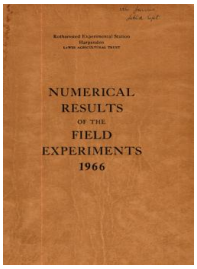
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ROTHAMSTED RESEARCH

# Yields of the Field Experiments 1966

*Full Table of Content*




# Yields of the Field Experiments 1966 - Numerical Results

## Rothamsted Research

Rothamsted Research (1967) *Yields of the Field Experiments 1966 - Numerical Results ;* Yields Of The Field Experiments 1966, pp 1 - 307 **- DOI: https://doi.org/10.23637/ERADOC-1-158**

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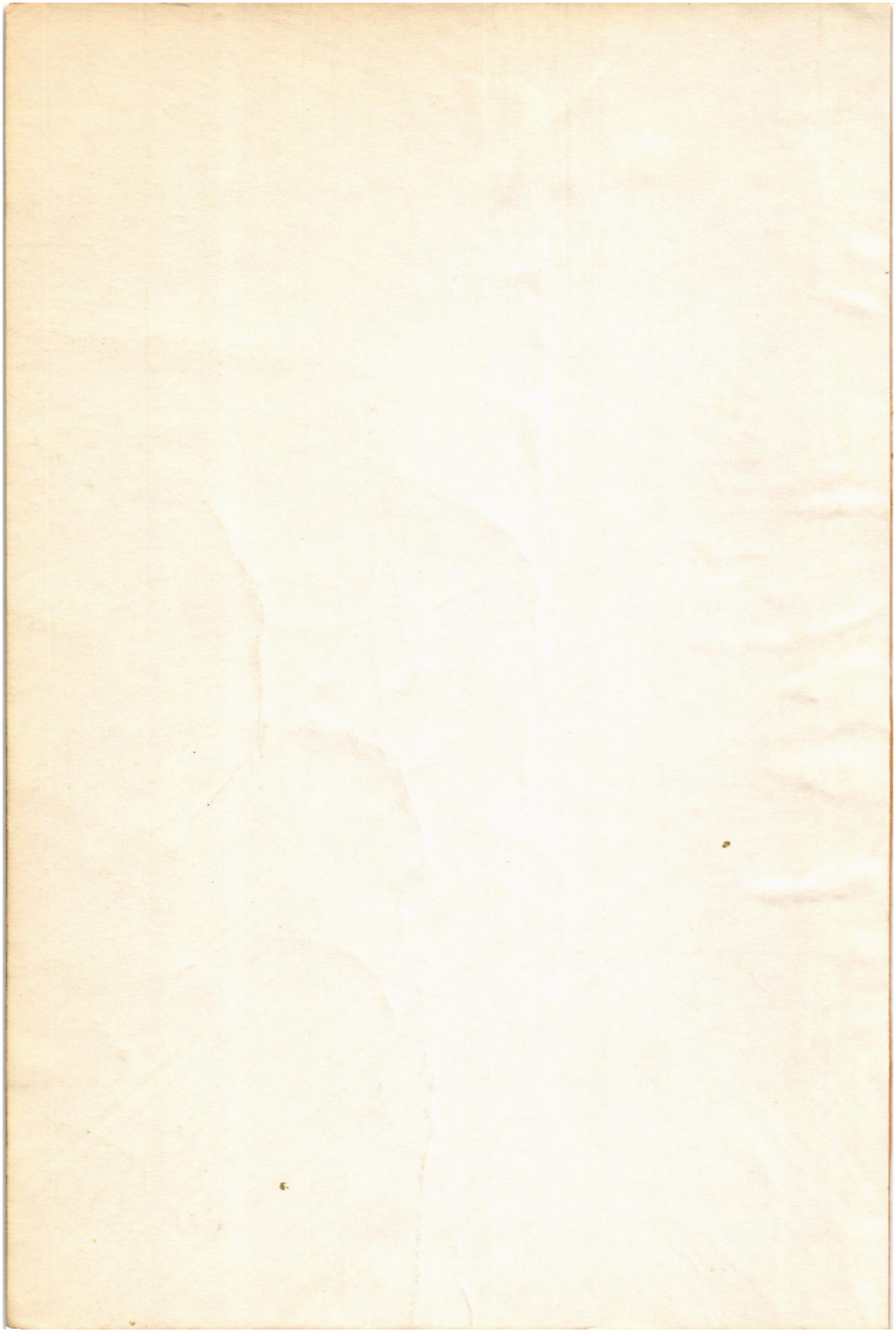
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Field Expt

Rothamsted Experimental Station
Harpenden
LAWES AGRICULTURAL TRUST

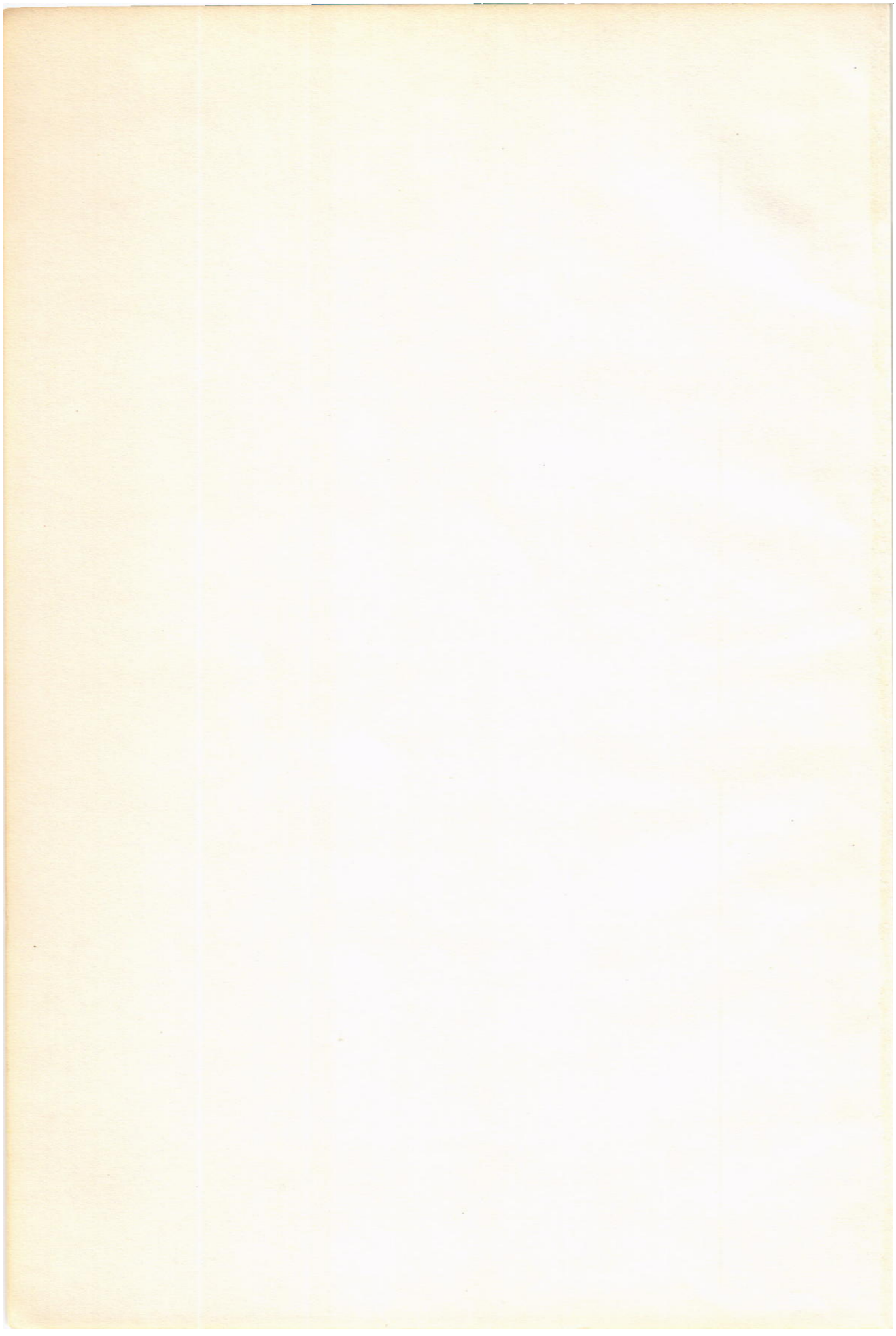
# NUMERICAL RESULTS OF THE FIELD EXPERIMENTS 1966

*https://doi.org/10.23637/ERADOC-1-158*

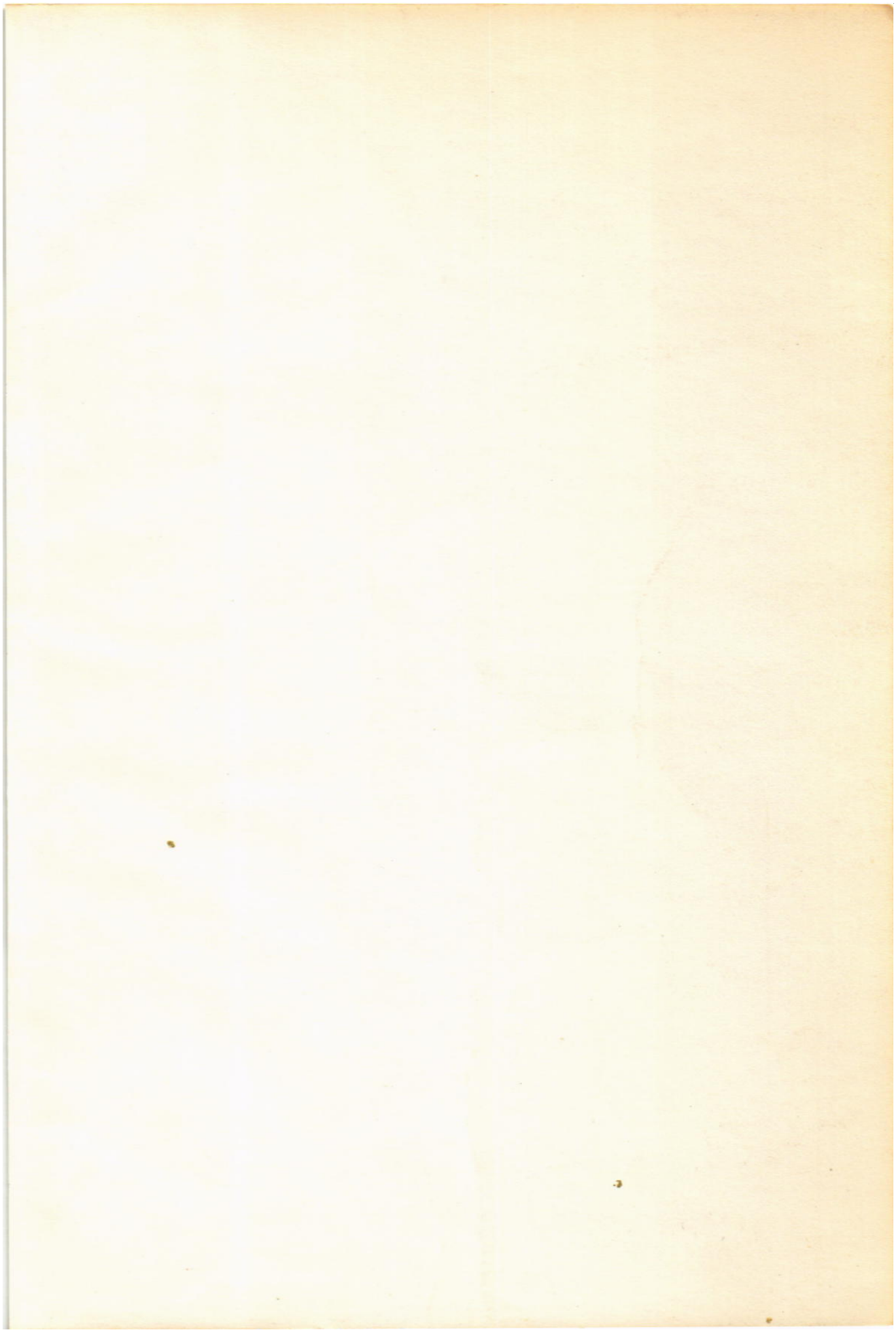
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Rothamsted Experimental Station

Harpenden

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# NUMERICAL RESULTS

of the

# FIELD

# EXPERIMENTS

1966

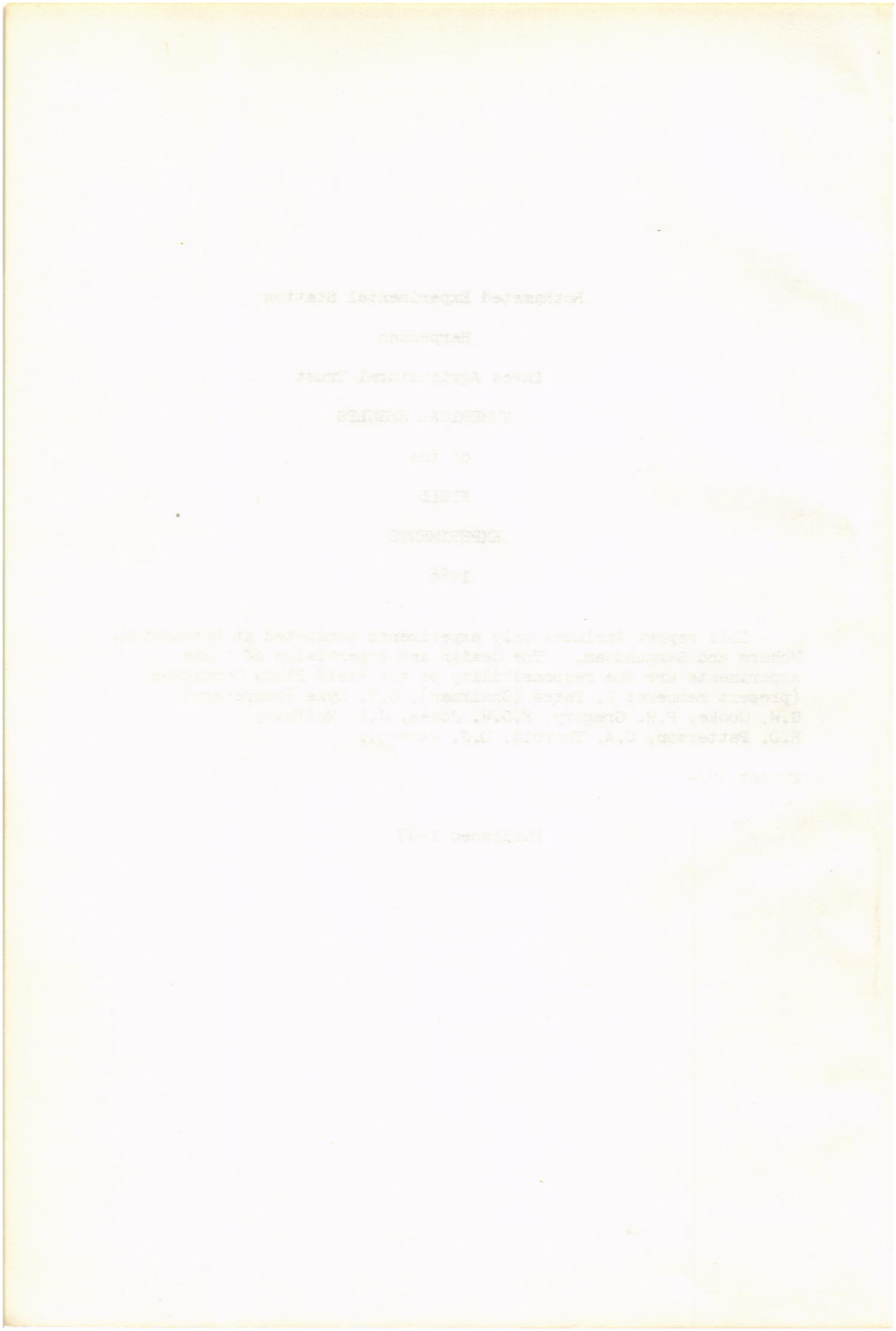
This report includes only experiments conducted at Rothamsted, Woburn and Saxmundham. The design and supervision of these experiments are the responsibility of the Field Plots Committee (present members: F. Yates (Chairman), G.V. Dyke (Secretary), G.W. Cooke, P.H. Gregory, F.G.W. Jones, J.R. Moffatt, H.D. Patterson, C.A. Thorold, D.J. Watson).

Price: 10/-

Published 1967

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# CONTENTS 1966

## CLASSICAL EXPERIMENTS*


| | | | |
|---|---|---|---|
| Broadbalk | Wheat | (BK) | A/1 |
| Hoosfield | Barley | (HB) | A/2 |
| Hoosfield | Wheat after fallow | (HWF) | A/3 |
| Agdell | Grass | (AG) | A/4 |
| Barnfield | Fallow | (BN) | A/5 |
| Park Grass | Hay | (PG) | A/6 |
| Hoosfield Exhaustion Land | Barley | (EX) | A/7 |
| Rothamsted Garden | Clover | (GC) | A/8 |
| Woburn Stackyard | Fallow | (WPW & WPB) | A/9 |
| Saxmundham | Rotation 1 | (SA) | A/10 |
| Saxmundham | Rotation 2 | (SB) | A/11 |


## ROTATION EXPERIMENTS


| | | | |
|---|---|---|---|
| Ley and arable rotations | Rothamsted | (HLA & FLA) | B/1 |
| Reference plots | Rothamsted & Woburn | (RA,RG,WRA&WRF) | B/2 |
| Green manuring | Woburn | (WGM) | B/3 |
| Ley and arable rotations | Woburn | (WLA) | B/4 |
| Market garden soil | Woburn | (WMG) | B/5 |
| Residual phosphate rotation | Rothamsted | (RP) | B/6 |
| Cultivation-weedkiller rotation | Rothamsted | (CW) | B/7 |
| Cultivation-weedkiller rotation | Woburn | (WCW) | B/8 |
| Intensive cereals | Woburn | (WIC) | B/9 |


## CROP SEQUENCE EXPERIMENTS*

### CROPS IN 1966


| | | | |
|---|---|---|---|
| K, Mg and Na Rothamsted | Kale | (LM) | C/1 |
| Intensive spring barley | Cereals | (IB) | C/2 |
| Long term liming Rothamsted & Woburn | Barley | (LL & WLL) | C/3 |
| Methods of application of fertiliser 1965-66 Woburn | Spring wheat | (WBT) | C/4 |
| Levels of N & K | Grass (9th year) | (AF) | C/5 |
| Decline of take-all | Winter wheat | (AD) | C/6 |
| Cereal disease reference plots | Wheat | (AQ) | C/7 |


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CONTENTS 1966 (CONTD.)

## CROP SEQUENCE EXPERIMENTS* (continued)


| | | | |
|---|---|---|---|
| Row spacing N and paraquat | Lucerne - 3rd year | (AZ) | C/8 |
| Irrigation | Potatoes & barley | (IR) | C/9 |
| Row spacing and fertilisers 1965 - 66 Woburn | Barley | (WBU) | C/10 |
| Soil structure 2 Woburn | Early potatoes & red beet | | C/11 |
| Oxamide | Grass | | C/12 |
| NPK | Old Grass (Park Grass Plot 5 Microplots) | (PGM) | C/13 |
| NPK & cutting | Old Grass (Park Grass plot 6 Microplots) | (PGM) | C/14 |
| Sod seeding & pests | Spring wheat | (BH) | C/15 |
| Intensive winter barley | Winter barley | (BJ) | C/16 |
| Legumes & barley | Cereal & hay | (BP) | C/17 |
| Previous crops & N for barley 1965 - 66 | Barley | (BQ) | C/18 |
| Previous crops & N for barley 1966 - 67 | Spring wheat, kale & ryegrass | (BY) | C/19 |
| Rate of action of P fertilisers 1965 - 66 | Barley & ryegrass | | C/20 |
| Rate of action of P fertilisers 1966 - 67 | Early potatoes & radishes | | C/21 |
| Formalin & N Rothamsted (2 sites) | Spring wheat | (BR, BS) | C/22 |
| Scorch study Woburn | Spring wheat - 3rd year | (WBL) | C/23 |
| Fumigants Woburn | Spring wheat | (WBO) | C/24 |
| K & protein synthesis Woburn | Grass | | C/25 |
| Lucerne virus control | Lucerne & lucerne/ cocksfoot | (BZ) | C/26 |
| Anhydrous ammonia | Established grass | (BX) | C/27 |
| Levels and forms of N | Spring beans | (CA) | C/28 |
| DD & Dazomet Rothamsted & Woburn | Spring wheat | (CC & WCD) | C/29 |
| Intensive wheat Saxmundham | Winter wheat | (SC) | C/30 |
| Organic manuring Woburn | Barley & grass | (WOM) | C/31 |
| Irrigation & eelworm Woburn | Potatoes | (WCE) | C/32 |
| Direct seeding Woburn | Spring wheat | (WBW) | C/33 |


## ANNUAL EXPERIMENTS*


| | | | |
|---|---|---|---|
| Winter wheat | Row spacing - Rothamsted & Woburn | (RW101&WW101) | Da/1 |
| Winter wheat | Spun seed | (RW301) | Da/2 |
| Winter wheat | Sowing dates and bulb fly | (BG13) | Da/3 |

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CONTENTS 1966 (CONTD.)

ANNUAL EXPERIMENTS* (continued)


| | | | |
|---|---|---|---|
| Spring wheat | Anhydrous ammonia - Rothamsted & Woburn | (RW601&WW301) | Da/4 |
| Spring wheat | Sowing dates - Woburn | (WW201) | Da/5 |
| Spring wheat | CCC | (RW701) | Da/6 |
| Spring wheat | CCC & Irrigation - Woburn | (WW401) | Da/7 |
| Winter & Spring wheat | Varieties and N | (RW401) | Da/8 |
| Barley | Row spacing - Rothamsted & Woburn | (RB101&WB101) | Db/1 |
| Barley | Spun seed | (RB201) | Db/2 |
| Spring beans | Irrigation and row spacing | (RBe101) | Dc/1 |
| Early potatoes | DSA | (RP1/1) | Dd/1 |
| Potatoes | Soil fungicides Rothamsted & Woburn | (RP3/1&WP201) | Dd/2 |
| Potatoes | Effect of gaps (2 sites) | (RP6/1&RP17/1) | Dd/3 |
| Potatoes | Oospora | (RP7/1) | Dd/4 |
| Potatoes | Rhizoctonia | (RP8/1) | Dd/5 |
| Potatoes | Gangrene | (RP9/1) | Dd/6 |
| Potatoes | Oospora (Dead eyes) | (RP10/1) | Dd/7 |
| Potatoes | Time of burning off | (RP11/1) | Dd/8 |
| Potatoes | Varieties - Woburn | (WP101) | Dd/9 |
| Potatoes | Verticillium - Woburn | (WP301) | Dd/10 |
| Potatoes | Tuber blight - Woburn | (WP401) | Dd/11 |
| Carrots | Motley dwarf virus - Woburn | (WCt1) | De/1 |
| Kale | Urea | | Df/1 |


MISCELLANEOUS DATA

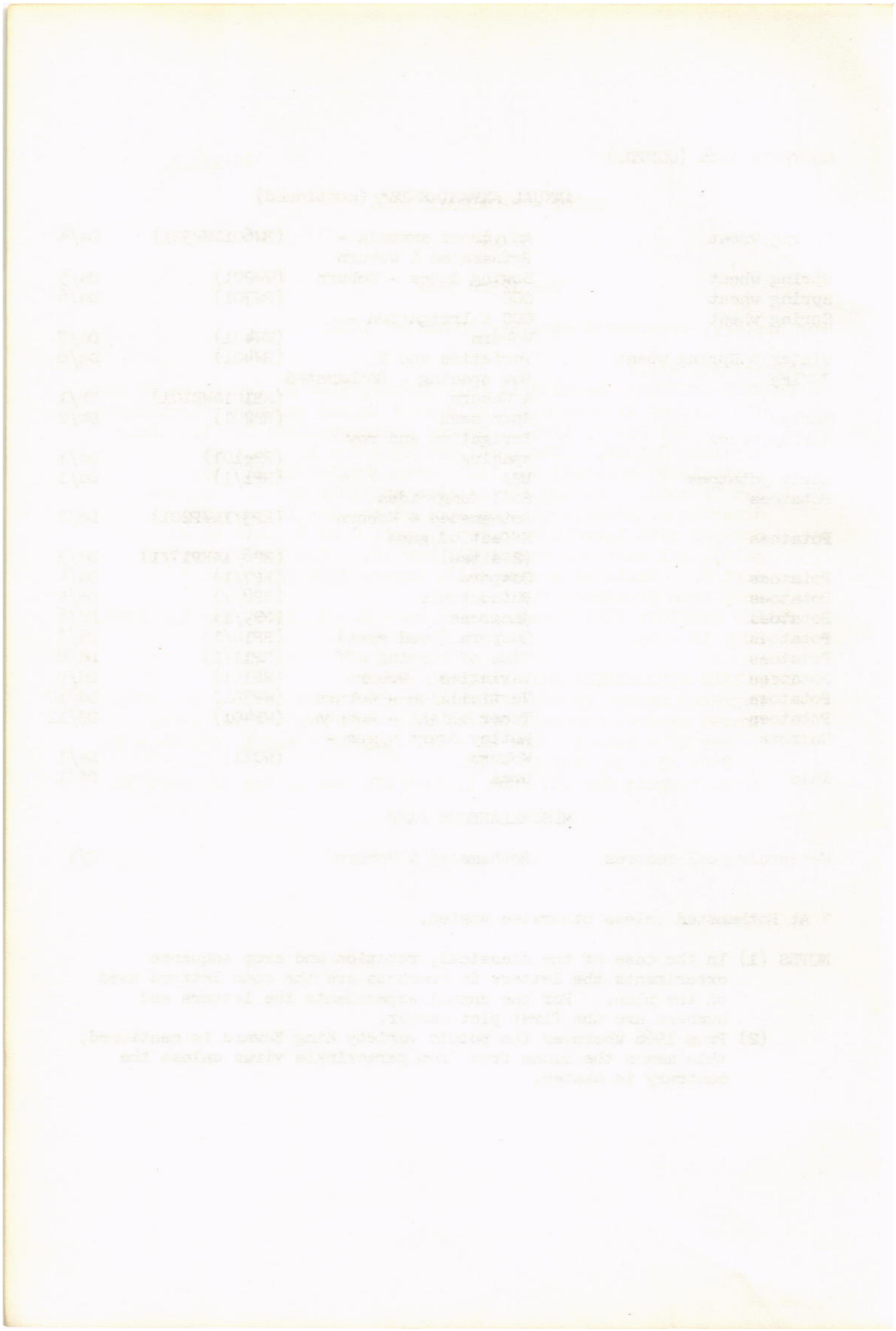

| | | |
|---|---|---|
| Meteorological records | Rothamsted & Woburn | E/1 |


* At Rothamsted unless otherwise stated.

NOTES (1) In the case of the classical, rotation and crop sequence experiments the letters in brackets are the code letters used on the plan. For the annual experiments the letters and numbers are the first plot number.

(2) From 1966 wherever the potato variety King Edward is mentioned, this means the clone free from paracrinkle virus unless the contrary is stated.

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66/A/1.1

# WHEAT - BROADBALK 1966

(BK)

The 123rd year

For history, treatments etc. see 'Details' 1962.

Cultivations, etc.:

CROPPED SECTIONS: Section IA (all plots), plot 20 (sections IB and II) sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb: Oct 4, 1965. Ground chalk applied: Oct 7. Dung applied: Oct 28. Ploughed: Oct 29 - Nov 1. Autumn fertilisers applied: Nov 15. Seed drilled at 187 lb: Jan 7, 1966. Spring fertilisers applied: May 2. Second dressing of nitrate of soda applied to plot 16: May 16. Sprayed with Ioxynil/mecoprop (Actril C at 6 pints in 40 gals), all sections except VA: May 16. Combine harvested: Sept 6. Variety: Squarehead's Master 13/4 (Rothamsted seed from Broadbalk field).

FALLOW SECTION: (IB) Ploughed: Oct 29 - Nov 1, 1965, May 23, 1966, July 14 - 15.

BROADBALK WILDERNESS: Cultivations, etc.:

Ungrazed meadow (north): Shrubs grubbed out: Dec 6 - 10, 1965.

Grazed meadow (centre): Grazed by sheep: May 6 - 12, 1966, May 27 - June 3, June 21 - 29, July 19 - Aug 1, Aug 24 - 30, Sept 23 - 30, Nov 16 - 18.

Grass topped: May 12, June 3, June 29, Aug 1, Aug 30, Sept 30.

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66/A/1.2

## SUMMARY OF RESULTS

### GRAIN

| Section<br>Years after fallow | III<br>1 | IV<br>2 | VA<br>3 | II<br>4 | VB<br>8 | IA<br>15 | Mean |
|---|---|---|---|---|---|---|---|
| 2A | 37.3 | 31.3 | 26.5 | 29.9 | 26.2 | 24.8 | 31.0 |
| 2B | 35.6 | 30.4 | 23.3 | 33.8 | 26.0 | 25.0 | 30.9 |
| 3 | 15.8 | 9.8 | 17.1 | 11.7 | 10.5 | 10.3 | 12.6 |
| 5 | 22.5 | 10.9 | 20.8 | 15.5 | 14.8 | 12.8 | 16.4 |
| 6 | 27.9 | 18.1 | 21.0 | 22.5 | 20.0 | 19.6 | 22.1 |
| 7 | 28.9 | 28.4 | 21.3 | 28.1 | 30.8 | 27.9 | 27.9 |
| 8 | 28.6 | 32.1 | 25.4 | 31.4 | 30.8 | 29.9 | 30.1 |
| 9 | 27.8 | 25.5 | 23.8 | 24.0 | 21.9 | 24.5 | 25.1 |
| 10 | 16.7 | 19.7 | 20.1 | 18.7 | 15.5 | 15.4 | 18.1 |
| 11 | 18.6 | 27.0 | 21.0 | 18.9 | 20.5 | 23.7 | 21.5 |
| 12 | 24.8 | 28.0 | 21.7 | 22.1 | 22.3 | 26.1 | 24.4 |
| 13 | 32.7 | 25.3 | 17.3 | 30.5 | 30.3 | 28.7 | 28.2 |
| 14 | 25.0 | 25.0 | 18.1 | 22.4 | 25.2 | 29.5 | 23.9 |
| 15 | 29.9 | 15.2 | 14.9 | 19.1 | 14.1 | 19.5 | 19.8 |
| 16 | 33.4 | 31.2 | 28.6 | 30.6 | 33.1 | 22.0 | 31.0 |
| 17 | 33.3 | 27.7 | 25.2 | 30.0 | 27.8 | 27.7 | 29.3 |
| 18 | 23.6 | 13.6 | 18.0 | 9.3 | 13.5 | 10.1 | 15.3 |
| 19 | 29.1 | 17.3 | 19.5 | 18.7 | 18.6 | 21.9 | 21.1 |
| 20 | | | | 17.4 | | 18.5 | 17.7 |

Mean D.M. %: 82.1

NOTE: The yields above are calculated (as in all experiments in the 'Results') from the weight of 'first' grain delivered by the combine harvester, adjusted only for moisture content. On certain sub plots in 1966, samples were separated into wheat, weed seeds and rubbish. Results:-

### % WEED SEEDS PLUS RUBBISH

| Section | Plot no. 2 | 5 | 7 | 9 | 18 |
|---|---|---|---|---|---|
| VA | 5 | 29 | 8 | 10 | 53 |
| VB | 2 | 4 | 2 | 2 | 2 |

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66/A/1.3

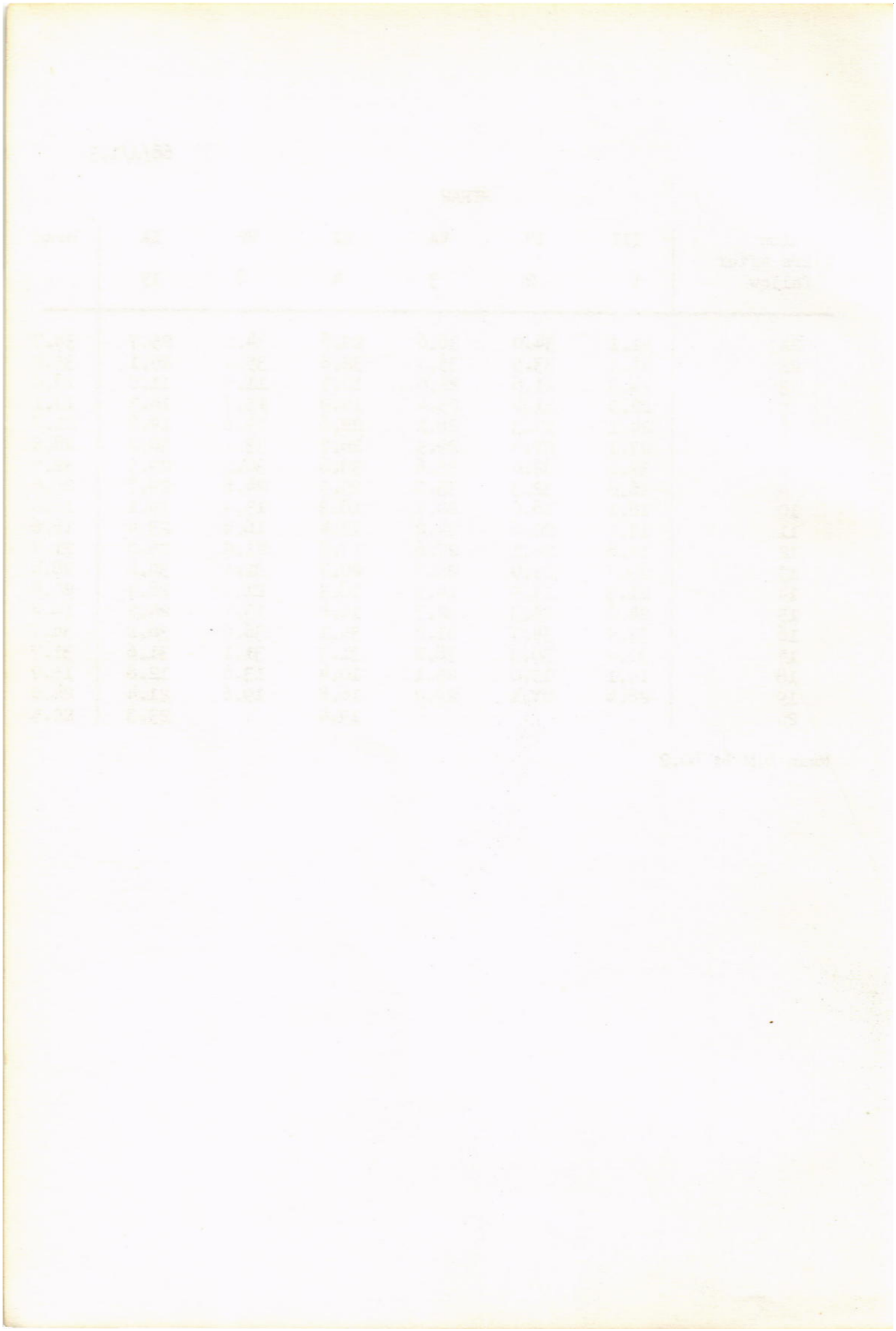
STRAW

| Section | III | IV | VA | II | VB | IA | Mean |
|---|---|---|---|---|---|---|---|
| Years after fallow | 1 | 2 | 3 | 4 | 8 | 15 | |
| 2A | 41.1 | 34.0 | 38.6 | 29.6 | 34.1 | 25.7 | 34.7 |
| 2B | 41.5 | 33.5 | 35.7 | 32.8 | 35.0 | 25.1 | 35.2 |
| 3 | 14.3 | 11.6 | 22.0 | 10.5 | 11.0 | 11.0 | 13.0 |
| 5 | 22.9 | 11.4 | 25.4 | 14.9 | 15.7 | 14.3 | 17.1 |
| 6 | 24.1 | 17.3 | 28.1 | 22.6 | 19.8 | 19.8 | 21.8 |
| 7 | 27.1 | 27.4 | 29.9 | 26.7 | 33.1 | 30.2 | 28.2 |
| 8 | 33.6 | 32.0 | 35.6 | 33.6 | 30.1 | 29.5 | 32.8 |
| 9 | 26.8 | 32.3 | 33.7 | 25.9 | 24.6 | 29.7 | 28.6 |
| 10 | 18.1 | 18.0 | 20.5 | 18.3 | 13.9 | 19.1 | 18.0 |
| 11 | 17.1 | 20.6 | 24.2 | 15.4 | 16.4 | 23.4 | 18.6 |
| 12 | 19.8 | 24.1 | 27.6 | 17.8 | 21.0 | 25.0 | 21.7 |
| 13 | 29.7 | 25.0 | 25.7 | 29.7 | 31.5 | 30.4 | 28.4 |
| 14 | 21.3 | 17.5 | 24.1 | 18.3 | 21.0 | 28.4 | 20.4 |
| 15 | 24.8 | 18.3 | 22.7 | 16.8 | 13.1 | 24.2 | 19.8 |
| 16 | 37.9 | 34.7 | 41.8 | 35.1 | 36.6 | 36.9 | 36.7 |
| 17 | 30.4 | 30.3 | 38.2 | 31.7 | 31.1 | 31.6 | 31.7 |
| 18 | 19.1 | 15.0 | 25.1 | 10.4 | 13.6 | 12.8 | 15.7 |
| 19 | 28.4 | 27.1 | 29.0 | 16.8 | 19.6 | 21.4 | 24.0 |
| 20 | | | | 19.4 | | 23.3 | 20.5 |

Mean D.M %: 80.2

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66/A/2.1

# BARLEY - HOOSFIELD 1966

(HB)

For history, treatments, etc. see 'Details' 1962 and 'Results' 64/A/2.

Cultivations, etc.: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Oct 4, 1965. Dung applied, all plots ploughed: Nov 1. Fertilisers applied: Mar 17, 1966. Seed drilled at 155 lb: Mar 18. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 27. Combine harvested: Aug 26.

NOTE: Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made.

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SUMMARY OF RESULTS

| Plot | GRAIN PA | GRAIN MB | GRAIN Mean | STRAW PA | STRAW MB | STRAW Mean |
|---|---|---|---|---|---|---|
| 1 0 | 10.2 | 10.0 | 10.1 | 5.1 | 4.3 | 4.7 |
| 2 0 | 13.2 | 10.7 | 12.0 | 7.0 | 3.8 | 5.4 |
| 3 0 | 6.3 | 5.5 | 5.9 | 2.4 | 1.6 | 2.0 |
| 4 0 | 11.9 | 7.0 | 9.5 | 6.3 | 3.4 | 4.8 |
| 5 0 | 10.6 | 8.4 | 9.5 | 5.6 | 4.4 | 5.0 |
| 1 A | 16.7 | 17.7 | 17.2 | 11.3 | 11.6 | 11.4 |
| 2 A | 26.7 | 24.7 | 25.7 | 18.0 | 18.9 | 18.4 |
| 3 A | 20.4 | 26.7 | 23.6 | 16.5 | 20.4 | 18.5 |
| 4 A | 29.1 | 43.4 | 36.2 | 19.0 | 29.6 | 24.3 |
| 5 A | 34.3 | 40.5 | 37.4 | 21.9 | 32.3 | 27.1 |
| 1 AA | 15.7 | 16.5 | 16.1 | 11.0 | 14.2 | 12.6 |
| 2 AA | 30.2 | 34.0 | 32.1 | 22.2 | 29.6 | 25.9 |
| 3 AA | 16.8 | 19.8 | 18.3 | 15.3 | 19.0 | 17.2 |
| 4 AA | 27.0 | 41.0 | 34.0 | 16.8 | 30.0 | 23.4 |
| 1 AAS | 22.6 | 23.6 | 23.1 | 20.5 | 20.7 | 20.6 |
| 2 AAS | 30.8 | 31.2 | 31.0 | 24.3 | 25.5 | 24.9 |
| 3 AAS | 21.6 | 32.2 | 26.9 | 18.0 | 22.7 | 20.3 |
| 4 AAS | 32.8 | 45.1 | 38.9 | 22.7 | 36.8 | 29.8 |
| 1 C | 26.4 | 38.4 | 32.4 | 17.9 | 26.2 | 22.0 |
| 2 C | 29.6 | 40.3 | 34.9 | 17.8 | 24.4 | 21.1 |
| 3 C | 25.4 | 35.9 | 30.6 | 15.0 | 21.8 | 18.4 |
| 4 C | 29.4 | 42.0 | 35.7 | 17.4 | 28.7 | 23.1 |
| 7 - 1 | 12.2 | 6.8 | 9.5 | 9.4 | 4.3 | 6.9 |
| 7 - 2 | 39.8 | 37.4 | 38.6 | 25.2 | 26.3 | 25.7 |
| 6 - 1 | 7.0 | 5.5 | 6.3 | 3.9 | 2.0 | 3.0 |
| 6 - 2 | 10.1 | 8.8 | 9.4 | 4.5 | 4.6 | 4.6 |
| 1 N | 12.1 | 11.0 | 11.5 | 11.5 | 12.1 | 11.8 |
| 2 N | 18.3 | 24.2 | 21.3 | 10.2 | 16.7 | 13.4 |
| Mean | 21.0 | 24.6 | 22.8 | 14.2 | 17.7 | 15.9 |
| Mean D.M. %: | | 79.6 | | | 66.7 | |

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66/A/3.1

# WHEAT AFTER FALLOW - HOOSFIELD 1966

(HWF)

For history, treatments, etc. see 'Details' 1962.

The winter wheat was damaged by wheat bulb fly (Leptohylemia coaretata) and plots A3 and A4 were resown with spring wheat. Plot A1, which was less severely attacked, was left in winter wheat.

Area of each plot: Cappelle (C) - 0.0552, Rothwell Perdix (R) - 0.0690, Kloka (K) - 0.124. Area harvested: 0.0368.

Cultivations, etc.:-

Cropped plots: Ploughed: Oct 14, 1965. Seed drilled at 190 lb: Nov 5. Sections A3 and A4 rotary cultivated and redrilled with Kloka spring wheat at 230 lb: May 2, 1966. Winter wheat sprayed with ioxynil/mecoprop (Actril C at 6 pints in 40 gals): May 16. Spring wheat sprayed with MCPA at 1.5 lb a.e. in 40 gals: June 16. Winter wheat combine harvested: Sept 3. Spring wheat combine harvested: Sept 7.

Fallowed plots: Ploughed 3 times: Oct 14, 1965, May 23, 1966 and July 15.

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66/A/3.2

## SUMMARY OF RESULTS

| Plot | A3 | | A4 | | A1 | |
|---|---|---|---|---|---|---|
| No of years of fallow | 1 | | 1 | | 3 | |
| Strip | A | B | A | B | A | B |
| Variety | K | K | K | K | C | R |
| **GRAIN** | | | | | | |
| | 10.0 | 9.0 | 10.2 | 9.6 | 11.2 | 13.7 |
| **STRAW** | | | | | | |
| | 8.0 | 6.5 | 8.1 | 7.1 | 4.6 | 7.0 |

Mean D.M. %: Grain: 79.7
Straw: 84.8

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# GRASS - AGDELL 1966

(AG)

For history, treatments etc., see 'Details' 1962 and 'Results' 64/A/4 and 65/A/4.

Area of each microplot: Plots 1 - 4 - 0.0180, Plots 5 - 6 - 0.0162.
Area harvested: 0.0023.

P and K applied after first cut:-
P was applied in 1966 as triple superphosphate to balance withdrawals by grass in 1965, to all sub plots except (P0) which continues to receive no P. Rates in cwt $P_2O_5$:-

| | Sub plots testing P:- | | | | Sub plots testing K:- | | | |
|---|---|---|---|---|---|---|---|---|
| Plot no. | P0 | P1 | P2 | P4 | K0 | K1 | K2 | K4 |
| 1 | - | 1.01 | 1.13 | 1.07 | 0.82 | 0.85 | 0.99 | 1.00 |
| 2 | - | 0.70 | 0.77 | 0.81 | 0.77 | 0.81 | 0.88 | 0.95 |
| 3 | - | 0.79 | 0.80 | 0.98 | 0.79 | 0.87 | 0.86 | 0.97 |
| 4 | - | 0.54 | 0.65 | 0.70 | 0.75 | 0.85 | 0.80 | 0.86 |
| 5 | - | 0.61 | 0.70 | 0.79 | 0.72 | 0.80 | 0.73 | 0.76 |
| 6 | - | 0.65 | 0.73 | 0.82 | 0.77 | 0.73 | 0.77 | 0.73 |

Withdrawals of K by grass were too great to be balanced by a single dressing without risk of damage to the grass. Consequently a standard dressing of 5 lb muriate of potash per sub plot (1.48 cwt $K_2O$ to plots 1, 2, 3 and 4, 1.66 cwt $K_2O$ to plots 5 and 6) was applied, except to sub plots (K0), which continue to receive no K. The remainder of the dressing required to balance withdrawals will be applied in 1967.

Basal dressing: 'Nitro-Chalk' applied at 0.8 cwt N on Mar 18 and after first 2 cuts. The dressing after the third cut was applied at 1.0 cwt N in error.

Cultivations, etc.:
Grass: P and K fertilisers applied: May 25, 1966. Cut 4 times for silage: May 19, June 29, Aug 12, Oct 12.
Fallow: Ploughed: Jan 13, 1966.

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# SUMMARY OF RESULTS

## DRY MATTER

| P | K | Plot 5 | 6 | 3 | 4 | 1 | 2 | Mean |
|---|---|---|---|---|---|---|---|---|
| | | | | 1ST CUT | | | | |
| 0 | 4 | 16.5 | 8.8 | 28.1 | 26.3 | 33.6 | 30.0 | 23.9 |
| 1 | 4 | 36.4 | 36.1 | 37.3 | 32.5 | 38.2 | 42.4 | 37.1 |
| 2 | 4 | 42.4 | 42.9 | 37.8 | 37.7 | 39.1 | 40.6 | 40.1 |
| 4 | 4 | 37.9 | 42.3 | 41.0 | 37.0 | 34.9 | 39.5 | 38.8 |
| 4 | 0 | 30.3 | 27.7 | 36.3 | 38.7 | 36.7 | 23.8 | 32.2 |
| 4 | 1 | 35.2 | 38.3 | 36.3 | 35.9 | 40.4 | 36.9 | 37.2 |
| 4 | 2 | 40.2 | 33.8 | 38.5 | 44.5 | 38.8 | 36.4 | 38.7 |
| 4 | 4 | 44.6 | 40.4 | 36.9 | 44.6 | 37.9 | 43.3 | 41.3 |
| Mean | | 35.5 | 33.8 | 36.5 | 37.2 | 37.4 | 36.6 | 36.2 |
| | | | | 2ND CUT | | | | |
| 0 | 4 | 19.8 | 13.7 | 15.2 | 19.3 | 24.6 | 22.4 | 19.2 |
| 1 | 4 | 20.6 | 20.4 | 19.4 | 28.3 | 27.7 | 20.9 | 22.9 |
| 2 | 4 | 24.0 | 23.7 | 24.3 | 15.4 | 25.9 | 19.1 | 22.0 |
| 4 | 4 | 24.0 | 22.4 | 20.7 | 26.0 | 24.0 | 22.6 | 23.3 |
| 4 | 0 | 14.8 | 17.3 | 18.5 | 23.8 | 23.3 | 20.8 | 19.7 |
| 4 | 1 | 24.9 | 27.4 | 21.1 | 29.6 | 26.8 | 28.2 | 26.3 |
| 4 | 2 | 24.3 | 25.3 | 24.5 | 17.0 | 25.5 | 20.7 | 22.9 |
| 4 | 4 | 24.5 | 25.1 | 21.1 | 16.1 | 27.9 | 18.9 | 22.3 |
| Mean | | 22.1 | 21.9 | 20.6 | 21.9 | 25.7 | 21.7 | 22.3 |

Mean D.M. %: 1st cut: 18.0
2nd cut: 18.4

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66/A/4.3

DRY MATTER

| P | K | Plot 5 | 6 | 3 | 4 | 1 | 2 | Mean |
|---|---|---|---|---|---|---|---|---|
| | | | | 3RD CUT | | | | |
| 0 | 4 | 3.7 | 2.8 | 12.0 | 9.9 | 14.4 | 12.0 | 9.1 |
| 1 | 4 | 13.9 | 16.2 | 15.4 | 12.2 | 21.0 | 16.2 | 15.8 |
| 2 | 4 | 16.2 | 14.7 | 14.2 | 14.0 | 18.0 | 14.8 | 15.3 |
| 4 | 4 | 14.6 | 15.6 | 19.7 | 14.5 | 19.4 | 14.4 | 16.4 |
| 4 | 0 | 9.5 | 7.2 | 8.8 | 10.1 | 12.4 | 9.2 | 9.5 |
| 4 | 1 | 15.6 | 16.3 | 16.5 | 14.2 | 17.7 | 14.5 | 15.8 |
| 4 | 2 | 19.3 | 12.9 | 13.4 | 13.5 | 16.6 | 18.7 | 15.7 |
| 4 | 4 | 20.5 | 16.8 | 15.7 | 16.8 | 16.2 | 17.5 | 17.2 |
| Mean | | 14.2 | 12.8 | 14.5 | 13.1 | 17.0 | 14.7 | 14.4 |
| | | | | 4TH CUT | | | | |
| 0 | 4 | 3.2 | 3.7 | 13.4 | 10.4 | 20.0 | 11.5 | 10.4 |
| 1 | 4 | 13.0 | 10.9 | 16.9 | 17.7 | 13.9 | 16.7 | 14.9 |
| 2 | 4 | 9.5 | 15.9 | 13.6 | 12.4 | 18.8 | 17.6 | 14.6 |
| 4 | 4 | 15.2 | 15.5 | 17.0 | 18.8 | 15.2 | 13.7 | 15.9 |
| 4 | 0 | 4.8 | 3.6 | 11.2 | 8.7 | 16.2 | 6.9 | 8.6 |
| 4 | 1 | 15.4 | 12.8 | 15.1 | 14.5 | 18.6 | 14.7 | 15.2 |
| 4 | 2 | 8.3 | 11.7 | 16.5 | 16.5 | 12.3 | 13.1 | 13.1 |
| 4 | 4 | 12.6 | 14.8 | 12.6 | 16.5 | 13.7 | 16.7 | 14.5 |
| Mean | | 10.2 | 11.1 | 14.5 | 14.4 | 16.1 | 13.9 | 13.4 |

Mean D.M. %: 3rd cut: 15.0
4th cut: 19.3

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66/A/4.4

DRY MATTER

Plot

| P | K | 5 | 6 | 3 | 4 | 1 | 2 | Mean |
|---|---|---|---|---|---|---|---|---|
| | | TOTAL OF 4 CUTS | | | | | | |
| 0 | 4 | 43.2 | 29.0 | 68.7 | 65.9 | 92.6 | 75.9 | 62.6 |
| 1 | 4 | 83.9 | 83.6 | 89.0 | 90.7 | 100.8 | 96.2 | 90.7 |
| 2 | 4 | 92.1 | 97.2 | 89.9 | 79.5 | 101.8 | 92.1 | 92.1 |
| 4 | 4 | 91.7 | 95.8 | 98.4 | 96.3 | 93.5 | 90.2 | 94.3 |
| 4 | 0 | 59.4 | 55.8 | 74.8 | 81.3 | 88.6 | 60.7 | 70.1 |
| 4 | 1 | 91.1 | 94.8 | 89.0 | 94.2 | 103.5 | 94.3 | 94.5 |
| 4 | 2 | 92.1 | 83.7 | 92.9 | 91.5 | 93.2 | 88.9 | 90.4 |
| 4 | 4 | 102.2 | 97.1 | 86.3 | 94.0 | 95.7 | 96.4 | 95.3 |
| Mean | | 82.0 | 79.6 | 86.1 | 86.7 | 96.2 | 86.8 | 86.2 |

Mean D.M. %: 17.7

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66/A/5

# FALLOW - BARNFIELD 1966

(BN)

For history, treatments etc., see 'Details' 1962 and 'Results' 62/A/5.

Cultivations, etc.: Dung applied: Dec 29, 1965 - Jan 10, 1966.
Ploughed: Jan 11. Mineral fertilisers applied: May 26 - 31.
Deep-tine cultivated: June 6. Ploughed second time: Aug 16 - 26.

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66/A/6.1

# HAY - THE PARK GRASS PLOTS

(PG)

For history, treatments etc., see 'Details' 1962 and 'Results' 65/A/6.

Cultivations, etc.: Mineral fertilisers applied: Dec 15, 1965. Nitrogenous fertilisers applied: 1st dressing - Mar 21, 1966, 2nd dressing - Apr 29. Cut twice: June 7, Oct 11.

*https://doi.org/10.23637/ERADOC-1-158*

## SUMMARY OF RESULTS

### DRY MATTER

| Plot No | 1st cut a | b | c | d | Mean | 2nd cut a | b | c | d | Mean | Total of 2 cuts a | b | c | d | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16.7 | 10.2 | 12.0 | 8.3 | 11.8 | 15.9 | 14.3 | 8.9 | 11.4 | 12.6 | 32.6 | 24.6 | 20.9 | 19.7 | 24.4 |
| 2 | 17.2 | 19.5 | 12.8 | 10.1 | 14.9 | 17.2 | 18.5 | 20.3 | 18.6 | 18.7 | 34.4 | 38.0 | 33.1 | 28.7 | 33.6 |
| 3 | 16.7 | 19.0 | 11.4 | 11.4 | 14.6 | 16.7 | 18.1 | 17.0 | 18.6 | 17.6 | 33.3 | 37.1 | 28.4 | 30.1 | 32.2 |
| 4-1 | 22.0 | 23.0 | 24.0 | 24.6 | 23.4 | 21.1 | 26.4 | 23.6 | 31.5 | 25.7 | 43.1 | 49.5 | 47.7 | 56.0 | 49.1 |
| 4-2 | 30.9 | 32.2 | 32.6 | 26.0 | 30.5 | 21.7 | 22.0 | 13.1 | 16.2 | 18.3 | 52.6 | 54.2 | 45.8 | 42.2 | 48.7 |
| 7 | 42.5 | 35.9 | 34.0 | 33.5 | 36.5 | 27.4 | 27.0 | 27.7 | 36.7 | 29.7 | 70.0 | 62.9 | 61.7 | 70.2 | 66.2 |
| 8 | 24.3 | 24.7 | 29.1 | 25.4 | 25.9 | 24.4 | 23.4 | 38.3 | 39.7 | 31.5 | 48.8 | 48.2 | 67.5 | 65.1 | 57.4 |
| 9 | 53.6 | 54.3 | 46.1 | 45.0 | 49.7 | 28.4 | 28.0 | 17.5 | 26.3 | 25.1 | 82.0 | 82.4 | 63.6 | 71.4 | 74.8 |
| 10 | 35.3 | 37.9 | 33.7 | 27.4 | 33.6 | 21.0 | 18.4 | 16.7 | 17.4 | 18.4 | 56.4 | 56.3 | 50.4 | 44.8 | 52.0 |
| 11-1 | 61.1 | 56.7 | 57.6 | 25.9 | 50.3 | 40.7 | 24.9 | 28.3 | 33.7 | 31.9 | 101.8 | 81.6 | 85.9 | 59.6 | 82.2 |
| 11-2 | 56.1 | 61.4 | 58.0 | 40.5 | 54.0 | 45.2 | 36.8 | 30.3 | 39.3 | 37.9 | 101.3 | 98.2 | 88.3 | 79.8 | 91.9 |
| 12 | 17.3 | | 17.2 | | 17.2 | 27.1 | | 23.1 | | 25.1 | 44.4 | | 40.3 | | 42.3 |
| 13 | 32.3 | 35.7 | 41.2 | 35.6 | 36.2 | 35.8 | 38.8 | 34.9 | 41.8 | 37.8 | 68.1 | 74.5 | 76.1 | 77.4 | 74.0 |
| 14 | 39.9 | 42.8 | 46.5 | 45.9 | 43.7 | 23.4 | 25.0 | 27.1 | 25.9 | 25.3 | 63.2 | 67.8 | 73.5 | 71.8 | 69.1 |
| 15 | 38.3 | | 31.0 | | 34.6 | 31.5 | | 34.4 | | 32.9 | 69.8 | | 65.4 | | 67.6 |
| 16 | 37.2 | 40.2 | 39.2 | 36.9 | 38.4 | 23.6 | 26.5 | 26.1 | 24.9 | 25.3 | 60.7 | 66.7 | 65.3 | 61.9 | 63.6 |
| 17 | 20.2 | 24.7 | 20.0 | 17.7 | 20.6 | 21.7 | 16.5 | 26.3 | 20.0 | 21.1 | 41.9 | 41.2 | 46.3 | 37.7 | 41.8 |
| 18-1 | | | 25.1 | 22.7 | 23.9 | | | 16.3 | 16.9 | 16.6 | | | 41.5 | 39.5 | 40.5 |
| 18-2 | | | | | 21.4 | | | | | 19.9 | | | | | 41.3 |
| 18-3 | 24.1 | 24.2 | | | 24.1 | 22.0 | 21.9 | | | 21.9 | 46.1 | 46.0 | | | 46.0 |
| 19-1 | | | | | 33.5 | | | | | 34.1 | | | | | 67.6 |
| 19-2 | | | | | 39.5 | | | | | 29.9 | | | | | 69.4 |
| 19-3 | | | | | 37.5 | | | | | 31.8 | | | | | 69.3 |
| 20-1 | | | | | 48.1 | | | | | 37.7 | | | | | 85.8 |
| 20-2 | | | | | 43.6 | | | | | 33.5 | | | | | 77.1 |
| 20-3 | | | | | 38.6 | | | | | 28.8 | | | | | 67.3 |

Mean D.M. %: 1st cut: 24.0 2nd cut: 25.1 Total of 2 cuts: 24.6

66/A/6.2

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66/A/7

# BARLEY - EXHAUSTION LAND HOOSFIELD 1966

(EX)

For history, treatments etc., see 'Details' 1962 and 'Results' 64/A/7.

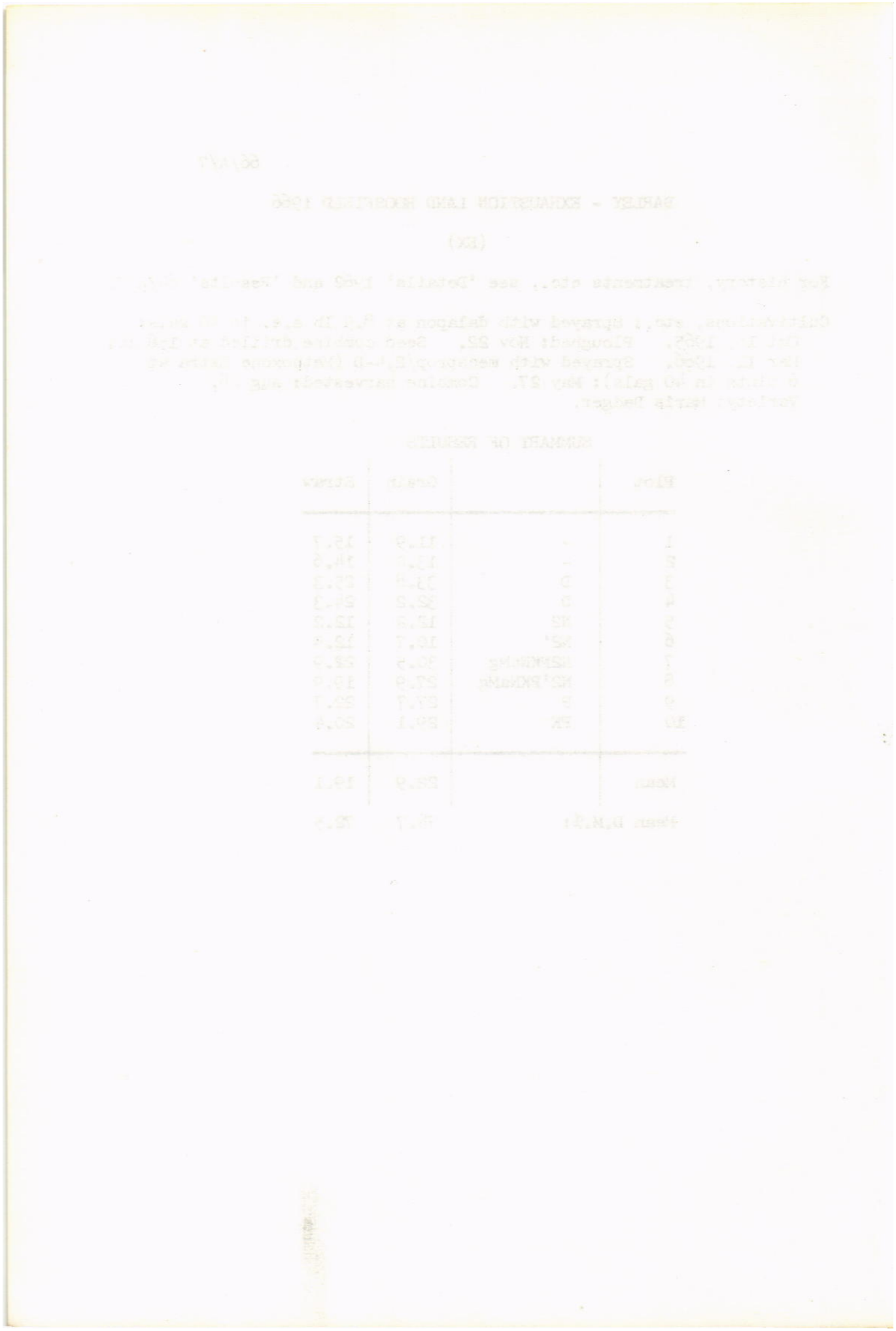
Cultivations, etc.: Sprayed with dalapon at 8.9 lb a.e. in 40 gals: Oct 18, 1965. Ploughed: Nov 22. Seed combine drilled at 156 lb: Mar 11, 1966. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 27. Combine harvested: Aug 26. Variety: Maris Badger.

SUMMARY OF RESULTS

| Plot | | Grain | Straw |
|---|---|---|---|
| 1 | - | 11.9 | 15.7 |
| 2 | - | 13.0 | 14.6 |
| 3 | D | 33.8 | 25.3 |
| 4 | D | 32.2 | 24.3 |
| 5 | N2 | 12.2 | 12.2 |
| 6 | N2' | 10.7 | 12.9 |
| 7 | N2PKNaMg | 30.5 | 22.9 |
| 8 | N2'PKNaMg | 27.9 | 19.9 |
| 9 | P | 27.7 | 22.7 |
| 10 | PK | 29.1 | 20.4 |
| Mean | | 22.9 | 19.1 |
| Mean D.M.%: | | 78.7 | 72.5 |

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66/A/8

# CLOVER - ROTHAMSTED GARDEN 1966

(GC)

The 113th year

For history etc., see 'Details' 1962.

Cultivations, etc.: K applied, soil hoed: Mar 22, 1966. Cut, stubble sprayed with paraquat at 2 lb ion in 40 gals: July 28. Plots dug, root stumps carted: Aug 18. Seed drilled at 30 lb: Sept 7. Variety: Red Clover (Dorsetiensis).

NOTE: (1) In the subsequent dry weather the seed failed to germinate.
(2) Samples of stems, roots and soil were taken in July for nematode counts.

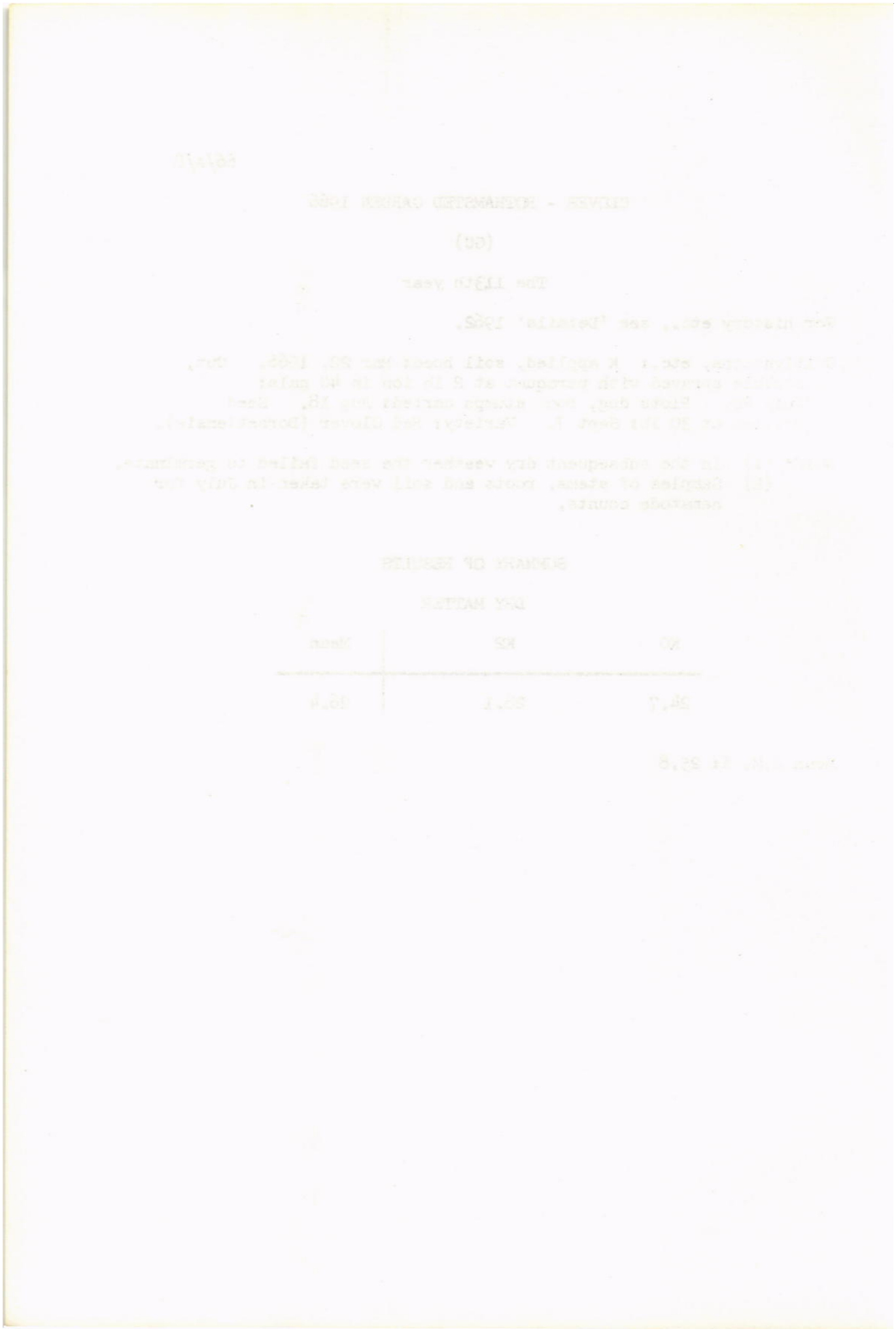
## SUMMARY OF RESULTS

### DRY MATTER

| K0 | K2 | Mean |
|---|---|---|
| 24.7 | 28.1 | 26.4 |

Mean D.M. %: 25.8

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66/A/9

FALLOW, SITE OF CONTINUOUS WHEAT AND BARLEY EXPERIMENTS

WOBURN STACKYARD 1966

(WPW and WPB)

For history, treatments etc., see 'Details' 1962.

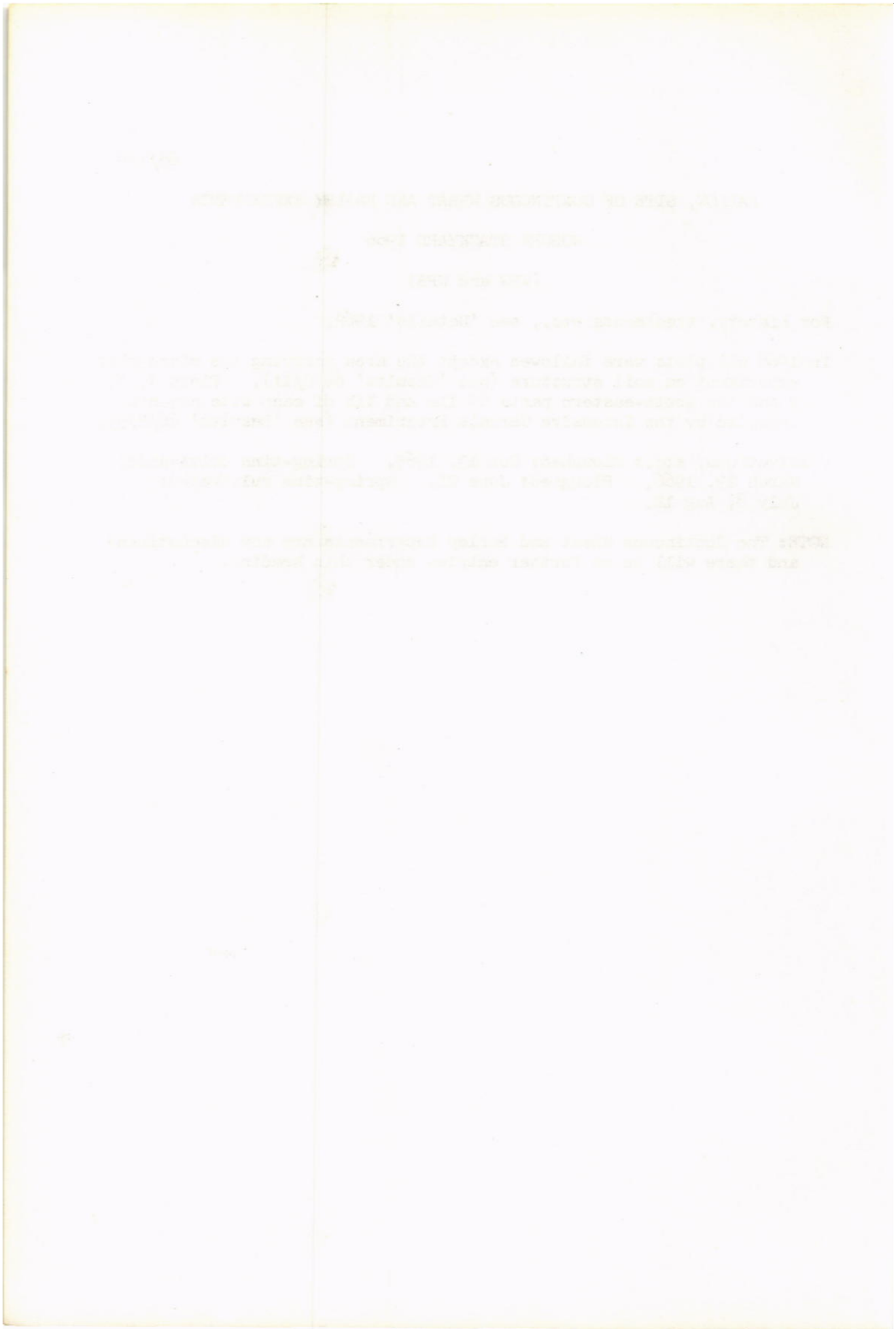
In 1966 all plots were fallowed except the area carrying the micro-plot experiment on soil structure (see 'Results' 66/C/11). Plots 7, 8, 9 and the south-eastern parts of 11a and 11b of each site are now occupied by the Intensive Cereals Experiment (see 'Results' 66/B/9).

Cultivations, etc.: Ploughed: Oct 13, 1965. Spring-tine cultivated: March 29, 1966. Ploughed: June 21. Spring-tine cultivated: July 8, Aug 12.

NOTE: The Continuous Wheat and Barley Experiments are now discontinued and there will be no further entries under this heading.

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66/A/10.1

# SAXMUNDHAM

## ROTATION I 1966

(SA)

For history, treatments, rotations etc. see Rothamsted Report for 1964, pp. 228 - 232, and for previous years' results see 'Results' 64/A/10 and 65/A/10.

The rotation is now sugar beet, barley, beans, winter wheat.

Area of each plot: 0.0546. Area harvested: Sugar beet - 0.0107, barley - 0.0234, spring beans - 0.0421, winter wheat - 0.0275.
Area of each sub-plot: 0.0074. Area harvested: 0.0025.

Treatments: New treatments were applied in 1966 as follows:-

| Former plot number | Treatment 1899 - 1965* | Treatment from 1966 |
|---|---|---|
| 1 | D | D |
| 2 | B | B |
| 3 | N | N2P2 |
| 4 | P | N1P1 |
| 5 | K | N1P2K |
| 6 | - | N1P2 |
| 7 | PK | N1P1K |
| 8 | NK | N2P2K |
| 9 | NP | N2P1 |
| 10 | NPK | N2P1K |

* for details see 'Results' 64/A/10.

Symbols (1966) D: 12 tons dung
B: 4 cwt bonemeal
N1, N2: 0.5, 1.0 cwt N to wheat, sugar beet and barley. 0, 0.5 cwt N to beans (all as 'Nitro-Chalk')
P1, P2: 0.4, 0.8 cwt $P_2O_5$ as superphosphate
K: 1 cwt $K_2O$ as muriate of potash.

A small area at the South end of each plot continues to be treated as in 1899 - 1965, except that (i) N is now applied as 'Nitro-Chalk' (ii) wheat 1966 received treatments as on the main plots. Yields of these sub plots were taken in sugar beet only.

Cultivations, etc.:
Sugar beet: Dung applied and ploughed in: Oct 11, 1965. Ploughed: Oct 12. NPK fertilisers applied: Mar 18, 1966. Bonemeal applied: Mar 22. Seed drilled: Mar 30. Singled: May 23.

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Sprayed with demeton-s-methyl (Metasystox at 17.3 fluid oz in 36 gals): June 15. Lifted: Oct 10. Variety: Klein E.

Barley: Ploughed (excluding dung plot): Oct 27, 1965. Dung applied: Oct 29. Dung ploughed in: Oct 30. Bonemeal applied: Mar 14, 1966. Fertilisers applied: Mar 15. Seed drilled at 195 lb: Mar 17. Sprayed with Dicamba, MCPA, mecoprop and TBA (Cambilene at 4 pints in 20 gals): May 13. Combine harvested: Aug 17. Variety: Proctor.

Spring beans: Dung applied: Oct 29, 1965. Ploughed in: Oct 30. Ploughed: Nov 3. Bonemeal applied: Mar 14, 1966. Fertilisers applied: Mar 15. Seed drilled at 110 lb: Mar 16. Sprayed with simazine at 1.2 lb in 23 gals: Mar 25. Sprayed with demeton-s-methyl (Metasystox at 17.3 fluid oz in 36 gals): June 15. Combine harvested: Aug 24. Variety: Spring Tick.

Winter wheat: Ploughing begun, stopped by rain: Sept 8, 1965. Dung applied and ploughed in (the remainder was not reploughed): Sept 21. PK fertilisers applied: Sept 27. Bonemeal applied, seed drilled: Oct 5. 'Nitro-Chalk' applied: Mar 26, 1966. Sprayed with Dicamba, MCPA, mecoprop and TBA (Cambilene at 4 pints in 20 gals): Apr 29. Combine harvested: Aug 17. Variety: Cappelle.

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## SUMMARY OF RESULTS

### NEW TREATMENTS

| Treatment 1899 - 1965 | Treatment from 1966 | SUGAR BEET | | | | | BARLEY | | SPRING BEANS | WINTER WHEAT | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Roots | Sugar % | Total sugar | Tops | Plant number | Grain | Straw | Grain | Grain | Straw |
| D | D | 13.50 | 16.5 | 44.6 | 5.78 | 32.6 | 34.2 | 20.2 | 24.3 | 18.7 | 13.4 |
| B | B | 4.67 | 16.0 | 15.0 | 2.83 | 22.1 | 11.2 | 3.8 | 7.3 | 9.9 | 2.4 |
| N | N2P2 | 13.71 | 17.3 | 47.5 | 6.86 | 29.2 | 29.8 | 16.6 | 9.1 | 27.1 | 18.5 |
| P | N1P1 | 9.60 | 17.2 | 33.0 | 3.86 | 28.1 | 25.4 | 15.9 | 8.4 | 19.8 | 14.2 |
| K | N1P2K | 7.29 | 17.1 | 25.0 | 3.91 | 29.4 | 19.5 | 12.8 | 7.5 | 16.7 | 12.8 |
| - | N1P2 | 9.27 | 17.3 | 32.1 | 3.78 | 30.7 | 28.1 | 13.6 | 8.8 | 17.8 | 6.4 |
| PK | N1P1K | 10.43 | 17.6 | 36.7 | 4.24 | 32.8 | 28.0 | 21.2 | 16.8 | 20.9 | 14.9 |
| NK | N2P2K | 10.10 | 17.4 | 35.2 | 6.44 | 30.8 | 32.4 | 23.6 | 15.2 | 28.3 | 19.9 |
| NP | N2P1 | 11.34 | 17.5 | 39.8 | 7.35 | 34.4 | 31.6 | 19.4 | 14.3 | 28.9 | 17.3 |
| NPK | N2P1K | 10.06 | 17.7 | 35.7 | 6.03 | 35.4 | 29.1 | 15.5 | 15.1 | 32.2 | 24.1 |
| Mean | | 10.00 | 17.2 | 34.5 | 5.11 | 30.5 | 26.9 | 16.2 | 12.7 | 22.0 | 14.4 |
| Mean D.M.%: | | | | | | | 83.5 | 87.7 | 83.7 | 83.0 | 79.1 |

66/4/10.3

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66/A/10.4

OLD TREATMENTS

| Plot no. | Treatment 1899 - 1966 | SUGAR BEET Roots | Sugar % | Total sugar | Tops | Plant number |
|---|---|---|---|---|---|---|
| 1 | D | 11.07 | 16.2 | 35.9 | 5.94 | 29.4 |
| 2 | B | 5.40 | 16.1 | 17.4 | 3.06 | 26.2 |
| 3 | N | 4.41 | 16.7 | 14.7 | 3.24 | 23.8 |
| 4 | P | 4.95 | 16.2 | 16.1 | 2.70 | 29.8 |
| 5 | K | 2.07 | 16.2 | 6.7 | 1.98 | 26.2 |
| 6 | - | 3.51 | 16.4 | 11.5 | 2.52 | 35.9 |
| 7 | PK | 7.29 | 16.9 | 24.6 | 3.78 | 35.9 |
| 8 | NK | 3.69 | 16.7 | 12.3 | 3.42 | 31.1 |
| 9 | NP | 12.69 | 16.9 | 43.0 | 5.22 | 30.7 |
| 10 | NPK | 11.16 | 17.3 | 38.6 | 5.58 | 34.3 |
| Mean | | 6.63 | 16.6 | 22.1 | 3.75 | 30.3 |

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# SAXMUNDHAM

## ROTATION II 1966

(SE)

For history, treatments, rotations, etc. see Rothamsted Report for 1964, pp. 228 - 232, and for previous years' results see 'Results' 64/A/11 and 65/A/11.

All plots were planted with potatoes, which were manured as follows:-

| | | |
|---|---|---|
| Plots 1, 2, 3 and 8: | No P | (P0) |
| Plot 4: | 20 tons dung | (D) |
| Plot 5: | 20 tons dung plus 1.5 cwt P205 | (DP1) |
| Plot 6: | 1.5 cwt P205 | (P1) |
| Plot 7: | 3.0 cwt P205 | (P2) |

All P205 as triple superphosphate.

Basal manuring: 1.2 cwt N and 1.2 cwt K20 as (16:0:16) and 0.8 cwt K20 as muriate of potash, applied on the flat.

Area of each plot: 0.0545. Area harvested: 0.0043.

Cultivations, etc.: Dung applied: Nov 2, 1965. Ploughed: Nov 3. Fertilisers applied: Mar 15, 1966. Potatoes planted: Mar 31. Sprayed with linuron at 0.67 lb and paraquat at 0.25 lb ion in 16 gals: Apr 29. Lifted: Sept 21. Variety: Pentland Dell.

NOTE: Leaf samples were taken on June 15 for P and K analysis.

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66/A/11.2

SUMMARY OF RESULTS

POTATOES

| Plot no. | Treatment 1966 | Total tubers |
|---|---|---|
| 1 | PO | 7.45 |
| 2 | PO | 14.56 |
| 3 | PO | 16.85 |
| 4 | D | 20.47 |
| 5 | DP1 | 20.34 |
| 6 | P1 | 18.23 |
| 7 | P2 | 18.60 |
| 8 | PO | 16.28 |
| Mean | | 16.60 |

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# LEY AND ARABLE ROTATIONS

## (HLA and FLA)

Highfield and Fosters Field 1966, the 18th year.

For details of treatments, rotations etc., see 'Details' and 'Results' 63/B/1.1, 64/B/1.1, 65/B/1.1.

Winter wheat: Sulphate of ammonia is now used for the autumn N test. The basal PK is now applied at 0.45 cwt P2O5 and 0.90 cwt K2O ploughed in and 0.45 cwt P2O5 and 0.90 cwt K2O broadcast before sowing (all as (0:14:28)).

All-grass leys and clover-grass leys (2nd and 3rd years), and all-grass and clover-grass permanent and reseeded grass plots: Fertiliser is now applied to these plots in spring before cutting as follows:-

All-grass sub plots and all-grass leys: 0.6 cwt N and 0.6 cwt K2O as (16:0:16).

Clover-grass sub plots and clover-grass leys: 0.6 cwt K2O as muriate of potash.

Potatoes: Fertilisers are now as follows:-

Sub-plots with dung: 1.2 cwt N, 1.8 cwt P2O5, 1.8 cwt K2O broadcast before ridging as 15:15:15 plus 0:20:20.

Sub-plots without dung: 1.5 cwt N, 2.5 cwt P2O5, 2.5 cwt K2O broadcast before ridging as 15:15:15 plus 0:20:20.

Former reseeded grass plots ploughed up for wheat 1963, 1964, 1965: These are now put through the arable sequence of treatment crops and were sown with ryegrass in spring 1966 on the plots which carried the barley test crop in 1965. These hay plots receive the same manurial treatment as those in the permanent arable sequence (but in 1966 the former were sown in spring, the latter in autumn).

Reseeded grass plots: Further ploughing up of these plots is discontinued.

ERRATUM to 'Results' 65/B/1.1. The first line (excluding headings) should read 'Highfield and Fosters Field 1965, the 17th year'.

## HIGHFIELD

1st year Treatment Crops:

All-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. 'Nitro-Chalk' applied, seeds sown at 30 lb: Mar 23. Sprayed with dicamba at 0.08 lb and MCPA at

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1.13 lb in 40 gals: June 1. Cut four times: July 1, Aug 8, Sept 13, Oct 13. NK compound applied after first three cuts.

Clover-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seeds sown at 33 lb: Mar 23. Sprayed with MCPB/MCPA (Tropotox Plus at 5 pints in 40 gals): June 1. Cut three times: July 13, Sept 2, Oct 13. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seed drilled at 20 lb: Apr 29. Cut three times: July 13, Aug 31, Nov 8.

Hay: Ploughed: Sept 27, 1965. Basal PK compound applied: Sept 29. Seeds sown at 38.5 lb: Oct 5. 'Nitro-Chalk' applied: Mar 22, 1966. Cut twice: June 1 and July 1. NK compound applied after first cut.

Hay (after reseeded grass till 1962): Ploughed: Sept 27, 1965. Basal NPK compound applied: Mar 17, 1966. Seeds sown at 40 lb: Mar 18. Sprayed with dicamba at 0.08 lb and MCPA at 1.13 lb in 40 gals: June 1. Cut twice: June 29, July 22. NK compound applied after first cut. Variety: S22 Italian ryegrass.

2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut five times: May 19, June 28, Aug 8, Sept 13, Oct 13. NK compound applied after first four cuts.

Clover-grass ley: Basal PK compound applied: Dec 21, 1965. Muriate of potash applied: Mar 22, 1966. Cut five times: May 19, June 28, Aug 8, Sept 13, Oct 13. Muriate of potash applied after first four cuts.

Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut four times: June 1, July 7, Sept 1, Nov 8.

Sugar beet: Ploughed: Aug 12, 1965. Ploughed second time: Oct 27. Muriate of potash applied: Feb 8, 1966. Basal NPK compound applied: Mar 22. 'Nitro-Chalk' applied: Mar 28. Seed drilled at 10 lb: Mar 30. Singled: May 23. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 14. Lifted: Nov 17.

3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut four times: May 19, June 28, Aug 8, Sept 13. NK compound applied after first three cuts.

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Clover-grass ley: Basal PK compound applied: Dec 2, 1965. Muriate of potash applied: Mar 22, 1966. Cut four times: May 19, June 28, Aug 8, Sept 13. Muriate of potash applied after first three cuts.
Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut three times: June 1, July 7, Sept 1.
Oats: Ploughed: Jan 7, 1966. Seed combine drilled at 160 lb: Mar 7. 'Nitro-Chalk' applied: Mar 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Sept 3.

1st Test Crop, Wheat:-
Basal PK compound applied: Sept 13, 1965. Sulphate of ammonia applied: Sept 14. Ploughed: Sept 16. Basal PK compound applied: Oct 26. Seed drilled at 170 lb: Nov 2. 'Nitro-Chalk' applied: Apr 25, 1966. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: Apr 29. Combine harvested: Aug 23.

2nd Test Crop, Potatoes:-
Dung applied, plots ploughed: Oct 1, 1965. NPK fertilisers applied: Mar 29 - Apr 1, 1966. Rotary cultivated, potatoes machine planted: Apr 4. Sprayed with linuron at 1 lb and paraquat at 0.75 lb in 37 gals: May 16. Rotary ridged: June 17. Sprayed three times with mancozeb at 1.2 lb in 37 gals: June 30, July 22, Aug 5. Sprayed with undiluted BOV at 15 gals: Sept 16. Haulm destroyed mechanically: Sept 21. Lifted: Sept 27.

3rd Test Crop, Barley:-
Ground chalk applied, plots ploughed: Oct 27, 1965. Seed combine drilled at 140 lb: Mar 7, 1966. 'Nitro-Chalk' applied: Mar 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Aug 20.
Permanent grasses: 16th, 17th and 18th experimental years permanent (old) grass, all blocks, 16th, 17th and 18th years reseeded grass, blocks 1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 2 and 3, basal PK compound applied: Dec 20, 1965. 'Nitro-Chalk' applied to 'all grass' half plots, muriate of potash to 'clover-grass' half plots: Mar 22, 1966. Cut five times: May 19, June 28, Aug 8, Sept 13. Muriate of potash and NK compound applied to appropriate half plots after each cut.

FOSTERS

1st year Treatment Crop:-
All-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. 'Nitro-Chalk' applied, seeds sown at 30 lb:

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Mar 23. Sprayed with dicamba at 0.08 lb and MCPA at 1.13 lb in 40 gals: June 1. Cut four times: July 1, Aug 8, Sept 12, Oct 13. NK compound applied after first three cuts.

Clover-grass ley: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seed sown at 33 lb: Mar 23. Sprayed with MCPB/MCPA (Tropotox Plus at 5 pints in 40 gals): June 1. Cut three times: July 13, Sept 2, Oct 13. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 27, 1965. Basal PK compound applied: Mar 22, 1966. Seed sown at 20 lb: Apr 29. Cut three times: July 13, Aug 31, Nov 8.

Hay: Ploughed: Sept 27, 1965. Basal PK compound applied: Sept 29. Seed sown at 38.5 lb: Oct 5. 'Nitro-Chalk' applied: Mar 22, 1966. Cut twice: June 1, July 1. NK compound applied after first cut.

Hay (after reseeded grass till 1962): Ploughed: Sept 27, 1965. Basal NPK compound applied: Mar 17, 1966. Seed drilled at 40 lb: Mar 18. Sprayed with dicamba at 0.08 lb and MCPA at 1.13 lb in 40 gals: June 1. Cut twice: June 29, July 22. NK compound applied after first cut. Variety: S22 Italian Ryegrass.

2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut five times: May 18, June 28, Aug 8, Sept 12, Oct 13. NK compound applied after first four cuts.

Clover-grass ley: Basal PK compound applied: Dec 21, 1965. Muriate of potash applied: Mar 22, 1966. Cut five times: May 18, June 28, Aug 8, Sept 12, Oct 13. Muriate of potash applied after first four cuts.

Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut four times: June 1, July 7, Aug 31, Nov 8.

Sugar beet: Ploughed twice: Aug 12 and Oct 27, 1965. Muriate of potash applied: Feb 8, 1966. Basal NPK compound applied: Mar 22. 'Nitro-Chalk' applied: Mar 28. Seed drilled at 10 lb: Mar 30. Singled: May 25. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 14. Lifted: Nov 17.

3rd year Treatment Crops:-

All-grass leys: Basal PK compound applied: Dec 21, 1965. NK compound applied: Mar 22, 1966. Cut four times: May 18, June 28, Aug 8, Sept 12. NK compound applied after first three cuts.

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Clover-grass ley: Basal PK compound applied: Dec 21, 1965. Muriate of potash applied: Mar 22, 1966. Cut four times: May 18, June 28, Aug 8, Sept 12. Muriate of potash applied after first three cuts.
Lucerne: Basal PK compound applied: Dec 21, 1965. Sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. Cut three times: June 1, July 7, Sept 1.
Oats: Ploughed: Jan 7, 1966. Seed drilled at 160 lb: May 7. 'Nitro-chalk' applied: May 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Sept 3.

1st Test Crop, Wheat:-
Basal PK compound and sulphate of ammonia applied, plots ploughed: Sept 13, 1965. Basal PK compound applied: Oct 26. Seed drilled at 170 lb: Nov 2. 'Nitro-Chalk' applied: Apr 25, 1966. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: Apr 29. Combine harvested: Aug 23.

2nd Test Crop, Potatoes:-
Dung applied, plots ploughed: Oct 1, 1965. NPK fertilisers applied: Mar 29 - Apr 1, 1966. Rotary cultivated, potatoes machine planted: Apr 4. Sprayed with linuron at 1 lb and paraquat at 0.75 lb in 37 gals: May 16. Rotary ridged: June 16. Sprayed three times with mancozeb at 1.2 lb in 37 gals: June 30, July 22, Aug 5. Sprayed with undiluted BCV at 15 gals: Sept 16. Haulm destroyed mechanically: Sept 22. Lifted: Sept 26.

3rd Test Crop, Barley:-
Ploughed: Oct 27, 1965. Seed combine drilled at 140 lb: Mar 7, 1966. 'Nitro-Chalk' applied: Mar 9. Sprayed with mecoprop at 2.25 lb a.e. in 40 gals: May 10. Combine harvested: Aug 20.

Permanent grasses:-
16th, 17th and 18th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Dec 21, 1965. NK compound applied to 'all-grass' half plots and muriate of potash to 'clover-grass' half plots: Mar 22, 1966. Cut five times: May 18, June 28, Aug 8, Sept 12, Oct 12. Muriate of potash and NK compound applied to appropriate half plots after first four cuts.

Standard errors per sub plot. Test crops.
Potatoes. Total tubers:

| | | |
|---|---|---|
| Highfield: | Whole plot: | 1.572 or 6.9% (4 d.f.) |
| | Sub plot: | 1.540 or 6.8% (15 d.f.) |
| Fosters: | Whole plot: | 1.014 or 4.9% (4 d.f.) |
| | Sub plot: | 1.536 or 7.4% (15 d.f.) |

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66/B/1.6

# SUMMARY OF RESULTS

## WHEAT 1ST TEST CROP

## 1963 - 1965

| | Lu | LC | LN | AH | Mean |
|---|---|---|---|---|---|
| **GRAIN** | | | | | |
| **HIGHFIELD** | | | | | |
| Mean | 44.5 | 46.0 | 43.9 | 43.4 | 44.5 |
| To test crop | | | | | |
| N0 | 51.2 | 45.2 | 36.5 | 31.9 | |
| N1 | 42.1 | 51.7 | 44.8 | 44.6 | |
| N2 | 50.3 | 45.1 | 46.2 | 50.1 | |
| N3 | 34.3 | 41.9 | 48.1 | 47.2 | |
| T0 | 46.4 | 46.9 | 44.7 | 41.9 | 45.0 |
| T1 | 42.6 | 45.1 | 43.1 | 45.0 | 43.9 |
| **FOSTERS** | | | | | |
| Mean. | 56.4 | 53.1 | 54.0 | 49.2 | 53.2 |
| To test crop | | | | | |
| N0 | 51.4 | 46.3 | 49.4 | 31.9 | |
| N1 | 59.0 | 54.4 | 55.8 | 50.2 | |
| N2 | 58.8 | 57.3 | 55.9 | 57.7 | |
| N3 | 56.3 | 54.3 | 54.9 | 56.9 | |
| T0 | 56.5 | 51.8 | 52.2 | 47.3 | 51.9 |
| T1 | 56.2 | 54.4 | 55.8 | 51.1 | 54.4 |

Mean D.M. %: Highfield 82.0
Fosters 80.8

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66/B/1.7

# WHEAT 1ST TEST CROP

## 1963 - 1965

| | Lu | LC | LN | AH | Mean |
|---|---|---|---|---|---|
| **STRAW** | | | | | |
| **HIGHFIELD** | | | | | |
| Mean | 52.4 | 42.4 | 38.0 | 44.2 | 44.2 |
| To test crop | | | | | |
| N0 | 48.7 | 35.4 | 31.2 | 27.4 | |
| N1 | 51.7 | 43.6 | 38.1 | 46.5 | |
| N2 | 53.5 | 41.1 | 44.1 | 51.8 | |
| N3 | 55.5 | 49.5 | 38.6 | 51.0 | |
| T0 | 51.8 | 40.5 | 37.6 | 40.8 | 42.7 |
| T1 | 52.9 | 44.4 | 38.4 | 47.6 | 45.8 |
| **FOSTERS** | | | | | |
| Mean | 52.4 | 46.4 | 47.8 | 37.6 | 46.1 |
| To test crop | | | | | |
| N0 | 42.5 | 36.4 | 37.6 | 21.8 | |
| N1 | 52.2 | 45.0 | 44.1 | 39.5 | |
| N2 | 55.6 | 52.9 | 51.1 | 43.2 | |
| N3 | 59.4 | 51.1 | 58.6 | 45.8 | |
| T0 | 52.4 | 43.0 | 46.2 | 37.4 | 44.8 |
| T1 | 52.5 | 49.7 | 49.5 | 37.8 | 47.4 |

Mean D.M. %: Highfield 63.3
Fosters 65.3

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66/B/1.8

POTATOES 2ND TEST CROP. TOTAL TUBERS

1962 - 1964

| | Lu | LC | LN | AH | R | Mean |
|---|---|---|---|---|---|---|
| | | | HIGHFIELD | | | |
| | | | (1) and (2) | | | (±0.344) |
| F | 22.35 | 21.57 | 22.77 | 21.13 | 25.76 | 22.72 |
| D | 21.93 | 22.95 | 23.83 | 21.38 | 24.06 | 22.83 |
| Mean (±1.112) | 22.14 | 22.26 | 23.30 | 21.26 | 24.91 | 22.77 |
| | | | FOSTERS | | | |
| | | | (1) and (2) | | | (±0.343) |
| F | 21.52 | 21.07 | 20.87 | 19.84 | 22.11 | 21.08 |
| D | 20.90 | 19.79 | 20.58 | 19.89 | 21.65 | 20.56 |
| Mean (±0.717) | 21.21 | 20.43 | 20.72 | 19.87 | 21.88 | 20.82 |

Highfield (1) (±1.238) For use in horizontal and diagonal comparisons
(2) (±0.770) For use in vertical and interaction comparisons

Fosters (1) (±0.899) For use in horizontal and diagonal comparisons
(2) (±0.768) For use in vertical and interaction comparisons

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66/B/1.9

POTATOES 2ND TEST CROP. % WARE

1962 - 1964

| | Lu | LC | LN | AH | R | Mean |
|---|---|---|---|---|---|---|
| | | | HIGHFIELD | | | |
| F | 97.8 | 97.7 | 98.0 | 97.9 | 98.4 | 98.0 |
| D | 97.7 | 97.8 | 97.9 | 97.6 | 97.7 | 97.7 |
| Mean | 97.8 | 97.7 | 98.0 | 97.7 | 98.0 | 97.8 |
| | | | FOSTERS | | | |
| F | 97.9 | 98.3 | 97.7 | 97.5 | 97.8 | 97.8 |
| D | 98.2 | 97.7 | 98.0 | 97.7 | 97.7 | 97.9 |
| Mean | 98.1 | 98.0 | 97.9 | 97.6 | 97.7 | 97.9 |

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66/B/1.10

# BARLEY 3RD TEST CROP

## GRAIN

### 1961 - 1963

| | Lu | Ley | CG | AH | R | Mean |
|---|---|---|---|---|---|---|
| | | | HIGHFIELD | | | |
| Mean | 49.9 | 53.2 | 51.1 | 49.9 | 52.3 | 51.3 |
| 1966 | | | | | | |
| N0 | 43.4 | 49.5 | 44.2 | 45.1 | 52.8 | 47.0 |
| N1 | 50.0 | 54.8 | 51.5 | 48.7 | 53.7 | 51.7 |
| N2 | 52.4 | 54.2 | 52.5 | 52.2 | 53.1 | 52.9 |
| N3 | 54.0 | 54.5 | 56.2 | 53.9 | 49.6 | 53.6 |
| 1965 | | | | | | |
| F | 50.8 | 52.4 | 51.0 | 49.0 | 54.0 | 51.6 |
| D | 49.0 | 54.1 | 51.2 | 50.9 | 50.5 | 51.1 |

Excluding AH

1966

| 1965 | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| F | 47.8 | 52.4 | 54.0 | 54.0 | 52.0 |
| D | 47.1 | 52.6 | 52.0 | 53.2 | 51.2 |

Mean D.M. %: 82.3

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66/B/1.11

# BARLEY 3RD TEST CROP

## GRAIN

### 1961 - 1963

| | Lu | Ley | CG | AH | R | Mean |
|---|---|---|---|---|---|---|
| | | | FOSTERS | | | |
| Mean | 50.8 | 53.7 | 51.9 | 51.2 | 54.1 | 52.4 |
| 1966 | | | | | | |
| N0 | 42.5 | 49.9 | 45.3 | 43.6 | 53.6 | 47.0 |
| N1 | 50.9 | 56.9 | 51.0 | - | 58.0 | - |
| N2 | 54.2 | 55.6 | 55.1 | 52.2 | 53.2 | 54.1 |
| N3 | 55.6 | 52.5 | 56.4 | 55.0 | 51.8 | 54.3 |
| N4 | - | - | - | 53.8 | - | - |
| 1965 | | | | | | |
| F | 47.9 | 52.2 | 50.4 | 51.3 | 53.5 | 51.1 |
| D | 53.7 | 55.3 | 53.4 | 51.0 | 54.8 | 53.6 |

Excluding AH

1966

| 1965 | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| F | 43.8 | 51.8 | 54.5 | 54.0 | 51.0 |
| D | 51.9 | 56.6 | 54.5 | 54.3 | 54.3 |

Mean D.M. %: 81.6

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66/B/1.12

TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER (Total of 2 cuts)

| After arable crop | | | After reseeded grass ploughed 1962 - 63 | | |
|---|---|---|---|---|---|
| F | D | Mean | F | D | Mean |
| HIGHFIELD | | | | | |
| 71.6 | 72.9 | 72.2 | 54.0 | 53.9 | 54.0 |
| FOSTERS | | | | | |
| 75.2 | 80.5 | 77.8 | 46.2 | 49.9 | 48.0 |

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66/B/1.13

TREATMENT CROPS ARABLE AND HAY ROTATION

| HIGHFIELD Mean | | FOSTERS Mean |
|---|---|---|
| | SUGAR BEET | |
| | ROOTS | |
| 23.69 | | 20.77 |
| | SUGAR % | |
| 16.2 | | 17.0 |
| | TOTAL SUGAR | |
| 76.7 | | 70.8 |
| | TOPS | |
| 22.12 | | 18.99 |
| | OATS | |
| | GRAIN | |
| 32.9 | | 50.4 |

Oats, grain, mean D.M. %: Highfield 81.0
Fosters 79.4

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## LUCERNE: DRY MATTER

| | HIGHFIELD 1964 | | | FOSTERS 1964 | | |
|---|---|---|---|---|---|---|
| | F | D | Mean | F | D | Mean |
| 1st year (3 cuts) | 50.1 | 49.6 | 49.8 | 57.3 | 60.8 | 59.0 |
| 2nd year (4 cuts) | | | 77.3 | | | 81.0 |
| 3rd year (3 cuts) | | | 54.3 | | | 73.3 |

## ALL-GRASS LEY: DRY MATTER

| | HIGHFIELD 1964 | | | FOSTERS 1964 | | |
|---|---|---|---|---|---|---|
| | F | D | Mean | F | D | Mean |
| 1st year (4 cuts) | 79.4 | 78.7 | 79.1 | 67.7 | 68.9 | 68.3 |
| 2nd year (5 cuts) | | | 115.0 | | | 111.2 |
| 3rd year (4 cuts) | | | 95.1 | | | 99.2 |

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## CLOVER-GRASS LEY: DRY MATTER

| | HIGHFIELD 1964 | | | FOSTERS 1964 | | |
|---|---|---|---|---|---|---|
| | F | D | Mean | F | D | Mean |
| 1st year (3 cuts) | 41.5 | 45.4 | 43.4 | 33.6 | 32.3 | 33.0 |
| 2nd year (5 cuts) | | | 90.0 | | | 92.2 |
| 3rd year (4 cuts) | | | 78.7 | | | 75.2 |

## PERMANENT GRASS: DRY MATTER

| | N0 | N1 | Mean |
|---|---|---|---|
| | HIGHFIELD | | |
| 16th exptl year | | | |
| Blocks 9 and 12 | 55.4 | 105.8 | 80.6 |
| Blocks 10 and 11 | 50.6 | 108.8 | 79.7 |
| 17th exptl year | | | |
| Blocks 5 and 8 | 58.8 | 104.6 | 81.7 |
| Blocks 6 and 7 | 56.6 | 115.0 | 85.8 |
| 18th exptl year | | | |
| Blocks 1 and 4 | 59.0 | 110.5 | 84.7 |
| Blocks 2 and 3 | 77.7 | 105.4 | 91.6 |

(N0) Clover-grass management
(N1) All-grass management

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66/B/1.16

RESEEDED GRASS: DRY MATTER

| | HIGHFIELD | | | FOSTERS | | |
|---|---|---|---|---|---|---|
| | NO | N1 | Mean | NO | N1 | Mean |
| 16th exptl year | 59.0 | 113.4 | 86.2 | 79.0 | 112.0 | 95.5 |
| 17th exptl year | 59.1 | 114.7 | 86.9 | 76.2 | 116.8 | 96.5 |
| 18th exptl year | 57.4 | 105.8 | 81.6 | 82.7 | 106.0 | 94.4 |

(NO) Clover-grass management
(N1) All-grass management

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66/B/2.1

# REFERENCE PLOTS

## ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

## AND

## WOBURN (W) STACKYARD SERIES C, 1966

## (RA, RG, WRA and WRF)

For details of previous year's results and for rates of fertilisers, etc., see 'Results' 58/Bc/1, 59/Bc/1, 60/B/3, 61/B/2, 62/B/2, 63/B/2, 64/B/2, 64/B/11 and 65/B/2. For conifer seedbeds and transplants see 63/B/2, 64/B/2 and 65/B/2.

Great Field IV:
Variety of wheat now Champlein and variety of barley Deba Abed on all plots.

Highfield IX:
P is now applied as granular superphosphate on all blocks.

Woburn:
Variety of oats now Maris Quest and variety of barley Maris Badger. Each plot of sugar beet was split for a test of 0 v 2 cwt sulphate of magnesia applied in May (with 2 cwt v 0 applied after lifting to balance the total dressings).

Woburn Forestry Reference Plots:
Bed 1: All plots with N received 4 topdressings of 4.5g.N as 'Nitro-Chalk', i.e. one more topdressing than in previous years. No formalin was applied.
Bed 2: All manured plots received 4 topdressings of 'Nitro-Chalk' (4.5g.N per occasion for seedbeds, 3g.N per occasion for transplants) compared with only 3 topdressings in 1965.

Cultivations, etc.:-
Great Field IV (R):-
Winter wheat: Dug by hand: Oct 6, 1965. P,K,Mg, Ca and S applied, seed drilled: Oct 8. First N dressings applied (excluding additional plots): Mar 7, 1966. Second N dressings applied, all N applied to additional plots: Apr 30. Trace element spray applied: May 9. Harvested: Aug 18.
Kale: Dung applied, plots dug by hand: Nov 4, 1965. P,K, Mg, Ca and S applied: Mar 7, 1966. First N dressings applied to additional plots, all N to remainder, plots rotary cultivated, seed drilled: Mar 17. Plots resown because of poor take: Apr 28. Second N dressing applied to additional plots: May 31. Trace element spray applied: June 10. Harvested: Oct 26.

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Barley: Plots dug by hand: Nov 12, 1965. P, K, Mg, Ca and S applied: Mar 7, 1966. All N applied, plots rotary cultivated, seed drilled: Mar 15. Trace element spray applied: May 31. Harvested: Aug 19.

Grass-clover ley: Undersown in barley: Mar 1, 1965. P and K applied (excluding additional plots): Feb 23, 1966. P, K, Mg, Ca and S applied to additional plots: Mar 7, All N applied: Mar 17. Trace element spray applied: May 9. Cut four times: Oct 20, 1965, May 27, 1966, July 8, Sept 16.

Potatoes: Dung applied, plots dug by hand: Nov 10, 1965. P, K, Mg, Ca and S applied: Mar 7, 1966. First N dressings applied to additional plots, all N applied to remaining plots, plots rotary cultivated, potatoes planted: Mar 23. Trace element spray applied: June 10. Earthed up: June 13. Sprayed four times with triphenyltin acetate at 6 oz in 120 gals: June 29, July 13, July 28, Aug 12. Lifted: Plots with neither K nor dung (where haulm died early): Aug 5, remainder: Sept 14.

Permanent grass: Dung applied: Feb 15, 1966. P and K applied: Feb 23. N applied - first dressing: Mar 14, second: May 5, third: July 8. Cut 3 times: May 5, July 8 and Sept 28.

NOTES: (1) Yields of dry matter were obtained from each crop.
(2) The percentages of N, P and K were measured in each crop.

Stackyard Series C (W):-

Oats: Plots dug by hand: Sept 27, 1965. P and K applied, seed drilled: Oct 19. First N dressing applied: Mar 8, 1966. Second N dressing applied: May 2. Harvested: Aug 17.

Sugar beet: Dung applied, plots dug by hand: Dec 7, 1965. P and K applied: Feb 28, 1966. First N dressing applied, plots rotary cultivated, seed drilled: Mar 22. Sprayed with 3 oz DDT in 40 gals: May 2. Mg fertiliser applied to half plots: May 26. Singled, second N dressing applied: June 2. Sprayed 4 times with dimethoate and DDT mixture at 1 pt in 40 gals: June 2, June 21, July 7, July 26. Harvested: Oct 10. Mg applied to other half plots: Oct 10.

Barley: Plots dug by hand: Dec 7, 1965. P and K applied: Feb 28, 1966. First N dressing applied, rotary cultivated, seed drilled: Mar 8. Second N dressing applied: May 2. Harvested: Aug 17.

Grass-clover ley: Undersown in barley: Mar 25, 1965. P and K applied: Feb 28, 1966. All N applied: Mar 8. Cut four times: Oct 19, 1965, May 8, 1966, July 6, Sept 13.

Potatoes: Dung applied, plots dug by hand: Dec 14, 1965. P and K applied: Feb 28, 1966. First N dressing applied, plots rotary cultivated, setts planted: Mar 31. Second N dressing applied: May 26. Earthed up: June 2. Sprayed twice with

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Bordeaux mixture at 5 lb in 40 gals: June 30, July 26. Sprayed with triphenyltin acetate at 6 oz in 124 gals: July 13. Lifted: Plots with neither K nor dung: Aug 4. Remaining plots: Sept 13.

Permanent grass: Dung, P and K applied: Feb 28, 1966. First N dressing applied: Mar 8. Second N dressing applied: May 9. Third N dressing applied: June 21. Cut four times: May 9, June 21, Aug 22, Oct 17.

NOTES: (1) Samples were taken for determination of dry matter for each crop, and the percentage N, P and K.
(2) A determination of the percentage of sugar in sugar beet, and the percentage of Mg leaves of sugar beet was carried out.
(3) Surface soil samples were taken from each block for a determination of soil pH.

Errata: To 'Results' 61/B/2 N1, N2 to potatoes 0.75, 1.50 cwt N per acre (formerly 0.6, 1.2), N1, N2 to permanent grass 1.5, 3.0 cwt N per acre (formerly 1.0, 2.0).
To 'Results' 63/B/2 N1, N2 to ley 0.25, 0.5 cwt N per acre (formerly 0.15, 0.3), to oats 0.5, 1.0 cwt N per acre (formerly 0.3, 0.6), to barley 0.5, 1.0 cwt N per acre (formerly 0.45, 0.9), to fruit 0.5, 1.0 cwt N per acre (formerly 0.6, 1.2). The potash rates for all crops, nil, 2.0 cwt $K_2O$ per acre (formerly nil, 1.0).

Grazed Reference Plots (Highfield IX (R)):-
Cultivations, etc.: P and K fertilisers applied, ground chalk applied to appropriate plots: Dec 20, 1965. First N dressings applied: Mar 4, 1966. Sample cuts taken 4 times: May 3, June 27, Aug 25, Oct 31. Sampling cages moved after each cut. N dressing applied after each cut except the last.

NOTES: (1) The percentage of N, P and K in the dry grass were measured.
(2) Visual estimates were made of the percentage surface area covered by clover leaves.

Conifer seedbeds and transplants:
Bed 1: All manures (other than N) dug in: Mar 17, 1966. Seed sown: Mar 23. T.V.O. pre-emergent spray: Apr 21. N topdressed: June 22, July 12, Aug 10, Sept 9.
Bed 2: Seedbeds as for Bed 1. Transplant plots lined out: Mar 28. All manures (other than N) as for seedbeds. N topdressed on transplants: May 10, June 22, July 12, Aug 10.

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NOTES: (1) Height assessments and samples for analysis as in 1965.
(2) Plots lacking N, K and Mg had typical deficiency symptoms.

Standard errors per plot.

Highfield IX (R), Dry Matter:

| | |
|---|---|
| 1st cut: | 3.31 or 22.8% (39 d.f.) |
| 2nd cut: | 5.06 or 10.3% (39 d.f.) |
| 3rd cut: | 3.96 or 10.1% (39 d.f.) |
| 4th cut: | 3.77 or 16.0% (38 d.f.) |
| Total of 4 cuts: | 9.08 or 7.2% (38 d.f.) |

Stackyard Series C (W), Sitka Spruce Bed 1:

| | |
|---|---|
| Mean height: | 0.219 or 8.8% (11 d.f.) |
| Plant number: | 168.4 or 16.5% (11 d.f.) |

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SUMMARY OF RESULTS

GREAT FIELD IV (R): ORIGINAL PLOTS

| Treatment | Winter wheat: GRAIN | STRAW | Kale: TOTAL WEIGHT | Barley: GRAIN | STRAW | Ley: DRY MATTER 1st cut | 2nd cut | 3rd cut | 4th cut | Total of 4 cuts | Potatoes: TOTAL TUBERS | Permanent grass: DRY MATTER 1st cut | 2nd cut | 3rd cut | Total of 3 cuts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| None | 33.3 | 37.5 | 11.64 | 29.9 | 26.2 | 8.0 | 19.0 | 18.3 | 15.2 | 60.5 | 3.79 | 3.4 | 21.3 | 18.6 | 43.3 |
| N1 | 28.4 | 32.9 | 14.58 | 38.8 | 31.5 | 5.1 | 17.9 | 16.0 | 14.9 | 53.9 | 3.90 | 8.4 | 21.6 | 24.0 | 54.0 |
| P | 33.5 | 40.6 | 14.93 | 34.9 | 25.8 | 5.8 | 16.4 | 11.9 | 10.2 | 44.3 | 6.78 | 3.0 | 16.9 | 14.8 | 34.7 |
| N1P | 22.1 | 36.1 | 19.10 | 35.2 | 30.8 | 3.2 | 23.0 | 10.1 | 6.5 | 42.8 | 3.60 | 9.3 | 23.4 | 24.4 | 57.1 |
| K | 33.4 | 37.8 | 6.94 | 29.6 | 23.5 | 10.7 | 24.5 | 26.3 | 23.7 | 85.2 | 15.88 | 2.9 | 15.7 | 19.2 | 37.8 |
| N1K | 38.9 | 45.2 | 10.59 | 33.8 | 28.1 | 10.6 | 28.1 | 31.5 | 23.1 | 93.3 | 17.80 | 8.2 | 29.6 | 32.9 | 70.7 |
| PK | 40.7 | 56.9 | 9.55 | 38.5 | 28.5 | 14.5 | 34.1 | 33.8 | 23.1 | 105.5 | 17.45 | 4.2 | 20.5 | 20.2 | 44.9 |
| N1PK | 53.2 | 75.4 | 15.62 | 51.2 | 40.5 | 11.6 | 36.7 | 31.9 | 24.2 | 104.4 | 16.76 | 10.0 | 30.9 | 27.1 | 68.0 |
| N2PK | 55.1 | 71.9 | 20.32 | 54.9 | 47.8 | 9.9 | 39.3 | 26.9 | 25.9 | 102.0 | 21.27 | 19.7 | 30.4 | 31.2 | 81.3 |
| D | 44.7 | 56.8 | 13.37 | 50.0 | 41.5 | 16.6 | 31.8 | 31.6 | 21.6 | 101.6 | 19.36 | 23.0 | 26.9 | 31.4 | 81.3 |
| N1PKD | 54.2 | 84.7 | 20.84 | 57.4 | 51.4 | 14.0 | 40.4 | 37.3 | 34.7 | 126.4 | 25.87 | 25.8 | 38.3 | 32.4 | 96.5 |
| N2PKD | 51.2 | 80.7 | 21.53 | 61.8 | 54.5 | 11.0 | 39.7 | 31.9 | 26.8 | 109.4 | 26.74 | 29.5 | 29.3 | 37.4 | 96.2 |
| Mean D.M.%: | 83.6 | 67.8 | | 76.8 | 50.9 | 19.2 | 17.0 | 17.3 | 19.6 | 18.3 | | 21.7 | 23.4 | 25.4 | 23.5 |

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GREAT FIELD (R): ADDITIONAL PLOTS

| Treatment | Winter wheat GRAIN | Winter wheat STRAW | Kale: TOTAL WEIGHT | Barley GRAIN | Barley STRAW | Ley: DRY MATTER 1st cut | Ley: DRY MATTER 2nd cut | Ley: DRY MATTER 3rd cut | Ley: DRY MATTER 4th cut | Total of 4 cuts | Potatoes TOTAL TUBERS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| None | 35.8 | 39.8 | 17.71 | 41.2 | 31.1 | 7.0 | 20.5 | 15.2 | 15.9 | 58.6 | 3.26 |
| N2PK | 46.8 | 62.9 | 30.90 | 56.8 | 54.1 | 10.8 | 35.3 | 15.7 | 22.9 | 84.7 | 20.23 |
| N2 PK Mg Ca | 51.5 | 72.2 | 27.26 | 56.0 | 53.5 | 9.7 | 35.9 | 14.2 | 22.2 | 82.0 | 19.54 |
| N2 PK Mg S | 54.4 | 74.6 | 30.56 | 55.8 | 44.6 | 8.8 | 37.6 | 10.6 | 27.4 | 84.4 | 21.10 |
| N2 PK Ca S | 49.9 | 73.5 | 29.00 | 55.2 | 51.9 | 10.0 | 39.2 | 17.3 | 26.1 | 92.6 | 16.41 |
| N2 PK Mg Ca S | 54.1 | 77.8 | 30.38 | 56.2 | 52.9 | 10.5 | 37.0 | 19.7 | 24.6 | 91.8 | 19.36 |
| N2 PK Mg Ca S TE | 49.6 | 64.2 | 30.38 | 57.2 | 48.8 | 9.2 | 37.4 | 16.2 | 21.6 | 84.4 | 20.06 |
| Mean D.M. %: | 85.3 | 69.2 | | 84.1 | 65.4 | 19.4 | 19.1 | 19.2 | 19.0 | 19.2 | |

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## STACKYARD SERIES C (W)

| Treatment | Oats GRAIN | Oats STRAW | Sugar beet ROOTS | Sugar % | Total sugar: cwt per acre | Barley GRAIN | Barley STRAW | Ley: DRY MATTER 1st cut | Ley: DRY MATTER 2nd cut | Ley: DRY MATTER 3rd cut | Ley: DRY MATTER 4th cut | Total of 4 cuts | Potatoes TOTAL TUBERS | Permanent grass: DRY MATTER 1st cut | Permanent grass: DRY MATTER 2nd cut | Permanent grass: DRY MATTER 3rd cut | Permanent grass: DRY MATTER 4th cut | Total of 4 cuts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| None | 16.2 | 15.1 | 9.41 | 14.5 | 27.3 | 10.2 | 8.2 | 6.5 | 14.4 | 23.6 | 17.2 | 61.7 | 4.22 | 9.0 | 11.3 | 10.6 | 4.7 | 35.6 |
| N1 | 30.4 | 33.1 | 13.58 | 14.2 | 38.7 | 21.3 | 17.4 | 5.2 | 19.4 | 21.5 | 15.5 | 61.6 | 5.56 | 9.7 | 18.0 | 19.2 | 5.3 | 52.2 |
| P | 15.9 | 15.2 | 9.72 | 14.3 | 27.8 | 12.7 | 9.5 | 8.6 | 14.7 | 18.8 | 13.9 | 56.0 | 4.64 | 7.9 | 9.5 | 9.5 | 4.0 | 30.9 |
| N1P | 28.0 | 28.5 | 11.11 | 14.1 | 31.4 | 21.3 | 19.5 | 7.0 | 21.2 | 20.0 | 14.8 | 63.0 | 5.50 | 10.7 | 19.9 | 19.3 | 5.0 | 54.9 |
| K | 15.6 | 18.4 | 12.66 | 15.0 | 38.0 | 10.4 | 8.2 | 10.0 | 8.1 | 26.6 | 20.3 | 65.0 | 7.18 | 9.1 | 13.9 | 13.5 | 6.5 | 43.0 |
| N1K | 32.0 | 36.7 | 16.52 | 14.9 | 49.4 | 31.3 | 29.4 | 8.0 | 22.7 | 23.6 | 19.9 | 74.2 | 8.56 | 13.3 | 21.9 | 22.5 | 5.6 | 63.3 |
| PK | 17.1 | 17.8 | 11.88 | 14.9 | 35.4 | 9.6 | 7.8 | 10.8 | 6.0 | 32.2 | 21.1 | 70.1 | 6.56 | 10.6 | 14.2 | 13.1 | 7.1 | 45.0 |
| N1PK | 31.5 | 40.4 | 16.05 | 14.9 | 48.0 | 28.4 | 25.4 | 10.2 | 19.6 | 32.2 | 27.7 | 89.7 | 10.42 | 16.4 | 21.7 | 24.9 | 6.0 | 69.0 |
| N2PK | 36.6 | 53.6 | 16.98 | 14.7 | 50.0 | 35.2 | 39.8 | 5.8 | 27.4 | 21.3 | 17.3 | 71.8 | 14.12 | 9.4 | 22.2 | 30.3 | 9.4 | 71.3 |
| D | 19.2 | 20.2 | 18.52 | 15.2 | 56.2 | 11.1 | 8.8 | 10.1 | 10.6 | 30.1 | 22.4 | 73.2 | 14.12 | 12.4 | 15.1 | 13.7 | 7.6 | 48.8 |
| N1PKD | 35.4 | 47.2 | 23.30 | 15.1 | 70.5 | 35.1 | 34.0 | 8.6 | 23.5 | 22.8 | 20.3 | 75.2 | 17.20 | 12.3 | 21.0 | 25.3 | 7.9 | 66.5 |
| N2PKD | 37.4 | 54.5 | 22.07 | 14.6 | 64.6 | 39.6 | 44.7 | 7.0 | 28.3 | 26.1 | 21.2 | 82.6 | 19.91 | 12.0 | 23.8 | 30.4 | 10.9 | 77.1 |
| Mean D.M.%: | 83.1 | 63.5 | | | | 81.4 | 57.3 | 17.9 | 18.9 | 23.9 | 23.2 | 21.0 | | 20.4 | 23.8 | 20.0 | 21.6 | 21.4 |

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STACKYARD C (W). Bed 1

SITKA SPRUCE

| Treatment | MEAN HEIGHT: INCHES | PLANT NUMBER: PER SQ YARD |
|---|---|---|
| | (±0.155) | (±119.0) |
| None | 1.83 (1) | 960 (2) |
| PK Mg | 1.72 | 1119 |
| NK Mg | 2.04 | 1008 |
| NP Mg | 2.45 | 654 |
| NPK | 2.66 | 1044 |
| NPK Mg | 2.76 (1) | 1054 (2) |
| NPK Mg F | 2.71 | 1248 |
| C | 2.65 | 939 |
| C NPK Mg | 3.37 | 1266 |
| L NPK Mg | 3.12 | 963 |
| Mean | 2.49 | 1023 |

(1) (±0.110) (2) (±84.2)

Bed 2 PLOTS 1 - 6

| | O | A | B | Mean |
|---|---|---|---|---|
| | MEAN HEIGHT: INCHES | | | |
| SS | 8.38 | 12.31 | 13.02 | 11.24 |
| NS | 6.41 | 8.36 | 8.39 | 7.72 |

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Bed 2 PLOTS 7 - 12

| | C | A | B | Mean |
|---|---|---|---|---|
| | MEAN HEIGHT: INCHES | | | |
| SS | 1.00 | 2.80 | 3.39 | 2.39 |
| NS | 1.35 | 2.42 | 2.59 | 2.12 |
| | PLANT NUMBER: PER SQ YD | | | |
| SS | 1374 | 1134 | 1284 | 1264 |
| NS | 1128 | 1122 | 1122 | 1124 |

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HIGHFIELD IX (R)

GRASS: DRY MATTER

| | 1st cut | 2nd cut | 3rd cut | 4th cut | Total of 4 cuts |
|---|---|---|---|---|---|
| PK | (±1.65) | (±2.53) | (±1.98) | (±1.88) | (±4.54) |
| N0 00 | 7.7 | 33.6 | 32.8 | 18.9 | 93.1 |
| N1 00 | 13.8 | 47.9 | 37.9 | 22.4 | 122.0 |
| A1 00 | 15.4 | 46.8 | 37.4 | 25.9 | 125.5 |
| N0 10 | 10.2 | 43.0 | 33.5 | 16.9 | 103.6 |
| N1 10 | 16.0 | 50.0 | 40.9 | 24.1 | 128.7 |
| A1 10 | 17.8 | 50.7 | 36.8 | 26.2 | 131.6 |
| N0 01 | 10.1 | 39.0 | 36.9 | 16.9 | 103.0 |
| N1 01 | 17.5 | 52.2 | 40.3 | 28.4 | 138.3 |
| A1 01 | 15.3 | 50.8 | 38.2 | 22.2 | 126.6 |
| N0 11 | 8.6 | 41.6 | 38.2 | 18.8 | 107.2 |
| N1 11 | 19.8 | 56.3 | 44.1 | 28.8 | 149.0 |
| A1 11 | 20.3 | 55.0 | 38.9 | 25.9 | 140.1 |
| N2 11 | 15.0 | 60.4 | 48.8 | 28.1 | 152.3 |
| A2 11 | 15.6 | 62.4 | 44.4 | 25.3 | 147.7 |
| Mean | 14.5 | 49.3 | 39.2 | 23.5 | 126.3 |

Mean D.M. %: 1st cut: 18.6
2nd cut: 18.1
3rd cut: 20.4
4th cut: 18.8
Total of 4 cuts: 19.0

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66/B/3.1

# GREEN MANURING EXPERIMENT

(WGM)

Woburn Stackyard 1966.

For history, treatments, etc., see 'Details' 1962 and 'Results' 64/B/3 and 65/B/3.

Area of each sub plot: 0.0195. Area harvested: 0.0146.

Treatments:

A new arrangement of the N levels was used on both halves in 1966, allowing the estimation of the residual effects of N applied in 1965.

Levels of N: None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3), 1.2 cwt N (N4), as 'Nitro-Chalk'.

Plots were grouped according to their previous treatment:-

A: no green manures since 1936
B: green manures 1936 - 63
C: green manures 1936 - 65
(dates are of crops testing direct effects)

Upper Half

Plots fallow under old scheme: N1, N2, N3, N4 (A).
Remainder: N0, N1, N2, N3 (B and C).
No green manures were undersown and this part of the experiment ended at harvest 1966.

Lower Half

A new arrangement of the green manuring treatments was begun in 1966.

1966 treatments

A plots: All combinations of:-
1. Green manures undersown 1966: Trefoil (T), ryegrass (R).
2. Nitrogen: N1, N3.

B plots:
1. Green manures undersown 1966: None (0), trefoil (T), ryegrass (R).
2. Nitrogen: to plots undersown: N1, N3.
to plots not undersown: N0, N1, N2, N3.

C plots:
(No green manures undersown 1966)
Nitrogen: N0, N1, N2, N3.

NOTE: On the B plots the green manures undersown in 1966 were applied as a new factor in all combinations with those applied in 1963.

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Cultivations, etc.: Ground chalk applied at 18 cwt: Sept 13, 1965. Ploughed (plots not undersown): Oct 19. Green manure plots ploughed: Feb 2, 1966. Basal PK and seed at 140 lb combine drilled: Mar 8. 'Nitro-Chalk' applied: Mar 10. Upper Half sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals): May 10. Lower Half sprayed with Morfamquat at 1 lb in 35 gals: May 11. Trefoil sown at 30 lb, ryegrass at 40 lb: May 13. Lower half sprayed with MCPB/MCPA (Tropotox plus at 5 pints in 35 gals): June 10. Combine harvested: Aug 23. Variety: Maris Badger.

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66/B/3.3

## SUMMARY OF RESULTS

### ESTIMATES OF PRODUCE (ROOTS AND TOPS) OF GREEN MANURE CROPS: CWT PER ACRE TO BARLEY 1965

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| **UPPER HALF** | | | | | |
| **DRY MATTER** | | | | | |
| T | 15.6 | 9.6 | 8.2 | 4.2 | 9.4 |
| R | 24.2 | 21.6 | 25.6 | 23.0 | 23.6 |
| Mean | 19.9 | 15.6 | 16.9 | 13.6 | 16.5 |
| **NITROGEN** | | | | | |
| T | 0.481 | 0.279 | 0.244 | 0.106 | 0.278 |
| R | 0.230 | 0.207 | 0.264 | 0.322 | 0.256 |
| Mean | 0.356 | 0.243 | 0.254 | 0.214 | 0.267 |
| **LOWER HALF** | | | | | |
| **DRY MATTER** | | | | | |
| T | 15.9 | 14.8 | 6.5 | 4.4 | 10.4 |
| R | 34.4 | 19.9 | 26.6 | 21.4 | 25.6 |
| Mean | 25.2 | 17.3 | 16.6 | 12.9 | 18.0 |
| **NITROGEN** | | | | | |
| T | 0.492 | 0.474 | 0.200 | 0.140 | 0.327 |
| R | 0.358 | 0.214 | 0.298 | 0.260 | 0.283 |
| Mean | 0.425 | 0.344 | 0.249 | 0.200 | 0.305 |

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66/B/3.4

UPPER HALF

BARLEY, GRAIN

A PLOTS

1966

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| 1965 | | | | | |
| N1 | 18.0 | 32.0 | 33.7 | 40.2 | 31.0 |
| N2 | 17.1 | 29.0 | 29.9 | 35.0 | 27.8 |
| N3 | 14.1 | 32.6 | 34.4 | 38.3 | 29.8 |
| N4 | 16.5 | 18.0 | 29.7 | 40.8 | 26.2 |
| Mean | 16.4 | 27.9 | 31.9 | 38.6 | 28.7 |

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66/B/3.5

UPPER HALF

BARLEY, GRAIN

B PLOTS

| | N0 | N1 | N2 | N3 |
|---|---|---|---|---|
| | | 1966 | | |
| 1965 | | | | |
| N0 | 10.2 | 22.3 | 33.2 | 41.0 |
| N1 | 11.6 | 19.0 | 33.6 | 38.8 |
| N2 | 13.2 | 19.7 | 33.6 | 38.2 |
| N3 | 11.2 | 19.9 | 33.3 | 36.9 |
| Green manure 1955 - 63 | | | | |
| T | 13.4 | 15.0 | 33.8 | 36.5 |
| R | 9.7 | 21.8 | 32.9 | 39.2 |
| TU | 13.2 | 20.2 | 33.9 | 39.9 |
| RU | 10.0 | 23.9 | 33.0 | 39.1 |
| Mean | 11.5 | 20.2 | 33.4 | 38.7 |

1965

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| T | 23.5 | 26.1 | 23.7 | 25.5 | 24.7 |
| R | 31.6 | 20.9 | 29.5 | 21.7 | 25.9 |
| TU | 31.7 | 24.3 | 28.4 | 22.8 | 26.8 |
| RU | 19.8 | 31.8 | 23.1 | 31.3 | 26.5 |
| Mean | 26.7 | 25.8 | 26.2 | 25.3 | 26.0 |

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65/B/3.6

UPPER HALF

BARLEY, GRAIN

C PLOT

| | N0 | N1 | N2 | N3 |
|---|---|---|---|---|
| Undersown 1964 - 65 | | 1966 | | |
| T | 22.7 | 30.8 | 37.8 | 42.4 |
| R | 12.5 | 22.6 | 32.6 | 40.8 |

| | Undersown 1964 - 65 T | R | Mean |
|---|---|---|---|
| 1965 | | | |
| N0 | 36.3 | 28.2 | 32.2 |
| N1 | 34.1 | 24.4 | 29.3 |
| N2 | 33.0 | 27.6 | 30.3 |
| N3 | 30.4 | 28.4 | 29.4 |
| Mean | 33.5 | 27.2 | 30.3 |

1965

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| 1966 | | | | | |
| N0 | 21.0 | 15.7 | 19.3 | 14.6 | 17.6 |
| N1 | 26.9 | 27.3 | 23.8 | 28.9 | 26.7 |
| N2 | 38.9 | 33.6 | 36.4 | 32.1 | 35.2 |
| N3 | 42.2 | 40.5 | 41.8 | 42.0 | 41.6 |

Mean D.M. %: 79.1

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66/B/3.7

LOWER HALF

BARLEY, GRAIN

A PLOTS

1966

| | N1 | N3 |
|---|---|---|
| Undersown 1966 | | |
| T | 14.6 | 34.2 |
| R | 14.1 | 31.1 |

1965

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| Undersown 1966 | | | | | |
| T | 25.9 | 25.0 | 23.8 | 22.9 | 24.4 |
| R | 25.0 | 21.2 | 21.0 | 23.2 | 22.6 |
| 1966 | | | | | |
| N1 | 15.2 | 12.4 | 15.8 | 13.8 | 14.3 |
| N3 | 35.6 | 33.7 | 29.0 | 32.3 | 32.7 |
| Mean | 25.4 | 23.1 | 22.4 | 23.1 | 23.5 |

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66/B/3.8

LOWER HALF

BARLEY, GRAIN

B PLOTS WITH T & R

1966

| | N1 | N3 |
|---|---|---|
| Undersown 1966 | | |
| T | 17.0 | 33.6 |
| R | 16.8 | 34.7 |

1965

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| Undersown 1966 | | | | | |
| T | 28.3 | 25.7 | 20.3 | 27.0 | 25.3 |
| R | 26.0 | 25.8 | 23.0 | 28.2 | 25.8 |
| 1966 | | | | | |
| N1 | 18.2 | 18.6 | 13.6 | 17.3 | 16.9 |
| N3 | 36.2 | 32.9 | 29.7 | 37.8 | 34.2 |
| Mean | 27.2 | 25.7 | 21.7 | 27.6 | 25.5 |

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LOWER HALF

BARLEY, GRAIN

B PLOTS WITHOUT T & R

1966

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| 1965 | | | | | |
| N0 | 9.4 | 23.7 | 27.1 | 40.9 | 25.3 |
| N1 | 9.2 | 12.4 | 24.5 | 31.5 | 19.4 |
| N2 | 11.7 | 14.8 | 33.7 | 41.7 | 25.5 |
| N3 | 7.3 | 12.6 | 24.0 | 33.2 | 19.3 |
| Mean | 9.4 | 15.9 | 27.3 | 36.8 | 22.4 |

C PLOTS

1966

| | N0 | N1 | N2 | N3 |
|---|---|---|---|---|
| Undersown 1964 - 65 | | | | |
| T | 22.5 | 29.8 | 38.9 | 39.0 |
| R | 11.7 | 20.9 | 31.7 | 35.1 |

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66/B/3.10

LOWER HALF

BARLEY, GRAIN

C PLOTS

Undersown 1964 - 65

| | T | R | Mean |
|---|---|---|---|
| 1965 | | | |
| N0 | 38.6 | 23.7 | 31.1 |
| N1 | 33.0 | 25.3 | 29.2 |
| N2 | 31.3 | 24.3 | 27.8 |
| N3 | 27.1 | 26.1 | 26.6 |
| Mean | 32.5 | 24.8 | 28.7 |

1966

| | N0 | N1 | N2 | N3 |
|---|---|---|---|---|
| 1965 | | | | |
| N0 | 20.7 | 31.4 | 37.2 | 35.3 |
| N1 | 18.6 | 24.8 | 34.6 | 38.6 |
| N2 | 15.1 | 24.1 | 34.1 | 37.9 |
| N3 | 14.0 | 20.9 | 35.3 | 36.1 |
| Mean | 17.1 | 25.3 | 35.3 | 37.0 |

Mean D.M. %: 78.7

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# LEY AND ARABLE ROTATIONS

(WLA)

Woburn Stackyard 1966 - the 29th year.

For history, treatments etc., see 'Details' 1962 and 'Results' 63/B/4, 64/B/4 and 65/B/4.

Potatoes: The variety is now Maris Piper.
Sainfoin: The third year sainfoin failed and was resown after receiving a basal dressing of 0.5 cwt $P_2O_5$ and 0.5 cwt $K_2O$ as (0:20:20) The normal spring dressings of N and K were not applied.

Corrective K dressings (in cwt $K_2O$) as muriate of potash, and the K equivalent of FYM for Block 3 (sugar beet 1966).

| Continuous rotations | No dung plots | Dung plots |
|---|---|---|
| Rotation | | |
| Ley | 2 | 0 |
| Lucerne+ | 5 | 5 |
| Arable with hay | 6 | 6 |
| Arable | 5 | 5 |
| Alternating rotations | | |
| Last 2 rotations in order | | |
| Arable*/ley | 4 | 0 |
| Arable with hay*/lucerne+ | 5 | 4 |
| Ley/arable with hay | 5 | 5 |
| Lucerne/arable | 6 | 5 |

* These are actual rotations - they should have been reversed.
\+ 3 yr lucerne replaced by sainfoin in 1965.

K equivalent of dung: In 1966 plots not receiving dung received 4.8 cwt $K_2O$ as muriate of potash, the K equivalent of the dung used.

Cultivations, etc.:
Treatment crops.
Ley 1st year: Ground chalk applied at 35 cwt: Sept 14, 1965. Ploughed: Sept 27. Fertilisers applied: Mar 22, 1966. Seed sown at 40 lb: Mar 29. NK fertiliser applied: July 5. Grazed 12 circuits: June 22 - Oct 24.
Ley 2nd year: NK fertiliser applied: Mar 17, 1966, June 17, Aug 5. Grazed 10 circuits: May 4 - Nov 1.
Ley 3rd year: NK fertiliser applied: Mar 17, 1966, June 7, Aug 5. Grazed 11 circuits: Apr 13 - Oct 16.
Sainfoin 1st year: Ground chalk applied at 35 cwt: Sept 14, 1965. Ploughed: Sept 27. Fertilisers applied: Mar 22, 1966. Seed drilled at 60 lb: May 10. Cut twice:

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Aug 12, Oct 24.

Sainfoin 2nd year: Sprayed with paraquat at 1 lb ion in 40 gals: Feb 14, 1966. N and K fertilisers applied: Apr 13. Sprayed with paraquat at 1 lb ion in 35 gals: June 10. Cut three times: June 8, Aug 15, Oct 24.

Sainfoin 3rd year: Sprayed with MCPB at 2.5 lb a.e. in 40 gals: Oct 11, 1965. Sprayed with paraquat at 1 lb ion in 40 gals: Feb 14, 1966. PK fertiliser applied: May 2. Re-drilled at 60 lb: May 10. Cut twice: Aug 15, Oct 24.

Arable rotations.

Potatoes: Ground chalk applied at 35 cwt: Sept 14, 1965. Ploughed: Sept 27. Fertiliser applied: Mar 23, 1966. Rotary cultivated and machine planted: Mar 29. Earthed up: June 8. Sprayed with mancozeb at 1.2 lb in 33 gals: June 29, July 15, Aug 4. Haulm mechanically destroyed: Sept 3. Lifted: Sept 5.

Rye: Deep-tine cultivated: Sept 7, 1965. Seed combine drilled at 160 lb: Nov 2. 'Nitro-Chalk' applied: Apr 12, 1966. Combine harvested: Aug 24.

Seeds hay: Seeds undersown in rye at 30 lb: Mar 31, 1965. 'Nitro-Chalk', and PK compound applied: Mar 17, 1966. NK fertiliser applied: June 2, cut twice: May 26, July 13.

Carrots: Ploughed: Oct 21, 1965. Fertilisers applied: May 2, 1966. Seed drilled at 5.1 lb: May 10. Sprayed with linuron at 1 lb in 35 gals: May 11. Sprayed with menazon (saphicol at 0.5 pints in 47 gals): June 16, July 15, and (saphicol at 0.5 pints in 50 gals): June 29. Lifted: Sept 29.

Test crops.

Sugar beet: Dung equivalent K and half corrective K, dung applied, ploughed: Jan 10 - 26, 1966. Remaining corrective K, basal muriate of potash, and half basal superphosphate applied: Feb 7. Remaining basal superphosphate, basal magnesium sulphate, and test 'Nitro-Chalk' and muriate of potash applied: Mar 25. Seed drilled at 9 lb: Apr 1. Singled: May 23. Sprayed demeton methyl at 12 fluid oz in 33 gals: June 14. Lifted: Oct 12.

Barley: Ground chalk applied at 35 cwt: Dec 14, 1965. Ploughed: Jan 7, 1966. Balancing muriate of potash, basal superphosphate, 'Nitro-Chalk' applied and seed drilled at 140 lb: Mar 9. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals): May 11. Combine harvested: Aug 18.

NOTES: Chalk was applied in error to Block 2 (1st year treatment crops 1966) as well as to Block 1 (Barley 1966).

Erratum to 'Results' 1965

p. 65/B/4.1. The K equivalent of dung for plots not receiving dung was 3.3 cwt K2O as muriate of potash and not 3.7 cwt K2O as stated.

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Standard errors per plot.

| | |
|---|---|
| Sugar beet 1/8 plot: | |
| Roots: | 1.042 or 4.4% (21 d.f.) |
| Total sugar: | 3.54 or 4.7% (21 d.f.) |
| Tops: | 2.039 or 9.2% (21 d.f.) |
| Barley grain: | |
| Whole plot: | 2.68 or 6.3% (4 d.f.) |
| 1/2 plot: | 2.31 or 5.4% (4 d.f.) |

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66/B/4.4

SUMMARY OF RESULTS

TREATMENT CROPS

LEY, SHEEP DAYS OF GRAZING

| 1st year | 2nd year | 3rd year |
|---|---|---|
| 1843 | 2650 | 2277 |

SAINFOIN, DRY MATTER

| | 1st cut | 2nd cut | 3rd cut | Total |
|---|---|---|---|---|
| | | 1ST YEAR | | |
| 1964 | | | | |
| D0 | 13.8 | 8.6 | | 22.4 |
| D1 | 15.4 | 9.5 | | 24.9 |
| Lu | 16.0 | 9.7 | | 25.7 |
| AH | 13.2 | 8.4 | | 21.6 |
| Mean | 14.6 | 9.0 | | 23.6 |
| | | 2ND YEAR | | |
| 1963 | | | | |
| D0 | 43.4 | 17.8 | 2.2 | 63.4 |
| D1 | 41.1 | 19.7 | 3.4 | 64.2 |
| Lu | 41.3 | 18.6 | 2.2 | 62.1 |
| AH | 43.2 | 18.9 | 3.3 | 65.4 |
| Mean | 42.2 | 18.8 | 2.8 | 63.8 |

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65/B/4.5

SAINFOIN, DRY MATTER

| | 1st cut | 2nd cut | 3rd cut | Total |
|---|---|---|---|---|
| | | 3RD YEAR | | |
| 1962 | | | | |
| D0 | 25.0 | 9.9 | | 34.9 |
| D1 | 24.0 | 10.4 | | 34.4 |
| Lu | 24.4 | 9.6 | | 34.0 |
| AH | 24.6 | 10.8 | | 35.4 |
| Mean | 24.5 | 10.2 | | 34.7 |

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## TREATMENT CROPS

| | POTATOES | | RYE | |
|---|---|---|---|---|
| | TOTAL TUBERS | % WARE | GRAIN | STRAW |
| D0 | 9.14 | 80.1 | 34.1 | 44.9 |
| D1* | 12.89 | 88.4 | 33.2 | 44.5 |
| Ley | 18.42 | 94.5 | 33.2 | 47.4 |
| Lu | 10.28 | 89.6 | 35.6 | 39.0 |
| AH | 7.78 | 72.2 | 32.0 | 48.2 |
| AR | 7.56 | 80.8 | 33.6 | 44.2 |
| Mean | 11.01 | 84.3 | 33.6 | 44.7 |

## HAY

### DRY MATTER

| | 1st cut | 2nd cut | Total |
|---|---|---|---|
| 1962 | | | |
| D0 | 65.0 | 31.6 | 96.6 |
| D1* | 67.4 | 33.4 | 100.8 |
| Lu | 66.4 | 32.5 | 98.9 |
| AH | 66.0 | 32.4 | 98.4 |
| Mean | 66.2 | 32.5 | 98.7 |

* Dung applied: Potatoes - for test crop sugar beet in 1964
Rye - for test crop sugar beet in 1963
Hay - for test crop sugar beet in 1962

Mean D.M. %: Rye, grain: 80.8
straw: 78.4

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CARROTS

| | Roots | Tops |
|---|---|---|
| 1962 | | |
| D0 | 17.80 | 11.11 |
| D1* | 21.34 | 12.88 |
| Ley | 19.26 | 13.00 |
| AR | 19.89 | 10.98 |
| Mean | 19.57 | 12.00 |

* Dung applied for test crop sugar beet in 1962

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# 1ST TEST CROP

## SUGAR BEET

## ROOTS

| | | N1 | N2 | N3 | N4 | N5 | N6 |
|---|---|---|---|---|---|---|---|
| | | | | (1) | | | |
| D0 | Ley | 20.79 | 21.68 | 22.52 | 22.58 | - | - |
| | Lu | 21.38 | 23.77 | 24.95 | 24.91 | - | - |
| | AH | - | - | 22.16 | 23.37 | 22.65 | 24.51 |
| | AR | - | 18.17 | 20.45 | 22.90 | 22.63 | - |
| D1 | Ley | 21.44 | 22.88 | 22.22 | 23.41 | - | - |
| | Lu | 24.84 | 25.73 | 26.37 | 25.63 | - | - |
| | AH | - | - | 24.70 | 25.01 | 25.37 | 24.95 |
| | AR | - | 23.39 | 25.58 | 26.15 | 25.50 | - |

| | Ley | Lu | AH | AR | Mean |
|---|---|---|---|---|---|
| CON | 22.91 | 25.10 | 23.69 | 22.39 | 23.52 |
| ALT | 21.47 | 24.29 | 24.49 | 23.80 | 23.51 |
| | | | (2) | | |
| D0 K0 | 21.91 | 23.90 | 23.89 | 20.61 | 22.58 |
| D0 K1 | 21.88 | 23.60 | 22.45 | 21.46 | 22.35 |
| D1 K0 | 22.69 | 25.58 | 25.14 | 25.12 | 24.63 |
| D1 K1 | 22.29 | 25.70 | 24.88 | 25.19 | 24.51 |
| Mean | 22.19 | 24.70 | 24.09 | 23.10 | 23.52 |

(1) (±0.521) For use in horizontal and interaction comparisons
(2) (±0.368) For use in vertical and interaction comparisons

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66/B/4.9

1ST TEST CROP

SUGAR BEET

SUGAR %

| | | N1 | N2 | N3 | N4 | N5 | N6 |
|---|---|---|---|---|---|---|---|
| D0 | Ley | 16.1 | 15.9 | 15.5 | 15.3 | - | - |
| | Lu | 16.6 | 16.4 | 16.1 | 16.4 | - | - |
| | AH | - | - | 16.8 | 16.6 | 16.2 | 15.8 |
| | AR | - | 16.7 | 16.6 | 16.4 | 16.1 | - |
| D1 | Ley | 15.8 | 15.4 | 15.3 | 15.4 | - | - |
| | Lu | 16.5 | 16.2 | 16.1 | 15.5 | - | - |
| | AH | - | - | 15.9 | 15.3 | 15.2 | 15.1 |
| | AR | - | 16.1 | 15.8 | 15.8 | 15.5 | - |

| | Ley | Lu | AH | AR | Mean |
|---|---|---|---|---|---|
| CON | 15.6 | 16.6 | 15.8 | 16.1 | 16.0 |
| ALT | 15.6 | 15.9 | 15.9 | 16.1 | 15.9 |
| D0 K0 | 15.6 | 16.3 | 16.3 | 16.4 | 16.2 |
| D0 K1 | 15.8 | 16.4 | 16.4 | 16.4 | 16.3 |
| D1 K0 | 15.4 | 16.1 | 15.4 | 15.9 | 15.7 |
| D1 K1 | 15.6 | 16.0 | 15.3 | 15.7 | 15.7 |
| Mean | 15.6 | 16.2 | 15.9 | 16.1 | 15.9 |

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66/B/4.10

1ST TEST CROP

SUGAR BEET

TOTAL SUGAR

| | | N1 | N2 | N3 | N4 | N5 | N6 |
|---|---|---|---|---|---|---|---|
| | | | | (1) | | | |
| D0 | Ley | 66.8 | 68.8 | 69.8 | 69.3 | - | - |
| | Lu | 71.0 | 78.0 | 80.4 | 81.3 | - | - |
| | AH | - | - | 74.6 | 77.4 | 73.5 | 77.6 |
| | AR | - | 60.6 | 67.8 | 75.0 | 72.8 | - |
| D1 | Ley | 67.5 | 70.5 | 67.8 | 72.3 | - | - |
| | Lu | 81.8 | 83.1 | 84.9 | 79.7 | - | - |
| | AH | - | - | 78.6 | 76.8 | 77.0 | 75.3 |
| | AR | - | 75.4 | 81.1 | 82.5 | 79.2 | - |

| | Ley | Lu | AH | AR | Mean |
|---|---|---|---|---|---|
| CON | 71.3 | 83.2 | 74.9 | 72.0 | 75.3 |
| ALT | 66.9 | 76.9 | 77.8 | 76.6 | 74.6 |
| | | | (2) | | |
| D0 K0 | 68.2 | 77.9 | 77.8 | 67.6 | 72.9 |
| D0 K1 | 69.1 | 77.5 | 73.7 | 70.5 | 72.7 |
| D1 K0 | 69.7 | 82.3 | 77.5 | 79.9 | 77.3 |
| D1 K1 | 69.4 | 82.5 | 76.3 | 79.2 | 76.9 |
| Mean | 69.1 | 80.0 | 76.3 | 74.3 | 74.9 |

(1) (±1.77) For use in horizontal and interaction comparisons
(2) (±1.25) For use in vertical and interaction comparisons

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66/B/4.11

1ST TEST CROP

SUGAR BEET

TOPS

| | | N1 | N2 | N3 | N4 | N5 | N6 |
|---|---|---|---|---|---|---|---|
| | | | | (1) | | | |
| DO | Ley | 20.83 | 21.97 | 25.39 | 26.11 | - | - |
| | Lu | 13.56 | 18.17 | 20.70 | 21.08 | - | - |
| | AH | - | - | 16.44 | 19.44 | 20.07 | 24.76 |
| | AR | - | 11.75 | 15.04 | 19.44 | 19.65 | - |
| D1 | Ley | 22.69 | 27.00 | 27.29 | 28.52 | - | - |
| | Lu | 18.21 | 21.04 | 23.58 | 24.93 | - | - |
| | AH | - | - | 23.24 | 27.21 | 27.42 | 30.04 |
| | AR | - | 18.25 | 22.90 | 24.76 | 26.75 | - |

| | Ley | Lu | AH | AR | Mean |
|---|---|---|---|---|---|
| CON | 25.53 | 18.39 | 23.24 | 19.19 | 21.59 |
| ALT | 24.42 | 21.93 | 23.91 | 20.44 | 22.68 |
| | | (2) | | | |
| DO KO | 22.82 | 18.68 | 21.10 | 15.68 | 19.57 |
| DO K1 | 24.34 | 18.08 | 19.25 | 17.26 | 19.73 |
| D1 KO | 26.60 | 22.25 | 26.81 | 22.75 | 24.60 |
| D1 K1 | 26.15 | 21.63 | 27.15 | 23.58 | 24.63 |
| Mean | 24.98 | 20.16 | 23.58 | 19.82 | 22.13 |

(1) (±1.020) For use in horizontal and interaction comparisons
(2) (±0.721) For use in vertical and interaction comparisons

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66/B/4.12

2ND TEST CROP

BARLEY

| | Ley | Lu | AH | AR | Mean |
|---|---|---|---|---|---|
| | | GRAIN | | | |
| | | (1) and (2) | | | (±0.82) |
| D0 | 44.6 | 45.0 | 40.3 | 39.1 | 42.2 |
| D1 | 45.1 | 46.1 | 43.1 | 39.0 | 43.3 |
| Mean (±1.90) | 44.8 | 45.5 | 41.7 | 39.1 | 42.8 |
| | | STRAW | | | |
| D0 | 30.2 | 30.7 | 23.9 | 26.7 | 27.9 |
| D1 | 27.8 | 32.5 | 23.9 | 21.9 | 26.5 |
| Mean | 29.0 | 31.6 | 23.9 | 24.3 | 27.2 |

Mean D.M. %: Grain: 84.0
Straw: 69.0

(1) (±2.22) For use in horizontal and diagonal comparisons
(2) (±1.63) For use in vertical and interaction comparisons

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66/B/5.1

# WOBURN MARKET GARDEN EXPERIMENT

(WMG)

Organic manures, N, P, and K - Lansome Field 1966, the sixth year with revised treatments.

For history, (treatments) etc., see 'Details 1962' and 'Results' 63/B/5, 64/B/5 and 65/B/5.

Area of each sub-plot (globe beet): 0.0031. Area harvested: 0.0006.
Area of each microplot (carrots): 0.0008. Area harvested: 0.0006.

Treatment symbols:
- Dung: None (D0), 10 (D1), 20 tons (D2).
- PK compound (0:20:20): None (P0K0), 1.5 $P_2O_5$, 1.5 $K_2O$ (P1K1), 3.0 $P_2O_5$, 3.0 cwt $K_2O$ (P2K2).
- Superphosphate: None (SP0), 1.5 (SP1), 3.0 cwt $P_2O_5$ (SP2).
- Peat: None (0), 12.5 tons (PT).

Treatments: All combinations of:-
- Series A (globe beet)
  - Dung plots: Whole plots: Dung: D1, D2 as previously.
    PK: P0K0, P1K1, the latter on plots that received NPK in 1965.
    Quarter plots: Nitrogen: None (N0), 0.9 (N1), 1.8 (N2), 2.7 cwt N (N3) as 'Nitro-Chalk' with (N3-N2+N1-N0) on half plots.
  - Fertiliser plots: Whole plots: PK: P1K1 as previously, P2K2 on plots that received P1K2 in 1965.
    Quarter plots: Nitrogen: 0.9 (N1), 1.8 (N2), 2.7 (N3), 3.6 cwt N (N4) as 'Nitro-Chalk' with (N4-N3+N2-N1) on half plots.
- Series B, microplots (carrots)
  - Dung plots: Whole plots: PK: P0K0, P1K1 as in 1965.
    Half plots: Dung: D0, D1, D2 as in 1965. (D0, D1 on old D1 plots, D0, D2 on old D2 plots).
    Quarter plots: Phosphate: SP0, SP1.
    Eighth plots: Nitrogen: None (N0), 0.45 cwt N (N1) as 'Nitro-Chalk'.

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Fertiliser plots: Whole plots: PK: P1K1, P2K2 as in 1965.
Half plots: Peat: 0, PT as in 1965.
Quarter plots: Phosphate: SP0, SP1 on plots that received P1K1. SP0, SP2 on plots that received P2K2.
Eighth plots: Nitrogen: 0.45 (N1), 0.90 cwt N (N2) as 'Nitro-Chalk'.

Basal applications: Series B, microplots (carrots): Weedkiller: Linuron at 1 lb in 50 gals. Insecticide: Rogor at 0.37 lb in 40 gals, on two occasions.

Cultivations, etc.:-
Globe beet Series A: Ploughed: Aug 12, 1965. Ground chalk applied at 18 cwt: Sept 13. Dung applied, all plots ploughed: Feb 3, 1966. Fertilizers applied: Mar 31. Seed drilled at 14 lb: May 10. Singled: June 13. Harvested: July 26, Aug 16. Variety: Detroit.
Carrots Series B, microplots: Peat applied and all plots rotary cultivated: Mar 24, 1966. Fertilisers and dung applied, all plots dug by hand: Mar 29 - 31, Apr 1. Seedbed fertilisers and peat applied, seedbed worked with drags and levelled with rakes: Apr 5 - 6. Seed drilled at 10 lb: Apr 26. Sprayed weedkiller: Apr 27. Fallow area rotary cultivated: June 1. Singled: June 3, 6, 8. Sprayed insecticide: June 9, June 21. Fallow areas rotary cultivated: June 21. Lifted: Aug 8 - 10. Variety: Cluseed New Stump-rooted.

NOTE: Soil samples were taken Aug 16. Crop samples were taken for determination of dry matter, and samples retained for chemical analysis.

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Standard errors per plot.

Globe beet. Dung and fertiliser plots:

| | | | |
|---|---|---|---|
| Marketable roots. | 1st Harvest, | whole plot: | 1.220 or 22.5% (10 d.f.) |
| | | 1/2 plot: | 0.589 or 10.9% (14 d.f.) |
| | | 1/4 plot: | 1.149 or 21.2% (28 d.f.) |
| | 2nd Harvest, | whole plot: | 2.063 or 16.5% (10 d.f.) |
| | | 1/2 plot: | 1.078 or 8.6% (14 d.f.) |
| | | 1/4 plot: | 2.148 or 17.1% (28 d.f.) |
| | Mean of 2 harvests, | whole plot: | 1.579 or 17.6% (10 d.f.) |
| | | 1/2 plot: | 0.688 or 7.7% (14 d.f.) |
| | | 1/4 plot: | 1.495 or 16.6% (28 d.f.) |
| Total produce. | 1st Harvest, | whole plot: | 1.915 or 15.4% (10 d.f.) |
| | | 1/2 plot: | 0.874 or 7.0% (14 d.f.) |
| | | 1/4 plot: | 1.609 or 12.9% (28 d.f.) |
| | 2nd Harvest, | whole plot: | 2.921 or 14.9% (10 d.f.) |
| | | 1/2 plot: | 1.602 or 8.2% (14 d.f.) |
| | | 1/4 plot: | 2.803 or 14.3% (28 d.f.) |
| | Mean of 2 harvests, | whole plot: | 2.314 or 14.4% (10 d.f.) |
| | | 1/2 plot: | 1.025 or 6.4% (14 d.f.) |
| | | 1/4 plot: | 1.946 or 12.1% (28 d.f.) |

Carrots.

| | | | |
|---|---|---|---|
| Dung plots. | Roots, | 1/2 plot: | 0.496 or 2.3% (4 d.f.) |
| | | 1/4 plot: | 0.900 or 4.1% (8 d.f.) |
| | | 1/8 plot: | 0.840 or 3.8% (16 d.f.) |
| | Tops, | 1/2 plot: | 0.907 or 9.4% (4 d.f.) |
| | | 1/4 plot: | 0.806 or 8.3% (8 d.f.) |
| | | 1/8 plot: | 0.763 or 7.9% (16 d.f.) |
| Fertiliser plots. | Roots, | 1/2 plot: | 1.843 or 10.2% (6 d.f.) |
| | | 1/4 plot: | 1.846 or 10.2% (12 d.f.) |
| | | 1/8 plot: | 1.248 or 6.9% (24 d.f.) |
| | Tops, | 1/2 plot: | 1.021 or 16.0% (6 d.f.) |
| | | 1/4 plot: | 0.989 or 15.5% (12 d.f.) |
| | | 1/8 plot: | 0.788 or 12.3% (24 d.f.) |

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66/B/5.4

# SUMMARY OF RESULTS

## GLOBE BEET

## DUNG PLOTS

## MARKETABLE ROOTS

| Dung Organic manure applied 1942 - 61* | D1 D1 | D2 D2 | D1 C1 | D2 C2 | D1+C1 | D2+C2 | Mean |
|---|---|---|---|---|---|---|---|
| | | | 1ST HARVEST | | | | |
| | | | (±0.610) | | | (±0.431) | |
| Mean | 3.66 | 8.18 | 5.32 | 7.14 | 4.49 | 7.66 | 6.08 |
| Fertiliser | | | (±0.863) | | | (±0.610) | (±0.431) |
| P0K0 | 2.25 | 7.29 | 3.97 | 5.68 | 3.11 | 6.48 | 4.80 |
| P1K1 | 5.07 | 9.08 | 6.67 | 8.61 | 5.87 | 8.84 | 7.36 |
| | | (1) and (2) | | | (3) and (4) | | (±0.251) |
| N0 | 0.95 | 5.27 | 1.76 | 4.01 | 1.36 | 4.64 | 3.00 |
| N1 | 2.54 | 8.47 | 5.21 | 7.40 | 3.88 | 7.94 | 5.91 |
| N2 | 4.94 | 9.57 | 7.31 | 8.66 | 6.12 | 9.12 | 7.62 |
| N3 | 6.20 | 9.42 | 7.00 | 8.49 | 6.60 | 8.95 | 7.78 |

(1) (±0.933) For use in horizontal and diagonal comparisons
(2) (±0.502) For use in vertical and interaction comparisons
(3) (±0.660) For use in horizontal and diagonal comparisons
(4) (±0.354) For use in vertical and interaction comparisons

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GLOBE BEET

DUNG PLOTS

MARKETABLE ROOTS

| Dung Organic manure applied 1942 - 61* | D1 D1 | D2 D2 | D1 C1 | D2 C2 | D1+C1 | D2+C2 | Mean |
|---|---|---|---|---|---|---|---|
| | | | 2ND HARVEST | | | | |
| | | | (1.031) | | | (±0.729) | |
| Mean | 10.04 | 16.60 | 11.39 | 15.99 | 10.72 | 16.29 | 13.50 |
| Fertiliser | | | (±1.459) | | | (±1.031) | (±0.729) |
| P0K0 | 8.28 | 16.07 | 10.09 | 13.95 | 9.18 | 15.01 | 12.10 |
| P1K1 | 11.81 | 17.13 | 12.69 | 18.02 | 12.25 | 17.57 | 14.91 |
| | | | (1) and (2) | | | (3) and (4) | (±0.466) |
| N0 | 4.38 | 12.13 | 4.05 | 9.69 | 4.22 | 10.91 | 7.56 |
| N1 | 7.60 | 15.91 | 10.68 | 16.16 | 9.14 | 16.04 | 12.59 |
| N2 | 12.06 | 19.54 | 14.48 | 18.24 | 13.27 | 18.89 | 16.08 |
| N3 | 16.15 | 18.82 | 16.34 | 19.85 | 16.24 | 19.33 | 17.79 |

(1) (±1.600) For use in horizontal and diagonal comparisons
(2) (±0.931) For use in vertical and interaction comparisons
(3) (±1.132) For use in horizontal and diagonal comparisons
(4) (±0.658) For use in vertical and interaction comparisons

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66/B/5.6

GLOBE BEET

DUNG PLOTS

MARKETABLE ROOTS

| Dung Organic manure applied 1942 - 61* | D1 D1 | D2 D2 | D1 C1 | D2 C2 | D1+C1 | D2+C2 | Mean |
|---|---|---|---|---|---|---|---|
| | | MEAN OF 2 HARVESTS | | | | | |
| | | (±0.790) | | | (±0.558) | | |
| Mean | 6.85 | 12.39 | 8.35 | 11.56 | 7.60 | 11.98 | 9.79 |
| Fertiliser | | (±1.117) | | | (±0.790) | | (±0.558) |
| P0K0 | 5.26 | 11.68 | 7.03 | 9.82 | 6.15 | 10.75 | 8.45 |
| P1K1 | 8.44 | 13.11 | 9.68 | 13.31 | 9.06 | 13.21 | 11.13 |
| | | (1) and (2) | | | (3) and (4) | | (±0.315) |
| N0 | 2.67 | 8.70 | 2.91 | 6.85 | 2.79 | 7.78 | 5.28 |
| N1 | 5.07 | 12.19 | 7.95 | 11.78 | 6.51 | 11.99 | 9.25 |
| N2 | 8.50 | 14.56 | 10.89 | 13.45 | 9.70 | 14.00 | 11.85 |
| N3 | 11.17 | 14.12 | 11.67 | 14.17 | 11.42 | 14.14 | 12.78 |

(1) (±1.203) For use in horizontal and diagonal comparisons
(2) (±0.631) For use in vertical and interaction comparisons
(3) (±0.850) For use in horizontal and diagonal comparisons
(4) (±0.446) For use in vertical and interaction comparisons

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GLOBE BEET

DUNG PLOTS

TOTAL PRODUCE

| Dung Organic manure applied 1942 - 61* | D1 D1 | D2 D2 | D1 C1 | D2 C2 | D1+C1 | D2+C2 | Mean |
|---|---|---|---|---|---|---|---|
| | | | 1ST HARVEST | | | | |
| | | (±0.958) | | | (±0.677) | | |
| Mean | 9.51 | 16.89 | 11.89 | 15.33 | 10.70 | 16.11 | 13.40 |
| Fertiliser | | (±1.354) | | | (±0.958) | | (±0.677) |
| POKO | 7.25 | 15.52 | 10.01 | 13.90 | 8.63 | 14.71 | 11.67 |
| PlK1 | 11.76 | 18.26 | 13.76 | 16.76 | 12.76 | 17.51 | 15.13 |
| | | (1) and (2) | | | (3) and (4) | | (±0.359) |
| N0 | 4.28 | 11.75 | 6.51 | 10.02 | 5.40 | 10.88 | 8.14 |
| N1 | 8.18 | 16.59 | 11.32 | 15.35 | 9.75 | 15.97 | 12.86 |
| N2 | 11.96 | 19.03 | 14.63 | 17.00 | 13.30 | 18.02 | 15.66 |
| N3 | 13.61 | 20.20 | 15.08 | 18.94 | 14.34 | 19.57 | 16.95 |

(1) (±1.446) For use in horizontal and diagonal comparisons
(2) (±0.717) For use in vertical and interaction comparisons
(3) (±1.023) For use in horizontal and diagonal comparisons
(4) (±0.507) For use in vertical and interaction comparisons

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GLOBE BEET

DUNG PLOTS

TOTAL PRODUCE

| Dung Organic manure applied 1942 - 61* | D1 D1 | D2 D2 | D1 C1 | D2 C2 | D1+C1 | D2+C2 | Mean |
|---|---|---|---|---|---|---|---|
| | | | 2ND HARVEST | | | | |
| | | (±1.461) | | | (±1.033) | | |
| Mean | 16.31 | 25.55 | 18.20 | 25.01 | 17.26 | 25.28 | 21.27 |
| Fertiliser | | (±2.066) | | | (±1.461) | | (±1.033) |
| P0K0 | 14.24 | 25.60 | 16.77 | 23.01 | 15.51 | 24.30 | 19.91 |
| P1K1 | 18.39 | 25.49 | 19.62 | 27.01 | 19.01 | 26.25 | 22.63 |
| | | (1) and (2) | | | (3) and (4) | | (±0.638) |
| N0 | 8.53 | 19.23 | 8.43 | 15.18 | 8.48 | 17.20 | 12.84 |
| N1 | 13.04 | 24.13 | 16.98 | 25.22 | 15.01 | 24.67 | 19.84 |
| N2 | 18.96 | 29.38 | 22.46 | 28.10 | 20.71 | 28.74 | 24.73 |
| N3 | 24.73 | 29.44 | 24.93 | 31.53 | 24.83 | 30.49 | 27.66 |

(1) (±2.254) For use in horizontal and diagonal comparisons
(2) (±1.275) For use in vertical and interaction comparisons
(3) (±1.594) For use in horizontal and diagonal comparisons
(4) (±0.901) For use in vertical and interaction comparisons

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GLOBE BEET

DUNG PLOTS

TOTAL PRODUCE

| Dung Organic manure applied 1942 - 61* | D1 D1 | D2 D2 | D1 C1 | D2 C2 | D1+C1 | D2+C2 | Mean |
|---|---|---|---|---|---|---|---|
| | MEAN OF 2 HARVESTS | | | | | | |
| | | (±1.157) | | | (±0.818) | | |
| Mean | 12.91 | 21.22 | 15.04 | 20.17 | 13.98 | 20.69 | 17.33 |
| Fertiliser | | (±1.636) | | | (±1.157) | | (±0.818) |
| POKO | 10.74 | 20.56 | 13.39 | 18.45 | 12.07 | 19.51 | 15.79 |
| P1K1 | 15.08 | 21.87 | 16.69 | 21.88 | 15.89 | 21.88 | 18.88 |
| | | (1) and (2) | | | (3) and (4) | | (±0.423) |
| NO | 6.41 | 15.49 | 7.47 | 12.60 | 6.94 | 14.04 | 10.49 |
| N1 | 10.61 | 20.36 | 14.15 | 20.28 | 12.38 | 20.32 | 16.35 |
| N2 | 15.46 | 24.21 | 18.55 | 22.55 | 17.00 | 23.38 | 20.19 |
| N3 | 19.17 | 24.82 | 20.00 | 25.24 | 19.59 | 25.03 | 22.31 |

(1) (±1.745) For use in horizontal and diagonal comparisons
(2) (±0.858) For use in vertical and interaction comparisons
(3) (±1.234) For use in horizontal and diagonal comparisons
(4) (±0.607) For use in vertical and interaction comparisons

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66/B/5.10

GLOBE BEET

FERTILISER PLOTS

MARKETABLE ROOTS

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| | | 1ST HARVEST | | | |
| | | (1) and (2) | | | (±0.610) |
| P1K1 | 2.25 | 4.01 | 5.29 | 5.21 | 4.19 |
| P2K2 | 3.49 | 5.54 | 6.43 | 6.01 | 5.37 |
| Mean | 2.87 | 4.78 | 5.86 | 5.61 | 4.78 |
| | | | (±0.354) | | |
| | | 2ND HARVEST | | | |
| | | (1) and (2) | | | (±1.031) |
| P1K1 | 6.03 | 10.50 | 12.68 | 14.25 | 10.86 |
| P2K2 | 6.92 | 11.90 | 14.83 | 15.45 | 12.27 |
| Mean | 6.47 | 11.20 | 13.75 | 14.85 | 11.57 |
| | | | (±0.658) | | |

| | 1st harvest | 2nd harvest | |
|---|---|---|---|
| (1) | (±0.933) | (±1.600) | For use in vertical and diagonal comparisons |
| (2) | (±0.502) | (±0.931) | For use in horizontal and interaction comparisons |

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66/B/5.11

GLOBE BEET

FERTILISER PLOTS

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| | | MARKETABLE ROOTS | | | |
| | | MEAN OF 2 HARVESTS | | | |
| | | (1) and (2) | | | (±0.790) |
| P1K1 | 4.14 | 7.26 | 8.98 | 9.73 | 7.53 |
| P2K2 | 5.20 | 8.72 | 10.63 | 10.73 | 8.82 |
| Mean | 4.67 | 7.99 | 9.81 | 10.23 | 8.17 |
| | | | (±0.446) | | |

TOTAL PRODUCE

1ST HARVEST

| | | | | | |
|---|---|---|---|---|---|
| | | | (1) and (2) | | (±0.958) |
| P1K1 | 7.09 | 10.80 | 12.33 | 12.64 | 10.71 |
| P2K2 | 8.84 | 12.58 | 13.82 | 13.94 | 12.29 |
| Mean | 7.97 | 11.69 | 13.07 | 13.29 | 11.50 |
| | | | (±0.507) | | |

| | Marketable roots | Total produce | |
|---|---|---|---|
| (1) | (±1.203) | (±1.446) | For use in vertical and diagonal comparisons |
| (2) | (±0.631) | (±0.717) | For use in horizontal and interaction comparisons |

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66/B/5.12

GLOBE BEET

FERTILISER PLOTS

TOTAL PRODUCE

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| | | 2ND HARVEST | | | |
| | | (1) and (2) | | | (±1.461) |
| P1K1 | 10.45 | 16.53 | 19.65 | 21.92 | 17.14 |
| P2K2 | 11.63 | 17.89 | 22.27 | 23.59 | 18.84 |
| Mean | 11.04 | 17.21 (±0.901) | 20.96 | 22.75 | 17.99 |

MEAN OF 2 HARVESTS

| | | | | | |
|---|---|---|---|---|---|
| | | (1) and (2) | | | (±1.157) |
| P1K1 | 8.77 | 13.66 | 15.99 | 17.28 | 13.93 |
| P2K2 | 10.23 | 15.23 | 18.04 | 18.76 | 15.57 |
| Mean | 9.50 | 14.45 (±0.607) | 17.02 | 18.02 | 14.75 |

| | 2nd harvest | Mean of 2 harvests | |
|---|---|---|---|
| (1) | (±2.254) | (±1.745) | For use in vertical and diagonal comparisons |
| (2) | (±1.275) | (±0.858) | For use in horizontal and interaction comparisons |

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66/B/5.13

CARROTS

FERTILISER PLOTS P1K1

| | SP0 | SP1 | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | | ROOTS | | |
| | (1) and (2) | | (3) and (4) | | (±0.921) |
| 0 | 15.55 | 16.18 | 14.36 | 17.38 | 15.87 |
| PT | 17.17 | 16.79 | 15.42 | 18.55 | 16.98 |
| | | | (5) and (6) | | (±0.653) |
| | | SP0 | 15.10 | 17.62 | 16.36 |
| | | SP1 | 14.67 | 18.30 | 16.49 |
| | | Mean (±0.312) | 14.89 | 17.96 | 16.42 |

| | SP0 | SP1 | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | | TOPS | | |
| 0 | 4.60 | 5.32 | 4.41 | 5.50 | 4.96 |
| PT | 5.92 | 5.60 | 4.85 | 6.67 | 5.76 |
| | | SP0 | 4.66 | 5.86 | 5.26 |
| | | SP1 | 4.60 | 6.32 | 5.46 |
| | | Mean | 4.63 | 6.09 | 5.36 |

(1) (±1.129) (3) (±0.973) (5) (±0.723) For use in vertical and diagonal comparisons

(2) (±0.923) (4) (±0.441) (6) (±0.441) For use in horizontal and interaction comparisons

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66/B/5.14

CARROTS

FERTILISER PLOTS P2K2

| | SP0 | SP2 | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | | ROOTS | | |
| | (1) and (2) | | (3) and (4) | | (±0.921) |
| 0 | 19.72 | 19.56 | 17.83 | 21.45 | 19.64 |
| PT | 20.21 | 19.24 | 18.30 | 21.16 | 19.73 |
| | | | (5) and (6) | | (±0.653) |
| | | SP0 | 18.57 | 21.36 | 19.96 |
| | | SP2 | 17.56 | 21.25 | 19.40 |
| | | Mean (±0.312) | 18.06 | 21.30 | 19.68 |

| | SP0 | SP2 | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | | TOPS | | |
| 0 | 7.03 | 6.92 | 6.00 | 7.95 | 6.98 |
| PT | 8.31 | 7.33 | 6.88 | 8.75 | 7.82 |
| | | SP0 | 6.81 | 8.52 | 7.67 |
| | | SP2 | 6.07 | 8.18 | 7.12 |
| | | Mean | 6.44 | 8.35 | 7.40 |

(1) (±1.129) (3) (±0.973) (5) (±0.723) For use in vertical and diagonal comparisons

(2) (±0.923) (4) (±0.441) (6) (±0.441) For use in horizontal and interaction comparisons

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66/E/5.15

CARROTS

OLD D1 PLOTS

ROOTS

| | D0 | D1 | SP0 | SP1 | N0 | N1 | Mean |
|---|---|---|---|---|---|---|---|
| | (±0.351)* | | (±0.450)* | | (±0.297)* | | |
| P0K0 | 19.54 | 23.12 | 20.64 | 22.01 | 20.68 | 21.97 | 21.33 |
| P1K1 | 19.09 | 23.05 | 20.26 | 21.88 | 20.62 | 21.52 | 21.07 |
| | | | (1) and (2) | | (3) and (4) | | (±0.248) |
| | | D0 | 18.41 | 20.21 | 18.39 | 20.23 | 19.31 |
| | | D1 | 22.48 | 23.68 | 22.91 | 23.25 | 23.08 |
| | | | | | (5) and (6) | | (±0.318) |
| | | | | SP0 | 19.92 | 20.98 | 20.45 |
| | | | | SP1 | 21.38 | 22.51 | 21.94 |
| | | | | Mean (±0.210) | 20.65 | 21.74 | 21.20 |

(1) (±0.403) (3) (±0.325) (5) (±0.381) For use in vertical and diagonal comparisons

(2) (±0.450) (4) (±0.297) (6) (±0.297) For use in horizontal and interaction comparisons

* For use in horizontal and interaction comparisons

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66/B/5.16

# CARROTS

## OLD D1 PLOTS

### TOPS

| | D0 | D1 | SP0 | SP1 | N0 | N1 | Mean |
|---|---|---|---|---|---|---|---|
| P0K0 | 6.75 | 9.80 | 8.25 | 8.29 | 7.67 | 8.88 | 8.27 |
| P1K1 | 7.43 | 11.36 | 8.87 | 9.93 | 8.86 | 9.94 | 9.40 |
| | | D0 | 6.78 | 7.40 | 6.17 | 8.02 | 7.09 |
| | | D2 | 10.34 | 10.81 | 10.36 | 10.80 | 10.58 |
| | | | | SP0 | 7.96 | 9.16 | 8.56 |
| | | | | SP1 | 8.56 | 9.66 | 9.11 |
| | | | | Mean | 8.26 | 9.41 | 8.84 |

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66/B/5.17

CARROTS

OLD D2 PLOTS

ROOTS

| | D0 | D2 | SP0 | SP1 | N0 | N1 | Mean |
|---|---|---|---|---|---|---|---|
| | (±0.351)* | | (±0.450)* | | (±0.297)* | | |
| P0K0 | 19.31 | 25.03 | 22.17 | 22.17 | 21.52 | 22.82 | 22.17 |
| P1K1 | 21.22 | 24.42 | 23.09 | 22.55 | 22.01 | 23.63 | 22.82 |
| | | | (1) and (2) | | (3) and (4) | | (±0.248) |
| | | D0 | 20.28 | 20.26 | 19.24 | 21.29 | 20.27 |
| | | D2 | 24.98 | 24.47 | 24.29 | 25.16 | 24.72 |
| | | | | | (5) and (6) | | (±0.318) |
| | | | | SP0 | 21.58 | 23.68 | 22.63 |
| | | | | SP1 | 21.94 | 22.78 | 22.36 |
| | | | | Mean (±0.210) | 21.76 | 23.23 | 22.50 |

(1) (±0.403) (3) (±0.325) (5) (±0.381) For use in vertical and diagonal comparisons

(2) (±0.450) (4) (±0.297) (6) (±0.297) For use in horizontal and interaction comparisons

*For use in horizontal and interaction comparisons

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66/B/5.18

CARROTS

OLD D2 PLOTS

TOPS

| | D0 | D2 | SP0 | SP1 | N0 | N1 | Mean |
|---|---|---|---|---|---|---|---|
| P0K0 | 8.27 | 13.38 | 10.78 | 10.86 | 10.18 | 11.46 | 10.82 |
| P1K1 | 7.69 | 12.68 | 10.37 | 9.99 | 9.55 | 10.81 | 10.18 |
| | | D0 | 7.91 | 8.04 | 7.06 | 8.89 | 7.98 |
| | | D2 | 13.24 | 12.81 | 12.67 | 13.39 | 13.03 |
| | | | | SP0 | 9.82 | 11.33 | 10.58 |
| | | | | SP1 | 9.90 | 10.95 | 10.43 |
| | | | | Mean | 9.86 | 11.14 | 10.50 |

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66/B/6

# RESIDUAL PHOSPHATE ROTATION

(RP)

The long term and residual effects of a number of phosphate fertilisers compared with superphosphate - Great Field IV and Sawyers I 1966, the seventh year.

For treatments and rotation, etc. see 'Results 63/B/8 and previous years' results see 60/B/9, 61/B/8, 62/B/8, 63/B/8, 64/B/7 and 65/B/7.

In 1966 the experiments were fallowed.

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66/B/7.1

# CULTIVATION - WEEDKILLER ROTATION

(CW)

## Great Harpenden 1966 - the 6th year

A comparison of weed control by various cultivation methods and by pre-emergence weedkillers.

For previous history, rotations, treatments etc., see 'Results' 61/B/10, 62/B/10, 63/B/10, 64/B/9 and 65/B/8.

Area harvested: Beans - 0.0100, wheat, potatoes and barley - 0.0107.

Minimum cultivation plots: One plot per block (treatment B) receives minimum cultivations. (The remaining reserve plots will in future be described as treatment C). Details will vary according to conditions of soil etc. Paraquat may be used at any stage in this rotation, and special machinery maybe used for drilling these treatments if it is more suitable. In 1966 the cultivations were:-

Beans: Deep-tine cultivated, disc-harrowed, spring-tine cultivated, sprayed with simazine after drilling.

Wheat: Deep-tine cultivated, disc-harrowed, spring-tine cultivated, sprayed with the same selective weedkiller as used on H sub-plots.

Potatoes: Rotary cultivated, treated with herbicide as on X and Y plots.

Barley: Minimum cultivations necessary to produce a seedbed, sprayed with the same selective weedkiller as used on the H sub-plots.

In 1966 beans on both X and Y plots received the same treatment (simazine at 1 lb in 40 gals in spring) - these plots are denoted by S.

Potatoes on the X and Y plots received the same spray (1 lb linuron plus 0.75 lb ion paraquat in 37 gals), denoted by S. The Y plots received an additional cultivation by 'rotary ridger', which was also applied to the M plots.

## Operations in 1966

Cultivations, etc.:-

Spring beans: T plots deep-tine cultivated twice and B plots once: Oct 21, 1965. P, A and C plots ploughed: Oct 22. T plots deep-tine cultivated 3rd time and B plots 2nd time, P, T, A, B and C plots disced: Oct 26. P, T, A, B and C plots disced: Oct 30.

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P, T, A and C plots spring-tine cultivated twice and B plots once, R plots rotary cultivated: Mar 8, 1966. R plots rotary cultivated 2nd time, seed drilled at 200 lb: Mar 9. S plots sprayed: Mar 15. M and C plots tractor hoed 3 times: May 16, June 3 and June 13. Combine harvested: Sept 16. Variety: Pedigree Tick.

Spring wheat: T plots deep-tine cultivated twice: Oct 21, 1965. P, A and C plots ploughed: Oct 22. T plots deep-tine cultivated 3rd time, B plots deep-tine cultivated twice, P, T, A, B and C plots disced: Oct 26. P, T, A, B and C plots disced: Oct 30. P, T, A, B, and C plots spring-tine cultivated twice: Mar 8, 1966. P plots rotary cultivated: Mar 9. R plots rotary cultivated 2nd time, P, T, A, B and C plots spring-tine cultivated 3rd time: Mar 14. Seed drilled at 180 lb: Mar 15. All plots rolled: Mar 21. H sub-plots and B plots sprayed with mecoprop/2,4-D (Methoxane Extra at 6 pints in 40 gals): May 13. Combine harvested: Sept 7. Variety: Kloka.

Potatoes: T plots deep-tine cultivated twice, P and C plot ploughed: Dec 21, 1965. R, A and B plots rotary cultivated: Mar 23, 1966. P and C plots spring-tine cultivated, T plots deep-tine cultivated 3rd time: Mar 24. Basal compound fertiliser applied: Mar 31. R, A and B plots rotary cultivated, T, P and C plots spring-tine cultivated twice: Apr 4. Potatoes machine planted: Apr 5. S plots sprayed: May 10. M and C plots chain-harrowed: May 14. M and C plots grubbed: May 14. M, Y and C plots rotary ridged: June 16. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: June 30, July 22 and Aug 5. Sprayed with undiluted BOV at 15 gals: Sept 8. Lifted: Sept 20. Variety: Pentland Dell.

Barley: All plots sprayed with sodium trichloroacetate at 18 lb in 40 gals: Oct 20, 1965. All plots spring-tine cultivated: Oct 28. All plots sprayed 2nd time with sodium trichloro-acetate at 18 lb in 40 gals: Dec 7. All plots spring-tine cultivated: Dec 22. T plots deep-tine cultivated: Feb 2, 1966. P and C plots ploughed: Feb 3. P, T and C plots spring-tine cultivated twice, B plots once: Mar 7. R and A plots rotary cultivated, seed drilled at 155 lb: Mar 8. All plots rolled: Mar 21. H sub-plots and B plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 13. Combine harvested: Aug 20.

Standard errors per plot.

| | | |
|---|---|---|
| Spring beans. | Grain, whole plot: | 6.76 or 22.2% (8 d.f.) |
| Wheat. | Grain, whole plot: | 2.97 or 8.6% (8 d.f.) |
| | sub plot: | 3.24 or 9.4% (9 d.f.) |
| Potatoes. | Total tubers, whole plot: | 1.782 or 11.1% (8 d.f.) |
| Barley. | Grain, whole plot: | 2.04 or 4.7% (8 d.f.) |
| | sub plot: | 2.79 or 6.4% (9 d.f.) |

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66/B/7.5

BARLEY

GRAIN

| | P | R | T | Mean |
|---|---|---|---|---|
| Mean (±0.83) | 42.3 | 44.1 | 43.4 | 43.3 |
| 1965 | | (±1.45) | | (±0.83) |
| M | 41.2 | 43.8 | 44.3 | 43.1 |
| X | 40.2 | 45.3 | 43.4 | 43.0 |
| Y | 45.6 | 43.1 | 42.5 | 43.7 |
| | | (1) and (2) | | (±0.66) |
| O | 42.0 | 44.1 | 44.2 | 43.4 |
| H | 42.6 | 44.0 | 42.6 | 43.1 |
| | A- | AH | BH | C |
| | 43.9 | 41.8 | 42.4 | 39.4 |

General mean: 42.8

Mean D.M. %: 84.2

(1) (±1.16) For use in horizontal and diagonal comparisons
(2) (±1.14) For use in vertical and interaction comparisons

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66/B/8.1

# CULTIVATION - WEEDKILLER ROTATION

(WCW)

A comparison of weed control by various cultivation methods and by a pre-emergence weedkiller - Woburn Great Hill I and II 1966, the seventh year.

For history, rotation, treatments etc., to barley, see 'Results' 60/B/11, 61/B/11, 62/B/11, 63/B/11, 64/B/10 and 65/B/9.

Area of each plot: 0.0482. Area harvested: Potatoes - 0.0069, barley - 0.0230.

Potatoes.
Treatments: All combinations of:-

1. Primary cultivations: Ploughed (P), rotary cultivated (R), deep-tine cultivated (T).
2. Weedkiller: None, normal cultivations (M), linuron 2 lb, plus paraquat 0.75 lb ion in 40 gals, with no cultivations (X), linuron, plus paraquat, with rotary ridging (Y).

Basal applications:
Barley: 340 lb (20:10:10) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).
Potatoes: 10 cwt (17:11:22). Fungicide: Mancozeb 1.2 lb in 33 gals. Haulm destroyer: Diquat (Reglone at 4 pints in 33 gals).

Cultivations, etc.:
Potatoes: T plots deep-tine cultivated (two strokes): Nov 26, 1965. P plots ploughed: Dec 14. P and T plots spring-tine cultivated, R plots rotary cultivated: Mar 23, 1966. T plots deep-tine cultivated (one stroke): Mar 24. Basal NPK applied: Mar 25. P and T plots spring-tine cultivated (twice), R plots rotary cultivated (twice), potatoes machine planted: Mar 31. All plots earthed up: Apr 1. M plots harrowed with weeder: Apr 26. M plots re-ridged: May 3. M plots ridges harrowed, X and Y plots sprayed with weedkiller: May 4. M plots harrowed with weeder: May 17. M plots grubbed: June 2. M and Y plots earthed up with rotary ridger: June 4. Fungicide applied: June 29, July 15 and Aug 4. Reglone applied: Sept 13. Haulm destroyed mechanically: Sept 16. Lifted: Sept 22. Variety: Maris Piper.

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Barley: All plots spring-tine cultivated: Dec 14, 1965. T plots deep-tine cultivated: Dec 15. P plots ploughed: Jan 7, 1966. P and T plots spring-tine cultivated: Mar 9. R plots rotary cultivated, all plots harrowed, seed drilled at 150 lb: Mar 10. 'Nitro-Chalk' applied: Mar 14. Weedkiller applied: May 10. Combine harvested: Aug 19. Variety: Maris Badger.

Standard errors per plot.

| | | | |
|---|---|---|---|
| Potatoes. | Total tubers: | 2.634 or 14.8% | (8 d.f.) |
| Barley. | Grain: | 3.27 or 11.5% | (8 d.f.) |

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## SUMMARY OF RESULTS

### POTATOES

| | M | X | Y | Mean |
|---|---|---|---|---|
| | | TOTAL TUBERS | | |
| | | (±1.862) | | (±1.075) |
| P | 16.92 | 20.25 | 19.11 | 18.76 |
| R | 17.57 | 16.46 | 18.52 | 17.52 |
| T | 17.45 | 17.87 | 16.19 | 17.17 |
| Mean (±1.075) | 17.31 | 18.19 | 17.94 | 17.81 |
| | | % WARE | | |
| P | 94.7 | 93.2 | 95.5 | 94.5 |
| R | 95.9 | 95.8 | 92.8 | 94.8 |
| T | 94.9 | 93.1 | 92.4 | 93.5 |
| Mean | 95.2 | 94.0 | 93.6 | 94.3 |

### BARLEY

| | N1 | N2 | N3 | Mean |
|---|---|---|---|---|
| | GRAIN | | | |
| | | (±2.31) | | (±1.34) |
| P | 21.2 | 27.8 | 34.4 | 27.8 |
| R | 17.9 | 30.4 | 34.2 | 27.5 |
| T | 24.1 | 31.1 | 35.4 | 30.2 |
| Mean (±1.34) | 21.1 | 29.7 | 34.7 | 28.5 |

Mean D.M. %: 83.3

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66/B/9.1

# INTENSIVE CEREALS

## (WIC)

### Woburn Stackyard Classical Site 1966 - the first year

To investigate the growing of continuous winter wheat in comparison with a five course rotation, both with heavy dressings of fertilisers. There is a similar experiment involving spring barley.

These experiments are respectively, wheat on part of the site of the Continuous Wheat Experiment 1877 - 1954 and the barley on part of the site of the continuous barley. As well as crop yields, soil carbon and nitrogen will be studied, and the incidence of soil-borne diseases.

Design: For each cereal: 2 randomised blocks of 6 plots, split for N.

Area of each sub-plot: 0.0103. Area harvested: Wheat and barley - 0.0067, potatoes - 0.0069. Area of each whole plot: 0.0431. Area harvested: Ley - 0.0411.

Treatments: Wheat blocks: All combinations of:-

1. Whole plots: cropping:
   Continuous wheat: Five course rotation, in all phases:
   1 year ley, potatoes, wheat, wheat, wheat.
2. Sub-plots: Nitrogen to wheat:
   0.5 (N1), 1.0 (N2), 1.5 (N3), 2.0 (N4) cwt N as 'Nitro-Chalk' as spring top-dressing.

Treatments: Barley blocks: All combinations of:-

1. Whole plots: cropping:
   Continuous barley: Five course rotation, in all phases:
   1 year ley, potatoes, barley, barley, barley.
2. Sub-plots: Nitrogen to barley:
   0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' applied in the seedbed.

| | | |
|---|---|---|
| Varieties: | Potatoes: | Pentland Dell |
| | Wheat: | Cappelle |
| | Barley: | Maris Badger |
| | Ley: | 1 lb English Italian ryegrass, 2 lb Danish Italian ryegrass, 1.5 lb English Broad Red clover, 0.5 lb Canadian Alsike Clover. Mixture sown at 29 lb. |

Other applications:

All crops: 1.0 cwt $P_2O_5$, 2.0 cwt $K_2O$, half ploughed in, half worked into the seedbed.

Ley: 0.4 cwt N as 'Nitro-Chalk'.

Potatoes: 1.2 cwt N as 'Nitro-Chalk'.

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NOTE: The whole area carried spring beans without manure in 1964, and was bare fallowed in 1965. To lessen the risk of damage due to Wheat-Bulb Fly mustard was broadcast with 0.42 cwt N as 'Nitro-Chalk' on June 28, 1965. The mustard was destroyed mechanically on Oct 7, and ploughed in on Oct 13.

Cultivations, etc.:

Ley: Half basal PK applied: Oct 26, 1965. Remaining basal PK applied: Mar 22, 1966. 'Nitro-Chalk' applied, seed sown at 29 lb: Mar 30. Cut twice for hay: July 4, Aug 26.

Potatoes: Half basal PK applied: Oct 26, 1965. Remaining basal PK, and 'Nitro-Chalk' applied: Mar 23, 1966. Rotary cultivated, potatoes machine planted: Mar 29. Earthed up: June 8. Sprayed with mancozeb 1.2 lb in 33 gals: June 29, July 15, Aug 4. Haulm mechanically destroyed: Sept 3. Lifted: Sept 13.

Wheat: Half basal PK applied: Oct 26, 1965. Remaining basal PK applied: Oct 29. Seed drilled 160 lb: Nov 2. 'Nitro-Chalk' applied: Apr 12, 1966. Combine harvested: Aug 25.

Barley: Half basal PK applied: Oct 26, 1965. Remaining basal PK applied: Mar 7, 1966. Seed drilled 140 lb, and 'Nitro-Chalk' applied: Mar 8. Combine harvested: Aug 18.

Standard errors per sub plot. Grain:

Wheat: 2.23 or 5.7% (21 d.f.)

Barley: 2.15 or 4.6% (21 d.f.)

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66/B/9.3

## SUMMARY OF RESULTS

### WHEAT GRAIN

| N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|
| 36.2 | 42.8 (±0.79) | 39.9 | 38.0 | 39.2 |

### BARLEY GRAIN

| | | | | |
|---|---|---|---|---|
| 38.1 | 48.4 (±0.76) | 51.4 | 49.0 | 46.7 |

### POTATOES

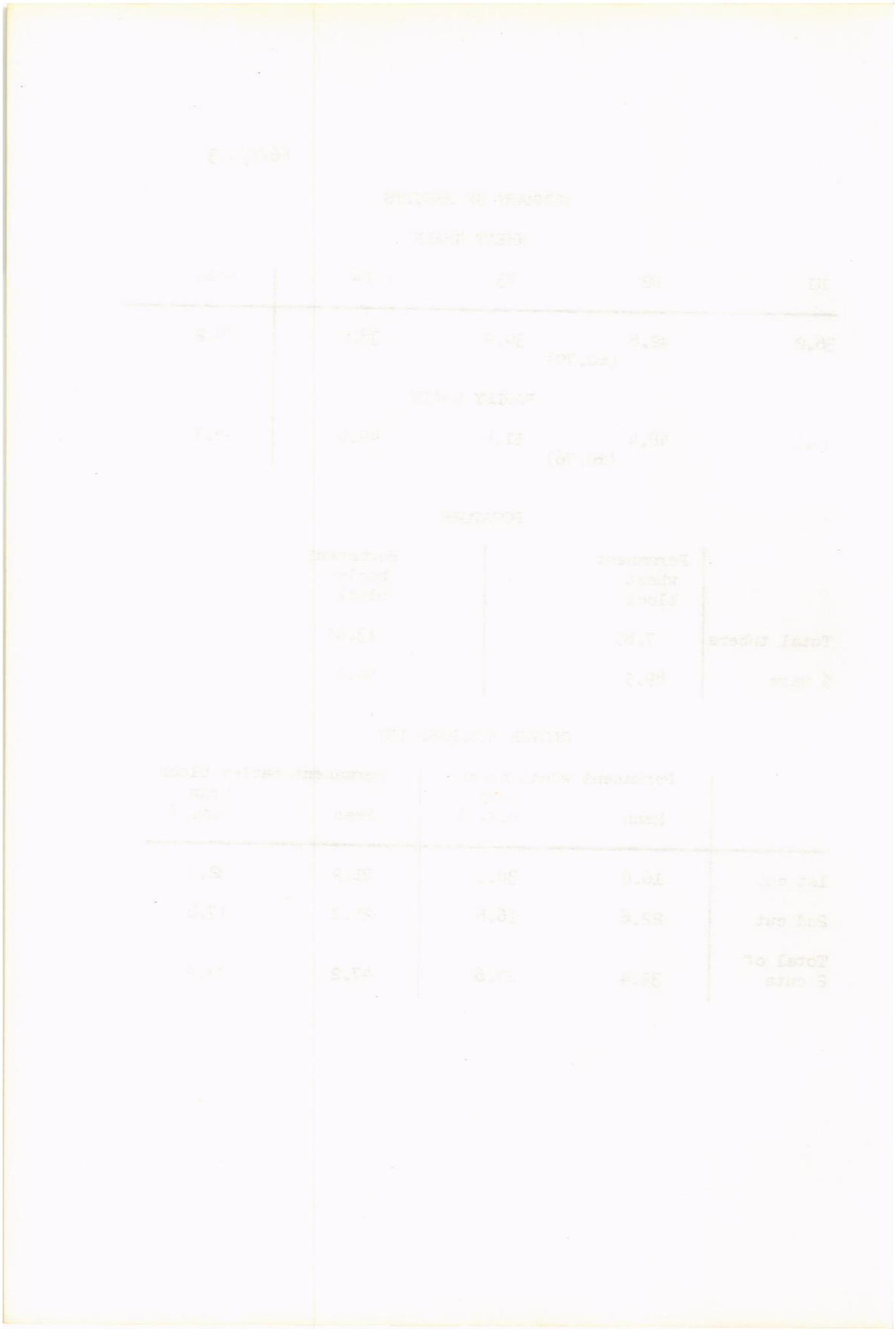
| | Permanent wheat block | Permanent barley block |
|---|---|---|
| Total tubers | 7.65 | 13.45 |
| % ware | 89.5 | 94.6 |

### CLOVER RYEGRASS LEY

| | Permanent wheat block | | Permanent barley block | |
|---|---|---|---|---|
| | Mean | Mean D.M. % | Mean | Mean D.M. % |
| 1st cut | 16.8 | 38.5 | 21.9 | 32.0 |
| 2nd cut | 22.6 | 16.8 | 25.2 | 17.8 |
| Total of 2 cuts | 39.4 | 27.6 | 47.2 | 24.9 |

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66/C/1.1

# LEVELS OF K AND Mg

(LM)

K and Mg - Rothamsted Sawyers I - the 8th year, kale.

Design: 3 x 3 x 3 arrangement in 6 blocks of 9 plots, with 3 blocks (1 replicate) at each of 2 levels of Ca.
In addition a 3 x 3 arrangement in 2 blocks of 9 (1 at each level of Ca).

Area of each plot: 0.0212. Area harvested: 0.0045.

Treatments:
Blocks receiving sodium treatments. All combinations of:-
1. (To blocks). Magnesium free calcium carbonate in 1959 and 1962 as follows:
   1959 10, 40 cwt (Ca1, Ca2)
   1962 38, 76 cwt (Ca1, Ca2)
2. Mg applied each year: None (Mg0), 29 (Mg1), 58 (Mg2) lb Mg applied as magnesium sulphate.
3. K applied each year: (In lb K, as sulphate of potash). None (K0), 68 (K1), 136 (K2).
4. Na (1966 only): None (Na0), 130 lb. Na as sodium chloride (C1), 130 lb as sodium carbonate (C).

Blocks not receiving sodium treatment. All combinations of (1), (2), (3) as above.

Basal applications: 0.5 cwt $P_2O_5$ as triple superphosphate in seedbed, 1.0 cwt N as 'Nitro-Chalk' in seedbed, 1.0 cwt N as 'Nitro-Chalk' top-dressed.

Cultivations, etc.:
Ploughed: Oct 19, 1965. Basal P applied: Mar 18, 1966. Fertilisers applied: Apr 26. 'Nitro-Chalk' applied, seed drilled at 1.5 lb: Apr 28. 'Nitro-Chalk' top-dressed: June 23. Harvested: Dec 5. Variety: Thousand Head.

NOTES: (1) The percentages of Na, Mg and K in the crop were determined.
(2) For previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1, 64/C/1, 65/C/1.

Standard errors per plot (pooled). Kale fresh weight:
1.703 or 6.8% (34 d.f.)

*https://doi.org/10.23637/ERADOC-1-158* 

SUMMARY OF RESULTS

KALE: FRESH WEIGHT

BLOCKS RECEIVING SODIUM TREATMENTS

| | Mg0 | Mg1 | Mg2 | K0 | K1 | K2 | Na0 | NaCl | NaC | Mean |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (±0.568)* | | | | | |
| Ca1 | 23.48 | 23.80 | 24.55 | 24.13 | 23.75 | 23.96 | 24.33 | 23.68 | 23.82 | 23.94 |
| Ca2 | 25.58 | 25.69 | 26.05 | 25.01 | 27.71 | 24.58 | 25.07 | 26.29 | 25.95 | 25.77 |
| Mean (±0.401) | 24.53 | 24.74 | 25.30 | 24.57 | 25.73 | 24.27 | 24.70 | 24.98 | 24.88 | 24.86 |

| | K0 | K1 | K2 | Na0 | NaCl | NaC | | Na0 | NaCl | NaC |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (±0.695) | | | (±0.695) | | | | (±0.695) | |
| Mg0 | 24.62 | 25.08 | 23.88 | 24.09 | 24.60 | 24.88 | K0 | 24.76 | 24.64 | 24.32 |
| Mg1 | 24.04 | 25.82 | 24.36 | 24.78 | 25.14 | 24.31 | K1 | 25.43 | 25.35 | 26.40 |
| Mg2 | 25.05 | 26.28 | 24.58 | 25.22 | 25.22 | 25.46 | K2 | 23.91 | 24.97 | 23.93 |

* For use in horizontal and interaction comparisons

66/C/1.2

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KALE: FRESH WEIGHT

BLOCKS NOT RECEIVING SODIUM TREATMENTS

| | K0 | K1 | K2 | Mg0 | Mg1 | Mg2 | Mean |
|---|---|---|---|---|---|---|---|
| | | (±0.983)* | | | (±0.983)* | | |
| Ca1 | 22.62 | 26.39 | 24.04 | 23.81 | 24.61 | 24.64 | 24.35 |
| Ca2 | 27.19 | 27.09 | 25.30 | 26.03 | 27.38 | 26.16 | 26.52 |
| | | | | | (±1.204) | | (±0.695) |
| | | K0 | | 25.55 | 25.00 | 24.16 | 24.90 |
| | | K1 | | 25.45 | 28.28 | 26.49 | 26.74 |
| | | K2 | | 23.76 | 24.70 | 25.55 | 24.67 |
| | | Mean (±0.695) | | 24.92 | 25.99 | 25.40 | 25.44 |

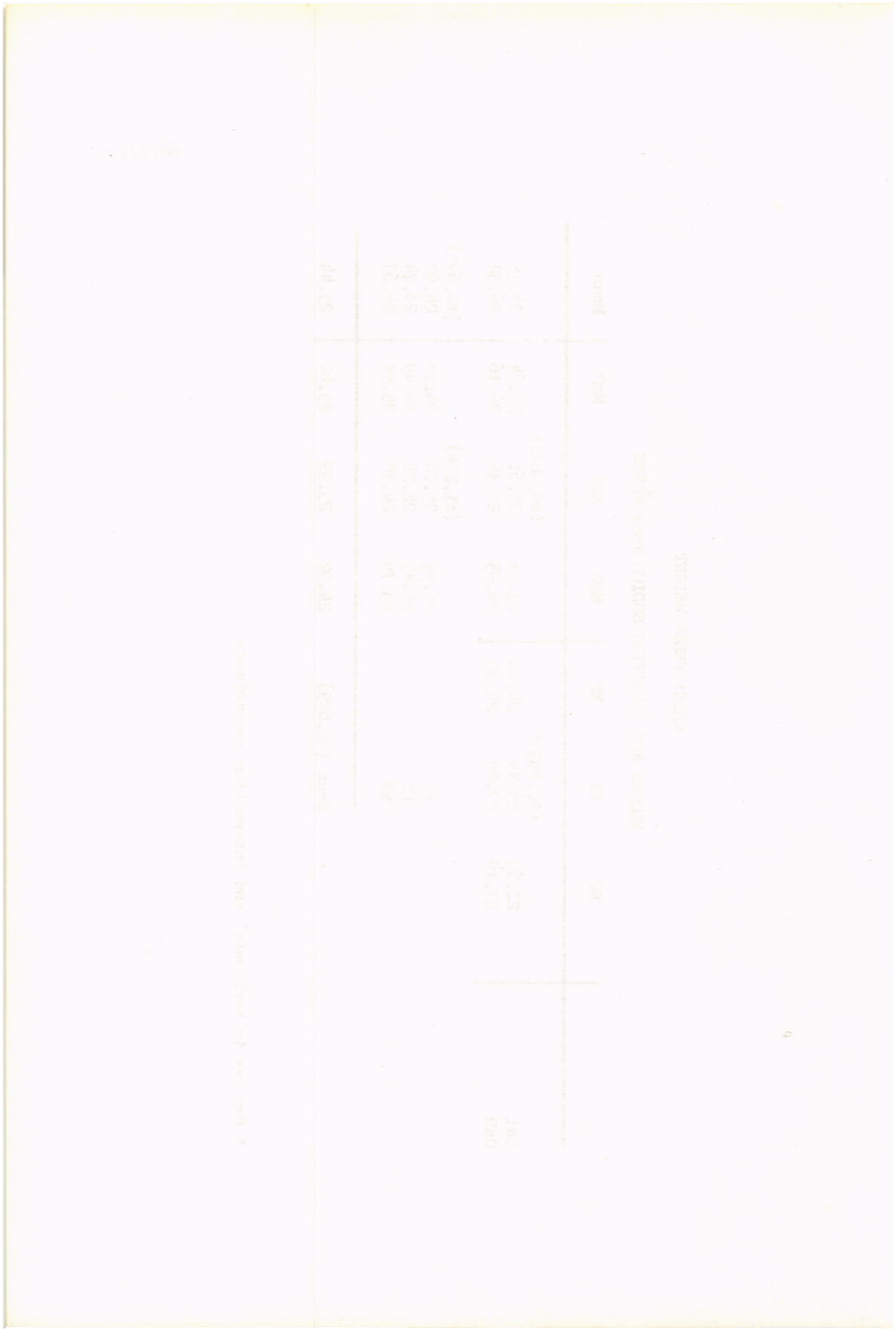
* For use in horizontal and interaction comparisons

66/C/1.3

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66/C/2.1

# INTENSIVE BARLEY GROWING EXPERIMENT

## (IB)

## Little Knott I - 1966, the sixth year

For treatments, etc., see 'Results' 61/C/8 (N0 = none, N1 = 0.3, N2 = 0.6, N3 = 0.9 cwt N).

Area of each plot: 0.0212. Area harvested: Winter and spring wheat - 0.0140, barley - 0.0139.

Basal applications: Manures as previously.
Insecticide: Spring beans: Demeton-s-methyl (Metasystox as 12 fluid oz in 37 gals).
Weedkiller: Winter wheat, spring wheat, barley and oats: Ioxynil/mecoprop (Actril C at 5 pints in 40 gals).

Cultivations, etc.: Ground chalk applied at 25 cwt: Nov 3, 1965.
Ploughed: Nov 11.
Spring beans: Seed placement drilled at 200 lb: Mar 8, 1966. Sprayed: June 14. Combine harvested: Sept 16.
Oats: Seed combine drilled at 160 lb: Mar 7, 1966. 'Nitro-Chalk' applied: Mar 10. Sprayed: May 10. Combine harvested: Sept 3.
Spring wheat: Seed combine drilled at 180 lb, 'Nitro-Chalk' applied: Mar 11, 1966. Sprayed: May 10. Combine harvested: Sept 3.
Barley: Seed combine drilled at 140 lb: Mar 8, 1966. 'Nitro-Chalk' applied: Mar 10. Sprayed: May 10. Combine harvested: Aug 23.
Winter wheat: Seed combine drilled at 190 lb: Jan 3, 1966. 'Nitro-Chalk' applied: Mar 10. Sprayed: May 10. Combine harvested: Aug 23.

NOTES: (1) Yields were taken only for sequences 1, 2, 3, 4, 7 (Barley) 8 (Spring wheat) 9 and 10 (Winter wheat).
(2) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer.
(3) For the previous years' results see 'Results' 61/C/8, 62/C/7, 63/C/2, 64/C/2, 65/C/2.

Standard errors per plot. Grain:
Winter wheat (9 and 10): 4.71 or 14.5% (7 d.f.)
Barley (1,2,3,4 and 7): 3.04 or 8.8% (19 d.f.)

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# SUMMARY OF RESULTS

## GRAIN

### WINTER WHEAT (9 and 10)

| Crop in 61 62 63 64 65 | NO | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| | | (±3.33) | | | (±1.66) |
| SW WW WW WW WW | 18.3 | 22.3 | 28.1 | 35.2 | 26.0 |
| Be WW P B Be | 30.6 | 35.2 | 42.5 | 46.9 | 38.8 |
| Mean (±2.35) | 24.5 | 28.7 | 35.3 | 41.0 | 32.4 |

Mean D.M. %: 75.2

### SPRING WHEAT (8)

| Crop in 61 62 63 64 65 | NO | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| SW SW SW SW SW | 15.3 | 18.4 | 32.2 | 35.4 | 25.3 |

Mean D.M. %: 74.5

### BARLEY (1,2,3,4,7)

| Crop in 61 62 63 64 65 | NO | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| | | (±2.15) | | | (±1.08) |
| O Be B B B | 13.4 | 26.2 | 34.8 | 45.7 | 30.0 |
| SW O Be B B | 17.3 | 25.6 | 36.3 | 45.4 | 31.2 |
| O SW O Be B | 25.0 | 32.1 | 44.3 | 49.7 | 37.8 |
| Be O SW O Be | 33.6 | 45.9 | 48.7 | 49.9 | 44.5 |
| B B B B B | 16.2 | 26.8 | 36.8 | 41.1 | 30.2 |
| Mean (±0.96) | 21.1 | 31.3 | 40.2 | 46.3 | 34.7 |

Mean D.M. %: 82.9

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66/C/3.1

# LONG TERM LIMING EXPERIMENTS - BARLEY 1966

## (LL and WLL)

Rothamsted Sawyers I and Woburn Stackyard Series C - the fifth year.

For treatments etc., see 'Results' 63/C/3 and for previous years' results see 62/C/8, 63/C/3, 64/C/3 and 65/C/3.

Area of each plot: 0.0289. Area harvested: 0.0129.

Basal applications:
Sawyers I (R) - 0.5 cwt N as 'Nitro-Chalk' combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 4 pints in 40 gals).
Stackyard Series C (W) - 0.5 cwt N as sulphate of ammonia broadcast by machine, 0.5 cwt N as 'Nitro-Chalk' broadcast by machine. Weedkiller: Ioxynil/mecoprop (Actril C at 4 pints in 35 gals).

Cultivations, etc.:-
Sawyers I (R): Ploughed: Jan 10, 1966. P and K applied, seed drilled at 160 lb: Mar 14. Sprayed: May 20. Combine harvested: Aug 26. Variety: Maris Badger.
Stackyard Series C (W): Ploughed: Sept 16, 1965. P and K applied: Mar 10, 1966. Sulphate of ammonia applied, seed drilled at 140 lb: Mar 11. Sprayed: May 11. 'Nitro-Chalk' applied by machine: June 7. Combine harvested: Sept 8. Variety: Maris Badger.

Standard errors per plot. Grain:
Sawyers I (R): 6.54 or 19.7% (15 d.f.)
Stackyard C (W): 1.26 or 3.2% (15 d.f.)

NOTE: Ground chalk tons per acre applied 1962 - 63

| | | Sawyers I (R) | Stackyard Series C (W)* |
|---|---|---|---|
| CA0 | = | 0 | 0 |
| CA2 | = | 2 | 2 |
| CA4 | = | 4 | 4.75 |
| CA8 | = | 8 | 7.5 |

* These were given incorrectly for Woburn in Results 64/C/3.1.

The following is a summary of the actual applications.

| | Sawyers I (R) | | | | Stackyard Series C (W) | | | |
|---|---|---|---|---|---|---|---|---|
| 1962 | 0 | 2 | 4 | 6 | 0 | 2 | 4 | 6 |
| 1963 | 0 | 0 | 0 | 2 | 0 | 0 | 0.75 | 1.5 |
| Total | 0 | 2 | 4 | 8 | 0 | 2 | 4.75 | 7.5 |

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66/C/3.2

SUMMARY OF RESULTS

SAWYERS I (R)

GRAIN

| | CA0 | CA2 | CA4 | CA8 | Mean |
|---|---|---|---|---|---|
| Mean (±2.31) | 21.7 | 35.1 | 38.0 | 38.2 | 33.3 |
| | | (±3.27) | | | (±1.64) |
| - | 18.5 | 33.9 | 36.7 | 37.0 | 31.5 |
| P | 25.0 | 36.3 | 39.4 | 39.4 | 35.0 |
| - | 25.3 | 33.7 | 37.4 | 36.0 | 33.1 |
| K | 18.2 | 36.6 | 38.6 | 40.4 | 33.4 |

| | - | P |
|---|---|---|
| | (±2.31) | |
| - | 32.1 | 34.2 |
| K | 31.0 | 35.9 |

Mean D.M. %: 77.4

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66/C/3.3

STACKYARD SERIES C (W)

GRAIN

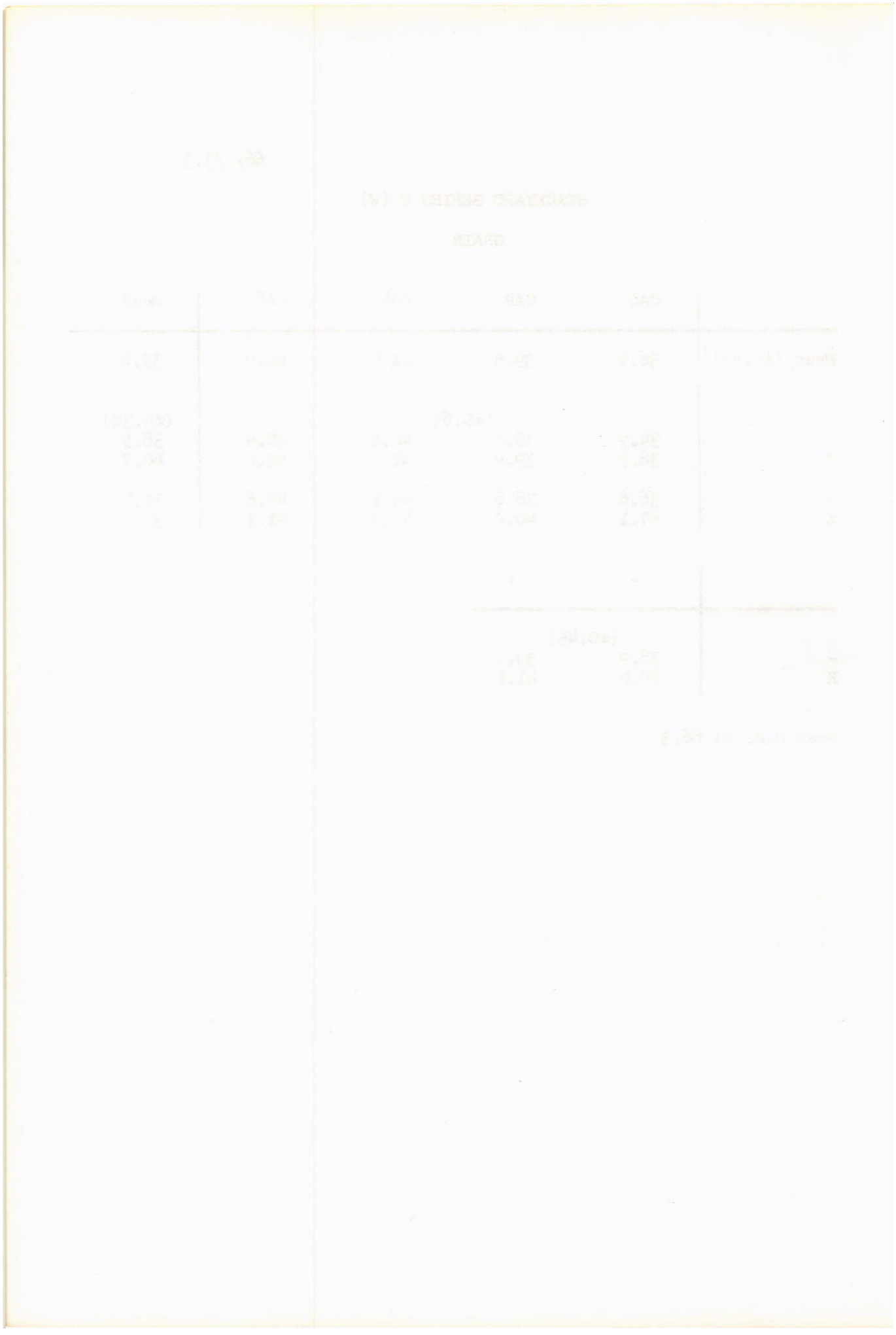
| | CA0 | CA2 | CA4 | CA8 | Mean |
|---|---|---|---|---|---|
| Mean (±0.45) | 36.9 | 39.5 | 41.0 | 40.9 | 39.6 |
| | | (±0.63) | | | (±0.32) |
| - | 34.9 | 39.1 | 40.2 | 39.9 | 38.5 |
| P | 38.9 | 39.9 | 41.9 | 42.0 | 40.7 |
| - | 36.6 | 38.8 | 41.1 | 40.6 | 39.3 |
| K | 37.1 | 40.2 | 40.9 | 41.3 | 39.9 |

| | - | P |
|---|---|---|
| | (±0.45) | |
| - | 38.9 | 39.7 |
| K | 38.2 | 41.6 |

Mean D.M. %: 86.3

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66/C/4.1

# METHODS OF APPLICATION OF FERTILISER

## (WBT)

Methods of application of fertiliser - Woburn Broadmead I, 1966
the second year - spring wheat.

Design: 3 x 3 x 3 in 3 blocks of 9 plots together with 3 additional plots per block.

Area of each plot: 0.0212. Area harvested: 0.0126.

Treatments: 3 x 3 x 3: All combinations of:-

To wheat 1966:

1. Levels of N, P and K:

| N | $P_2O_5$ | $K_2O$ | |
|---|---|---|---|
| None | None | None | (F0) |
| 0.66 | 0.66 | 1.02 | (F1) |
| 1.32 | 1.32 | 2.03 | (F2) |

P as superphosphate, K as muriate of potash, both applied in seedbed. N as 'Nitro-Chalk', half in seedbed, half top-dressed.

To potatoes 1965:

2. Levels of compound (13:13:20) to supply:

| N | $P_2O_5$ | $K_2O$ | |
|---|---|---|---|
| 0.66 | 0.66 | 1.02 | (L1) |
| 1.32 | 1.32 | 2.03 | (L2) |
| 2.00 | 2.00 | 3.07 | (L3) |

3. Methods of application: Broadcast (B), placed (P), broadcast and rotary cultivated in (BR).

Additional plots:

To wheat 1966: NPK: F0, F1, F2 as above to plots receiving no fertiliser in 1965.

Basal applications: Manures: None. Weedkillers: Sodium trichloroacetate at 18 lb in 40 gals on 2 occasions, Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Deep-tine cultivated: Oct 18, 1965. Sprayed (Sodium trichloroacetate): Oct 22 and Dec 29. Seed drilled at 170 lb: Mar 15, 1966. Sprayed (Mecoprop/2,4-D): May 10. Combine harvested: Sept 6. Variety: Kloka.

NOTE: For the previous year's results see 'Results' 65/C/5.

Standard error per plot.

Grain: 2.78 or 7.2% (21 d.f.)

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66/C/4.2

## SUMMARY OF RESULTS

| | GRAIN | | | | STRAW | | | |
|---|---|---|---|---|---|---|---|---|
| | B | P | BR | Mean | B | P | BR | Mean |
| | | (±1.61) | | (±0.93) | | | | |
| F0 | 25.1 | 28.8 | 28.2 | 27.4 | 14.3 | 16.5 | 14.0 | 14.9 |
| F1 | 39.0 | 40.5 | 37.9 | 39.1 | 26.7 | 29.0 | 26.2 | 27.3 |
| F2 | 49.0 | 49.2 | 49.5 | 49.2 | 38.0 | 38.3 | 37.3 | 37.8 |
| Mean | 37.7 | 39.5 (±0.93) | 38.5 | 38.6 | 26.3 | 27.9 | 25.8 | 26.7 |

| | L1 | L2 | L3 | L1 | L2 | L3 |
|---|---|---|---|---|---|---|
| | | (±1.61) | | | | |
| F0 | 22.0 | 26.1 | 34.0 | 11.7 | 15.0 | 18.1 |
| F1 | 34.1 | 41.0 | 42.4 | 22.1 | 31.0 | 28.9 |
| F2 | 48.6 | 50.1 | 49.0 | 36.9 | 39.7 | 36.9 |
| Mean | 34.9 | 39.0 (±0.93) | 41.8 | 23.5 | 28.6 | 28.0 |
| | | (±1.61) | | | | |
| B | 32.1 | 38.1 | 42.9 | 23.0 | 28.7 | 27.2 |
| P | 35.6 | 42.1 | 40.7 | 23.5 | 32.3 | 28.0 |
| BR | 36.9 | 37.0 | 41.7 | 24.2 | 24.6 | 28.7 |

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66/C/4.3

Plots receiving no fertiliser in 1965

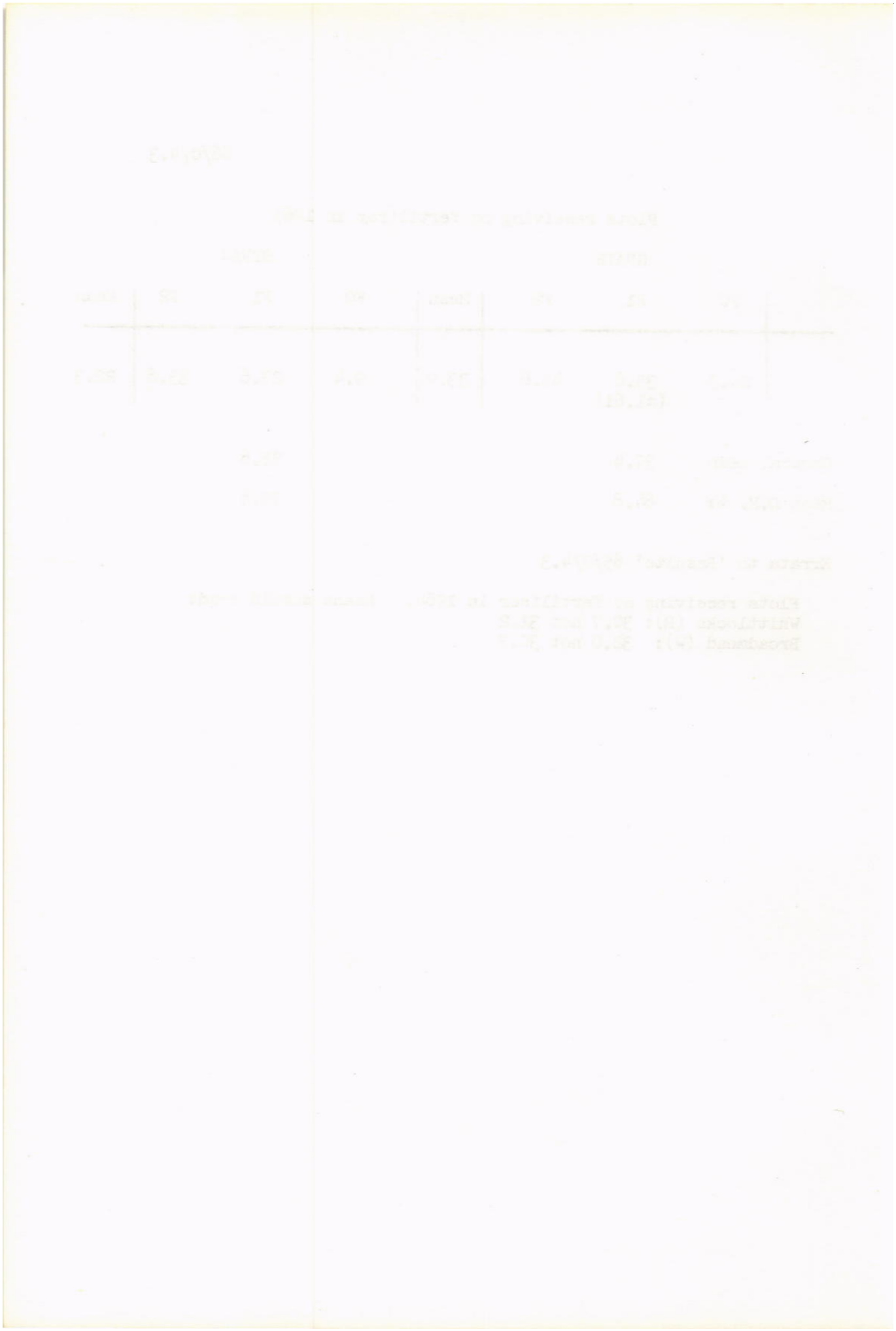
| | GRAIN | | | | STRAW | | | |
|---|---|---|---|---|---|---|---|---|
| | F0 | F1 | F2 | Mean | F0 | F1 | F2 | Mean |
| | 20.3 | 35.8 (±1.61) | 45.6 | 33.9 | 9.4 | 23.6 | 33.8 | 22.3 |
| General mean | | 37.4 | | | | 25.6 | | |
| Mean D.M. %: | | 84.8 | | | | 79.8 | | |

Errata to 'Results' 65/C/4.3

Plots receiving no fertiliser in 1964. Means should read:
Whittlocks (R): 30.7 not 31.2
Broadmead (W): 32.0 not 30.7

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# GRASS

## (AF)

Levels of N and K - Harwoods Piece 1966, the 9th year.

For treatments etc. see 'Results' 63/C/7.1 and 65/C/6.2 and for previous years' results see 58/Cg/2, 59/Cg/2, 60/Ci/1, 61/Dg/1, 62/C/11, 63/C/7, 64/C/6 and 65/C/6.

Area of each plot: 0.0087. Area harvested: 1st cut - 0.0057, 2nd, 3rd, 4th cuts - 0.0059.

Cultivations, etc.: N, P and K fertilisers applied: Mar 28, 1966. Cut 4 times: May 17, June 28, Aug 15, Oct 13. N and K applied after first 3 cuts.

NOTE: Crop samples were taken for N, P and K determinations.

Standard errors per plot. Dry matter:

| | |
|---|---|
| 1st cut: | 2.07 or 7.5% (33 d.f.) |
| 2nd cut: | 1.70 or 6.8% (33 d.f.) |
| 3rd cut: | 1.90 or 10.3% (33 d.f.) |
| 4th cut: | 1.37 or 11.5% (33 d.f.) |
| Total of 4 cuts: | 4.78 or 5.8% (33 d.f.) |

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66/C/5.2

## SUMMARY OF RESULTS

### DRY MATTER

| N | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | |
| K | 0 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 2 | 2 | Mean |
| **1ST CUT** | | | | | | | | | | | | | |
| | 5.5 | 17.3 | 19.1 | 19.1 | 30.3 | 30.0 (±1.03) | 30.9 | 33.9 | 34.6 | 36.7 | 37.8 | 37.4 | 27.7 |
| **2ND CUT** | | | | | | | | | | | | | |
| | 7.7 | 20.8 | 22.6 | 20.9 | 28.1 | 28.4 (±0.85) | 28.8 | 28.2 | 28.5 | 28.0 | 28.1 | 28.0 | 24.8 |
| **3RD CUT** | | | | | | | | | | | | | |
| | 2.0 | 14.5 | 14.8 | 14.4 | 20.3 | 21.2 (±0.95) | 22.0 | 17.8 | 22.8 | 24.4 | 23.1 | 25.1 | 18.5 |

Mean D.M. %: 19.8

Mean D.M. %: 19.9

Mean D.M. %: 19.9

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66/C/5.3

DRY MATTER

| N | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | |
| K | 0 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 2 | 2 | Mean |
| 4TH CUT | | | | | | | | | | | | | |
| | 0.4 | 8.4 | 9.9 | 10.4 | 11.7 | 15.3 (±0.69) | 16.3 | 9.7 | 15.0 | 15.0 | 15.7 | 15.1 | 11.9 |

Mean D.M. %: 18.4

TOTAL OF 4 CUTS

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15.6 | 60.9 | 66.4 | 64.8 | 90.5 | 94.8 (±2.39) | 98.1 | 89.7 | 100.9 | 104.1 | 104.7 | 105.6 | 83.0 |

Mean D.M. %: 19.5

Treatment symbols:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| N | 0 | 1 | 2 | 3 | 0.0 | 0.3 | 0.6 0.9 cwt N as 'Nitro-Chalk' 21 per cut |
| P | 0 | 1 | 2 | | 0.0 | 0.6 | 1.2 cwt P2O5 as Granular Superphosphate |
| K | 0 | 1 | 2 | | 0.0 | 0.3 | 0.6 cwt K2O as Granular Muriate of Potash per cut |

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66/C/6.1

## DECLINE OF TAKE-ALL

(AD)

The effect of crop sequences on the decline of take-all (Ophiobolus graminis) - Great Field I 1966, the fourth year, winter wheat.

Design: 3 randomised blocks of 6 plots each, using the plots of Series III of the Cereal - Bean Rotations Experiment (see 'Results' 61/C/1).

Area of each plot: 0.0145. Area harvested: 0.0091.

Treatments: 6 crop sequences. For details see 'Results' 63/C/8.

Basal applications: 2.5 cwt (0:10:20). Combine drilled, 1.0 cwt N applied in spring as 'Nitro-Chalk'. Weedkillers: Aminotriazole 4lb and ammonium thiocyanate 3.7 lb in 40 gals: Oct 14, 1965. Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 16, 1966.

Cultivations, etc.: Ploughed: Nov 10, 1965. Seed drilled at 190 lb: Jan 3, 1966. 'Nitro-Chalk' applied: Apr 27. Combine harvested: Aug 23. Variety: Cappelle.

NOTES: (1) Estimates were made of the incidence of take-all (Ophiobolus graminis) and of eyespot (Cercosporella herpotrichoides).
(2) For details of the previous years' results see 'Results' 63/C/8, 64/C/7, 65/C/7.

Standard error per plot.
Grain: 2.19 or 7.4%. (10 d.f.)

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66/C/6.2

## SUMMARY OF RESULTS

### WINTER WHEAT

### GRAIN

| Crop in | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1959 | W | W | W | WS | O | B | |
| 1960 | W | O | O | W | W | W | |
| 1961 | WS | WS | Be | WS | WS | B | |
| 1962 | W | W | W | W | W | W | |
| 1963 | W | W | W | O | W | W | |
| 1964 | W | W | W | W | O | W | |
| 1965 | W | W | W | W | W | O | Mean |
| | 30.0 | 29.2 | 27.9 | 30.9 | 26.4 | 32.8 | 29.5 |

(±1.27)

Mean D.M. %: 79.4

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66/C/7.1

# CEREAL DISEASE REFERENCE PLOTS

## (AQ)

## Pennells Piece 1966, the fourth year

For treatments etc., see 'Results' 63/C/10 (Ww = Winter wheat, Sw = Spring wheat, O = Oats, Be = Spring beans).

The varieties in 1966 were:-
Winter wheat: Cappelle
Spring wheat: Jufy I
Oats: Condor
Spring beans: Tick
These have remained unchanged since the beginning of the experiment.

Area of each plot: 0.0180. Area harvested: Winter wheat - 0.0115, spring wheat - 0.0116.

Cultivations, etc.: Ploughed: Oct 16, 1965.
Winter wheat: Seed combine drilled at 160 lb: Nov 4. 'Nitro-Chalk' applied: Mar 10, 1966. Sprayed with ioxynil/MCPA (Actril A at 2 pints in 40 gals): Mar 29. Combine harvested: Aug 23.
Spring wheat: Seed combine drilled at 180 lb, 'Nitro-Chalk' applied: Mar 11, 1966. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 40 gals): May 10. Combine harvested: Sept 3.
Oats: Seed combine drilled at 160 lb: Mar 7, 1966. 'Nitro-Chalk' applied: Mar 10. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 40 gals): May 10. Combine harvested: Sept 3.
Spring beans: Seed placement drilled at 200 lb: Mar 8, 1966. (Rows spaced at 21 in). Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 14. Combine harvested: Sept 16.

NOTES: (1) Yields were taken for winter and spring wheat only.
(2) Estimates were made throughout the growing season of the incidence of take-all (Ophiobolus graminis) and eyespot (Cercosporella herpotrichoides).
(3) For previous years' results see 'Results' 63/C/10, 64/C/9 and 65/C/9.

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66/C/7.2

## SUMMARY OF RESULTS

### GRAIN

| Crop 1963<br>1964<br>1965 | W<br>Be<br>O | Be<br>O<br>W | O<br>W<br>W | W<br>W<br>W | Mean |
|---|---|---|---|---|---|
| | | | WINTER WHEAT | | |
| | 41.8 | 41.5 | 25.5 | 31.6 | 35.1 |
| | | | SPRING WHEAT | | |
| | 44.8 | 37.9 | 35.3 | 37.1 | 38.8 |

Mean D.M. %: Winter wheat: 83.3
Spring wheat: 75.4

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66/C/8.1

# LUCERNE

## (AZ)

Row spacing, N and paraquat, Long Hoos VII, the 3rd year 1966.

For treatments, etc. and the previous years' results see 'Results' 64/C/13 and 65/C/12.

Area of each plot: 0.0145. Area harvested: 0.0034.

Cultivations, etc.: Basal PK compound applied: Dec 22, 1965. P1 treatment sprayed with paraquat at 2 lb ion in 40 gals: Mar 1, 1966. 'Nitro-Chalk' applied: Mar 15. Cut 3 times: June 3, July 12 and Oct 25. PK applied after first 2 cuts.

Standard errors per plot. Dry matter:

| | |
|---|---|
| 1st cut: | 2.50 or 7.5% (33 d.f.) |
| 2nd cut: | 2.09 or 8.0% (33 d.f.) |
| 3rd cut: | 1.56 or 10.0% (33 d.f.) |
| Total of 3 cuts: | 4.52 or 6.0% (33 d.f.) |

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66/C/8.2

# SUMMARY OF RESULTS

## DRY MATTER

### 1ST CUT

| | N0 | N1 | N2 | Mean |
|---|---|---|---|---|
| Mean (±0.63) | 31.6 | 32.8 | 35.3 | 33.2 |
| | | (±0.88) | | (±0.51) |
| C | 32.5 | 33.7 | 35.3 | 33.9 |
| W | 30.6 | 31.9 | 35.3 | 32.6 |
| | | (±0.88) | | (±0.51) |
| P0 | 34.7 | 38.4 | 40.2 | 37.8 |
| P1 | 28.4 | 27.2 | 30.5 | 28.7 |

| | C | W |
|---|---|---|
| | (±0.72) | |
| P0 | 38.3 | 37.2 |
| P1 | 29.4 | 28.0 |

Mean D.M. %: 20.4

N cwt per acre as 'Nitro-Chalk'

N0 = 0.00
N1 = 0.25
N2 = 0.50

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66/c/8.3

DRY MATTER

2ND CUT

| | NO | N1 | N2 | Mean |
|---|---|---|---|---|
| Mean (±0.52) | 26.4 | 26.1 | 26.2 | 26.3 |
| | | (±0.74) | | (±0.43) |
| C | 27.9 | 26.5 | 26.6 | 27.0 |
| W | 24.9 | 25.8 | 25.9 | 25.5 |
| | | (±0.74) | | (±0.43) |
| P0 | 26.5 | 25.4 | 25.5 | 25.8 |
| P1 | 26.2 | 26.9 | 26.9 | 26.7 |

| | C | W |
|---|---|---|
| | (±0.60) | |
| P0 | 26.4 | 25.2 |
| P1 | 27.5 | 25.8 |

Mean D.M. %:16.3

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66/C/8.4

DRY MATTER

3RD CUT

| | N0 | N1 | N2 | Mean |
|---|---|---|---|---|
| Mean (±0.39) | 15.0 | 16.4 | 15.3 | 15.6 |
| | | (±0.55) | | (±0.32) |
| C | 15.8 | 16.2 | 15.2 | 15.7 |
| W | 14.2 | 16.5 | 15.4 | 15.4 |
| | | (±0.55) | | (±0.32) |
| P0 | 15.8 | 17.1 | 16.4 | 16.4 |
| P1 | 14.2 | 15.7 | 14.3 | 14.7 |

| | C | W |
|---|---|---|
| | (±0.45) | |
| P0 | 16.7 | 16.2 |
| P1 | 14.8 | 14.6 |

Mean D.M. %: 23.8

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66/C/8.5

DRY MATTER

TOTAL OF 3 CUTS

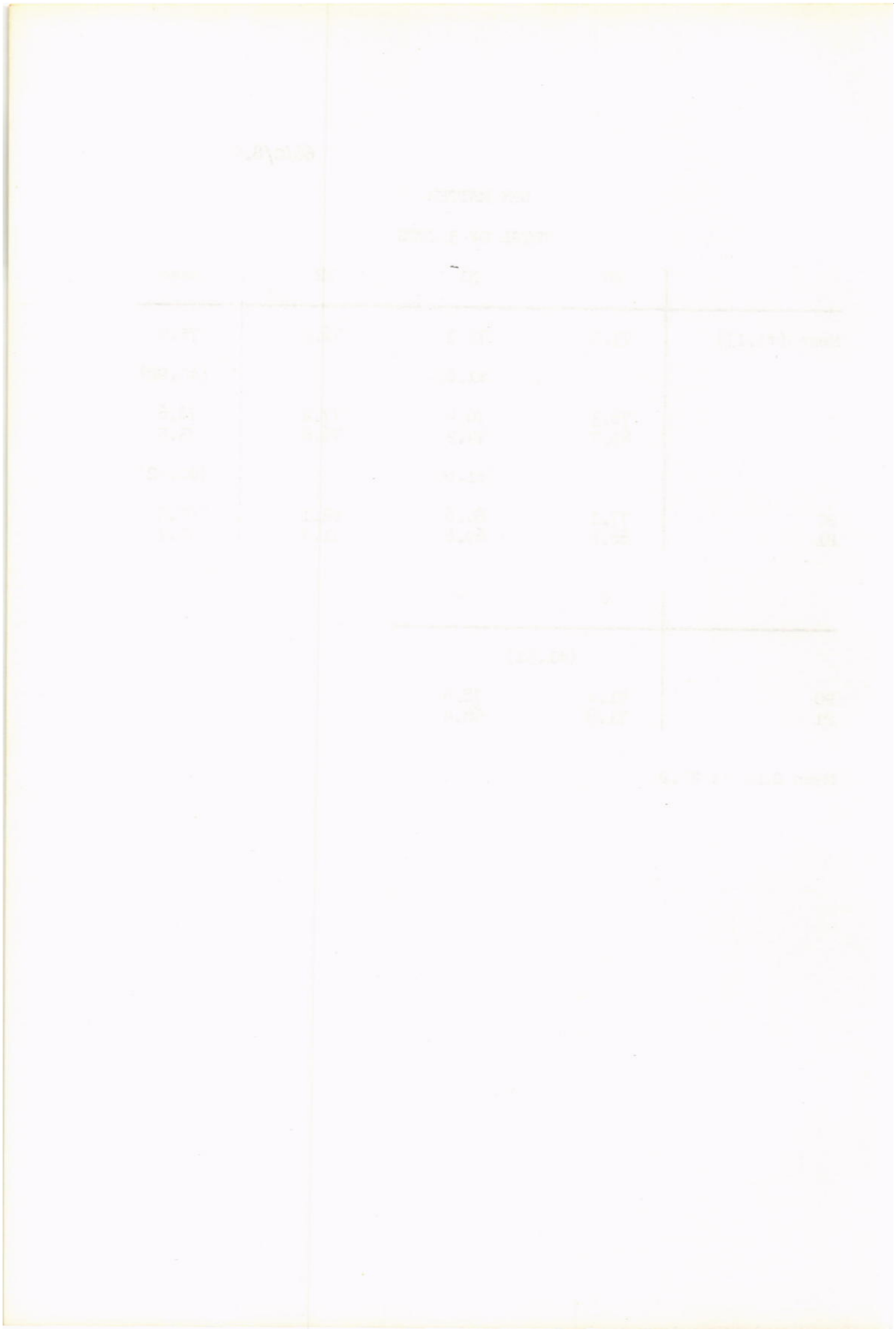
| | N0 | N1 | N2 | Mean |
|---|---|---|---|---|
| Mean (±1.13) | 73.0 | 75.3 | 76.9 | 75.0 |
| | | (±1.60) | | (±0.92) |
| C | 76.3 | 76.4 | 77.2 | 76.6 |
| W | 69.7 | 74.2 | 76.6 | 73.5 |
| | | (±1.60) | | (±0.92) |
| P0 | 77.1 | 80.8 | 82.1 | 80.0 |
| P1 | 68.8 | 69.8 | 71.7 | 70.1 |

| | C | W |
|---|---|---|
| | (±1.31) | |
| P0 | 81.4 | 78.6 |
| P1 | 71.8 | 68.4 |

Mean D.M. %: 20.2

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# IRRIGATION

## (IRA and IRB)

The effect of irrigation on potatoes and barley - Great Field I and II 1966. For previous years' results see 'Results' 65/C/14.

Design:
Potatoes: Two replicates of 4 x 2 x 3 x 2 in two blocks. Each block is divided into 4 whole plots for irrigation treatments, and at right angles into 6 strips for varieties and spacing. There is a further split for N.
Barley: Two randomised blocks of 4 plots, with plots split for N.

| | Area of each sub plot: | Area harvested: |
|---|---|---|
| Potatoes: | 0.0214 | 0.0080 |
| Barley: | 0.1286 | 0.0689 |

Treatments: Potatoes: All combinations of:-
Whole plots. 1. Irrigation: None (O), early (A), late (B), full (C).
To strips of 1/6th plots.
2. Varieties: Majestic (M), King Edward (E). Unchitted seed.
3. Spacing: Seed 12 (S1), 15 (S2), 18 inches (S3) apart in rows.
1/12th plots. 4. Nitrogen: 1.2 (N1), 1.8 (N2) cwt N as compound fertiliser (basal) and 'Nitro-Chalk'.

Barley: All combinatons of:-
Main plots. 1. Irrigation: None (O), early (A), late (B), full (C).
Sub plots. 2. Nitrogen: 0.6 (N1), 0.8 (N2) cwt N as compound fertiliser (basal) and 'Nitro-Chalk'.

Basal applications:
Potatoes: 12 cwt compound fertiliser (10:10:18). Weedkiller: Linuron at 1 lb and paraquat at 0.75 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions.
Barley: 3 cwt compound fertiliser (20:10:10) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.:-
Potatoes: Sprayed with dalapon at 8.8 lb a.e. in 40 gals: Nov 8, 1965. Ploughed: Jan 5, 1966. Basal compound

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fertiliser applied: Apr 1. 'Nitro-Chalk' applied: May 3. East half of experiment (one replicate) rotary cultivated, potatoes planted on eastern four 1/12th plots of each block: May 4. Rotary cultivation completed, remainder of plots planted: May 10. Weedkiller applied: May 27. Rotary ridged: June 17. Fungicide applied: June 30, July 22, Aug 5. Sprayed with undiluted BOV at 15 gals: Sept 8. Haulm destroyed mechanically, potatoes lifted: Sept 21. Previous crop: Barley 1964, spring beans 1965.

Barley: Deep-tine cultivated: Mar 23, 1966. Seed drilled at 155 lb, 'Nitro-Chalk' applied: Mar 24. Weedkiller applied: May 14. Combine harvested: Aug 19. Variety: Maris Badger. Previous crop: Barley 1964, potatoes 1965.

RAINFALL AND IRRIGATION: INCHES

| Week-ending | Rain-fall | IRRIGATION | |
|---|---|---|---|
| | | Potatoes A and C | Barley A and C |
| May 6 | 0.95 | | |
| 13 | 0.93 | | |
| 20 | 0.38 | | |
| 27 | 0.28 | | |
| June 3 | 0.00 | | |
| 10 | 1.15 | | 1.00 |
| 17 | 0.39 | | |
| 24 | 1.30 | | |
| July 1 | 0.25 | | |
| 8 | 0.45 | | |
| 15 | 0.21 | 1.00 | |
| 22 | 0.87 | | |
| 29 | 0.98 | | |
| Aug 5 | 0.94 | | |
| 12 | 1.00 | | |
| 19 | 0.02 | | |
| 26 | 0.08 | | |
| Sept 2 | 1.89 | | |
| 9 | 0.17 | | |
| 16 | 0.38 | | |
| 23 | 0.00 | | |
| 30 | 0.62 | | |
| Total | 13.24 | 1.00 | 1.00 |

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Standard errors per plot.

| | | | |
|---|---|---|---|
| Potatoes, total tubers: | Pooled whole & strip: | 0.820 or 4.8% | (10 d.f.) |
| | 1/6 plot: | 0.597 or 3.5% | (25 d.f.) |
| | 1/12 plot: | 1.065 or 6.2% | (36 d.f.) |
| Barley, grain: | Whole plot: | 1.39 or 3.1% | (5 d.f.) |
| | Sub plot: | 2.26 or 5.0% | (6 d.f.) |

## SUMMARY OF RESULTS

### POTATOES

### TOTAL TUBERS

| | O & B | A & C | Mean |
|---|---|---|---|
| | | (±0.335) | |
| Mean | 17.01 | 17.38 | 17.20 |
| | | (1) and (2) | (±0.335) |
| M | 17.27 | 17.46 | 17.37 |
| E | 16.76 | 17.29 | 17.02 |
| | | (3) and (4) | (±0.410) |
| S1 | 17.40 | 18.45 | 17.93 |
| S2 | 17.20 | 17.70 | 17.45 |
| S3 | 16.44 | 15.98 | 16.21 |
| | | (5) and (6) | (±0.154) |
| N1 | 16.66 | 16.97 | 16.82 |
| N2 | 17.37 | 17.78 | 17.57 |

(1) (±0.172) For use in interaction comparisons only
(2) (±0.280) For use in all other comparisons
(3) (±0.211) For use in interaction comparisons only
(4) (±0.343) For use in all other comparisons
(5) (±0.368) For use in vertical and diagonal comparisons
(6) (±0.217) For use in horizontal and interaction comparisons

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66/C/9.4

POTATOES

TOTAL TUBERS

| | MS1 | MS2 | MS3 | ES1 | ES2 | ES3 |
|---|---|---|---|---|---|---|
| O & B | 17.73 | 16.71 | 17.37 | 17.07 | 17.69 | 15.51 |
| A & C | 18.21 | 17.59 | 16.60 | 18.69 | 17.81 | 15.36 |

| | MN1 | MN2 | EN1 | EN2 |
|---|---|---|---|---|
| O & B | 17.15 | 17.39 | 16.17 | 17.34 |
| A & C | 17.35 | 17.58 | 16.59 | 17.98 |

| | S1N1 | S1N2 | S2N1 | S2N2 | S3N1 | S3N2 |
|---|---|---|---|---|---|---|
| O & B | 16.94 | 17.87 | 17.04 | 17.36 | 16.00 | 16.87 |
| A & C | 17.74 | 19.16 | 17.28 | 18.12 | 15.90 | 16.06 |

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66/C/9.5

POTATOES

% WARE

| | O & B | A & C | Mean |
|---|---|---|---|
| Mean | 97.1 | 97.2 | 97.1 |
| M | 97.4 | 97.5 | 97.5 |
| E | 96.7 | 96.8 | 96.8 |
| S1 | 96.4 | 96.6 | 96.5 |
| S2 | 97.2 | 97.4 | 97.3 |
| S3 | 97.5 | 97.7 | 97.6 |
| N1 | 97.0 | 97.0 | 97.0 |
| N2 | 97.1 | 97.4 | 97.2 |

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66/C/9.6

## POTATOES

### % WARE

| | MS1 | MS2 | MS3 | ES1 | ES2 | ES3 |
|---|---|---|---|---|---|---|
| O & B | 96.9 | 97.5 | 97.7 | 96.0 | 96.8 | 97.4 |
| A & C | 97.1 | 97.8 | 97.8 | 96.1 | 96.9 | 97.5 |

| | MN1 | MN2 | EN1 | EN2 |
|---|---|---|---|---|
| O & B | 97.5 | 97.3 | 96.5 | 96.9 |
| A & C | 97.5 | 97.6 | 96.5 | 97.2 |

| | S1N1 | S1N2 | S2N1 | S2N2 | S3N1 | S3N2 |
|---|---|---|---|---|---|---|
| O & B | 96.5 | 96.4 | 97.2 | 97.1 | 97.3 | 97.7 |
| A & C | 96.5 | 96.7 | 97.0 | 97.7 | 97.5 | 97.8 |

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66/C/9.7

BARLEY

GRAIN

| | O&B | A&C | Mean |
|---|---|---|---|
| | (1) and (2) | | (±0.80) |
| N1 | 45.6 | 47.9 | 46.7 |
| N2 | 43.4 | 43.2 | 43.3 |
| Mean (±0.70) | 44.5 | 45.6 | 45.0 |

STRAW

| | | | |
|---|---|---|---|
| N1 | 44.5 | 44.6 | 44.6 |
| N2 | 52.0 | 50.1 | 51.1 |
| Mean | 48.3 | 47.4 | 47.8 |

(1) (±1.06) For use in horizontal and diagonal comparisons
(2) (±1.13) For use in vertical and interaction comparisons

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66/C/10

# ROW SPACING AND FERTILISERS

(WBU)

Row spacing and concentrated fertilisers - Woburn Workhouse 1966, the second year. Barley 1966 after potatoes 1965.

Design: Two replicates of 4 x 2 x 2 x 2 in 4 blocks of 16 plots.

Area of each plot: 0.0030.

Treatments: All combinations of:-

To potatoes 1965.
1. Levels of NPK (in proportion 1.0 N, 1.0 $P_2O_5$, 1.5 $K_2O$) to supply: None (F0), 0.66 (F1), 1.32 (F2), 2.0 cwt N (F3).
2. Types of fertiliser: Concentrated (C), dilute (D).
3. Time of application: Before (B), after (A) rotary cultivation.
4. Spacing of setts: 14 in. x 14 in. (S14), 14 in. x 28 in. (S28).

To barley 1966.
5. Concentrated NPK fertiliser to supply: None (F0), 0.33 (F1), 0.66 (F2), 1.0 cwt N (F3) with $P_2O_5$ and $K_2O$ in proportion as above.

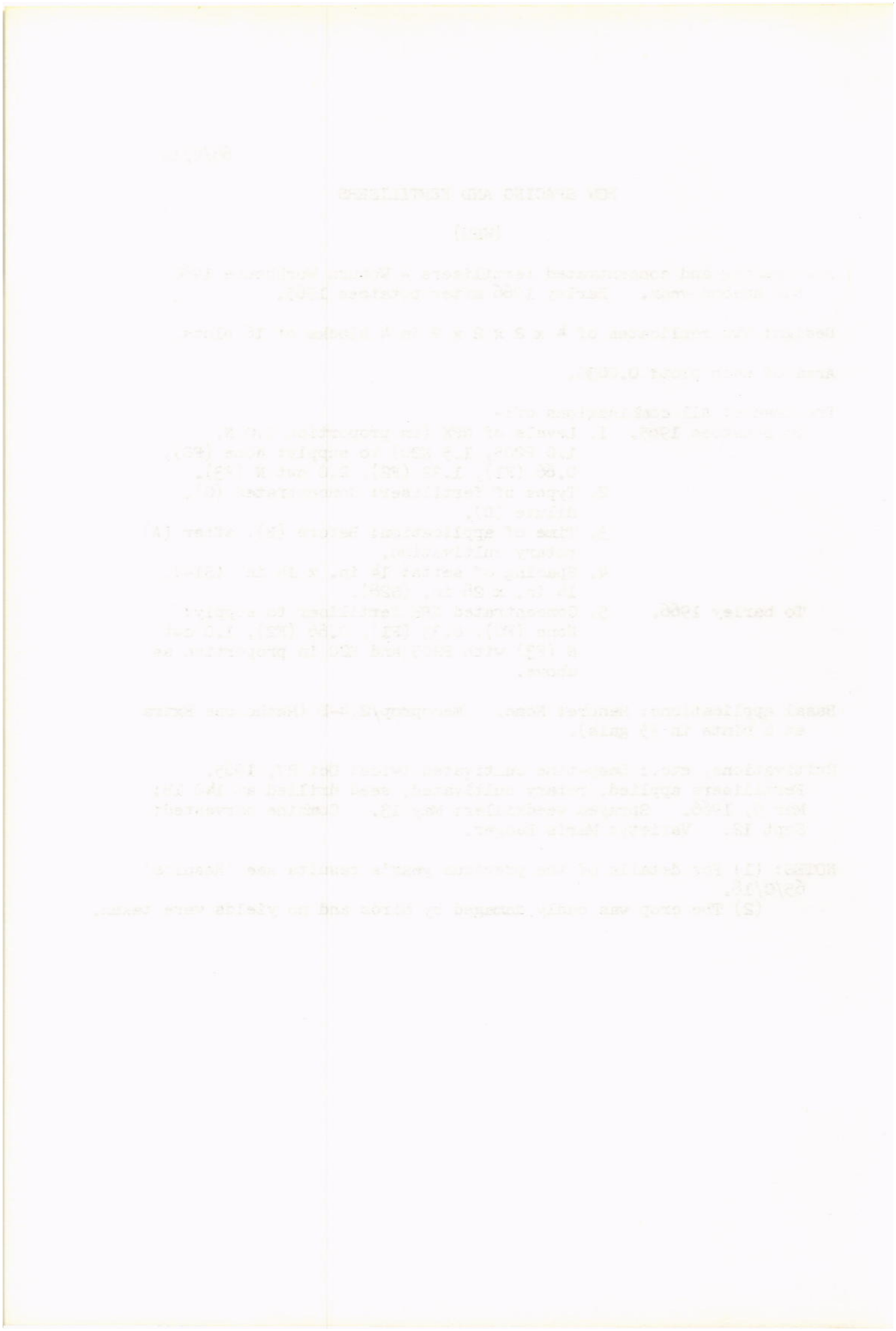
Basal applications: Manure: None. Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Deep-tine cultivated twice: Oct 27, 1965. Fertilisers applied, rotary cultivated, seed drilled at 140 lb: Mar 9, 1966. Sprayed weedkiller: May 13. Combine harvested: Sept 12. Variety: Maris Badger.

NOTES: (1) For details of the previous year's results see 'Results' 65/C/18.
(2) The crop was badly damaged by birds and no yields were taken.

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66/C/11.1

# SOIL STRUCTURE 2

Effects of peat (annual applications) and subsoiling (1963 only) Woburn Stackyard Field, plot 6 of the Continuous Barley site, early potatoes followed by red beet 1966, the fourth year.

Design: 4 randomised blocks of 5 plots split into two for P. Two blocks subsoiled.

Area of each plot: 0.0016. Area harvested: Potatoes - 0.0006, red beet - 0.0011.

Treatments: All combinations of:-

Blocks. 1. Subsoiling: None (0), subsoiled (S) by hand to a depth of 20 inches in 1963.

Whole plots. 2. Peat: None (0), 62.5 cwt peat dry matter applied to top 2 inches of soil in 1965 only (Sb65), 1963-66 cumulative dressings, 62.5 cwt peat dry matter applied annually to top 2 inches of soil alone (Sb), or with peat dug in annually to a depth of 8 inches either at the same rate (Dg1), or at twice the rate (Dg2).

Half plots. 3. Phosphate*: None (0), 75 lb $P_2O_5$ (P) applied as triple superphosphate three quarters dug in, and a quarter in the seedbed.

*not tested on red beet.

Basal applications: Monoammonium phosphate, potassium nitrate, ammonium nitrate and magnesium sulphate to supply 120 lb N, 75 lb P, 150 lb K, 50 lb Mg, to the potatoes, and 200 lb N, 75 lb P, 250 lb K, and 50 lb Mg to red beet. Three quarters being dug in, and a quarter in the seedbed in each case.

Cultivations, etc.:

Early potatoes:

Fertilisers and peat for digging in applied: Mar 25, 1966. All plots dug: Mar 28. Seedbed fertilisers and peat applied, setts planted: Apr 4. Earthed up: May 20. Lifted: July 7. Variety: Arran Pilot.

Red beet:

Chalk applied at 1 ton: July 15, 1966. Fertilisers applied to seedbed, seedbed prepared, and seed drilled at 30 lb: July 27. Singled to 4 inch spacing: Aug 24. Lifted: Oct 28. Variety: Crimson Globe.

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NOTE:

1. Crop samples were taken for estimation of dry matter and PK analysis.
2. Soil samples taken 0-12 inches Dec 15, 1965, for determination of pH and readily soluble P and K.
3. For previous years' results see 'Results' 64/C/20, 65/C/19.

Standard errors per plot.

| | | | |
|---|---|---|---|
| Early potatoes. | Total tubers, | whole plot: | 0.810 or 8.3% (8 d.f.) |
| | | sub plot: | 0.625 or 6.4% (10 d.f.) |
| Red beet. | Whole plots, | Roots: | 0.239 or 4.7% (8 d.f.) |
| | | Tops: | 0.485 or 4.8% (8 d.f.) |
| | | Roots and tops: | 0.698 or 4.6% (8 d.f.) |

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66/C/11.3

## SUMMARY OF RESULTS

## EARLY POTATOES

### TOTAL TUBERS

| | O | Sb65 | Sb | Dg1 | Dg2 | Mean |
|---|---|---|---|---|---|---|
| Mean (±0.405) | 8.76 | 9.51 | 10.20 | 9.99 | 10.55 | 9.80 |
| | | | (±0.573)* | | | |
| O | 7.98 | 8.45 | 9.62 | 9.07 | 10.32 | 9.09 |
| S | 9.53 | 10.56 | 10.78 | 10.90 | 10.78 | 10.51 |
| | | | (1) and (2) | | | (±0.140) |
| O | 8.69 | 9.11 | 9.88 | 9.89 | 11.07 | 9.73 |
| P | 8.82 | 9.90 | 10.52 | 10.08 | 10.03 | 9.87 |

| | O | P | Mean |
|---|---|---|---|
| | (±0.198)* | | |
| O | 9.14 | 9.03 | 9.09 |
| S | 10.32 | 10.71 | 10.51 |

*For use in horizontal and interaction comparisons

(1) (±0.461) For use in horizontal and diagonal comparisons
(2) (±0.313) For use in vertical and interaction comparisons

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RED BEET

| | O | Sb65 | Sb | Dg1 | Dg2 | Mean |
|---|---|---|---|---|---|---|
| | | | ROOTS | | | |
| | | | (±0.169)* | | | |
| O | 4.72 | 5.20 | 4.72 | 5.30 | 5.35 | 5.06 |
| S | 4.72 | 4.72 | 4.91 | 5.49 | 5.40 | 5.05 |
| Mean (±0.120) | 4.72 | 4.96 | 4.81 | 5.40 | 5.37 | 5.05 |
| | | | TOPS | | | |
| | | | (±0.343)* | | | |
| O | 9.19 | 9.63 | 9.14 | 11.23 | 10.36 | 9.91 |
| S | 9.82 | 9.58 | 9.77 | 10.89 | 11.67 | 10.35 |
| Mean (±0.242) | 9.50 | 9.60 | 9.46 | 11.06 | 11.01 | 10.13 |
| | | | ROOTS AND TOPS | | | |
| | | | (±0.494)* | | | |
| O | 13.90 | 14.83 | 13.86 | 16.53 | 15.70 | 14.96 |
| S | 14.54 | 14.29 | 14.68 | 16.38 | 17.06 | 15.39 |
| Mean (±0.349) | 14.22 | 14.56 | 14.27 | 16.46 | 16.38 | 15.18 |

*For use in horizontal and interaction comparisons.

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66/C/12.1

## GRASS

The effects of oxamide on the growth and N uptake of sown ryegrass.
Highfield O and E I, 1966, the second year.

Design: 4 randomised blocks of 10 plots.

Area of each plot: 0.0009. Area harvested: 0.0006.

Treatments (applied in 1965): None (O) (2 plots per block) and all combinations of:-

1. N fertiliser:
   - Oxamide powder (P)
   - Oxamide, small granules (2-4 mm) (S)
   - Oxamide, large granules (7-9 mm) (L)
   - Ammonium nitrate (A)
2. Levels of N: 100 lb (N1), 200 lb (N2) N.

Basal application: 4 cwt (0:14:28).

Cultivations, etc.: Basal PK applied: Mar 1, 1966. Cut twice: May 6 and June 13.

NOTES: (1) % N in grass was determined.
(2) For the previous year's results see 'Results' 65/C/21.

Standard errors per plot. Dry matter:

| | | |
|---|---|---|
| 1st cut: | 1.81 | or 20.6% (27 d.f.) |
| 2nd cut: | 0.64 | or 7.7% (27 d.f.) |
| Total of 2 cuts: | 2.19 | or 12.8% (27 d.f.) |

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66/C/12.2

## SUMMARY OF RESULTS

### DRY MATTER

| | O | P | S | L | A | Mean |
|---|---|---|---|---|---|---|
| | | | 1ST CUT | | | |
| | | | (±0.90) | | | (±0.45) |
| N1 | | 6.7 | 8.5 | 9.1 | 6.8 | 7.8 |
| N2 | | 8.8 | 12.6 | 15.9 | 8.1 | 11.4 |
| Mean (±0.64) | 5.5 | 7.7 | 10.6 | 12.5 | 7.5 | 8.8* |
| | | | 2ND CUT | | | |
| | | | (±0.32) | | | (±0.16) |
| N1 | | 7.9 | 8.6 | 9.3 | 7.5 | 8.3 |
| N2 | | 8.5 | 7.7 | 9.7 | 8.6 | 8.6 |
| Mean (±0.23) | 7.4 | 8.2 | 8.2 | 9.5 | 8.1 | 8.3* |
| | | | TOTAL OF 2 CUTS | | | |
| | | | (±1.09) | | | (±0.55) |
| N1 | | 14.6 | 17.1 | 18.5 | 14.3 | 16.1 |
| N2 | | 17.2 | 20.3 | 25.6 | 16.7 | 20.0 |
| Mean (±0.77) | 12.9 | 15.9 | 18.7 | 22.0 | 15.5 | 17.0* |

* General mean

Mean D.M. %: 1st cut: 22.5
2nd cut: 23.4
Total of 2 cuts: 23.0

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66/C/13.1

# PARK GRASS MICROPLOTS

## (PGM 81 - 160)

### Plots 5/1 and 5/2, 1966, the second year

For details of treatments etc., and for previous year's results see 'Results' 65/C/22.

Area harvested: 0.0021.

Residual effects only were measured from treatments K1P2 and K6P2. All other treatments are cumulative.

All plots were cut 3 times. N applied for each cut at 50 and 100 lb. Total for year 150 and 300 lb.

Cultivations, etc.: PK applied: Feb 8, 1966. 'Nitro-Chalk' applied: Mar 7. Cut 3 times: May 23, July 18, Oct 6. 'Nitro-Chalk' applied after every cut except the last.

Standard errors per plot. Dry matter:

| | | |
|---|---|---|
| Plot 5/1. | 1st cut: | 2.17 or 12.3% (11 d.f.) |
| | 2nd cut: | 4.01 or 18.1% (11 d.f.) |
| | 3rd cut: | 2.43 or 11.0% (11 d.f.) |
| | Total of 3 cuts: | 6.31 or 10.2% (11 d.f.) |
| Plot 5/2. | 1st cut: | 3.10 or 8.9% (11 d.f.) |
| | 2nd cut: | 2.86 or 10.1% (11 d.f.) |
| | 3rd cut: | 2.22 or 8.0% (11 d.f.) |
| | Total of 3 cuts: | 6.13 or 6.7% (11 d.f.) |

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66/C/13.2

SUMMARY OF RESULTS

PLOT 5/1: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±0.77) | 6.3 | 20.4 | 22.4 | 22.9 | 18.0 |
| | | | (±1.53) | | (±0.77) |
| K0 | 6.2 | 19.6 | 19.6 | 19.9 | 16.3 |
| K2 | 8.0 | 20.5 | 24.2 | 23.2 | 19.0 |
| K4 | 5.7 | 22.7 | 24.2 | 24.7 | 19.3 |
| K8 | 5.2 | 18.9 | 21.7 | 23.8 | 17.4 |
| | | | (±1.08) | | (±0.54) |
| N1 | 7.6 | 19.2 | 19.2 | 20.2 | 16.5 |
| N2 | 5.0 | 21.7 | 25.7 | 25.7 | 19.5 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±1.08) | |
| N1 | 15.8 | 17.5 | 16.3 | 16.6 |
| N2 | 16.9 | 20.5 | 22.4 | 18.2 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±1.53) | | (±1.08) |
| N1 | 15.0 | 17.8 | 16.4 |
| N2 | 16.6 | 14.6 | 15.6 |
| Mean (±1.08) | 15.8 | 16.2 | 16.0 |

* Applied 1965

General mean: 17.6

Mean D.M. %: 22.4

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66/C/13.3

PLOT 5/1: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±1.42) | 16.7 | 21.3 | 26.1 | 28.3 | 23.1 |
| | | | (±2.84) | | (±1.42) |
| K0 | 10.3 | 18.1 | 20.8 | 23.0 | 18.0 |
| K2 | 18.1 | 21.2 | 30.5 | 29.1 | 24.7 |
| K4 | 20.6 | 25.2 | 26.1 | 29.0 | 25.2 |
| K8 | 18.0 | 20.7 | 27.0 | 32.1 | 24.5 |
| | | | (±2.01) | | (±1.00) |
| N1 | 17.9 | 20.7 | 24.5 | 26.7 | 22.4 |
| N2 | 15.6 | 21.8 | 27.8 | 29.9 | 23.8 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±2.01) | |
| N1 | 18.6 | 23.1 | 23.8 | 24.2 |
| N2 | 17.4 | 26.3 | 26.6 | 24.8 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±2.84) | | (±2.01) |
| N1 | 18.0 | 19.1 | 18.5 |
| N2 | 18.5 | 18.0 | 18.2 |
| Mean (±2.01) | 18.2 | 18.5 | 18.4 |

* Applied 1965

General mean: 22.2

Mean D.M. %: 21.5

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66/C/13.4

PLOT 5/1: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±0.86) | 18.0 | 22.5 | 24.0 | 26.2 | 22.7 |
| | | | (±1.72) | | (±0.86) |
| K0 | 16.6 | 21.8 | 22.8 | 20.2 | 20.4 |
| K2 | 17.9 | 23.8 | 22.4 | 26.7 | 22.7 |
| K4 | 18.4 | 21.6 | 24.8 | 29.0 | 23.4 |
| K8 | 19.2 | 22.8 | 26.2 | 28.9 | 24.3 |
| | | | (±1.22) | | (±0.61) |
| N1 | 17.3 | 21.8 | 22.7 | 26.6 | 22.1 |
| N2 | 18.7 | 23.3 | 25.4 | 25.9 | 23.3 |

| | K0 | K2 | K4 | K3 |
|---|---|---|---|---|
| | | | (±1.22) | |
| N1 | 19.4 | 22.9 | 23.3 | 22.7 |
| N2 | 21.3 | 22.5 | 23.6 | 25.9 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±1.72) | | (±1.22) |
| N1 | 16.4 | 19.8 | 18.1 |
| N2 | 18.7 | 22.4 | 20.6 |
| Mean (±1.22) | 17.6 | 21.1 | 19.4 |

* Applied 1965

General mean: 22.0

Mean D.M. %: 19.5

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66/C/13.5

PLOT 5/1: DRY MATTER

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±2.23) | 41.1 | 64.2 | 72.6 | 77.4 | 63.8 |
| | | | (±4.46) | | (±2.23) |
| K0 | 33.1 | 59.5 | 63.2 | 63.2 | 54.8 |
| K2 | 43.9 | 65.5 | 77.1 | 78.9 | 66.4 |
| K4 | 44.8 | 69.4 | 75.1 | 82.7 | 68.0 |
| K8 | 42.4 | 62.4 | 74.9 | 84.8 | 66.2 |
| | | | (±3.16) | | (±1.58) |
| N1 | 42.7 | 61.7 | 66.3 | 73.4 | 61.0 |
| N2 | 39.4 | 66.8 | 78.9 | 81.4 | 66.6 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±3.16) | |
| N1 | 53.8 | 63.5 | 63.3 | 63.4 |
| N2 | 55.7 | 69.2 | 72.7 | 68.9 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±4.46) | | (±3.16) |
| N1 | 49.4 | 56.7 | 53.0 |
| N2 | 53.7 | 55.1 | 54.4 |
| Mean (±3.16) | 51.5 | 55.9 | 53.7 |

* Applied 1965

General mean: 61.8

Mean D.M. %: 21.1

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66/C/13.6

PLOT 5/2: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±1.10) | 35.5 | 33.9 | 39.0 | 33.6 | 35.5 |
| | | | (±2.19) | | (±1.10) |
| K0 | 34.4 | 32.9 | 34.5 | 34.7 | 34.1 |
| K2 | 36.4 | 32.5 | 37.5 | 34.5 | 35.2 |
| K4 | 35.2 | 36.5 | 43.2 | 32.0 | 36.7 |
| K8 | 36.0 | 33.5 | 41.0 | 33.0 | 35.9 |
| | | | (±1.55) | | (±0.78) |
| N1 | 29.1 | 24.8 | 28.4 | 24.4 | 26.7 |
| N2 | 41.8 | 42.9 | 49.7 | 42.7 | 44.3 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±1.55) | |
| N1 | 26.1 | 28.4 | 26.8 | 25.4 |
| N2 | 42.1 | 42.0 | 46.7 | 46.3 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±2.19) | | (±1.55) |
| N1 | 26.5 | 29.4 | 28.0 |
| N2 | 37.2 | 38.5 | 37.8 |
| Mean (±1.55) | 31.8 | 33.9 | 32.9 |

* Applied 1965

General mean: 35.0

Mean D.M. %: 19.1

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66/C/13.7

## PLOT 5/2: DRY MATTER

### 2ND CUT

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±1.01) | 28.3 | 27.1 | 26.1 | 29.3 | 27.7 |
| | | | (±2.03) | | (±1.01) |
| K0 | 27.7 | 28.4 | 31.6 | 26.5 | 28.5 |
| K2 | 29.2 | 26.4 | 26.7 | 32.8 | 28.8 |
| K4 | 27.6 | 25.4 | 24.2 | 27.5 | 26.2 |
| K8 | 28.6 | 28.4 | 22.0 | 30.4 | 27.4 |
| | | | (±1.43) | | (±0.72) |
| N1 | 28.3 | 25.9 | 27.8 | 27.5 | 27.4 |
| N2 | 28.2 | 28.4 | 24.5 | 31.1 | 28.0 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±1.43) | |
| N1 | 27.4 | 29.1 | 26.4 | 26.8 |
| N2 | 29.7 | 28.5 | 26.0 | 27.9 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±2.03) | | (±1.43) |
| N1 | 26.5 | 29.3 | 27.9 |
| N2 | 33.7 | 33.1 | 33.4 |
| Mean (±1.43) | 30.1 | 31.2 | 30.7 |

* Applied 1965

General mean: 28.3

Mean D.M. %: 20.7

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66/C/13.8

PLOT 5/2: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±0.78) | 27.5 | 26.6 | 27.1 | 29.0 | 27.6 |
| | | | (±1.57) | | (±0.78) |
| K0 | 26.0 | 27.5 | 26.8 | 27.6 | 27.0 |
| K2 | 27.8 | 26.8 | 29.1 | 30.2 | 28.5 |
| K4 | 28.4 | 25.1 | 28.1 | 28.1 | 27.4 |
| K8 | 27.7 | 27.2 | 24.5 | 30.1 | 27.4 |
| | | | (±1.11) | | (±0.56) |
| N1 | 27.1 | 23.7 | 25.7 | 25.3 | 25.5 |
| N2 | 27.8 | 29.5 | 28.6 | 32.7 | 29.7 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±1.11) | |
| N1 | 25.6 | 27.1 | 2.8 | 24.3 |
| N2 | 28.3 | 29.8 | 30.0 | 30.5 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±1.57) | | (±1.11) |
| N1 | 26.8 | 27.2 | 27.0 |
| N2 | 30.5 | 32.1 | 31.3 |
| Mean (±1.11) | 28.6 | 29.7 | 29.1 |

* Applied 1965

General mean: 27.9

Mean D.M. %: 16.3

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66/C/13.9

PLOT 5/2: DRY MATTER

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

| | P0 | P1 | P2 | P4 | Mean |
|---|---|---|---|---|---|
| Mean (±2.17) | 91.2 | 87.6 | 92.3 | 91.9 | 90.8 |
| | | | (±4.33) | | (±2.17) |
| K0 | 88.1 | 88.7 | 92.8 | 88.8 | 89.6 |
| K2 | 93.3 | 85.7 | 93.3 | 97.6 | 92.5 |
| K4 | 91.2 | 87.0 | 95.4 | 87.7 | 90.3 |
| K8 | 92.3 | 89.1 | 87.6 | 93.6 | 90.6 |
| | | | (±3.06) | | (±1.53) |
| N1 | 84.5 | 74.5 | 81.9 | 77.2 | 79.5 |
| N2 | 97.9 | 100.8 | 102.7 | 106.6 | 102.0 |

| | K0 | K2 | K4 | K8 |
|---|---|---|---|---|
| | | | (±3.06) | |
| N1 | 79.0 | 84.6 | 78.0 | 76.5 |
| N2 | 100.2 | 100.3 | 102.7 | 104.7 |

K1* and K6* plots

| | K1 | K6 | Mean |
|---|---|---|---|
| | (±4.33) | | (±3.06) |
| N1 | 79.7 | 85.9 | 82.8 |
| N2 | 101.3 | 103.7 | 102.5 |
| Mean (±3.06) | 90.5 | 94.8 | 92.7 |

* Applied 1965

General mean: 91.1

Mean D.M. %: 18.7

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66/C/14.1

# PARK GRASS MICROPLOTS

## (PGM 41-80)

## Plot 6, 1966, the second year

For details of treatments etc., and for previous year's results see 'Results' 65/C/33.

Cultivations, etc.: P, K, Na and Mg fertilisers applied: Dec 16, 1965. 'Nitro-Chalk' applied: Mar 7, 1966. Mecoprop treatment applied at 45 oz a.e. in 50 gals: First spraying: Apr 26, second spraying at same rate: July 28. Cut: May 4, June 1, July 8, Aug 1, Sept 8, Oct 7. 'Nitro-Chalk' applied after every cut except the last.

Standard error per plot.
Dry matter, total of all cuts: 4.09 or 5.5% (27 d.f.)

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66/C/14.2

SUMMARY OF RESULTS

DRY MATTER: TOTAL OF ALL CUTS

| | N0 | SN0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|---|
| | | | (±2.04) | | | (±0.91) |
| C3 | 68.3 | 34.1 | 84.1 | 109.3 | 105.1 | 80.2 |
| C6 | 46.1 | 26.9 | 67.4 | 92.2 | 107.3 | 68.0 |
| Mean (±1.45) | 57.2 | 30.5 | 75.7 | 100.8 | 106.2 | 74.1 |

Mean D.M. %: 3 cut plots: 19.4
6 cut plots: 20.1

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66/C/15.1

# SPRING WHEAT

(BH)

Sod seeding and pests - New Zealand 1966, the second year.

Design: 3 randomised blocks of 3 plots, split into 2.

Area of each sub-plot: 0.0226. Area harvested: 0.0152.

Treatments: All combinations of:-

Whole plots: 1. Seedbed preparation: Ploughed 1965 and 1966 (M).
Ploughed with ioxynil spray 1965, ploughed 1966 (MI).
Direct seeding after paraquat* spray (P).

Sub-plots: 2. Insecticide spray: None (O), chlordane at 8.4 lb plus diazinon at 4 lb before sowing (D).

* At 2 lb ion in 40 gals.

Basal applications: 340 lb (20:10:10) combine drilled. Weedkillers: Amino-triazole at 4 lb plus ammonium thiocyanate at 3.7 lb in 40 gals, mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Cultivations, etc.: Amino-triazole and ammonium thiocyanate applied: Oct 13, 1965. M plots ploughed, P plots trimmed with forage harvester and produce carted: Nov 16. Insecticide applied: Jan 27, 1966. P plots sprayed with paraquat: Mar 1. M plots rotary cultivated: Mar 14. Seed drilled at 180 lb: Mar 17. Mecoprop/2,4-D applied: May 17. Combine harvested: Sept 7. Variety: Kloka.

NOTES (1) Counts of soil fauna were made throughout the season.
(2) For the previous year's results see 'Results' 65/C/24.

Standard errors per plot. Grain:
Whole plot: 3.59 or 10.3% (4 d.f.)
Sub-plot: 3.42 or 9.9% (6 d.f.)

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66/C/15.2

SUMMARY OF RESULTS

GRAIN

| | O | D | Mean |
|---|---|---|---|
| | (1) and (2) | | (±2.07) |
| M | 41.8 | 45.0 | 43.4 |
| MI | 39.7 | 43.0 | 41.3 |
| P | 18.5 | 20.3 | 19.4 |
| Mean (±1.14) | 33.3 | 36.1 | 34.7 |

Mean D.M. %: 83.2

(1) (±2.50) For use in vertical and diagonal comparisons

(2) (±1.98) For use in horizontal and interaction comparisons

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66/C/16.1

# INTENSIVE WINTER BARLEY GROWING EXPERIMENT

(BJ)

## Hoosfield (Old Four Course) 1966, the second year

For details of treatments, etc. and for the previous year's results see 'Results' 65/C/25.

Because of the weather spring beans were sown instead of winter beans.

Area of each plot: 0.0386. Area harvested: 0.0254.

Cultivations, etc.: Sprayed with aminotriazole at 2 lb and ammonium thiocyanate at 1.85 lb in 40 gals: Oct 14, 1965. Ploughed: Oct 28.

Barley: Seed drilled at 140 lb: Nov 5, 1965. 'Nitro-Chalk' applied: Apr 13, 1966. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 40 gals): May 17. Combine harvested: Aug 16.

Spring beans: Seed drilled at 200 lb: Mar 4. 1966. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 14. Combine harvested: Sept 17. Variety: Pedigree Tick.

NOTES: (1) Yields were taken only for sequences 1, 2 and 4 (Barley).
(2) Estimates were made of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) in barley.

Standard errors per plot. Barley, grain:
Sequences 1 and 2: 3.80 or 14.2% (10 d.f.)
4: 1.18 or 4.1% (4 d.f.)

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66/C/16.2

SUMMARY OF RESULTS

Barley (1, 2 and 4)

| Crop in 1965 | NO | N1 | N2 | N3 | Mean | Mean N1 and N2 |
|---|---|---|---|---|---|---|
| | | (±2.19) | | | | (±1.55) |
| B (1) | | 21.5 | 26.4 | 30.2 | 26.0 | 23.9 |
| O (2) | | 19.0 | 26.6 | 36.6 | 27.4 | 22.8 |
| | | (±0.68) | | | | (±0.48) |
| Be (4) | 22.7 | 30.6 | 31.9 | - | 28.4 | 31.3 |

Mean of (1) and (2): 26.7

General mean: 27.3

General mean D.M. %: 83.7

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66/C/17.1

# LEGUMES AND BARLEY

(BP)

Effects of crop sequences and green manures - Stackyard 1966, the second year.

Design: 2 randomised blocks of 10 plots, split into 2 for N.

Area of each sub-plot: 0.0198. Area harvested: Barley - 0.0131, beans - 0.0124, oats - 0.0132, clover - 0.0047.

Treatments: All combinations of:-

Whole plots:

1. Crop sequences (C):

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1965 | B | B | B | B | B | B | B | B | B | B |
| Undersown | Cl | T | T | - | - | - | - | - | T | T |
| 1966 | H | B | O | B | O | B | O | Be | B | O |
| Undersown | - | T | T | T | T | - | - | - | - | - |
| 1967 | B | B | B | B | B | B | B | B | B | B |

Sub-plots:

2. Nitrogen: 0.4 (N1), 0.8 (N2), cwt N as 'Nitro-Chalk' in seedbed (none to beans and hay).

B = barley, H = hay, O = oats, Be = spring beans, Cl = red clover, T = trefoil.

Basal applications: 280 lb (0:20:20) in early spring to hay, placement drilled to beans, combine drilled to oats and barley. Insecticide to beans: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals).

Cultivations, etc.: Ploughed (except H plots): Jan 28, 1966. All plots except H plots rotary cultivated, beans drilled at 200 lb: Mar 14. Oats drilled at 160 lb and barley at 156 lb, 'Nitro-Chalk' applied to barley and oats: Mar 15. Trefoil sown at 30 lb: Mar 19. Basal PK applied to clover: Mar 21. Clover cut three times: June 3, July 14 and Sept 14. Beans sprayed: June 14. Barley combine harvested: Aug 19. Oats combine harvested: Sept 3.

NOTE: For the previous year's results see 'Results' 65/C/26.

Standard errors per plot. Grain:

Barley. Sub-plot: 4.97 or 20.6% (4 d.f.)

Oats. Sub-plot: 3.73 or 9.1% (4 d.f.)

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66/C/17.2

# SUMMARY OF RESULTS

## BARLEY

## GRAIN

| Undersown 1965 | Undersown 1966 - | Undersown 1966 T | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | | (±2.48)* | | |
| - | 24.8 | 25.8 | 21.0 | 29.6 | 25.3 |
| T | 23.3 | 22.4 | 17.1 | 28.5 | 22.8 |
| Undersown 1966 | | | | | |
| | | | (±2.48)* | | |
| - | | | 19.7 | 28.4 | 24.0 |
| T | | | 18.5 | 29.7 | 24.1 |
| Mean (±1.76) | | | 19.1 | 29.1 | 24.1 |

* For use in horizontal and interaction comparisons only.

Mean D.M. %: 83.0

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66/C/17.3

OATS

GRAIN

| Undersown 1965 | Undersown 1966 - | Undersown 1966 T | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | | (±1.87)* | | |
| - | 43.2 | 36.8 | 36.5 | 43.5 | 40.0 |
| T | 46.9 | 37.6 | 38.1 | 46.4 | 42.3 |
| Undersown 1966 | | | (±1.87)* | | |
| - | | | 42.1 | 48.0 | 45.1 |
| T | | | 32.5 | 41.9 | 37.2 |
| Mean (±1.32) | | | 37.3 | 45.0 | 41.1 |

* For use in horizontal and interaction comparisons only.

Mean D.M. %: 80.0

| | SPRING BEANS Grain | HAY: DRY MATTER 1st cut | 2nd cut | 3rd cut | Total of 3 cuts |
|---|---|---|---|---|---|
| Mean | 31.1 | 23.8 | 29.0 | 28.6 | 81.5 |
| Mean D.M. %: | 72.0 | 17.5 | 16.5 | 16.9 | 17.0 |

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66/C/18.1

# PREVIOUS CROPS & N FOR BARLEY

(BQ)

The effect of previous cropping and nitrogen on the yield of barley - Stackyard 1966, the second year - barley.

Design: 3 randomised blocks of 9 plots, split into 3 for N.

Area of each sub plot: 0.0096. Area harvested: 0.0064.

Treatments: All combinations of:-

Whole plots (applied 1965):-

1. Cropping: Spring wheat (W), Kale (K), Italian Ryegrass (G).
2. Nitrogen: None (R0), 1.0 (R2), 2.0 cwt (R4) N as 'Nitro-Chalk'.

Sub plots (applied to barley 1966):-

3. Nitrogen: None (N0), 0.5 (N1), 1.0 cwt (N2) as 'Nitro-Chalk'.

Basal applications: 2.5 cwt (0:20:20) combine drilled. Weed-killer: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Cultivations, etc.: Ploughed: Jan 28, 1966. Seed drilled at 145 lb: Mar 10. 'Nitro-Chalk' applied: Mar 11. Sprayed: May 17. Combine harvested: Aug 20. Variety: Maris Badger.

NOTE: For the previous year's results see 'Results' 65/C/27.

Standard errors per plot. Grain:

Whole plot: 3.04 or 11.0% (16 d.f.)
Sub plot: 3.07 or 11.1% (36 d.f.)

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66/C/18.2

## SUMMARY OF RESULTS

### GRAIN

| | R0 | R2 | R4 | Mean |
|---|---|---|---|---|
| | | (±1.75) | | (±1.01) |
| W | 22.2 | 26.3 | 31.8 | 26.8 |
| K | 29.8 | 31.9 | 33.9 | 31.8 |
| G | 21.3 | 23.9 | 27.6 | 24.3 |
| Mean (±1.01) | 24.4 | 27.4 | 31.1 | 27.6 |

| | N0 | N1 | N2 |
|---|---|---|---|
| | | (1) and (2) | |
| W | 16.1 | 27.9 | 36.3 |
| K | 21.6 | 33.6 | 40.3 |
| G | 11.8 | 25.9 | 35.1 |
| Mean (±0.59) | 16.5 | 29.1 | 37.2 |

| | | (1) and (2) | |
|---|---|---|---|
| R0 | 13.9 | 26.1 | 33.3 |
| R2 | 15.3 | 28.8 | 38.0 |
| R4 | 20.5 | 32.5 | 40.3 |

(1) (±1.31) For use in vertical and diagonal comparisons
(2) (±1.02) For use in horizontal and interaction comparisons

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66/c/18.3

GRAIN

| | R0 | | | R2 | | | R4 | | |
|---|---|---|---|---|---|---|---|---|---|
| | N0 | N1 | N2 | N0 | N1 | N2 | N0 | N1 | N2 |
| | | | | (1) and (2) | | | | | |
| W | 10.5 | 22.7 | 33.3 | 16.1 | 25.7 | 37.2 | 21.8 | 35.1 | 38.3 |
| K | 22.0 | 32.8 | 34.6 | 21.0 | 31.9 | 42.7 | 21.9 | 36.3 | 43.5 |
| G | 9.1 | 22.9 | 31.9 | 8.7 | 28.8 | 34.1 | 17.7 | 26.0 | 39.1 |

(1) (±2.27) For use in comparisons involving different combinations of Crop and R

(2) (±1.77) For use in comparisons involving the same combinations of Crop and R

Mean D.M. %: 85.6

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66/C/19.1

# PREVIOUS CROPS & N FOR BARLEY

## (BY)

The effect of previous cropping and nitrogen on the yield of barley - Fosters Corner 1966, the 1st year.

Crops in 1966: Spring wheat, kale and ryegrass.

Design: 3 randomised blocks of 9 plots.

Area of each plot: 0.0321. Area harvested: Spring wheat - 0.0214, kale - 0.0161, ryegrass - 0.0069.

Treatments applied in 1966: All combinations of:-

1. Cropping: Spring wheat (W), kale (K), Italian ryegrass (G).
2. Nitrogen: None (N0), 1.0 (N2), 2.0 cwt (N4) N as 'Nitro-Chalk'.

NOTE: Barley 1967 will test in addition:-

3. Nitrogen: None (N0), 0.5 (N1), 1.0 cwt (N2) N as 'Nitro-Chalk'.

Basal applications: 9 cwt compound (0:20:20). Weedkiller: To wheat: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Cultivations, etc.: Ploughed: Nov 16, 1965. Basal PK applied: Mar 9, 1966. 'Nitro-Chalk' applied: Mar 16.
Spring wheat: Seed drilled at 170 lb: Mar 16. Weedkiller applied: May 16. Combine harvested: Sept 3. Variety: Kloka.
Kale: Seed drilled at 1.5 lb: Apr 29, 1966. Harvested: Nov 8. Variety: Thousand Head.
Ryegrass: Seed drilled at 40 lb: Mar 18, 1966. Cut 3 times: June 30, Aug 18, Oct 12. Variety: S22 Italian.
Previous crops: Kale and potatoes 1964, barley 1965.

NOTE: Samples were taken from each crop at harvest for estimation of N percentage. Soil samples were taken on Mar 16 for estimation of mineralisable N and pH.

Standard errors per plot.
Spring wheat, Dry matter: 1.69 or 3.9% (4 d.f.)
Kale, Fresh weight: 2.590 or 10.8% (4 d.f.)
Ryegrass, Dry matter, 1st cut: 2.99 or 11.1% (4 d.f.)
2nd cut: 1.93 or 7.7% (4 d.f.)
3rd cut: 0.58 or 6.2% (4 d.f.)
Total of 3 cuts: 4.35 or 7.1% (4 d.f.)

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## SUMMARY OF RESULTS

| NO | N2 | N4 | Mean |
|---|---|---|---|
| | SPRING WHEAT | | |
| | GRAIN | | |
| | (±0.93) | | |
| 30.6 | 44.8 | 48.4 | 41.3 |
| | STRAW | | |
| 18.0 | 32.1 | 30.4 | 26.8 |

Mean D.M. %: Grain: 77.2
Straw: 72.7

| | | | |
|---|---|---|---|
| | KALE | | |
| | FRESH WEIGHT | | |
| | (±1.495) | | |
| 17.14 | 25.79 | 28.85 | 23.92 |

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66/C/19.3

RYEGRASS

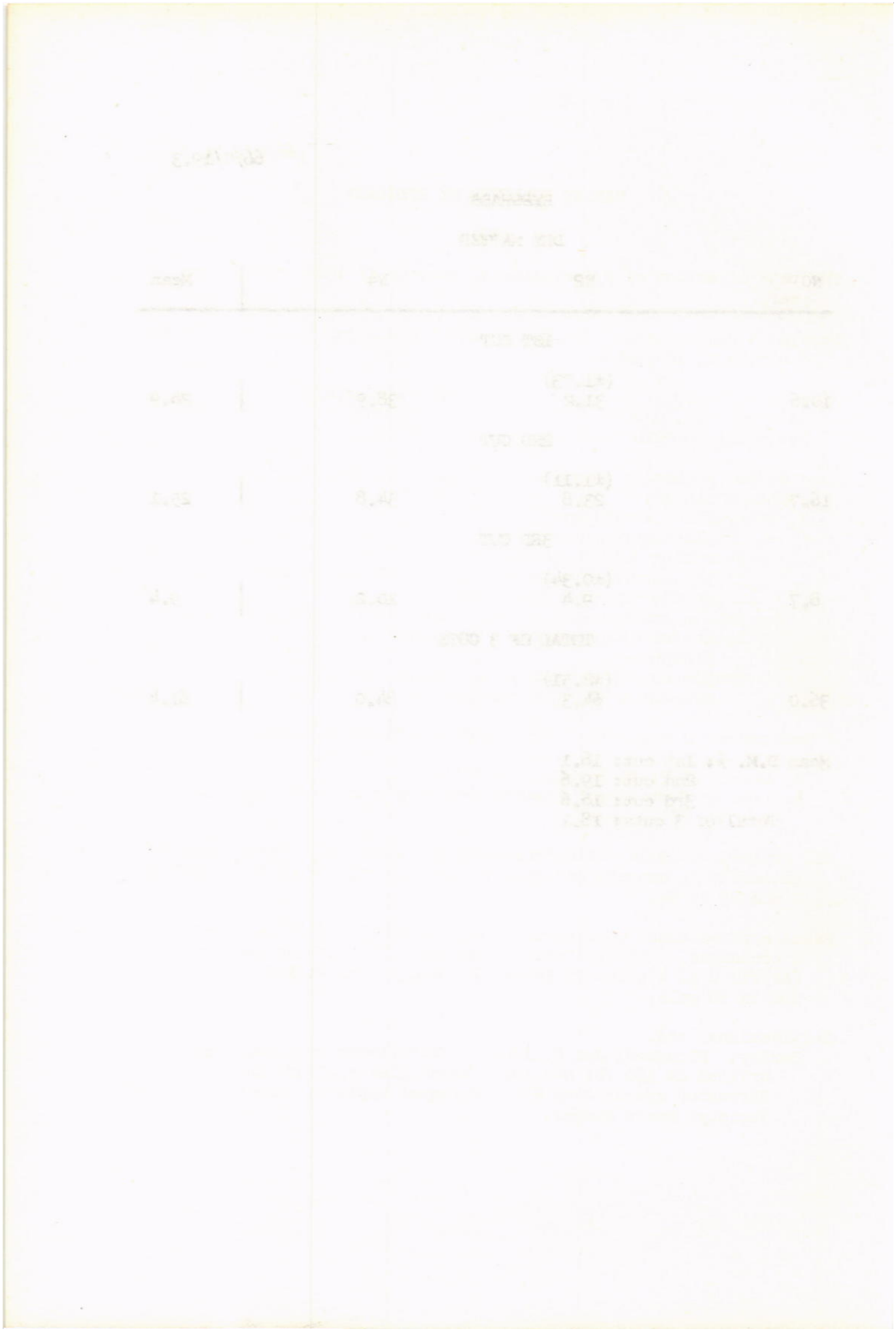
DRY MATTER

| NO | N2 | N4 | Mean |
|---|---|---|---|
| | 1ST CUT | | |
| 10.6 | (±1.73) 31.2 | 38.9 | 26.9 |
| | 2ND CUT | | |
| 16.7 | (±1.11) 23.8 | 34.8 | 25.1 |
| | 3RD CUT | | |
| 8.7 | (±0.34) 9.4 | 10.2 | 9.4 |
| | TOTAL OF 3 CUTS | | |
| 36.0 | (±2.51) 64.3 | 84.0 | 61.4 |

Mean D.M. %: 1st cut: 18.1
2nd cut: 19.6
3rd cut: 16.6
Total of 3 cuts: 18.1

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66/C/20.1

# BARLEY FOLLOWED BY RYEGRASS

## (EQ)

The rate of action of P fertilisers, Sawyers II 1966, the second year.

Design: 4 replicates of 7 x 2 x 2 plus 2 plots per block without P, 8 blocks of 16 plots.

| Area of each plot: | Area harvested: |
|---|---|
| Barley: 0.0018 | 0.0009 |
| Ryegrass: 0.0018 | 0.0007 |

Treatments, to barley only: No P (0) (2 plots per block) and all combinations of:-

1. Phosphatic fertilisers:

| | |
|---|---|
| Triple superphosphate | (S) |
| Potassium metaphosphate | (K) |
| Triple superphosphate plus potassium metaphosphate* | (SK) |
| Magnesium ammonium phosphate | (M) |
| Triple superphosphate plus magnesium ammonium phosphate* | (SM) |
| Potassium metaphosphate plus magnesium ammonium phosphate* | (KM) |
| Triple superphosphate plus potassium metaphosphate plus magnesium ammonium phosphate* | (SKM) |

* Each material supplying half the P (one third in treatment SKM).

2. Levels of P: 12 lb (L1), 24 lb (L2) P.
3. Type of fertiliser: Powder, less than 1 mm. (P), granular 1-4 mm. (G).

All applied to barley with 'Nitro-Chalk', muriate of potash and kieserite in amounts adjusted to give a total of 60 lb N, 100 lb K and 25 lb Mg.

Basal applications: To ryegrass: 60 lb N and 50 lb K (16:0:16) on 2 occasions. Weedkillers: To barley: Ioxynil and mecoprop (Actril C at 4 pints in 50 gals), paraquat to stubble at 1 lb ion in 50 gals.

Cultivations, etc.

Barley: Ploughed: Jan 8, 1966. Fertilisers applied, seed drilled at 160 lb: Mar 10. Weedkiller applied: May 19. Harvested green: June 24. Paraquat applied: June 29. Variety: Maris Badger.

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Ryegrass: Basal NK applied, plots rotary cultivated, seed drilled at 60 lb: July 1. Basal NK applied: Sept 2. Cut: Oct 19. Variety: S22.

NOTE: For previous year's results see 'Results' 65/C/28.

Standard errors per plot. Dry matter:
Barley: 2.65 or 6.7% (90 d.f.)
Ryegrass: 2.66 or 11.4% (90 d.f.)

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66/C/20.3

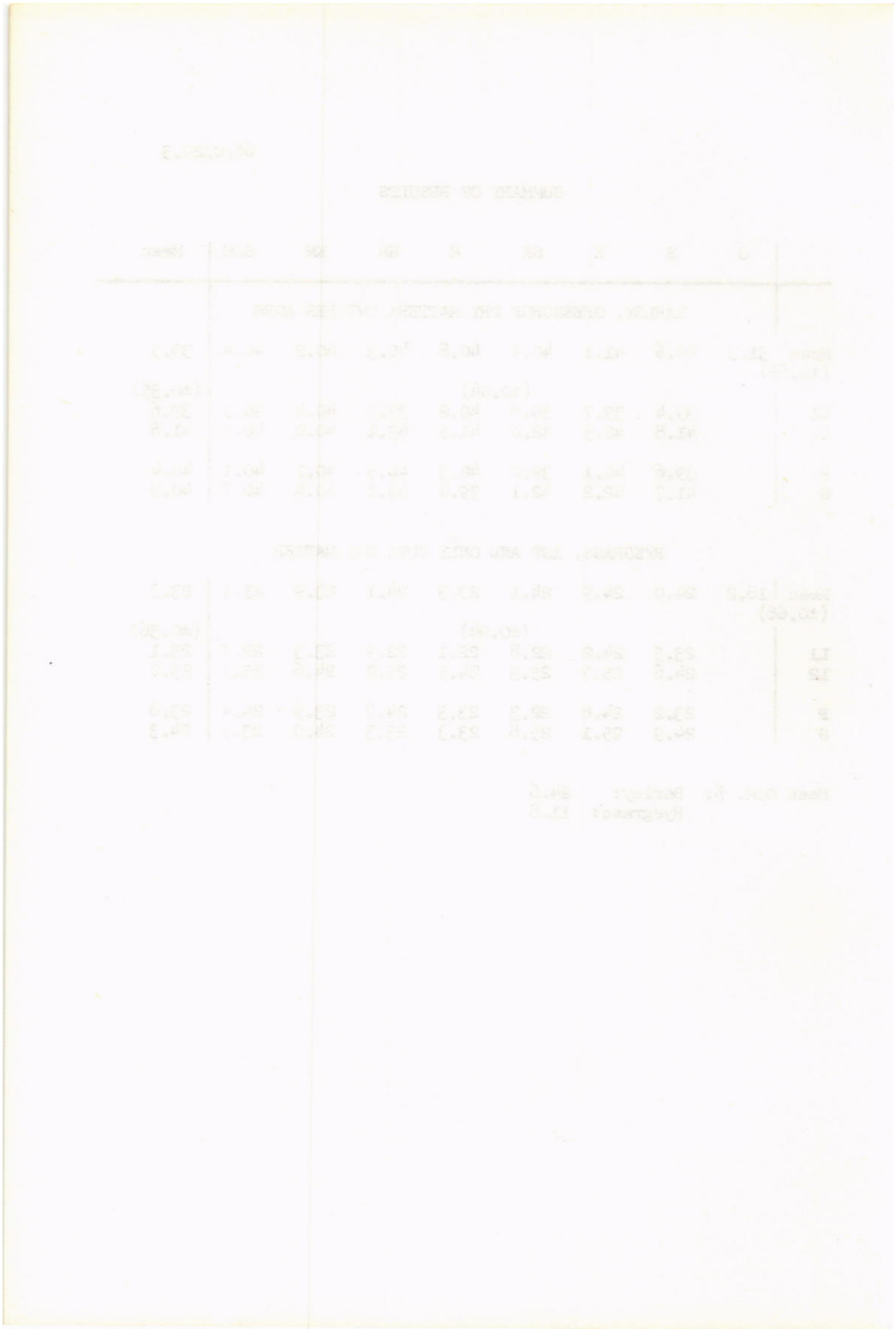
## SUMMARY OF RESULTS

| | O | S | K | SK | M | SM | KM | SKM | Mean |
|---|---|---|---|---|---|---|---|---|---|
| | | | | BARLEY, GREENCROP DRY MATTER: CWT PER ACRE | | | | | |
| Mean (±0.66) | 31.3 | 40.6 | 41.1 | 40.9 | 40.8 | 40.3 | 40.2 | 40.4 | 39.5 |
| | | | | (±0.94) | | | | | (±0.35) |
| L1 | | 39.4 | 39.7 | 39.9 | 40.2 | 37.5 | 40.4 | 40.3 | 39.6 |
| L2 | | 41.8 | 42.5 | 42.0 | 41.5 | 43.1 | 40.0 | 40.5 | 41.6 |
| P | | 39.6 | 40.1 | 39.8 | 42.3 | 40.5 | 40.1 | 40.1 | 40.4 |
| G | | 41.7 | 42.2 | 42.1 | 39.4 | 40.1 | 40.4 | 40.7 | 40.9 |
| | | | | RYEGRASS, 1ST AND ONLY CUT: DRY MATTER | | | | | |
| Mean (±0.66) | 18.2 | 24.0 | 24.9 | 24.1 | 23.3 | 24.1 | 23.9 | 23.9 | 23.3 |
| | | | | (±0.94) | | | | | (±0.36) |
| L1 | | 23.5 | 24.2 | 22.8 | 22.1 | 22.9 | 23.3 | 22.7 | 23.1 |
| L2 | | 24.6 | 25.7 | 25.3 | 24.5 | 25.2 | 24.6 | 25.1 | 25.0 |
| P | | 23.2 | 24.8 | 22.3 | 23.3 | 24.8 | 23.9 | 24.4 | 23.8 |
| G | | 24.9 | 25.1 | 25.8 | 23.3 | 23.3 | 24.0 | 23.5 | 24.3 |

Mean D.M. %: Barley: 24.6
Ryegrass: 11.8

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66/B/7.3

## SUMMARY OF RESULTS

| | P | R | T | Mean |
|---|---|---|---|---|
| **SPRING BEANS** | | | | |
| **GRAIN** | | | | |
| Mean (±2.76) | 32.4 | 28.1 | 30.8 | 30.4 |
| M (±4.78) | 34.8 | 29.8 | 29.6 | 31.4 (±2.76) |
| S (±3.38) | 31.1 | 27.2 | 31.4 | 29.9 (±1.95) |
| | A | B | C | |
| | 30.7 | 34.5 | 34.2 | |

General mean: 31.1

Mean D.M. %: 76.6

| | | | | |
|---|---|---|---|---|
| **WHEAT** | | | | |
| **GRAIN** | | | | |
| Mean (±1.21) | 36.9 | 33.9 | 32.3 | 34.4 |
| 1965 | | (±2.10) | | (±1.21) |
| M | 39.4 | 32.8 | 32.8 | 35.0 |
| X | 36.0 | 34.1 | 26.2 | 32.1 |
| Y | 35.2 | 34.8 | 37.9 | 36.0 |
| | | (1) and (2) | | (±0.76) |
| D | 38.1 | 32.4 | 31.5 | 34.0 |
| H | 35.7 | 35.4 | 33.1 | 34.7 |
| | A- | AH | BH | C |
| | 38.6 | 38.0 | 32.9 | 40.0 |

General mean: 35.0

Mean D.M. %: 83.7

(1) (±1.53) For use in horizontal and diagonal comparisons
(2) (±1.32) For use in vertical and interaction comparisons

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| | P | R | T | Mean |
|---|---|---|---|---|
| | | POTATOES | | |
| | | TOTAL TUBERS | | |
| Mean (±0.727) | 17.54 | 15.59 | 15.07 | 16.07 |
| | | (±1.260) | | (±0.727) |
| M | 15.52 | 13.39 | 10.23 | 13.05 |
| S | 18.02 | 15.30 | 17.98 | 17.10 |
| SY | 19.09 | 18.10 | 17.02 | 18.07 |
| | A | B | C | |
| | 15.80 | 17.71 | 18.10 | |

General mean: 16.35

| | | % WARE | | |
|---|---|---|---|---|
| Mean | 99.2 | 98.6 | 98.9 | 98.9 |
| M | 98.9 | 98.4 | 98.6 | 98.6 |
| S | 99.3 | 98.4 | 98.9 | 98.9 |
| SY | 99.3 | 99.0 | 99.2 | 99.2 |
| | A | B | C | |
| | 98.6 | 99.0 | 99.0 | |

General mean: 98.9

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66/C/21.1

## EARLY POTATOES FOLLOWED BY RADISHES

(ER)

The rate of action of P fertilisers, Delharding, 1966, the first year.

Design: 3 replicates of 7 x 2 x 2 plus 2 plots per block without P, in 6 blocks of 16 plots.

| Area of each plot: | Area harvested: |
|---|---|
| Potatoes: 0.0018 | 0.0009 |
| Radishes: 0.0006 | 0.0003 |

Treatments to potatoes only: No P (0) (2 plots per block) and all combinations of:-

1. Phosphatic fertilisers:

| | |
|---|---|
| Triple superphosphate | (S) |
| Potassium metaphosphate | (K) |
| Triple superphosphate plus potassium metaphosphate* | (SK) |
| Magnesium ammonium phosphate | (M) |
| Triple superphosphate plus magnesium ammonium phosphate* | (SM) |
| Potassium metaphosphate plus magnesium ammonium phosphate* | (KM) |
| Triple superphosphate plus potassium metaphosphate plus magnesium ammonium phosphate* | (SKM) |

* Each material supplying half the P (one third in treatment SKM).

2. Levels of P: 24 lb (L1), 48 lb (L2) P.
3. Type of fertiliser: Powder, less than 1 mm. (P), granular 1-4 mm. (G).

All applied to potatoes with 'Nitro-Chalk', muriate of potash and kieserite in amounts adjusted to give a total of 100 lb N, 200 lb K and 50 lb Mg.

Basal applications: Ground chalk at 15 cwt. To radishes: 60 lb N and 50 lb K as (16:0:16). Weedkiller:- To potatoes: 1 lb linuron plus 0.75 lb ion paraquat in 50 gals. Insecticide:- To radishes: DDT at 5 oz in 40 gals.

Cultivations, etc.: Ploughed: Oct 25, 1965. Limed: Mar 2, 1966.

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Potatoes: Fertilisers applied: Mar 28, 1966. Rotary cultivated, potatoes planted: Mar 30. Weedkiller applied: Apr 28. Harvested: July 11. Variety: Arran Pilot.
Radishes: Rotary cultivated, basal NK applied, seed drilled at 25 lb: July 14, 1966. Insecticide applied: July 25. Harvested: Sept 6. Variety: French Breakfast. Previous crops: Fallow 1964 and 1965.

NOTE: The soil was sampled in spring 1966 for P determination.

Standard error per plot.
Potatoes, Total tubers: 1.000 or 11.2% (59 d.f.)
Radishes, Fresh weight: 2.004 or 12.0% (60 d.f.)

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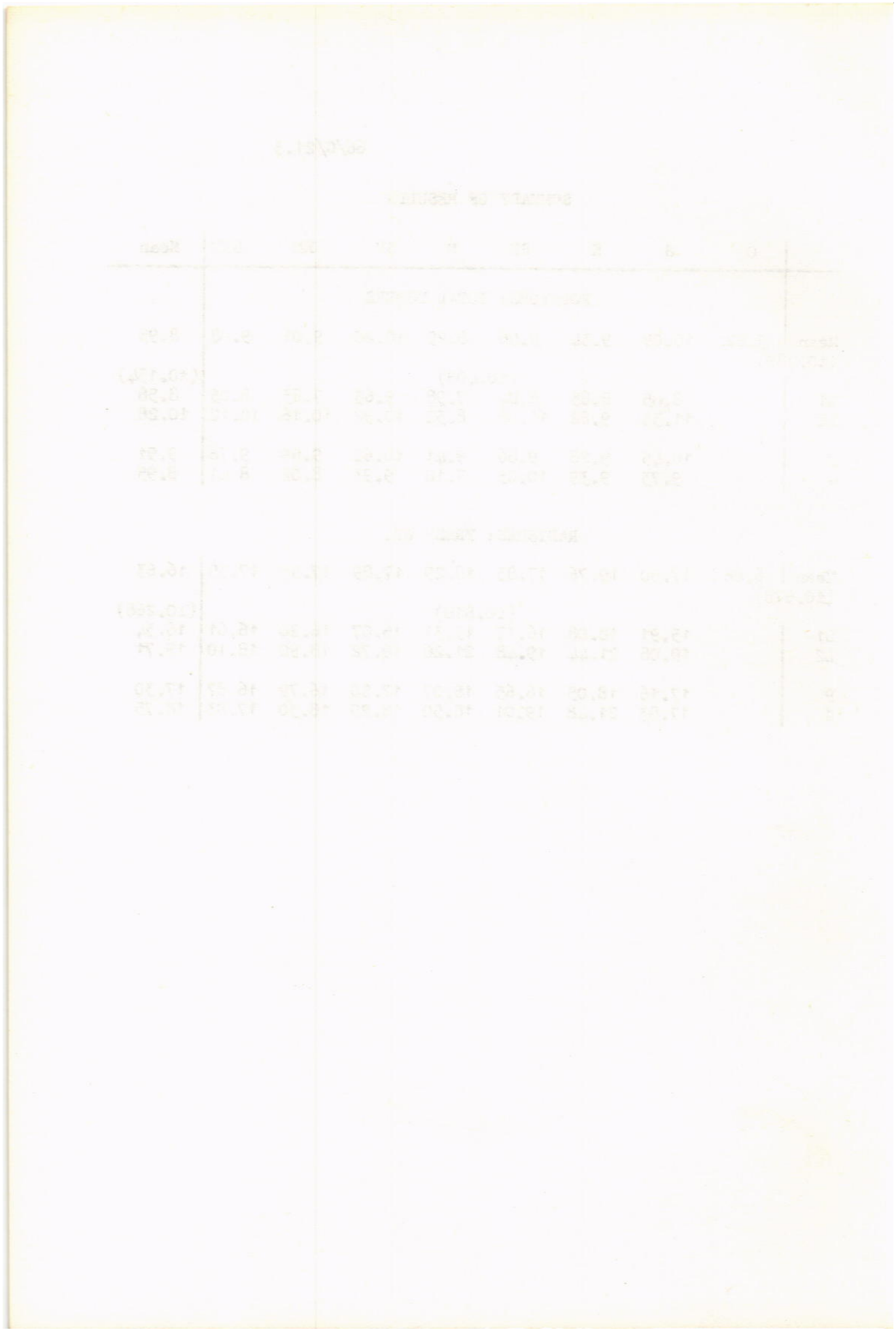
66/C/21.3

## SUMMARY OF RESULTS

| | 0 | S | K | SK | M | SM | KM | SKM | Mean |
|---|---|---|---|---|---|---|---|---|---|
| | | | | POTATOES: TOTAL TUBERS | | | | | |
| Mean (±0.289) | 5.62 | 10.09 | 9.34 | 9.96 | 8.25 | 10.28 | 9.01 | 9.08 | 8.95 |
| | | | | (±0.408) | | | | | (±0.134) |
| L1 | | 8.85 | 8.85 | 8.84 | 7.98 | 9.63 | 7.83 | 8.05 | 8.58 |
| L2 | | 11.33 | 9.82 | 11.08 | 8.52 | 10.92 | 10.18 | 10.12 | 10.28 |
| P | | 10.45 | 9.28 | 9.86 | 9.41 | 10.62 | 9.99 | 9.76 | 9.91 |
| G | | 9.73 | 9.39 | 10.05 | 7.10 | 9.93 | 8.02 | 8.41 | 8.95 |
| | | | | RADISHES: FRESH WT. | | | | | |
| Mean (±0.578) | 6.86 | 17.50 | 19.76 | 17.83 | 18.29 | 17.89 | 17.55 | 17.35 | 16.63 |
| | | | | (±0.818) | | | | | (±0.268) |
| L1 | | 15.91 | 18.08 | 16.17 | 15.31 | 16.07 | 16.20 | 16.61 | 16.34 |
| L2 | | 19.08 | 21.44 | 19.48 | 21.26 | 19.72 | 18.90 | 18.10 | 19.71 |
| P | | 17.16 | 18.05 | 16.65 | 18.07 | 17.50 | 16.79 | 16.87 | 17.30 |
| G | | 17.83 | 21.48 | 19.01 | 18.50 | 18.29 | 18.30 | 17.83 | 18.75 |

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66/C/22.1

# SPRING WHEAT

(BR, BS)

Effects of formalin and nitrogen, Pastures (few pathogens), and Little Knott I (many pathogens) 1966, the second year.

Design: Pastures: 2 blocks of 8 plots split into 2.
Little Knott I: 4 blocks of 8 plots.

Area of each plot: 0.0032. Area harvested: Pastures - 0.0012, Little Knott I - 0.0013.

Treatments:

Pastures: All combinations of:-

Whole plots:
1. Formalin (applied 1965): None (0), sprayed with a 38% solution of formaldehyde at 266 gals in 3700 gals (R).
2. N: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt as 'Nitro-Chalk' applied in 1965 and 1966.

Sub plots:
3. Formalin (applied 1966): None (0), sprayed with a 38% solution of formaldehyde at 266 gals in 3700 gals (F).

Little Knott I: All combinations of:-

1. Formalin (applied 1965): None (0), sprayed with a 38% solution of formaldehyde at 266 gals in 3700 gals (R).
2. Formalin as 1965, applied 1966: (0) and (F).
3. N (applied 1965 and 1966): None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt as 'Nitro-Chalk'.

Basal applications: 280 lb (0:20:20). Weedkillers:
Pastures: Ioxynil/mecoprop (Actril P at 4 pints in 40 gals).
Little Knott I: Dichlorprop/MCPA (Cornox RK Extra at 6 pints in 40 gals).

Cultivations, etc.:

Pastures: Ploughed: Nov 4, 1965. Formalin applied: Feb 18, 1966. PK basal compound and 'Nitro-Chalk' (first half dressing) applied, rotary cultivated, seed sown at 180 lb: Mar 14. 'Nitro-Chalk' applied (2nd half dressing): May 6. Weedkiller applied: May 12. Harvested: Aug 26. Variety: Kloka.

Little Knott I: Ploughed: Oct 25, 1965. Formalin applied: Feb 18, 1966. PK basal compound, 'Nitro-Chalk' (first half dressing) applied, rotary cultivated, seed drilled at 180 lb: Mar 14. 'Nitro-Chalk' applied (2nd half dressing): May 6. Weedkiller applied: May 13. Harvested: Aug 26. Variety: Kloka.

NOTES: (1) Samples of grain and straw were taken at harvest for N percentage determinations.
(2) For previous year's results see 'Results' 65/C/29.

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Standard errors per plot. Dry matter:
Pastures (R): Whole plot: 2.31 or 6.3% (7 d.f.)
Sub plot: 3.44 or 9.4% (8 d.f.)
Little Knott I (R): 3.71 or 13.6% (14 d.f.)

## SUMMARY OF RESULTS

### PASTURES

### GRAIN

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| Mean (±1.15) | 32.7 | 39.3 | 39.1 | 34.7 | 36.5 |
| | | (±1.63) | | | (±0.82) |
| O | 29.5 | 39.5 | 39.3 | 36.7 | 36.3 |
| R | 35.8 | 39.1 | 38.9 | 32.8 | 36.6 |
| | | (1) and (2) | | | (±0.86) |
| O | 28.4 | 39.2 | 39.2 | 36.0 | 35.7 |
| F | 36.9 | 39.5 | 39.0 | 33.4 | 37.2 |

| | O | R |
|---|---|---|
| | (3) and (4) | |
| O | 35.7 | 35.7 |
| F | 36.8 | 37.6 |

Mean D.M. %: 80.2

(1) (±1.67) (3) (±1.18) For use in horizontal and diagonal comparisons
(2) (±1.72) (4) (±1.22) For use in vertical and interaction comparisons

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66/C/22.3

PASTURES

STRAW

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| Mean | 42.9 | 61.1 | 61.5 | 61.1 | 56.6 |
| O | 41.0 | 59.4 | 61.3 | 63.1 | 56.2 |
| R | 44.8 | 62.7 | 61.7 | 59.1 | 57.1 |
| O | 33.9 | 55.1 | 57.4 | 56.8 | 50.8 |
| F | 51.9 | 67.0 | 65.6 | 65.4 | 62.5 |

| | O | R |
|---|---|---|
| O | 50.8 | 50.8 |
| F | 61.6 | 63.4 |

Mean D.M. %: 63.8

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66/C/22.4

LITTLE KNOTT I

GRAIN

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| Mean (±1.31) | 22.0 | 26.8 | 30.1 | 30.0 | 27.3 |
| | | (±1.86) | | | (±0.93) |
| O | 23.8 | 27.6 | 32.7 | 30.2 | 28.6 |
| R | 20.3 | 26.1 | 27.5 | 29.9 | 25.9 |
| O | 16.2 | 24.0 | 29.2 | 27.0 | 24.1 |
| F | 27.9 | 29.7 | 31.1 | 33.1 | 30.4 |

| | O | R |
|---|---|---|
| | (±1.31) | |
| O | 26.5 | 21.6 |
| F | 30.6 | 30.2 |

Mean D.M. %: 81.3

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66/C/22.5

LITTLE KNOTT I

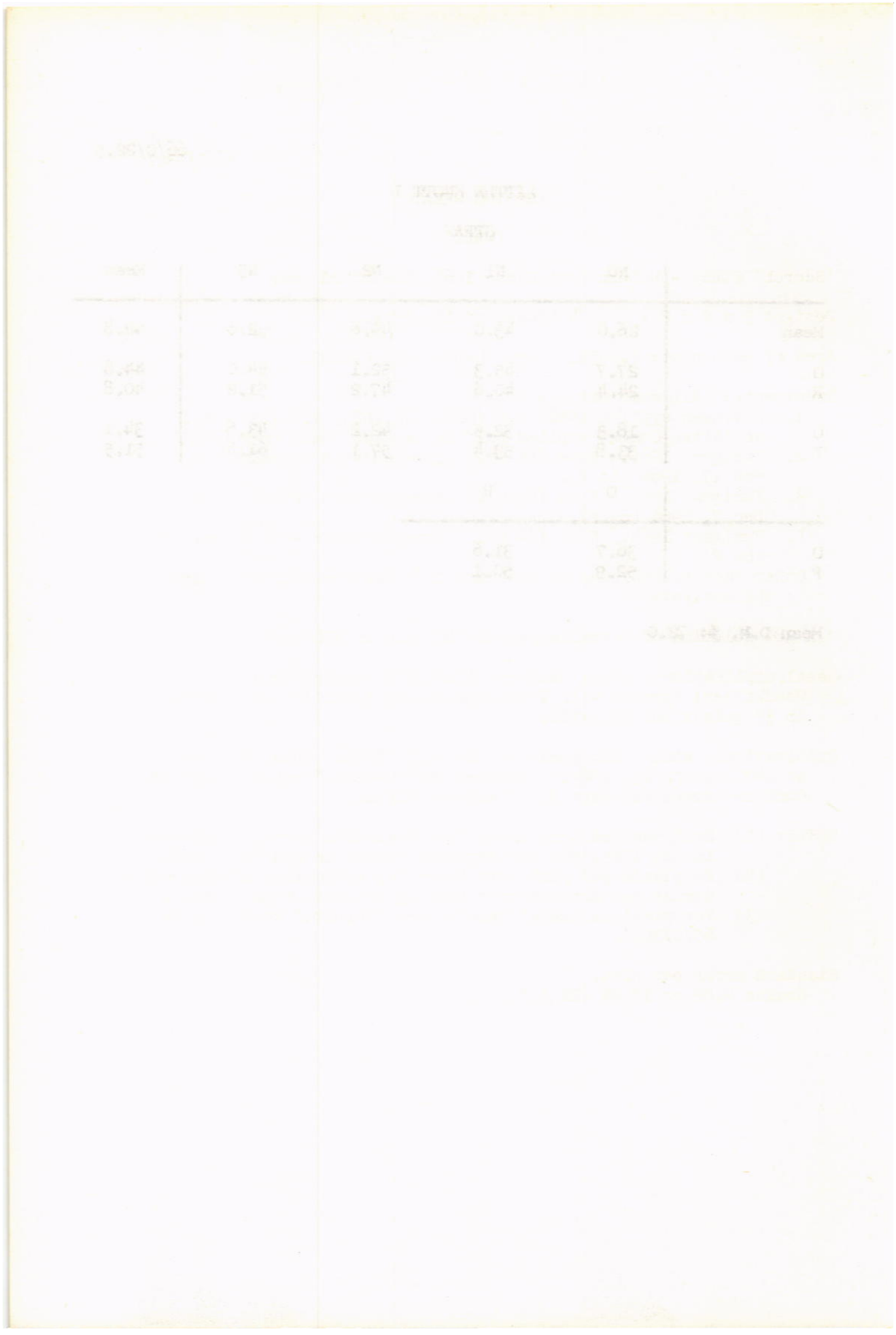
STRAW

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| Mean | 26.0 | 43.0 | 49.6 | 52.6 | 42.8 |
| O | 27.7 | 45.3 | 52.1 | 54.0 | 44.8 |
| R | 24.4 | 40.6 | 47.2 | 51.2 | 40.8 |
| O | 18.3 | 32.5 | 42.2 | 43.6 | 34.1 |
| F | 33.8 | 53.4 | 57.1 | 61.6 | 51.5 |

| | O | R |
|---|---|---|
| O | 36.7 | 31.6 |
| F | 52.9 | 50.1 |

Mean D.M. %: 72.0

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66/C/23.1

SPRING WHEAT

(WBL)

'Scorch' Study - Woburn Butt Close 1966, the third year.

Design: 3 x 2 x 2 x 2 in 4 blocks of 12 plots.

Area of each plot: 0.0032. Area harvested: 0.0023.

Treatments: All combinations of:-

1. Nitrogen applied 1966: 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk' applied half in seedbed, half on May 27.
2. Fumigant 1966: None (66 0). Sprayed with formalin* on Feb 17, 1966 (66 F).
3. Fumigant 1965: None (65 0). Sprayed with formalin* on Dec 7, 1964 (65 F).
4. Fumigant 1964: None (64 0). Sprayed twice with formalin* (64 F).

Other factors included in 1964 and 1965 have been omitted from the analysis.

* A 38% solution of formaldehyde at 266 gals in 3700 gals.

Basal applications, etc.: 2.5 cwt (0:20:20) combine drilled.
Weedkiller: Sprayed with Ioxynil/mecoprop (Actril C at 5 pints in 35 gals): May 13, 1966.

Cultivations, etc.: Ploughed: Nov 15 - 23, 1965. Seed drilled at 160 lb: Apr 13, 1966. Seedbed 'Nitro-Chalk' applied: Apr 25. Combine harvested: Sept 7. Variety: Kloka.

NOTES: (1) Soil samples were taken for Heterodera avenae populations in Oct 1965, and for nematode counts in mid Sept 1966.
(2) 20 plants per plot were taken for estimation of Heterodera avenae per gram of root and top weights in May 1966.
(3) For previous years' results see 'Results' 64/Da/3 and 65/C/30.

Standard error per plot.
Grain: 4.03 or 17.4% (22 d.f.)

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66/C/23.2

SUMMARY OF RESULTS

GRAIN

| | N1 | N2 | N3 | Mean |
|---|---|---|---|---|
| | | (±1.43) | | (±0.82) |
| 66 O | 16.3 | 23.0 | 25.5 | 21.6 |
| 66 F | 18.9 | 24.5 | 30.5 | 24.6 |
| 65 O | 18.2 | 22.4 | 26.0 | 22.2 |
| 65 F | 17.1 | 25.1 | 30.1 | 24.1 |
| 64 O | 18.3 | 22.7 | 28.3 | 23.1 |
| 64 F | 16.9 | 24.8 | 27.8 | 23.2 |
| Mean (±1.01) | 17.6 | 23.8 | 28.0 | 23.1 |

Mean D.M. %: 81.9

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66/C/24.1

# COMPARISON OF FUMIGANTS

(WBO)

Nitrogen and fumigants - Woburn Butt Close, spring wheat 1966, the second year.

Design: 4 randomised blocks of 16 plots split into two for effects of fumigants.

Area of each sub plot: 0.0010.

Treatments: All combinations of:-

Whole plots:

1. Nitrogen: 0.6 (N1), 1.8 (N3) cwt N as 'Nitro-Chalk' half on Apr 26, half on May 27.
2. Fumigants etc.:
   - None. (O)
   - None, plots rotary cultivated. (OR)
   - Methyl bromide applied under gas tight sheets at 436 lb. (MB)
   - Dichloropropane/dichloropropane at 800 lb injected at 12 inch spacing. (DD)
   - Chloropicrin at 400 lb injected at 12 inch spacing. (Chp)
   - Dazomet at 400 lb rotary cultivated in. (Daz)
   - Formalin as drench at 200 gals formaldehyde in 40% solution. (For)
   - Calomel dust, 4% mercurous chloride at 5 lb Hg rotary cultivated in. (Mer)

Sub plots:

3. Fumigants etc.: In 1965 only (R).
   In 1965, repeated 1966 (C).

Basal applications, etc.: 2 cwt (0:20:20) combine drilled. Weedkiller: 4 lb amino-triazole plus 3.7 lb ammonium thiocyanate in 40 gals, and ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.: Sprayed weedkiller amino-triazole: Oct 9, 1965. Ploughed: Nov 15-23. Fumigants applied (Chp) and (DD) plots: Feb 3, 1966, (For) and (Daz) plots: Feb 7. (R) plots rotary cultivated and fumigants applied to (Mer) plots: Mar 22, (MB) plots: Mar 31. Seed combine drilled at 165 lb: Apr 13. 'Nitro-Chalk' applied: Apr 26, May 27. Sprayed weedkiller Actril: May 13. Harvested: Sept 5. Variety: Kloka.

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NOTES: (1) Soil samples were taken to estimate initial population of cereal cyst-nematode (Heterodera avenae), plant samples for weighing of tops and roots and estimation of nematode invasion of roots: May 31. Soil samples were taken at the end of the season to estimate the nematode population.
(2) For previous results see 'Results' 65/C/31.

Standard errors per plot. Grain:
Whole plot: 6.33 or 25.2% (45 d.f.)
Sub plot: 4.33 or 17.3% (48 d.f.)

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66/C/24.3

## SUMMARY OF RESULTS

### GRAIN

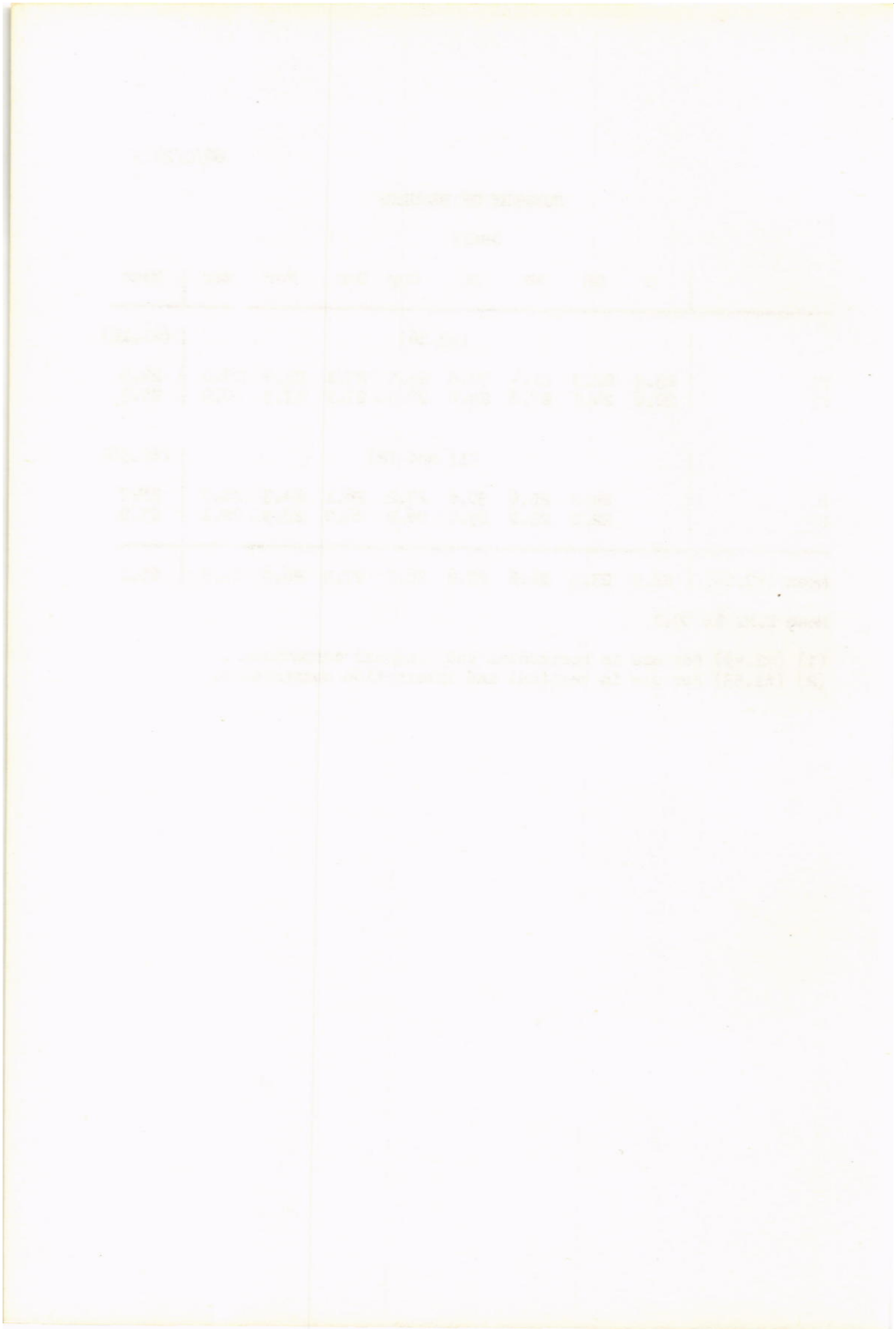
| | O | OR | MB | DD | Chp | Daz | For | Mer | Mean |
|---|---|---|---|---|---|---|---|---|---|
| | | | | (±3.16) | | | | | (±1.12) |
| N1 | 23.2 | 22.3 | 21.4 | 30.8 | 25.5 | 27.1 | 25.9 | 23.0 | 24.9 |
| N3 | 22.6 | 24.1 | 27.8 | 24.8 | 27.9 | 27.1 | 27.3 | 20.9 | 25.3 |
| | | | | (1) and (2) | | | | | (±0.58) |
| R | | 24.2 | 25.6 | 30.6 | 27.2 | 26.1 | 24.3 | 21.7 | 25.7 |
| C | | 22.2 | 23.6 | 25.0 | 26.2 | 28.0 | 28.9 | 22.1 | 25.2 |
| Mean (±2.24) | 22.9 | 23.2 | 24.6 | 27.8 | 26.7 | 27.1 | 26.6 | 21.9 | 25.1 |

Mean D.M. %: 80.1

(1) (±2.49) For use in horizontal and diagonal comparisons.
(2) (±1.53) For use in vertical and interaction comparisons.

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# GRASS

Effect of K on protein synthesis - Woburn Stackyard Series C 1966, 2nd year.

Design: 4 randomised blocks of 10 plots, with N on blocks for 3rd and 4th cuts.

Area of each plot: 0.0014. Area harvested: 0.0008.

Treatments: All combinations of:-
Blocks (to 3rd and 4th cuts only):
1. N in addition to basal: None, 100 lb N as ammonium nitrate on June 21, repeated Aug 2 (i.e. for 3rd and 4th cuts).

Plots:
2. Species: Cocksfoot S37 (C), Meadow Fescue S215 (M), sown 1965.
3. Levels of K: None (K0), 60 (K1), 120 (K2), 180 (K3), 240 lb K (K4) as sulphate of potash applied after the second cut.

Basal application: 100 lb N as ammonium nitrate in spring and after the first, second and third cuts.

Cultivations etc.: N applied: Mar 9, May 10, June 21, Aug 2, 1966. K applied: June 23. Cut four times: May 10, June 21, Aug 2, Sept 27.

NOTES: (1) After each cut samples were analysed for total N, protein N and K. After the last cut, samples were taken to assess the residual effects.
(2) For the previous year's results see 'Results' 65/C/32.

Standard errors per plot. Dry matter:

| | |
|---|---|
| 1st cut: | 1.21 or 5.2% (27 d.f.) |
| 2nd cut: | 1.77 or 8.8% (27 d.f.) |
| Total of 1st and 2nd cuts: | 1.74 or 4.0% (27 d.f.) |
| 3rd cut: | 1.53 or 7.6% (18 d.f.) |
| 4th cut: | 1.77 or 6.6% (18 d.f.) |
| Total of 3rd and 4th cuts: | 3.01 or 6.4% (18 d.f.) |

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66/C/25.2

## SUMMARY OF RESULTS

### DRY MATTER

| | K0 | K1 | K2 | K3 | K4 | Mean |
|---|---|---|---|---|---|---|
| **1ST CUT** | | | | | | |
| | | | (±0.61) | | | (±0.27) |
| C | 14.3 | 16.2 | 18.0 | 18.5 | 20.1 | 17.4 |
| M | 28.1 | 28.8 | 30.0 | 29.7 | 30.8 | 29.5 |
| Mean (±0.43) | 21.2 | 22.5 | 24.0 | 24.1 | 25.4 | 23.5 |
| **2ND CUT** | | | | | | |
| | | | (±0.88) | | | (±0.40) |
| C | 19.1 | 21.4 | 20.4 | 20.2 | 21.5 | 20.5 |
| M | 20.1 | 20.4 | 19.5 | 18.1 | 19.1 | 19.5 |
| Mean (±0.62) | 19.6 | 20.9 | 19.9 | 19.1 | 20.3 | 20.0 |
| **TOTAL OF 1ST AND 2ND CUTS** | | | | | | |
| | | | (±0.87) | | | (±0.39) |
| C | 33.4 | 37.6 | 38.4 | 38.6 | 41.6 | 37.9 |
| M | 48.2 | 49.3 | 49.6 | 47.8 | 49.9 | 48.9 |
| Mean (±0.61) | 40.8 | 43.5 | 44.0 | 43.2 | 45.7 | 43.4 |

Mean D.M. %: 1st cut: 19.2
2nd cut: 22.8
1st and 2nd cuts: 21.0

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66/C/25.3

DRY MATTER

| | K0 | K1 | K2 | K3 | K4 | Mean |
|---|---|---|---|---|---|---|
| **3RD CUT** | | | | | | |
| | | | (±0.77)* | | | |
| N1 | 16.4 | 18.8 | 20.9 | 20.0 | 21.5 | 19.5 |
| N2 | 16.9 | 20.7 | 21.1 | 21.9 | 23.3 | 20.8 |
| | | | (±0.77) | | | (±0.34) |
| C | 15.3 | 19.2 | 21.0 | 21.8 | 22.9 | 20.1 |
| M | 18.0 | 20.4 | 21.0 | 20.2 | 21.9 | 20.3 |
| Mean (±0.54) | 16.7 | 19.8 | 21.0 | 21.0 | 22.4 | 20.2 |
| **4TH CUT** | | | | | | |
| | | | (±0.89)* | | | |
| N1 | 22.5 | 25.4 | 27.9 | 27.9 | 28.9 | 26.5 |
| N2 | 20.9 | 26.4 | 27.3 | 29.9 | 29.8 | 26.9 |
| | | | (±0.89) | | | (±0.40) |
| C | 19.9 | 24.9 | 27.2 | 28.8 | 29.8 | 26.1 |
| M | 23.5 | 26.8 | 28.0 | 29.1 | 28.9 | 27.3 |
| Mean (±0.63) | 21.7 | 25.9 | 27.6 | 28.9 | 29.4 | 26.7 |

Mean D.M. %: 3rd cut: 23.3
4th cut: 25.0

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66/C/25.4

DRY MATTER

| | K0 | K1 | K2 | K3 | K4 | Mean |
|---|---|---|---|---|---|---|
| | | | TOTAL OF 3RD AND 4TH CUTS | | | |
| | | | (±1.51)* | | | |
| N1 | 38.9 | 44.2 | 48.8 | 47.9 | 50.5 | 46.1 |
| N2 | 37.8 | 47.2 | 48.4 | 51.8 | 53.1 | 47.7 |
| | | | (±1.51) | | | (±0.67) |
| C | 35.3 | 44.2 | 48.2 | 50.5 | 52.8 | 46.2 |
| M | 41.4 | 47.2 | 49.1 | 49.3 | 50.8 | 47.6 |
| Mean (±1.07) | 38.3 | 45.7 | 48.6 | 49.9 | 51.8 | 46.9 |

Mean D.M. %: 24.1

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66/c/26.1

# LUCERNE

(BZ)

Virus control - Long Hoos, 1966.

Design: 4 x 4 Latin square.

Area of each plot: 0.0661. Area harvested: 0.0046.

Treatments: All combinations of:-

1. Cropping: Lucerne (L), lucerne and cocksfoot in alternate rows (M).
2. Insecticide spray: None (0), sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 80 gals) one week after each cut (S).

The M plots received 0.6 cwt N as 'Nitro-Chalk' in the seedbed, and 0.5 cwt N, 0.5 cwt K20 as (16:0:16) as top-dressing after each cut except the last. The L plots received 0.5 cwt K20 as muriate of potash as top-dressing after each cut except the last.

Basal applications: 0.6 cwt P205, 1.2 cwt K20 as (0:14:28) in seedbed.
Weedkiller: Dinoseb at 2.1 lb in 40 gals.

Cultivations, etc.: Ploughed: Oct 28, 1965. Rotary cultivated: Mar 30, 1966. Basal PK compound applied: Apr 28. 'Nitro-Chalk' applied to M plots: Apr 29. Rotary cultivated: Apr 30. Seed drilled - at 20 lb to L plots and 10 lb lucerne and 4 lb cocksfoot to M plots: May 2. Weedkiller applied: June 16. Cut to clear weeds (no yields): July 14. Cut: Oct 25. Variety: Du Puits. Previous crops: Oats 1964, spring wheat 1965.

NOTE: Aphid counts were made and the incidences of lucerne mosaic virus and of bean leaf roll virus were estimated.

Standard error per plot.
Dry matter: 1.89 or 7.9% (6 d.f.)

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66/C/26.2

## SUMMARY OF RESULTS

### DRY MATTER (cut on Oct 25)

| | O | S | Mean |
|---|---|---|---|
| | (±0.94) | | (±0.67) |
| L | 21.7 | 23.4 | 22.5 |
| M | 25.2 | 25.3 | 25.2 |
| Mean (±0.67) | 23.4 | 24.3 | 23.9 |

Mean D.M. %: 19.9

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66/C/27.1

## ESTABLISHED GRASS

## (BX)

Anhydrous ammonia for grass, West Barnfield I 1966, the first year.

Design: 4 randomised blocks of 16 plots.

Area of each plot: 0.0080. Area harvested: 0.0052.

Treatments: All combinations of:-

1. Forms of nitrogen: Anhydrous ammonia injected 2 - 3 inches deep (I). 'Nitro-Chalk' broadcast in spring (B). 'Nitro-Chalk' dressing divided equally between 3 cuts (BD).
2. Levels of nitrogen: 1.0 (N1), 2.0 (N2), 3.0 (N3), 4.0 (N4) cwt N.

together with no nitrogen - without (N0), with (N0 I) the injector running idle through the turf (two plots of each per block).

Basal application: 560 lb (0:14:28).

Cultivations, etc.:- Anhydrous ammonia injected: Mar 2, 1966. 'Nitro-Chalk' to (B) plots and first dressing to (BD) plots and basal PK applied: Mar 8. Cut 3 times: May 16, July 4, Oct 5. 'Nitro-Chalk' applied after first 2 cuts.

Standard errors per plot. Dry matter:
1st cut: 2.69 or 10.7% (44 d.f.)
2nd cut: 1.89 or 7.4% (44 d.f.)
3rd cut: 1.95 or 23.2% (44 d.f.)
Total of 3 cuts: 4.03 or 6.8% (44 d.f.)

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66/C/27.2

## SUMMARY OF RESULTS

### DRY MATTER

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| | | | 1ST CUT | | |
| | | (±1.35) | | | (±0.67) |
| I | 17.0 | 24.3 | 23.2 | 25.0 | 22.4 |
| B | 35.5 | 36.9 | 38.4 | 36.4 | 36.8 |
| BD | 22.5 | 32.1 | 35.5 | 35.9 | 31.5 |
| Mean (±0.78) | 25.0 | 31.1 | 32.4 | 32.4 | 30.2 |

| NO | NO I |
|---|---|
| (±0.95) | |
| 9.6 | 9.9 |

General mean: 25.1

Mean D.M. %: 18.8

| | | | 2ND CUT | | |
|---|---|---|---|---|---|
| | | (±0.94) | | | (±0.47) |
| I | 16.5 | 19.8 | 21.0 | 22.2 | 19.9 |
| B | 21.0 | 33.4 | 36.1 | 34.9 | 31.4 |
| BD | 29.9 | 39.3 | 38.2 | 37.6 | 36.2 |
| Mean (±0.54) | 22.5 | 30.8 | 31.8 | 31.6 | 29.2 |

| NO | NO I |
|---|---|
| (±0.67) | |
| 14.5 | 15.0 |

General mean: 25.6

Mean D.M. %: 26.5

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66/C/27.3

DRY MATTER

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| | | 3RD CUT | | | |
| | | (±0.98) | | | (±0.49) |
| I | 2.3 | 1.5 | 1.8 | 1.8 | 1.8 |
| B | 1.6 | 4.0 | 7.1 | 15.2 | 7.0 |
| BD | 10.4 | 24.1 | 26.7 | 27.4 | 22.2 |
| Mean (±0.56) | 4.8 | 9.8 | 11.9 | 14.8 | 10.3 |

| NO | NO I |
|---|---|
| (±0.69) | |
| 3.3 | 2.1 |

General mean: 8.4

Mean D.M. %: 23.5

TOTAL OF 3 CUTS

| | | | | | |
|---|---|---|---|---|---|
| | | (±2.01) | | | (±1.01) |
| I | 35.8 | 45.6 | 46.0 | 49.0 | 44.1 |
| B | 58.1 | 74.4 | 81.7 | 86.6 | 75.2 |
| BD | 62.9 | 95.4 | 100.4 | 100.8 | 89.9 |
| Mean (±1.16) | 52.3 | 71.8 | 76.0 | 78.8 | 69.7 |

| NO | NO I |
|---|---|
| (±1.42) | |
| 27.4 | 27.1 |

General mean: 59.1

Mean D.M. %: 22.9

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66/C/28.1

# SPRING BEANS

(CA/Be)

Rates and forms of N for beans followed by wheat - Great Knott II 1966, the first year.

Design: 3 randomised blocks of 12 plots.

Area of each plot: 0.0193. Area harvested: 0.0121.

Treatments: None (3 plots per block) and all combinations of:-

1. Forms of nitrogen: Ammonium nitrate (A), nitrate of soda (N), sulphate of ammonia (S).
2. Rates of N: None (N0), 1 (N1), 2 (N2), 3 (N3) cwt N, broadcast.

Basal applications: 360 lb (0:14:28) placement drilled. Insecticide: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals).

Cultivations, etc.: Ploughed: Nov 16, 1965. Seed drilled at 200 lb: Mar 8, 1966. Nitrogen applied: Mar 14. Insecticide applied: June 14. Combine harvested: Sept 23. Variety: Pedigree Tick. Previous crops: Winter wheat and barley 1964, barley 1965.

NOTE: Plant samples were taken for nodulation counts and grain samples for 1000 grain weight and % N.

Standard error per plot.
Grain: 3.00 or 7.3% (21 d.f.)

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66/c/28.2

## SUMMARY OF RESULTS

### GRAIN

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| | | (±1.73) | | | (±1.00) |
| A | | 40.2 | 42.4 | 42.6 | 41.7 |
| N | | 41.3 | 42.6 | 42.3 | 42.1 |
| S | | 39.3 | 39.5 | 43.9 | 40.9 |
| Mean (±1.00) | 39.8 | 40.3 | 41.5 | 42.9 | 41.1* |

* General mean

Mean D.M. %: 75.8

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66/C/29.1

# DD AND DAZOMET - SPRING WHEAT

## (CC and WCD)

Effects of soil fumigants on yield and soil-borne pathogens, Rothamsted (R) Hoosfield and Woburn (W) Lansome, the first year.

Design: 3 randomised blocks of 3 plots, split into 8.

Area of each sub plot: 0.0048. Area harvested: Hoosfield (R) - 0.0048, Lansome (W) - 0.0036.

Treatments: All combinations of:-

Whole plots: 1. Nitrogen: 0.5 (N1), 1.0 (N2), 1.5 cwt N (N3) applied as 'Nitro-Chalk'.

Sub plots: 2. Fumigants: None (0), none, rotary cultivated (R). DD: 200 (D2), 400 (D4), 800 lb (D8) injected to 6 inch depth. Dazomet: 100 (Z1), 200 (Z2), 400 lb (Z4) rotary cultivated in.

Basal applications: 280 lb (0:20:20) combine drilled. Weedkiller (Lansome (W) only): Ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.:

Hoosfield (R): Ploughed: Oct 28, 1965. DD applied: Nov 8. Dazomet applied, Z and R plots rotary cultivated: Mar 7, 1966. Seed drilled at 180 lb: Apr 26. 'Nitro-Chalk' applied: Apr 27. Combine harvested: Sept 9. Variety: Kloka. Previous crops: Barley 1964, winter barley 1965.

Lansome (W): Ploughed: Sept 30, 1965. DD applied: Nov 22. Dazomet applied, Z and R plots rotary cultivated: Feb 14, 1966. Seed drilled at 170 lb: Apr 13. 'Nitro-Chalk' applied: Apr 25. Weedkiller applied: May 13. Combine harvested: Sept 7. Variety: Kloka. Previous crops: Winter wheat 1964, barley 1965.

NOTE: Soil samples were taken for microflora investigations and plant samples for root-rotting diseases. Samples were also taken for nematode counts and plant weights, also soil samples for final nematode population.

Standard errors per plot. Grain.

| | | |
|---|---|---|
| Hoosfield (R). | Whole plot: | 1.19 or 3.9% (4 d.f.) |
| | Sub plot: | 1.73 or 5.6% (42 d.f) |
| Lansome (W). | Whole plot: | 2.99 or 7.4% (4 d.f.) |
| | Sub plot: | 2.92 or 7.2% (38 d.f) |

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66/C/29.2

## SUMMARY OF RESULTS

### GRAIN

| | 0 | R | D2 | D4 | D8 | Z1 | Z2 | Z4 | Mean |
|---|---|---|---|---|---|---|---|---|---|
| **Hoosfield (R)** | | | | | | | | | |
| | | | | (1) and (2) | | | | | (±0.69) |
| N1 | 25.8 | 26.3 | 27.1 | 24.6 | 25.3 | 29.0 | 30.4 | 32.6 | 27.6 |
| N2 | 28.6 | 33.7 | 31.0 | 30.4 | 27.1 | 31.2 | 34.6 | 32.3 | 31.1 |
| N3 | 32.7 | 35.1 | 34.4 | 32.5 | 33.7 | 33.2 | 33.2 | 35.9 | 33.9 |
| Mean (±0.58) | 29.0 | 31.7 | 30.8 | 29.1 | 28.7 | 31.1 | 32.7 | 33.6 | 30.9 |

Mean D.M. %: 83.1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Lansome (W)** | | | | | | | | | |
| | | | | (1) and (2) | | | | | (±1.73) |
| N1 | 30.5 | 31.5 | 35.1 | 34.2 | 40.1 | 32.0 | 39.7 | 41.9 | 35.6 |
| N2 | 39.2 | 40.8 | 41.3 | 41.6 | 43.4 | 43.4 | 46.2 | 45.3 | 42.7 |
| N3 | 40.1 | 38.5 | 43.7 | 42.4 | 41.3 | 43.7 | 46.4 | 45.8 | 42.8 |
| Mean (±0.97) | 36.6 | 36.9 | 40.1 | 39.4 | 41.6 | 39.7 | 44.1 | 44.3 | 40.3 |

Mean D.M. %: 82.8

| | Hoosfield (R) | Lansome (W) | |
|---|---|---|---|
| (1) | (±1.16) | (±2.34) | For use in vertical and diagonal comparisons |
| (2) | (±1.00) | (±1.69) | For use in horizontal and interaction comparisons |

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66/C/30.1

# INTENSIVE WHEAT

(SC)

Saxmundham, Oldershaw's and Garner's plots 1966, the first year.

Design: 4 randomised blocks of 5 plots, with plots (excluding leys and beans) split into 3 for N.

Area of each sub-plot: 0.0182. Area harvested: 0.0096.

Treatments: All combinations of:-

1. Crop sequences:

| | 1966 | 1967 | 1968 | 1969 | 1970 |
|---|---|---|---|---|---|
| 1 | W | W | W | W | W |
| 2 | L | W | W | W | W |
| 3 | L | Be | W | W | W |
| 4 | W | L | Be | W | W |
| 5 | W | W | L | Be | W |

Where W = Winter wheat, L = Ley - one year Meadow Fescue (cut twice* for hay), Be = Spring beans.

2. Nitrogen to wheat: 0.6 (N1), 1.2 (N2), 1.8 cwt (N3) N per acre as 'Nitro-Chalk'.

* once only in 1966.

Basal application: 500 lb compound (0:20:20). Other applications: To Meadow Fescue: 1.0 cwt N and 1.0 $K_2O$ as muriate of potash in seedbed, 0.5 cwt N top-dressed. N as 'Nitro-Chalk'. Weedkiller to wheat: Dicamba, MCP, mecoprop and TBA (Cambilene at 4 pints in 20 gals).

Cultivations, etc.: Ploughed: Sept 29, 1965. Basal compound fertiliser applied: Sept 30.
Wheat: Seed drilled: Oct 8, 1965. 'Nitro-Chalk' applied: Mar 24, 1966. Weedkiller applied: Apr 29. Combine harvested: Aug 17. Variety: Cappelle.
Grass ley: 'Nitro-Chalk' applied: Mar 24, 1966. Muriate of potash applied, seed drilled at 16 lb: Mar 28. 'Nitro-Chalk' applied: July 13. Cut for hay: Aug 12. Variety: Canadian Meadow Fescue.

NOTES: (1) Yields were taken for winter wheat only.
(2) Estimates of the incidence of take-all (Ophiobolus graminis) and eyespot (Cercosporella herpotrichoides) were made in April and June.

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Standard error per sub-plot:
Winter wheat, grain: 2.59 or 9.8% (22 d.f.)

SUMMARY OF RESULTS

WINTER WHEAT

GRAIN

| N1 | N2 | N3 | Mean |
|---|---|---|---|
| 19.4 | 28.8 | 31.5 | 26.6 |

Mean D.M. %: 83.8

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66/C/31.1

# ORGANIC MANURING EXPERIMENT

(WOM)

The cumulative effects of organic matter on light land - Woburn Stackyard B 1966.

The intention is to allow 6 years for the accumulation of organic matter derived from different sources including applied organic manures, green manures and long leys. Later there will be a period of test-cropping with nutrient tests on micro plots.

Design: 4 randomised blocks of eight plots. Plots (except those in leys) being split into four for nitrogen.

Area of each sub-plot: 0.0156. Area harvested: Barley - 0.0104, leys - 0.0129.

Treatments: Whole plots:

(A) 6 year leys (cut): Grass-clover (N to seedbed only) (LC).
All grass (N for each cut) (Ln).

(B) A sequence of arable crops with the following annual treatments:
Dung at 3 tons o.m. (approx 20 tons dung) (Dg).
Chaffed straw at 3 tons organic matter (o.m.) (St).
Peat at 3 tons o.m. (Pt).
Green manures as practicable (Gm).
No organic, fertilisers equivalent to dung (Fd).
No organic, fertilisers equivalent to straw (Fs).

Quarter plots (not to Lc, Ln):
Nitrogen at 4 levels. The levels each year are equally spaced, but vary from crop to crop. On each sub-plot the levels are applied in rotation in the first four years.

Notes on manuring:

1. Green manures (treatment Gm) receive appropriate fertilisers.
2. Organics are applied in autumn.
3. Treatments Fs, Gm, Pt, Lc, Ln receive the same net amounts of K and Mg as in the straw (allowance being made retrospectively for differential removals). These treatments will receive P at 0.5 cwt $P_2O_5$ each year (allowance being made for the P in the peat) and treatment St receives P at 0.5 cwt $P_2O_5$ (allowance being made for the P in the straw). Treatment Fd receives PK Na Mg equivalent to the total amounts in the dung.

All P as superphosphate, all K as muriate of potash, all Mg as sulphate of magnesia, and all N as 'Nitro-Chalk'.

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1964. The experiment began with the sowing of the leys and green manures (Hybrid Italian ryegrass sown at 30 lb) in spring 1964.

Basal manuring:
Lc and Ln: 0.2 cwt N, 0.5 cwt $P_2O_5$, 0.5 cwt $K_2O$ in seedbed.
Ln only: 0.5 cwt N in spring and after each cut except the last.
Gm: 0.5 cwt N, 0.5 cwt $P_2O_5$, 0.5 cwt $K_2O$ in seedbed.
The remaining plots were left fallow without manures. Because of perennial weeds (grasses and Equisetum) all plots were rotary cultivated in July.

Cultivations, etc.:
Subsoiled: Sept 23, 1963. Ploughed twice: Oct 3, 1963, and Jan 3, 1964. Fertilisers applied: May 1. Seeds sown: May 7. Previous crops: Winter wheat 1962, spring wheat 1963.

1965. Treatment Lc and Ln were resown (basal manuring as for 1964, but with 0.5 cwt N in seedbed for both).
Treatment Gm was resown with species and manuring as in 1964.

Cultivations, etc.:
All plots: Rotary cultivated: July 2, 1964 and again July 18. Deep-tine cultivated: Aug 17. Rotary cultivated: Oct 13. Ploughed: Nov 16. Rotary cultivated: Apr 21, 1965.
Lc and Ln plots: Seeds sown, seedbed fertilisers applied: Apr 23. Sprayed with dinoseb at 1.25 lb in 40 gals: June 30. Cut twice: Aug 12, and Oct 20. 'Nitro-Chalk' applied: Aug 20.
Gm plots: Seed sown, fertiliser applied: Apr 23.

Seeds mixtures 1964 and 1965:

| | | |
|---|---|---|
| Lc | Timothy S48 | 6 lb |
| | Meadow Fescue S215 | 10 lb |
| | Smooth-stalked meadow grass | 4 lb |
| | Kersey white clover | 3 lb |
| | Wild white clover | 1 lb |
| | | 24 lb |

Sown at 24 lb

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| | | |
|---|---|---|
| Ln | Timothy S48 | 8 lb |
| | Meadow Fescue S215 | 12 lb |
| | Smooth-stalked meadow grass | 6 lb |
| | | 26 lb |
| | Sown at 26 lb | |

1966. In autumn 1965 winter wheat (Cappelle at 180 lb) was sown on all treatments except Lc and Ln, but it was severely damaged by wheat bulb fly (Leptohylemia coarctata) and was replaced by spring barley (Maris Badger at 155 lb). Treatment Gm was undersown with trefoil (inoculated, but with no additional manures) in both wheat and barley.

Fertilisers applied autumn 1965 (cwt)

| Treatments | P2O5 | K2O | MgO |
|---|---|---|---|
| Dg | - | - | - |
| St | 0.4 | - | - |
| Pt | 0.5 | 1.0 | 0.15 |
| Gm | - | - | 0.15 |
| Fd | 1.0 | 3.0 | 0.40 |
| Fs | 0.5 | 1.0 | 0.15 |
| Lc | - | - | 0.15 |
| Ln | - | - | 0.15 |

Nitrogen to spring barley:
N0, N1, N2 N3-0.0, 0.2, 0.4, 0.6 cwt N as 'Nitro-Chalk'.

Cultivations, etc.:
Lc and Ln plots: Mg applied: Nov 4, 1965. 'Nitro-Chalk' applied to Ln plots: Mar 17, 1966, June 15, Aug 22. Lc plots cut: June 8, July 13, Aug 12, Oct 25. Ln plots cut: June 8, Aug 12, Oct 25.
Remainder: Peat, straw, dung, P, K, Mg, applied: Sept 2 - 7, 1965. Ploughed: Sept 7. Wheat drilled, trefoil undersown on Gm plots: Nov 2. 'Nitro-Chalk' applied: Apr 28, 1966. Sprayed with paraquat at 0.75 lb ion in 34 gals: Apr 28. Barley drilled, trefoil undersown on Gm plots: Apr 30. Combine harvested: Sept 9.

Standard errors per plot. Barley, grain 1966.
Whole plot: 1.41 or 7.2% (15 d.f.)
Sub plot: 1.82 or 9.3% (54 d.f.)

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66/C/31.4

SUMMARY OF RESULTS

1965

GRASS: DRY MATTER

| | Lc | Ln |
|---|---|---|
| 1ST CUT | | |
| | 17.1 | 12.3 |
| 2ND CUT | | |
| | 14.6 | 14.3 |
| TOTAL OF 2 CUTS | | |
| | 31.7 | 26.6 |
| Mean D.M. %: 1st cut: | 18.4 | 23.0 |
| 2nd cut: | 18.6 | 24.8 |
| Total of 2 cuts: | 18.5 | 23.9 |

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66/C/31.5

1966

GRASS: DRY MATTER

| | Lc | Ln |
|---|---|---|
| 1ST CUT | 27.0 | 43.8 |
| 2ND CUT | 9.4 | * |
| 3RD CUT | 5.2 | 20.2 |
| 4TH CUT | 12.2 | 12.9 |
| TOTAL OF ALL CUTS | 53.7 | 76.9 |

* No cut taken.

| Mean D.M. %: | Lc | Ln |
|---|---|---|
| 1st cut: | 26.7 | 31.8 |
| 2nd cut (Lc only): | 18.0 | - |
| 3rd cut: | 17.4 | 26.5 |
| 4th cut: | 19.1 | 24.4 |

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66/C/31.6

BARLEY

GRAIN

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| | | (1) and (2) | | | (±0.71) |
| Dg | 11.5 | 18.5 | 26.3 | 35.5 | 22.9 |
| St | 4.1 | 13.9 | 22.4 | 27.9 | 17.1 |
| Pt | 7.1 | 15.4 | 24.7 | 31.3 | 19.6 |
| Gm | 8.8 | 13.2 | 17.7 | 27.8 | 16.9 |
| Fd | 7.3 | 17.5 | 26.7 | 31.3 | 20.7 |
| Fs | 7.0 | 16.7 | 23.7 | 32.9 | 20.1 |
| Mean (±0.37) | 7.6 | 15.9 | 23.6 | 31.1 | 19.5 |

Mean D.M. %: 81.8

(1) (±1.06) For use in vertical and diagonal comparisons
(2) (±0.91) For use in horizontal and interaction comparisons

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66/C/32.1

# IRRIGATION AND EELWORM

(WCE)

Butt Close Woburn, the first year - potatoes.

Effects on yield and cyst-nematode of soil fumigant and irrigation and of sequences of resistant and susceptible varieties of potatoes.

Site: 3 replicates on Series I (Potatoes 1950, 1951, 1954, 1961), 3 on Series IV (last potato crop 1950) of the Irrigation Experiment 1951 - 1965.

Design: (each Series) 3 blocks of 4 whole plots, sequences of varieties on strips of 2 half plots, fumigants on quarter plots.

Area of each quarter-plot: 0.0114. Area harvested: 0.0068.

Treatments: All combinations of:-

1. Whole plots: Irrigation: None (O), full irrigation (C).
2. Strips of 4 plots: Sequences of varieties: (D = Pentland Dell, susceptible P = Maris Piper, resistant).

| 1966 | 1967 | 1968 | 1969 |
|---|---|---|---|
| D | D | D | D |
| D | P | D | P |
| P | P | P | P |
| P | D | P | D |

3. Quarter-plots: Fumigants: None (FO), DD injected at 400 lb at 6 inches in rows 12 inches apart (F).

Irrigation (C) 1966: (inches water)

| | Series I | | Series IV |
|---|---|---|---|
| May 27 | 0.5 | May 26 | 0.5 |
| June 1 | 0.5 | June 2 | 0.5 |
| June 7 | 0.5 | June 6 | 0.5 |
| June 10 | 0.5 | June 9 | 0.5 |
| July 4 | 0.5 | July 5 | 0.5 |
| July 18 | 0.5 | July 14 | 0.5 |
| Total | 3.0 | | 3.0 |

Basal applications, etc.: 7 cwt (17:11:22). Weedkiller: Sprayed with 1 lb linuron plus 0.75 lb ion paraquat in 37 gals. Fungicide: Mancozeb at 1.2 lb in 33 gals on 3 occasions.

Cultivations, etc.: Series I ploughed: Sept 27, 1965. Series IV

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ploughed: Jan 8, 1966. Fumigant injected: Feb 14. Basal NPK applied: Mar 23. Rotary cultivated, potatoes planted: Apr 29. Weedkiller applied: May 16. Earthed up: June 9. Fungicide applied: June 29, July 15, Aug 5. Sprayed with diquat (Reglone at 4 pints in 33 gals): Sept 12. Haulm mechanically destroyed: Sept 16. Lifted: Sept 20. Previous crops: Series I - sugar beet 1964, spring wheat 1965, Series IV - lucerne 1964, Italian ryegrass 1965.

NOTES: (1) Soil samples were taken from each plot after fumigation and before cropping. Cyst and egg counts were made, and soil used for root invasion tests.
(2) Plots were scored for magnesium deficiency and general appearance at the beginning of July.

Standard errors per plot. Total tubers:

Series I

| | | |
|---|---|---|
| Strip: | 1.537 | or 12.7% (8 d.f.) |
| 1/2 plot: | 1.577 | or 13.0% (8 d.f.) |
| 1/4 plot: | 1.823 | or 15.0% (20 d.f.) |

Series IV

| | | |
|---|---|---|
| Strip: | 1.332 | or 7.9% (8 d.f.) |
| 1/2 plot: | 1.900 | or 11.3% (8 d.f.) |
| 1/4 plot: | 1.546 | or 9.2% (20 d.f.) |

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66/C/32.3

SUMMARY OF RESULTS

SERIES I

TOTAL TUBERS

| | D | P | O | F | Mean |
|---|---|---|---|---|---|
| | (1) and (2) | | (±0.526)* | | |
| O | 11.47 | 14.79 | 10.97 | 15.29 | 13.13 |
| C | 9.57 | 12.69 | 8.82 | 13.44 | 11.13 |
| | | | (3) and (4) | | (±0.628) |
| | | D | 7.77 | 13.27 | 10.52 |
| | | P | 12.02 | 15.45 | 13.74 |
| | | Mean (±0.372) | 9.90 | 14.36 | 12.13 |

* For use in horizontal and interaction comparisons only

(1) (±0.644) For use in interaction comparisons only
(2) (±0.887) For use in horizontal comparisons only
(3) (±0.730) For use in vertical and diagonal comparisons only
(4) (±0.526) For use in horizontal and interaction comparisons only

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66/C/32.4

SERIES I

% WARE

| | D | P | O | F | Mean |
|---|---|---|---|---|---|
| O | 86.4 | 92.6 | 84.6 | 94.4 | 89.5 |
| C | 78.9 | 89.4 | 76.3 | 91.9 | 84.1 |
| | | D | 73.2 | 92.1 | 82.7 |
| | | P | 87.7 | 94.3 | 91.0 |
| | | Mean | 80.5 | 93.2 | 86.8 |

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66/C/32.5

SERIES IV

TOTAL TUBERS

| | D | P | O | F | Mean |
|---|---|---|---|---|---|
| | (1) and (2) | | (±0.446)* | | |
| O | 16.66 | 19.70 | 17.79 | 18.58 | 18.18 |
| C | 13.73 | 17.28 | 14.00 | 17.01 | 15.50 |
| | | | (3) and (4) | | (±0.544) |
| | | D | 14.02 | 16.37 | 15.19 |
| | | P | 17.77 | 19.21 | 18.49 |
| | | Mean (±0.316) | 15.89 | 17.79 | 16.84 |

* For use in horizontal and interaction comparisons only

(1) (±0.776) For use in interaction comparisons only
(2) (±0.769) For use in horizontal comparisons only
(3) (±0.629) For use in vertical and diagonal comparisons only
(4) (±0.446) For use in horizontal and interaction comparisons only

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66/C/32.6

SERIES IV

% WARE

| | D | P | O | F | Mean |
|---|---|---|---|---|---|
| O | 94.8 | 94.8 | 94.7 | 94.9 | 94.8 |
| C | 92.0 | 92.1 | 89.6 | 94.5 | 92.1 |
| | | D | 92.5 | 94.4 | 93.4 |
| | | P | 91.9 | 95.1 | 93.5 |
| | | Mean | 92.2 | 94.7 | 93.5 |

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66/C/33.1

## SPRING WHEAT

(WBW)

Direct seeding, Woburn White Horse Field 1966, the first year.

Design: 4 randomised blocks of 4 plots split into 2.

Area of each sub plot: 0.0149. Area harvested: 0.0071.

Treatments: All combinations of:-

Whole plots:
1. Seedbed preparation: Direct seeding after aminotriazole 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals in autumn, paraquat at 2 lb ion in 40 gals in spring (S). Normal cultivations (P).
2. Seed dressing: No insecticide, fungicide only (IO). Combined insecticide and fungicide (I).

Sub plots:
3. Insecticide spray: None (DO), diazinon at 3.8 lb a.i. plus chlordane at 7.6 lb a.i. plus DDT at 6.1 lb a.i. plus zinophos at 3.4 lb a.i. in 40 gals (DD).

Basal applications: 3 cwt (20:10:10) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Aminotriazole and ammonium thiocyanate applied: Oct 15, 1965. 'P' plots ploughed: Jan 27 - 28, 1966. Insecticide and paraquat applied: Mar 14. Seed combine drilled at 180 lb: Mar 18. Mecoprop/2,4-D applied: May 12. Combine harvested: Sept 7. Variety: Kloka. Previous crop: Grass for at least five years.

Standard errors per plot. Grain:
Whole plot: 2.89 or 6.4% (9 d.f.)
Sub plot: 2.87 or 6.3% (12 d.f.)

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66/C/33.2

## SUMMARY OF RESULTS

### GRAIN

| | O | I | DO | DD | Mean |
|---|---|---|---|---|---|
| | (±1.44) | | (1) and (2) | | (±1.02) |
| S | 43.5 | 46.6 | 44.0 | 46.1 | 45.1 |
| P | 46.6 | 44.9 | 44.7 | 46.8 | 45.8 |
| | | | (1) and (2) | | |
| | | O | 43.5 | 46.6 | 45.0 |
| | | I | 45.3 | 46.3 | 45.8 |
| | | Mean (±0.72) | 44.4 | 46.4 | 45.4 |

Mean D.M. %: 83.0

(1) (±1.25) For use in vertical and diagonal comparisons

(2) (±1.01) For use in horizontal and interaction comparisons

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66/Da/1.1

# WINTER WHEAT

## (RW101 and WW101)

Row spacing, seed rates and N - Rothamsted (R) Great Knott I and Woburn (W) Workhouse 1966.

Design: 2 replicates of a 4 x 2 x 4 factorial arranged in 4 blocks of 8 whole plots, with N on half plots. (4 - 3 + 2 - 1 on whole plots Great Knott I (R), 3 - 2 + 1 - 0 on Workhouse (W)).

Area of each sub plot: 0.0069. Area harvested: 0.0069.

Treatments: All combinations of:-

Whole plots.

1. Row spacing etc.:
   - Seed broadcast, autumn fertiliser** broadcast (B)
   - Seed drilled, 4 inch rows, autumn fertiliser broadcast (C)
   - Seed drilled, 7 inch rows, autumn fertiliser broadcast (W)
   - Seed drilled, 7 inch rows, with autumn fertiliser combine drilled (W*)
2. Seed rates: 140 lb (L), 240 lb (H).

Sub plots:

3. Nitrogen in spring:
   Great Knott I (R): 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' broadcast.
   Workhouse (W): None (N0), 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk' broadcast.

** Great Knott I (R): (6:15:15) to all plots - rate 340 lb.
Workhouse (W): (8:20:16) to all plots - rate 310 lb.

NOTE: At Rothamsted because of a mistake in an instruction nitrogen was applied to the wrong plots: in order to achieve balance certain additions were made making the total applications listed.

Basal applications: Great Knott I (R): Ioxynil/MCPA (Actril A at 2 pints in 40 gals).

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Cultivations, etc.:

Great Knott I (R): Deep-tine cultivated twice: Nov 3 and 4, 1965. Seed sown, NPK applied: Nov 5. 'Nitro-Chalk' applied: Apr 13, 1966, completed: Apr 21. Sprayed: Apr 29. Combine harvested: Aug 24. Variety: Cappelle. Previous crops: Barley 1964, potatoes 1965.

Workhouse (W): Deep-tine cultivated: Oct 27, 1965. Seed sown, NPK applied: Nov 3. 'Nitro-Chalk' applied: Apr 27, 1966. Combine harvested: Aug 27. Variety: Cappelle. Previous crops: Grass 1964, potatoes 1965.

Standard errors per plot. Grain:

| | | |
|---|---|---|
| Great Knott I (R). | Whole plot: | 2.57 or 5.3% (14 d.f.) |
| | Sub plot: | 3.11 or 6.4% (16 d.f.) |
| Workhouse (W). | Whole plot: | 2.88 or 5.2% (14 d.f.) |
| | Sub plot: | 3.98 or 7.1% (16 d.f.) |

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66/Da/1.3

## SUMMARY OF RESULTS

## GREAT KNOTT I (R)

### GRAIN

| | B | C | W | W* | Mean |
|---|---|---|---|---|---|
| Mean (±0.91) | 49.2 | 48.7 | 48.9 | 46.4 | 48.3 |
| | | | (±1.29) | | (±0.64) |
| L | 49.3 | 50.6 | 50.9 | 48.3 | 49.8 |
| H | 49.0 | 46.8 | 47.0 | 44.5 | 46.8 |
| | | (1) and (2) | | | (3) and (4) |
| N1 | 49.9 | 49.8 | 47.3 | 47.0 | 48.5 |
| N2 | 52.0 | 51.3 | 50.7 | 48.1 | 50.5 |
| N3 | 46.4 | 48.1 | 49.4 | 45.0 | 47.2 |
| N4 | 48.4 | 45.6 | 48.3 | 45.4 | 47.0 |

| | L | H |
|---|---|---|
| | (5) and (6) | |
| N1 | 49.6 | 47.4 |
| N2 | 50.9 | 50.2 |
| N3 | 48.7 | 45.7 |
| N4 | 49.9 | 44.0 |

(1) (±1.56) (5) (±1.10) For use in vertical and interaction comparisons involving N4-N2 or N3-N1
(2) (±1.69) (6) (±1.20) For use in all other comparisons
(3) (±0.78) For use in comparisons N4-N2 or N3-N1
(4) (±0.85) For use in all other comparisons

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66/Da/1.4

WORKHOUSE (W)

GRAIN

| | B | C | W | W* | Mean |
|---|---|---|---|---|---|
| Mean (±1.02) | 55.9 | 56.7 | 55.4 | 55.3 | 55.8 |
| | | (±1.44) | | | (±0.72) |
| L | 56.5 | 57.7 | 56.1 | 54.9 | 56.3 |
| H | 55.4 | 55.8 | 54.6 | 55.6 | 55.3 |
| | | (1) and (2) | | | (3) and (4) |
| N0 | 52.8 | 55.3 | 53.7 | 53.0 | 53.7 |
| N1 | 57.4 | 60.1 | 59.8 | 57.5 | 58.7 |
| N2 | 59.6 | 58.8 | 56.2 | 56.7 | 57.8 |
| N3 | 53.9 | 52.6 | 52.0 | 53.8 | 53.1 |

| | L | H |
|---|---|---|
| | (5) and (6) | |
| N0 | 52.4 | 55.0 |
| N1 | 57.8 | 59.6 |
| N2 | 59.3 | 56.4 |
| N3 | 55.8 | 50.3 |

(1) (±1.99) (5) (±1.41) For use in vertical and interaction comparisons involving N3-N1 or N2-N0
(2) (±2.02) (6) (±1.43) For use in all other comparisons
(3) (±1.00) For use in comparisons N3-N1 or N2-N0
(4) (±1.01) For use in all other comparisons

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66/Da/2.1

# WINTER WHEAT

## (RW 301)

Spun and drilled seed, and cultivations, Great Knott I 1966.

Design:
Spun seed: 6 randomised blocks of 4 plots, with seed rates on strips of 3 blocks.
Drilled seed: 6 randomised blocks of 2 plots.

Area of each plot: 0.0135. Area harvested: 0.0096.

Treatments:
Spun seed: all combinations of:-
To strips of 3 blocks: (1) Seed rate: 190 lb (L), 250 (H).
To plots: (2) Seedbed cultivations: spring-tine cultivate, harrow, sow, harrow (C1). Disc, sow, harrow (C2). Spring-tine cultivate, sow, harrow (C3). Spring-tine cultivate, sow, spring-tine cultivate, harrow (C4).
Drilled seed: Seedbed cultivations C1, C3 as above (all at seed-rate L).

Basal applications: 310 lb (6:15:15) broadcast by distributor, 0.94 cwt N as 'Nitro-Chalk' top dressed in spring. Weedkiller: Ioxynil/MCPA (Actril A at 2 pints in 40 gals).

Cultivations, etc.: Deep-tine cultivated twice: Nov 3, 1965. Basal NPK applied, pre-sowing treatments carried out: Nov 5. Seed sown, post-sowing treatments carried out: Nov 6. Weedkiller applied: Apr 29, 1966. 'Nitro-Chalk' applied: May 2. Combine harvested: Aug 23. Variety: Cappelle. Previous crops: Barley 1964, potatoes 1965.

Standard error per plot (pooled spun and drilled seed):
Grain: 1.84 or 4.1% (17 d.f.)

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66/Da/2.2

## SUMMARY OF RESULTS

### GRAIN

### SPUN SEED

| | C1 | C2 | C3 | C4 | Mean |
|---|---|---|---|---|---|
| | | | (±1.06)* | | |
| L | 48.4 | 47.2 | 46.6 | 45.0 | 46.8 |
| H | 44.1 | 43.0 | 43.1 | 45.9 | 44.0 |
| Mean (±0.75) | 46.2 | 45.1 | 44.9 | 45.5 | 45.4 |

* For use in horizontal and interaction comparisons only

### DRILLED SEED

| C1 | C3 | Mean |
|---|---|---|
| 45.0 | 44.9 | 45.0 |
| | (±0.75) | |

Pooled mean: 45.3

Pooled mean D.M. %: 82.2

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66/Da/3.1

WINTER WHEAT

(BG 13)

Sowing dates and bulb fly, Stackyard 1966.

Design: 4 randomised blocks of 3 plots, split into 2 for covering to prevent egg-laying (unrandomised).

Area of each sub-plot: 0.0096. Area harvested: 0.0064.

Treatments: All combinations of:-
Whole plots: 1. Sowing dates and weedkiller: Nov 2, 1965, sprayed* (ES). Jan 8, 1966, sprayed* (LS) and unsprayed (L-).
Sub plots: 2. Not covered (O), covered with polythene sheet to prevent egg-laying July 1 - Oct 7, 1965 (C).

* With mecoprop/2,4-D (Methoxone Extra at 6.5 pints in 56 gals) on May 13.

Basal applications: 284 lb (6:15:15) combine drilled, 0.8 cwt N as 'Nitro-Chalk' top dressed in spring. Seed dressed with organo-mercury fungicide only.

Cultivations, etc.: Ploughed: Oct 20, 1965. 'Nitro-Chalk' applied: Apr 26, 1966. Combine harvested: Aug 24.
Variety: Cappelle. Previous crops: Barley 1964, fallow 1965.

NOTES: (1) Samples were taken from late February until mid-May to estimate numbers of plants, shoots and larvae and damaged plants and shoots. Samples were taken just before harvest to estimate ear number and grain weight. Counts were made for gaps and straw number in stubble after harvest.
(2) The intention was to make sowings in early November, late November and January but the late November sowing could not be made and the treatments listed above were applied.

Standard errors per plot. Grain:
Whole plot: 1.98 or 4.4% (6 d.f.)
Sub plot: 2.75 or 6.1% (8 d.f.)

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66/Da/3.2

SUMMARY OF RESULTS

GRAIN

| | ES | LS | L- | Mean |
|---|---|---|---|---|
| | | (1) and (2) | | |
| O | 47.4 | 40.7 | 37.5 | 41.8 |
| C | 49.1 | 49.3 | 47.0 | 48.5 |
| Mean (±0.99) | 48.2 | 45.0 | 42.2 | 45.1 |

(1) (±1.41) For use in horizontal comparisons only
(2) (±1.38) For use in interaction comparisons only

Mean D.M. %: 81.4

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66/Da/4.1

SPRING WHEAT

(RW 601 and WW 301)

Anhydrous ammonia as a fertiliser - Rothamsted (R) Great Knott III and Woburn (W) Lansome 1966.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0321. Area harvested: Great Knott III (R) - 0.0208, Lansome (W) - 0.0207.

Treatments: All combinations of:-

1. Forms of N: Broadcast 'Nitro-Chalk' (B), injected anhydrous ammonia (I).
2. Levels of N: 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt N

together with no nitrogen - without (N0), with (N0I), the injector running empty through the soil.

Basal applications: 280 lb (0:20:20). Weedkiller: Great Knott III (R): Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals). Lansome (W): Ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.:

Great Knott III (R): Ground chalk applied at 22 cwt: Nov 8, 1965. Ploughed: Nov 15, 1965. Anhydrous ammonia injected: Mar 2, 1966. Seed drilled at 170 lb, basal PK and 'Nitro-Chalk' applied: Mar 16, 1966. Sprayed: May 17. Combine harvested: Sept 7. Variety: Kloka. Previous crops: Barley 1964, spring beans 1965.

Lansome (W): Ploughed: Sept 30 - Oct 25, 1965. Anhydrous ammonia injected: Mar 3, 1966. Seed drilled at 160 lb, basal PK and 'Nitro-Chalk' applied: Mar 15. Sprayed: May 13. Combine harvested: Sept 6. Variety: Kloka. Previous crops: Winter wheat 1964, barley 1965.

Standard errors per plot. Grain:

Great Knott III (R): 2.15 or 5.3% (21 d.f.)
Lansome (W): 3.57 or 14.8% (21 d.f.)

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66/Da/4.2

## SUMMARY OF RESULTS

## GREAT KNOTT III (R)

### GRAIN

| | N1 | N2 | N3 | Mean |
|---|---|---|---|---|
| | | (±1.07) | | (±0.62) |
| B | 43.7 | 45.6 | 43.6 | 44.3 |
| I | 36.6 | 46.3 | 46.9 | 43.3 |
| Mean (±0.76) | 40.2 | 46.0 | 45.3 | 43.8 |

| | NO | NOI | Mean |
|---|---|---|---|
| | 31.7 | 31.1 | 31.4 |
| | (±1.07) | | |

General mean: 40.7

Mean D.M. %: 83.0

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66/Da/4.3

LANSOME (W)

GRAIN

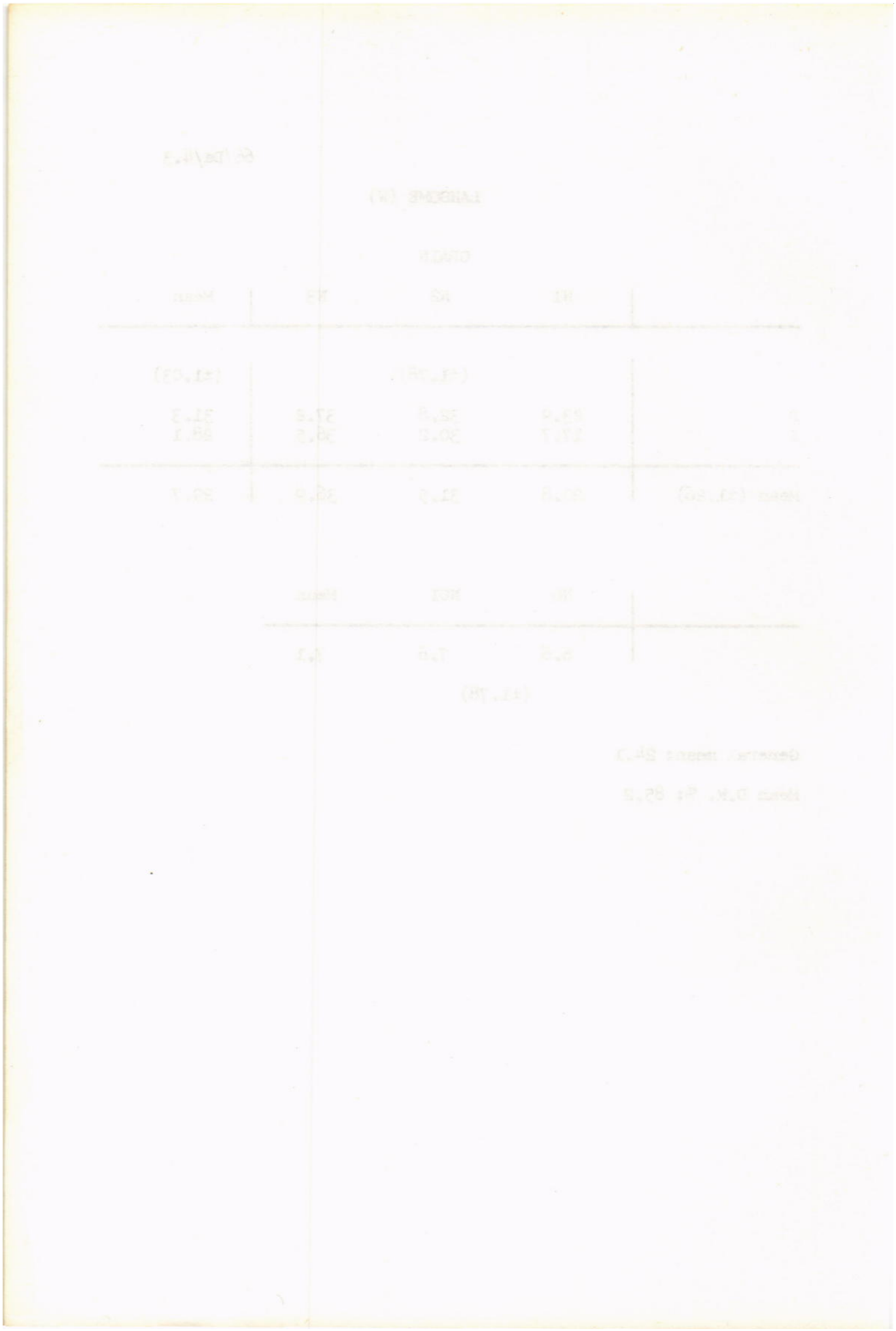
| | N1 | N2 | N3 | Mean |
|---|---|---|---|---|
| | | (±1.78) | | (±1.03) |
| B | 23.9 | 32.8 | 37.2 | 31.3 |
| I | 17.7 | 30.2 | 36.5 | 28.1 |
| Mean (±1.26) | 20.8 | 31.5 | 36.9 | 29.7 |

| | NO | NOI | Mean |
|---|---|---|---|
| | 6.6 | 7.6 | 7.1 |
| | (±1.78) | | |

General mean: 24.1

Mean D.M. %: 85.2

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66/Da/5.1

# SPRING WHEAT

## (WW 201)

Effects of sowing date, and time of nitrogen application on the incidence of take-all - Woburn Lansome 1966.

Design: 3 randomised blocks of 3 plots, split into 2.

Area of each sub-plot: 0.0154. Area harvested: 0.0101.

Treatments: All combinations of:-

Whole plots. 1. Sowing dates: Feb 17, 1966 (F), Mar 15 (M), Apr 13 (A). Seed drilled at 160 lb.

Sub plots. 2. Time of application of N: 0.8 cwt N at sowing (T1), 0.4 cwt N at sowing plus 0.4 cwt N in early May (T2). All N as 'Nitro-Chalk'.

Basal applications: 390 lb (0:14:28) combine drilled. Sprayed with Ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.: Ploughed: Sept 30 - Oct 25, 1965. Seed drilled, seedbed 'Nitro-Chalk' applied - F plots: Feb 17, 1966, - M plots: Mar 15. Seed drilled - A plots: Apr 13. 'Nitro-Chalk' applied - A plots: Apr 21. Top dressing 'Nitro-Chalk' applied: May 11. Combine harvested: Sept 6. Variety: Kloka. Previous crops: Winter wheat 1964, barley 1965.

NOTE: Plant samples were taken from all plots for incidence of take-all (Ophiobolus graminis) on 24th May and 6th July.

Standard errors per plot. Grain:

Whole plot: 1.96 or 6.1% (4 d.f.)

Sub plot: 2.15 or 6.7% (6 d.f.)

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## SUMMARY OF RESULTS

### GRAIN

| | F | M | A | Mean |
|---|---|---|---|---|
| | (1) and (2) | | | (±0.72) |
| T1 | 30.4 | 33.0 | 33.7 | 32.3 |
| T2 | 30.1 | 33.8 | 31.7 | 31.9 |
| Mean (±1.13) | 30.2 | 33.4 | 32.7 | 32.1 |

(1) (±1.43) For use in horizontal and diagonal comparisons
(2) (±1.24) For use in vertical and interaction comparisons

Mean D.M. %: 85.5

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66/Da/6.1

# SPRING WHEAT

(RW 701)

Effects of CCC - Long Hoos III 1966.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0144. Area harvested: 0.0096.

Treatments: All combinations of:-
1. CCC* in spray at 40 gals: None (C0), 2.5 lb (C1) in May at 5 leaf stage.
2. Nitrogen: None (N0), 0.8 (N1), 1.6 (N2), 2.4 (N3) cwt N as 'Nitro-Chalk'.

* 2-chlorotrimethylammonium chloride - a dwarfing compound.

NOTE: (1) A wetter was included in the CCC spray.

Basal applications: 27 cwt ground chalk, 400 lb compound fertiliser (0:14:28) applied broadcast, 340 lb compound fertiliser (0:20:20) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.: Ground chalk and PK compound applied: Nov 6, 1965. Deep-tine cultivated twice: Feb 4, 1966. Rotary cultivated: Mar 11. Seed drilled at 180 lb, 'Nitro-Chalk' applied: Mar 12. Weedkiller applied, CCC spray applied: May 17. Combine harvested: Sept 7. Variety: Kloka. Previous crops: Winter wheat 1964, potatoes 1965.

NOTE: (2) Counts of shoots were made from time to time.

Standard error per plot.
Grain: 2.85 or 8.7% (21 d.f.)

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66/Da/6.2

SUMMARY OF RESULTS

GRAIN

| | N0 | N1 | N2 | N3 | Mean |
|---|---|---|---|---|---|
| | | (±1.43) | | | (±0.71) |
| CO | 19.5 | 31.5 | 38.3 | 38.1 | 31.8 |
| CS | 19.6 | 34.6 | 39.7 | 41.0 | 33.8 |
| Mean (±1.01 ) | 19.6 | 33.0 | 39.0 | 39.6 | 32.8 |

Mean D.M. %: 82.6

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66/Da/7.1

# SPRING WHEAT

## (WW 401)

CCC*, irrigation, and nitrogen - Woburn Butt Close (Series III) 1966.

* Chloroethyltrimethylammonium chloride - a dwarfing compound.

Design: 6 blocks of 2 whole plots, CCC on half plots, nitrogen on quarter plots, 2 d.f. for N confounded with quarter plot pairs, one in each direction.

Area of each quarter plot: 0.0143. Area harvested: 0.0032.

Treatments: All combinations of:-
Main plots: 1. Irrigation: None (O), full irrigation (C).
Half plots: 2. CCC: None (O), sprayed with 2.5 lb CCC in 43 gals water (S).
Quarter plots: 3. Nitrogen: 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk'.

Basal applications: 240 lb (0:14:28) combine drilled, sprayed with ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.: Ploughed: Nov 24, 1965. Seed drilled at 160 lb: Mar 14, 1966. 'Nitro-Chalk' applied: Mar 16. Weedkiller applied: May 13. CCC applied: May 16. C plots irrigation applied at 0.5 inches on each occasion: May 25, June 1, June 3, June 9, July 6, July 15, (total 3 inches). Combine harvested: Sept 7. Variety: Kloka.

NOTE: Weekly samples of 3 feet of row lengths were taken from each plot for chemical analysis, April - June.

Standard error per plot (pooled).
Grain: 4.23 or 10.5% (30 d.f.)

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66/Da/7.2

## SUMMARY OF RESULTS

### GRAIN

| | N1 | N2 | N3 | N4 | Mean |
|---|---|---|---|---|---|
| Mean (±1.22) | 28.1 | 40.5 | 45.8 | 47.3 | 40.4 |
| | | (±1.73) | | | (±0.86) |
| O | 25.5 | 38.5 | 40.6 | 41.8 | 36.6 |
| C | 30.7 | 42.5 | 51.1 | 52.8 | 44.3 |
| O | 28.3 | 41.8 | 43.5 | 46.6 | 40.0 |
| S | 28.0 | 39.1 | 48.2 | 48.1 | 40.8 |

| | O | S |
|---|---|---|
| | (±1.22) | |
| O | 35.5 | 37.7 |
| C | 44.5 | 44.0 |

Mean D.M.: 82.3

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66/Da/8.1

# WINTER AND SPRING WHEAT

(RW 401)

Varieties and nitrogen - Great Knott I 1966.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0212. Area harvested: 0.0141.

Treatments: All combinations of:-
1. Varieties: Winter wheat - Cappelle (C), Rothwell Perdix (P), spring wheat - Kloka (K), Jufy I (J).
2. Nitrogen: 0.4 (N1), 1.0 (N2) cwt N as 'Nitro-Chalk', top-dressed, in addition to basal.

Basal applications: 300 lb (6:15:15) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 36 gals).

Cultivations, etc.: Deep-tine cultivated twice: Nov 3, 1965. Seed drilled at 190 lb: Feb 17, 1966*. 'Nitro-Chalk' applied: Apr 14. Sprayed: May 14. Combine harvested: Sept 6. Previous crops: Barley 1964, potatoes 1965

Standard error per plot.
Grain: 2.13 or 5.1% (21 d.f.)

* Drilling of winter wheat was delayed by weather and so all varieties were sown on the same date.

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66/Da/8.2

## SUMMARY OF RESULTS

### GRAIN

| | C | P | K | J | Mean |
|---|---|---|---|---|---|
| | | (±1.06) | | | (±0.53) |
| N1 | 40.5 | 38.3 | 37.5 | 42.9 | 39.8 |
| N2 | 45.3 | 40.5 | 43.5 | 44.1 | 43.3 |
| Mean (±0.75) | 42.9 | 39.4 | 40.5 | 43.5 | 41.6 |

Mean D.M. %: 83.0

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66/Db/1.1

# BARLEY

## (RB101 and WB101)

Row spacing, seed rates and N - Rothamsted (R) Whittlocks N.E. and Woburn (W) Horsepool E. 1966.

Design: 2 replicates of 4 x 2 x 4 factorial arranged in 4 blocks of 8 whole plots, with N on half plots. (3 - 2 + 1 - 0 on whole plots.)

Area of each sub-plot: 0.0069. Area harvested: 0.0069.

Treatments: All combinations of:-

Whole plots:

1. Row spacing etc.:
   - Seed broadcast, PK** broadcast (B)
   - Seed drilled, 4 inch rows, PK broadcast (C)
   - Seed drilled, 7 inch rows, PK broadcast (W)
   - Seed drilled, 7 inch rows, with PK combine drilled (W*)
2. Seed rates: 110 lb (L), 220 lb (H).

Sub-plots:

3. Nitrogen: None, 0.4, 0.7, 1.0 cwt N as 'Nitro-Chalk'.

** (0:20:20) to all plots - rate 220 lb.

Basal applications: Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 36 gals).

Cultivations, etc.:

Whittlocks N.E. (R): Ploughed: Nov 1-9, 1965. Seed sown, fertilisers applied: Mar 10, 1966. Sprayed: May 11. Combine harvested: Aug 19. Variety: Maris Badger. Previous crops: Potatoes 1964, winter wheat 1965.

Horsepool E. (W): Ploughed: Oct 28, 1965. PK fertiliser applied and seed sown: Mar 11, 1966. 'Nitro-Chalk' applied: Mar 14. Sprayed: May 13. Combine harvested: Aug 19. Variety: Maris Badger. Previous crops: Potatoes 1964, barley 1965.

Standard errors per plot. Grain:

| | | |
|---|---|---|
| Whittlocks N.E. (R) | Whole plot: | 2.10 or 4.6% (14 d.f.) |
| | Sub plot: | 2.18 or 4.7% (16 d.f.) |
| Horsepool E. (W) | Whole plot: | 2.10 or 4.4% (14 d.f.) |
| | Sub plot: | 3.67 or 7.7% (16 d.f.) |

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66/Db/1.2

SUMMARY OF RESULTS

WHITTLOCKS N.E. (R)

GRAIN

| | B | C | W | W* | Mean |
|---|---|---|---|---|---|
| Mean (±0.74) | 45.8 | 45.9 | 47.1 | 45.7 | 46.1 |
| | | | (±1.05) | | (±0.53) |
| L | 46.1 | 45.8 | 48.8 | 46.3 | 46.8 |
| H | 45.6 | 45.9 | 45.4 | 45.0 | 45.5 |
| | | | (1) and (2) | | (3) and (4) |
| N0 | 36.2 | 37.6 | 39.8 | 36.9 | 37.6 |
| N1 | 48.1 | 47.8 | 49.5 | 48.2 | 48.4 |
| N2 | 50.6 | 48.9 | 49.9 | 48.3 | 49.4 |
| N3 | 48.5 | 49.2 | 49.3 | 49.3 | 49.0 |

| | L | H |
|---|---|---|
| | (5) and (6) | |
| N0 | 39.4 | 35.8 |
| N1 | 47.9 | 48.9 |
| N2 | 50.5 | 48.3 |
| N3 | 49.2 | 48.8 |

(1) (±1.84) and (5) (±1.30) For use in vertical and interaction comparisons involving N3-N1 or N2-N0
(2) (±1.30) and (6) (±0.92) For use in all other comparisons
(3) (±0.55) For use in comparisons N3-N1 or N2-N0
(4) (±0.65) For use in all other comparisons

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66/Db/1.3

HORSEPOOL E. (W)

GRAIN

| | B | C | W | W* | Mean |
|---|---|---|---|---|---|
| Mean (±0.74) | 47.2 | 47.6 | 48.1 | 46.7 | 47.4 |
| | | (±1.05) | | | (±0.52) |
| L | 47.2 | 49.1 | 50.1 | 47.1 | 48.4 |
| H | 47.3 | 46.1 | 46.1 | 46.4 | 46.5 |
| | | (1) and (2) | | | (3) and (4) |
| N0 | 46.0 | 43.3 | 45.6 | 42.6 | 44.4 |
| N1 | 48.6 | 51.3 | 49.8 | 48.4 | 49.5 |
| N2 | 51.4 | 49.0 | 49.5 | 49.7 | 49.9 |
| N3 | 43.0 | 47.0 | 47.7 | 46.3 | 46.0 |

| | L | H |
|---|---|---|
| | (5) and (6) | |
| N0 | 44.4 | 44.4 |
| N1 | 50.8 | 48.2 |
| N2 | 52.2 | 47.6 |
| N3 | 46.3 | 45.7 |

(1) (±1.84) and (5) (±1.30) For use in vertical and interaction comparisons involving N3-N1 or N2-N0
(2) (±1.67) and (6) (±1.18) For use in all other comparisons
(3) (±0.92) For use in comparisons N3-N1 or N2-N0
(4) (±0.83) For use in all other comparisons

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66/Db/2.1

# BARLEY

## (RB 201)

Spun and drilled seed and cultivations - Whittlocks N.E. 1966.

Design:
Spun seed: 6 randomised blocks of 4 plots with seed rates on strips of 3 blocks.
Drilled seed: 6 randomised blocks of 2 plots.

Area of each plot: 0.0135. Area harvested: 0.0096.

Treatments:
Spun seed. All combinations of:
To strips of 3 blocks: (1) Seed rates 140 (L), 200 (H).
To plots: (2) Seedbed cultivations (all on Mar 10, 1966): Spring-tine cultivate, harrow, sow, harrow (C1). Spring-tine cultivate, sow, spring-tine cultivate, harrow (C2). Spring-tine cultivate twice, sow, harrow (C3). Sow, spring-tine cultivate, harrow (C4).

Drilled seed.
Seedbed cultivations: C1, C3 as above (all at seed rate L).

Basal applications: 4 cwt (20:10:10) broadcast by distributor.
Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 36 gals).

Cultivations, etc.: Ploughed: Nov 1, 1965. Basal dressing applied: Mar 9, 1966. Seed sown: Mar 10. Sprayed: May 11. Combine harvested: Aug 19. Variety: Maris Badger. Previous crops: Potatoes 1964, winter wheat 1965.

Standard error per plot (pooled spun and drilled seed):
Grain: 4.53 or 12.0% (17 d.f.)

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66/Db/2.2

## SUMMARY OF RESULTS

### GRAIN

### SPUN SEED

| | C1 | C2 | C3 | C4 | Mean |
|---|---|---|---|---|---|
| | | (±2.62)* | | | |
| L | 39.6 | 40.1 | 37.9 | 35.0 | 38.2 |
| H | 37.3 | 38.5 | 38.6 | 34.0 | 37.1 |
| Mean (±1.85) | 38.5 | 39.3 | 38.3 | 34.5 | 37.6 |

* For use in horizontal and interaction comparisons only

### DRILLED SEED

| C1 | C3 | Mean |
|---|---|---|
| 36.8 | 39.9 | 38.4 |
| | (±1.85) | |

Pooled mean: 37.9

Pooled mean D.M. %: 86.3

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66/Dc/1.1

# SPRING BEANS

(RBe 101)

Row spacing, seed rates, methods of fertiliser application and irrigation - Long Hoos IV 1966.

Design: A single replicate of 4 x 2 x 2 x 2 x 2 in 8 blocks of 8 plots. Irrigation on one group of 4 blocks.

Area of each plot: 0.0172. Area harvested: 0.0110.

Treatments: All combinations of:-
Groups of blocks: 1. Irrigation: None (0), 1 in. of water (I).
Plots: 2. Row spacing: 10.5 ins (C), 21 ins (W).
3. Seed rates: 200 lb (L), 300 lb (H).
4. Fertiliser forms and rates: 400 (F1), 560 (F2), compound (0:20:20), 500 (N1), 700 (N2) (6:15:15).
5. Methods of fertiliser application: Broadcast (B), placed (P).

Basal applications: Ground chalk at 27 cwt. Weedkiller: Simazine at 1 lb in 40 gals. Insecticide: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals).

Cultivations, etc.: Ploughed: Oct 15, 1965. Ground chalk applied: Nov 4. Seed drilled, fertilisers applied: Feb 18, 1966. Simazine applied: Mar 4. Irrigated: June 7. Combine harvested: Sept 14. Variety: Spring Tick. Previous crops: Potatoes 1964, winter and spring wheat 1965.

Standard error per plot.
Grain: 2.94 or 7.2% (13 d.f.)

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66/Dc/1.2

## SUMMARY OF RESULTS

### GRAIN

| | F1 | F2 | N1 | N2 | Mean |
|---|---|---|---|---|---|
| | | (±0.73) | | | |
| Mean | 40.4 | 40.5 | 41.1 | 40.4 | 40.6 |
| | | (±1.04)* | | | |
| O | 40.3 | 41.6 | 41.0 | 39.8 | 40.7 |
| I | 40.5 | 39.4 | 41.2 | 41.1 | 40.5 |
| | | (±1.04) | | | (±0.52) |
| C | 40.6 | 40.6 | 40.7 | 40.3 | 40.6 |
| W | 40.2 | 40.4 | 41.5 | 40.6 | 40.7 |
| | | (±1.04) | | | (±0.52) |
| L | 39.5 | 39.9 | 40.8 | 40.0 | 40.1 |
| H | 41.3 | 41.0 | 41.4 | 40.9 | 41.1 |
| | | (±1.04) | | | (±0.52) |
| B | 40.0 | 40.5 | 41.7 | 40.4 | 40.6 |
| P | 40.9 | 40.5 | 40.6 | 40.5 | 40.6 |

| | C | W | L | H | B | P |
|---|---|---|---|---|---|---|
| | (±0.73)* | | (±0.73)* | | (±0.73)* | |
| O | 40.3 | 41.1 | 39.9 | 41.4 | 40.9 | 40.4 |
| I | 40.8 | 40.2 | 40.2 | 40.9 | 40.3 | 40.7 |
| | | | (±0.73) | | (±0.73) | |
| C | | | 40.7 | 40.4 | 40.5 | 40.6 |
| W | | | 39.4 | 41.9 | 40.7 | 40.6 |
| | | | | | (±0.73) | |
| L | | | | | 39.7 | 40.5 |
| H | | | | | 41.6 | 40.7 |

Mean D.M. %: 75.4

* For use in horizontal and interaction comparisons only.

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66/Dd/1.1

# EARLY POTATOES

## (RP/1)

Effects of DSA (dimethylamino-succinamic acid - a dwarfing compound) on early potatoes - Little Hoos 1966.

Design: 6 randomised blocks of 4 plots.

Area of each plot: 0.0064. Area harvested: 0.0004.

Treatments: All combinations of:-
1. Varieties: Arran Pilot (A), Maris Peer (M).
2. DSA spray: None (O), sprayed at 1.5 lb in 120 gals at tuber formation (S).

Basal applications: 13.5 tons dung, 7.75 cwt (17:11:22). Fungicide: Mancozeb at 1.2 lb in 37 gals on 2 occasions.

Cultivations, etc.: Dung applied: Jan 11, 1966. Ploughed: Jan 12. Basal NPK applied: Mar 30. Rotary cultivated, potatoes planted: Apr 14. DSA applied: June 10. Fungicide applied: July 1 and 25. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 17. Lifted: Sept 19. Previous crops: Barley 1964, fallow 1965.

NOTE: The crop was sampled on 4 occasions for leaf area, dry weights and tuber yield. The yields presented are based on the final samples taken on Sept 19.

Standard error per plot.
Total tubers: 2.397 or 13.6% (14 d.f.)

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66/Dd/1.2

SUMMARY OF RESULTS

TOTAL TUBERS

| | O | S | Mean |
|---|---|---|---|
| | (±0.978) | | (±0.692) |
| A | 18.03 | 18.28 | 18.16 |
| M | 18.03 | 15.90 | 16.97 |
| Mean (±0.692) | 18.03 | 17.09 | 17.56 |

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66/Dd/2.1

# POTATOES

## (RP 3/1 and WP 201)

Soil fungicides and blight - Rothamsted (R) Fosters West Side and Woburn (W) Butt Close 1966.

Design: 6 randomised blocks of 10 plots.

Area of each plot: 0.0043. Area harvested: 0.0021.

Treatments: Fungicides: None (0) and the following combinations of materials and forms and times of application:-

| | | |
|---|---|---|
| TaS1 | TaS2 | TaF |
| TcS1 | TcS2 | |
| | DS2 | DF |
| | ZS2 | ZF |

Ta - Triphenyltin acetate
Tc - Triphenyltin chloride, both at 0.18 lb of metallic Sn, equivalent to 0.6 lb triphenyltin acetate
D - Tetrachloro-iso-phthalonitrile at 5 lb
Z - Zineb at 3 lb
S1 - Applied as dust in 210 - 220 lb kaolin lightly forked into the soil in May
S2 - As S1 but in June
F - Applied as foliar spray at first foliage blight as a wettable powder in 100 gals of water.

Basal applications:
Fosters West Side (R): 13.5 tons dung. 7.75 cwt (17:11:22).
Butt Close (W): 10 tons dung. 7 cwt (17:11:22).
Weedkiller (both fields): Linuron at 1 lb plus paraquat at 0.75 lb ion in 37 gals.

Cultivations, etc.:
Fosters West Side (R): Dung applied: Jan 12, 1966. Ploughed: Jan 14. Basal NPK applied: Mar 29. Rotary cultivated, potatoes planted: Apr 7. Weedkiller applied: May 10. Fungicides applied: S1 plots - May 25, S2 plots - June 20, foliar spray (F) - Aug 2. Haulm destroyed mechanically: Sept 22. Lifted: Sept 26. Variety: King Edward. Previous crops: Kale and spring wheat 1964, barley 1965.

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Butt Close (W): Deep-tine cultivated: Sept 16, 1965. Ploughed: Nov 15. Dung applied: Jan 11, 1966. Ploughed 2nd time: Jan 28. Basal NPK applied: Mar 23. Rotary cultivated, potatoes planted: Mar 30. Weedkiller applied: May 7. Fungicides applied: S1 plots - May 17, S2 plots - June 27. Haulm destroyed mechanically: Sept 7. Lifted: Sept 19. Variety: King Edward. Previous crops: Barley 1964, fallow 1965.

NOTES: (1) Butt Close (W): The haulm became yellow before blight appeared and no foliar sprays (F) were applied.

(2) On Fosters West Side (R) tubers were examined at harvest for blight infection. There was no blight on the Butt Close (W) experiment.

Standard errors per plot. Total tubers:

| | | |
|---|---|---|
| Fosters West Side (R): | 1.332 | or 8.0% (45 d.f.) |
| Butt Close (W): | 2.122 | or 13.1% (45 d.f.) |

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## SUMMARY OF RESULTS

| | 0 | TaS1 | TaS2 | TaF | TcS1 | TcS2 | DS2 | DF | ZS2 | ZF | Mean |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TOTAL TUBERS** | | | | | | | | | | | |
| **FOSTERS WEST SIDE (R)** | | | | | | | | | | | |
| Mean (±0.544) | 16.47 | 16.20 | 16.34 | 17.65 | 16.50 | 16.11 | 16.56 | 16.22 | 16.38 | 17.61 | 16.60 |
| **BUTT CLOSE (W)** | | | | | | | | | | | |
| Mean (±0.866) | 16.50 | 16.43 | 15.90 | 14.62 | 17.14 | 16.63 | 16.34 | 15.31 | 16.16 | 16.49 | 16.15 |
| **% WARE** | | | | | | | | | | | |
| **FOSTERS WEST SIDE (R)** | | | | | | | | | | | |
| Mean | 94.5 | 94.2 | 94.6 | 94.7 | 93.9 | 93.7 | 94.0 | 94.4 | 95.1 | 93.4 | 94.3 |
| **BUTT CLOSE (W)** | | | | | | | | | | | |
| Mean | 79.5 | 78.7 | 79.7 | 76.5 | 77.7 | 80.9 | 79.5 | 77.0 | 80.9 | 78.4 | 78.9 |

NOTE: Butt Close (W) F not applied

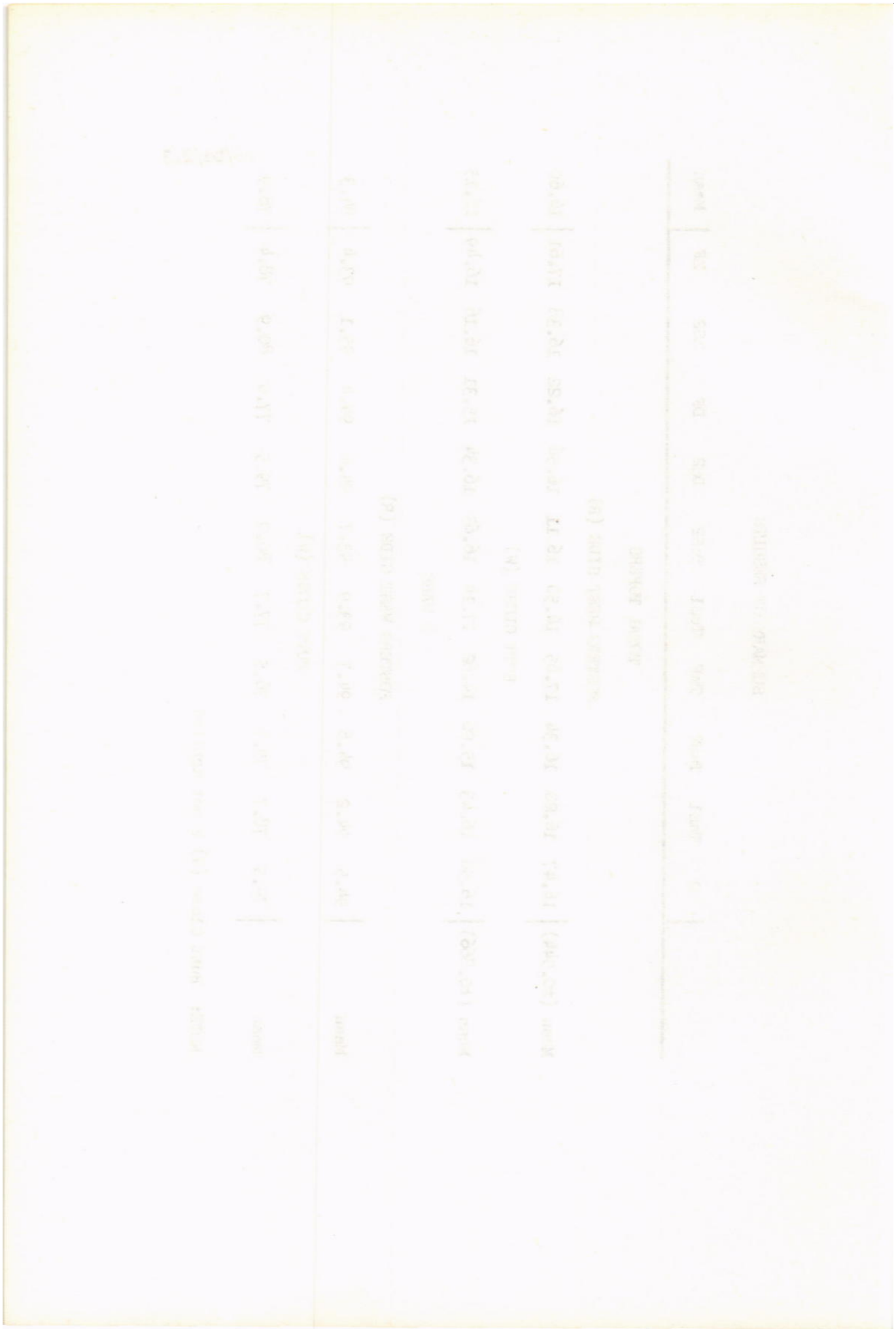
66/Dd/2.3

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66/Dd/3.1

# POTATOES

(Two experiments - RP6/1 and RP17/1)

Effects of gaps - Little Hoos 1966.

Design: RP6/1 (variety Pentland Dell) - 4 randomised blocks of 3 plots split into 5.
RP17/1 (variety King Edward) - 6 randomised blocks of 2 plots split into 5.

Area of each plot: 0.0071. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Time of gapping: At emergence (E) - variety Pentland Dell only, at flowering (F), just before harvest (H).
Sub plots: 2. Amount of gapping: Normal plant population (G0), 4 (G4), 8 (G8), 12 (G12), 16% (G16) of plants removed.

Basal applications: 13.5 tons dung, 7.75 cwt (17:11:22).
Weedkiller: Linuron at 1 lb plus paraquat at 0.75 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 35 gals on 4 occasions (King Edward) and on 2 occasions (Pentland Dell).

Cultivations, etc.: Dung applied: Jan 11, 1966. Ploughed: Jan 12. Basal NPK applied: Mar 30. Rotary cultivated, potatoes planted: King Edward - Apr 7, Pentland Dell - May 17. Weedkiller applied: June 1. Rotary ridged (King Edward only): June 15. Fungicide applied: King Edward - June 30, July 23, Aug 8 and 18, Pentland Dell - July 23 and Aug 8. Sprayed with undiluted BUV: King Edward - Sept 16, Pentland Dell - Sept 23. Haulm destroyed mechanically: Sept 27. Lifted: King Edward - Sept 28, Pentland Dell - Oct 10. Previous crops: Barley 1964, fallow 1965.

NOTE: The Pentland Dell experiment suffered badly from unplanned gaps and poor growth. A second experiment was therefore started on King Edward potatoes already planted.

Standard errors per plot. Total tubers:

| | | | |
|---|---|---|---|
| RP6/1. | Pentland Dell. | Whole plot: | 0.583 or 3.6% (6 d.f.) |
| | | Sub plot: | 1.303 or 8.0% (36 d.f.) |
| RP17/1. | King Edward. | Whole plot: | 0.772 or 3.7% (5 d.f.) |
| | | Sub plot: | 0.952 or 4.5% (40 d.f.) |

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66/Dd/3.2

## SUMMARY OF RESULTS

### TOTAL TUBERS

| | G0 | G4 | G8 | G12 | G16 | Mean |
|---|---|---|---|---|---|---|
| **RP6/1 Pentland Dell** | | | | | | |
| | | (1) and (2) | | | | (±0.326) |
| E | | 17.20 | 16.82 | 16.39 | 15.15 | 16.39 |
| F | | 17.74 | 16.08 | 16.21 | 15.01 | 16.26 |
| H | | 16.34 | 15.88 | 15.24 | 13.65 | 15.28 |
| Mean (±0.376) | 17.56 | 17.09 | 16.26 | 15.95 | 14.60 | 16.29* |
| **RP17/1 King Edward** | | | | | | |
| | | (1) and (2) | | | | (±0.342) |
| F | | 22.90 | 21.21 | 21.10 | 19.63 | 21.21 |
| H | | 21.80 | 20.16 | 19.18 | 18.82 | 19.99 |
| Mean (±0.275) | 22.61 | 22.35 | 20.69 | 20.14 | 19.23 | 21.00* |

* General Mean

| | RP6/1 | RP17/1 | |
|---|---|---|---|
| (1) | (±0.652) | (±0.469) | For use in vertical and diagonal comparisons |
| (2) | (±0.652) | (±0.389) | For use in horizontal and interaction comparisons |

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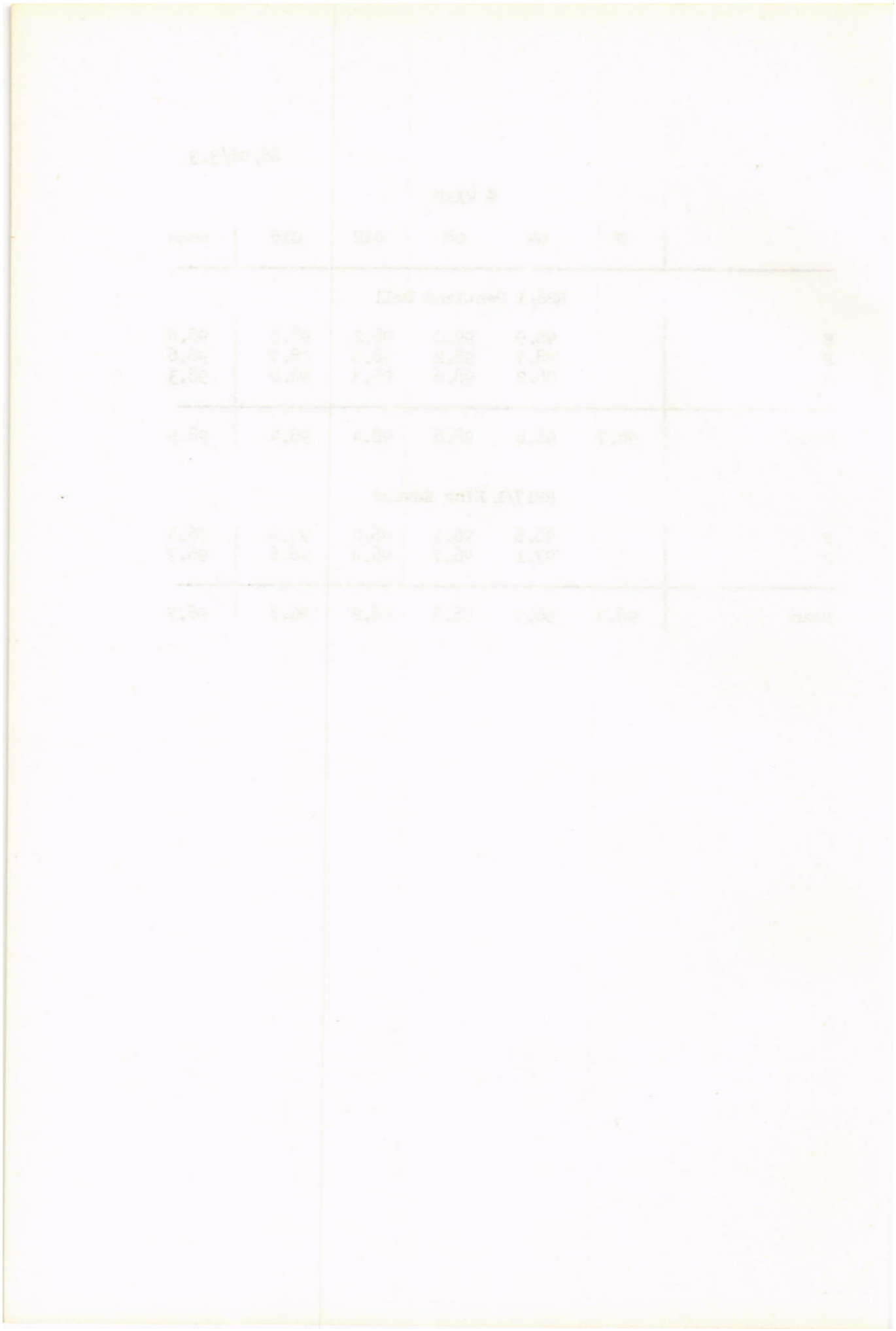
66/Dd/3.3

% WARE

| | G0 | G4 | G8 | G12 | G16 | Mean |
|---|---|---|---|---|---|---|
| **RP6/1 Pentland Dell** | | | | | | |
| E | | 98.9 | 99.0 | 98.2 | 98.5 | 98.6 |
| F | | 98.7 | 98.2 | 98.8 | 98.7 | 98.6 |
| H | | 98.2 | 98.6 | 98.3 | 98.0 | 98.3 |
| Mean | 98.7 | 98.6 | 98.6 | 98.4 | 98.4 | 98.5 |
| **RP17/1 King Edward** | | | | | | |
| F | | 96.6 | 96.5 | 96.0 | 97.0 | 96.5 |
| H | | 97.1 | 96.7 | 96.4 | 96.6 | 96.7 |
| Mean | 96.9 | 96.9 | 96.6 | 96.2 | 96.8 | 96.7 |

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# POTATOES

## (RP 7/1)

Effects of skin-spot (Oospora pustulans)* - Little Hoos 1966.

Design: 6 blocks of 2 plots split into 4.

Area of each plot: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (E), Majestic (M).
Sub plots: 2. Levels of seed infection (Oospora pustulans): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 7.75 cwt (17:11:22). Fungicide: Mancozeb at 1.2 lb in 35 gals on 4 occasions.

Cultivations, etc.: Ploughed: Jan 12, 1966. Basal NPK applied: Mar 30. Rotary cultivated, potatoes planted: May 3. Rotary ridged twice: May 28, June 17. Fungicide applied: June 30, July 23, Aug 8 and 18. Sprayed with undiluted BOV at 21 gals: Sept 16. Haulm destroyed mechanically: Sept 27. Lifted: Sept 29. Previous crops: Barley 1964, fallow 1965.

* In experiment RP7/1 (66/Dd/4) the tuber grades were selected on the degree of skin-spotting, in RP10/1 (66/Dd/7) a King Edward stock in which the infections occurred mainly close to the eyes was used and the grades were based on number of live eyes in March.

Standard errors per plot. Total tubers:
Whole plot: 1.049 or 6.7% (5 d.f.)
Sub plot: 0.910 or 5.8% (30 d.f.)

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66/Dd/4.2

## SUMMARY OF RESULTS

| | A | B | C | D | Mean |
|---|---|---|---|---|---|
| | | TOTAL TUBERS | | | |
| | | (1) and (2) | | | (±0.428) |
| E | 17.92 | 17.35 | 12.65 | 16.72 | 16.16 |
| M | 15.52 | 15.59 | 14.66 | 15.38 | 15.29 |
| Mean (±0.263) | 16.72 | 16.47 | 13.66 | 16.05 | 15.72 |
| | | % WARE | | | |
| E | 96.1 | 96.2 | 97.6 | 96.2 | 96.5 |
| M | 97.7 | 97.4 | 97.8 | 97.6 | 97.6 |
| Mean | 96.9 | 96.8 | 97.7 | 96.9 | 97.1 |

(1) (±0.536) For use in vertical and diagonal comparisons
(2) (±0.371) For use in horizontal and interaction comprisons.

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66/Dd/5.1

# POTATOES

(RP 8/1)

Effects of stem-canker (Rhizoctonia solani) - Little Hoos 1966.

Design: 6 randomised blocks of 2 plots split into 4.

Area of each plot: 0.0036. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (E), Majestic (M).
Sub plots: 2. Infection of seed (Rhizoctonia solani): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 7.75 cwt (17:11:22). Fungicide: Sprayed 4 times with mancozeb at 1.2 lb in 35 gals.

Cultivations, etc.: Ploughed: Jan 12, 1966. Basal NPK applied: Mar 30. Rotary cultivated, potatoes planted: May 3. Rotary ridged twice: May 28 and June 17. Fungicide applied: June 30, July 23, Aug 8 and 18. Sprayed with undiluted BOV at 21 gals: Sept 16. Haulm destroyed mechanically: Sept 27. Lifted: Sept 29. Previous crops: Barley 1964, fallow 1965.

Standard errors per plot. Total tubers:
Whole plot: 0.601 or 4.2% (5 d.f.)
Sub plot: 0.770 or 5.4% (30 d.f.)

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65/Dd/5.2

## SUMMARY OF RESULTS

| | A | B | C | D | Mean |
|---|---|---|---|---|---|
| **TOTAL TUBERS** | | | | | |
| | (1) and (2) | | | | (±0.245) |
| E | 18.79 | 17.12 | 17.33 | 17.51 | 17.69 |
| M | 12.47 | 10.18 | 9.95 | 11.65 | 11.06 |
| Mean (±0.222) | 15.63 | 13.65 | 13.64 | 14.58 | 14.38 |
| **% WARE** | | | | | |
| E | 96.8 | 95.2 | 94.7 | 95.1 | 95.4 |
| M | 96.2 | 95.4 | 95.6 | 96.0 | 95.8 |
| Mean | 96.5 | 95.3 | 95.2 | 95.6 | 95.6 |

(1) (±0.366) For use in vertical and diagonal comparisons
(2) (±0.314) For use in horizontal and interaction comparisons

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66/Dd/6.1

# POTATOES

(RP 9/1)

Effects of gangrene (Phoma spp.) - Little Hoos 1966.

Design: 6 randomised blocks of 2 plots, split into 4.

Area of each plot: 0.0067. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (E), Majestic (M).
Sub plots: 2. Levels of seed-infection (Phoma spp.): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 7.75 cwt (17:11:22). Fungicide: Mancozeb at 1.2 lb in 35 gals on 4 occasions.

Cultivations, etc.: Ploughed: Jan 12, 1966. Basal NPK applied: Mar 30. Rotary cultivated, potatoes planted: May 3. Rotary ridged twice: May 28 and June 17. Fungicide applied: June 30, July 23, Aug 8 and 18. Sprayed with undiluted BUV at 21 gals: Sept 16. Haulm destroyed mechanically: Sept 27. Lifted: Sept 29. Previous crops: Barley 1964, fallow 1965.

Standard errors per plot. Total tubers:
Whole plot: 0.708 or 4.0% (5 d.f.)
Sub plot: 0.873 or 4.9% (30 d.f.)

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66/Dd/6.2

SUMMARY OF RESULTS

| | A | B | C | D | Mean |
|---|---|---|---|---|---|
| | | TOTAL TUBERS | | | |
| | | (1) and (2) | | | (±0.289) |
| E | 18.71 | 18.13 | 17.35 | 18.44 | 18.16 |
| M | 17.71 | 18.01 | 15.36 | 17.50 | 17.15 |
| Mean (±0.252) | 18.21 | 18.07 | 16.36 | 17.97 | 17.65 |
| | | % WARE | | | |
| E | 93.9 | 92.0 | 91.3 | 92.7 | 92.5 |
| M | 97.6 | 96.3 | 94.5 | 95.5 | 96.0 |
| Mean | 95.8 | 94.1 | 92.9 | 94.1 | 94.2 |

(1) (±0.423) For use in vertical and diagonal comparisons
(2) (±0.356) For use in horizontal and interaction comparisons

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66/Dd/7.1

# POTATOES

## (RP 10/1)

Effects of 'dead eyes' (Oospora pustulans)* - Little Hoos 1966.

Design: 6 randomised blocks of 4 plots.

Area of each plot: 0.0071. Area harvested: 0.0033.

Treatments: Levels of seed infection (Oospora pustulans):-

| | |
|---|---|
| Clean | (A) |
| Moderately infected (1-2 live eyes) | (B) |
| Severely infected (no live eyes) | (C) |
| Unselected stock | (D) |

Basal applications: 7.75 cwt (17:11:22). Mancozeb at 1.2 lb in 35 gals on 4 occasions.

Cultivations, etc.: Ploughed: Jan 12, 1966. Basal NPK applied: Mar 30. Rotary cultivated, potatoes machine planted: May 3. Rotary ridged twice: May 28, June 18. Fungicide applied: June 30, July 23, Aug 8 and 18. Sprayed with undiluted BOV at 21 gals: Sept 16. Haulm destroyed mechanically: Sept 27. Lifted: Sept 29. Variety: King Edward. Previous crops: Barley 1964, fallow 1965.

* In experiment RP7/1 (66/Dd/4) the tuber grades were selected on the degree of skin-spotting, in RP10/1 (66/Dd/7) a King Edward stock in which the infections occurred mainly close to the eyes was used and the grades were based on number of live eyes in March.

Standard error per plot.
Total tubers: 1.173 or 7.2% (15 d.f.)

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66/Dd/7.2

SUMMARY OF RESULTS

| | A | B | C | D | Mean |
|---|---|---|---|---|---|
| | | TOTAL TUBERS | | | |
| | | (±0.479) | | | |
| Mean | 18.85 | 17.96 | 10.07 | 18.65 | 16.38 |
| | | % WARE | | | |
| Mean | 96.3 | 97.1 | 96.8 | 96.5 | 96.7 |

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66/Dd/8.1

# POTATOES

## (RP 11/1)

Times of burning off haulm - Little Hoos 1966.

Design: 4 randomised blocks of 7 plots, plots being split into two for times of burning off.

Area of each sub plot: 0.0274. Area harvested: 0.0071.

Treatments:

| Fungicide sprays* and times of application (whole plots) | Times of burning off** (sub plots) |
|---|---|
| None (O) | (O), (S) |
| Early 4 (E+) | (O), (S) |
| Early 4 (E+) | (B), (C) |
| Early 3 (E) | (B), (C) |
| Late 4 (L+) | (B), (C) |
| Late 3 (L) | (B), (C) |
| Early 4 (E+) | (A), (IC) |

(O) Not burnt off
(A) Burnt off when mean destruction by blight of the remaining haulm on the (E+O) plots was 0.7% (31% senility)
(B) as (A) but 0.8% (58% senility)
(C) as (A) but 1.3% (68% senility)
(IC) as (C) but sprayed also with insecticide (menazon - 'Saphicol' at 10 fluid oz in 35 gals)
(S) sub plots for sampling (no yields recorded).
The first fungicde sprays were applied before the Ministry of Agriculture's blight warning.
* 1.5 lb fungicide containing 80% mancozeb in 35 gals.
** With undiluted BOV at 21 gals.

Basal applications: 13.5 tons dung, 7.75 cwt (17:11:22).

Cultivations, etc.: Dung applied: Jan 11, 1966. Ploughed: Jan 12. Fertiliser applied: Mar 3. Rotary cultivated, potatoes machine planted: Apr 6. Rotary ridged: June 15. Menazon spray applied, first spraying with mancozeb (E, E+): June 30. Second spraying with mancozeb (E, E+, L, L+): July 22, third (E, E+, L, L+): Aug 8, fourth (E+, L, L+): Aug 18, fifth (L+): Sept 8. (A) plots sprayed with BOV: Sept 8, (B) plots: Sept 16, (C) plots: Sept 23. Haulm destroyed mechanically: Sept 27. Lifted: Sept 28. Variety: King Edward. Previous crops: Barley 1964, fallow 1965.

NOTE: Destruction of foliage was assessed at weekly intervals from the blight outbreak until total destruction. Periodic samples were taken from the sample plots for weights of tubers and assessment of blight in tubers.

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Standard error per plot (Pooled).
Total tubers: 0.972 or 4.4% (30 d.f.)

SUMMARY OF RESULTS

| | O | E+ | E | L+ | L | Mean |
|---|---|---|---|---|---|---|
| **TOTAL TUBERS** | | | | | | |
| | | | (±0.486) | | | |
| O | 19.29 | 23.35 | | | | |
| | | | | | | (±0.243) |
| B | | 22.81 | 21.64 | 22.39 | 23.09 | 22.48 |
| C | | 22.15 | 21.95 | 21.64 | 23.80 | 22.38 |
| A | | 21.29 | | | | |
| IC | | 21.68 | | | | |
| Mean of B & C | | 22.48 | 21.80 (±0.344) | 22.01 | 23.44 | 22.09* |
| **% WARE** | | | | | | |
| O | 97.2 | 97.5 | | | | |
| B | | 97.5 | 96.4 | 97.3 | 97.3 | 97.1 |
| C | | 97.4 | 97.1 | 97.4 | 97.7 | 97.4 |
| A | | 97.4 | | | | |
| IC | | 97.8 | | | | |
| Mean of B & C | | 97.5 | 96.7 | 97.4 | 97.5 | 97.3* |

* General mean

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66/Dd/9.1

# POTATOES

(WP 101)

Varieties - Woburn Butt Close 1966.

Design: 4 x 4 Latin square.

Area of each plot: 0.0096. Area harvested: 0.0048.

Treatments:-
Varieties: Pentland Dell (D), King Edward (E), Majestic (see note below), Maris Piper (P).

Basal applications, etc.: 10 tons dung, 7 cwt (17:11:22).
Fungicide: Mancozeb 1.2 lb in 33 gals on 3 occasions. Weedkiller: Linuron at 1 lb a.i., and paraquat 0.75 lb ion in 37 gals.

Cultivations, etc.: Deep-tine cultivated: Sept 16, 1965. Ploughed: Nov 15. Dung applied: Jan 11, 1966. Ploughed: Jan 28. Basal NPK applied: Mar 23. Rotary cultivated and planted: Mar 31. Earthed up (rotoridged): May 4. Sprayed weedkiller: May 7. Sprayed fungicide: June 29, July 18, Aug 4. Haulm destroyed mechanically: Sept 3. Lifted: Sept 13. Previous crops: Barley 1964, fallow 1965.

NOTE: The seed of the varieties D, E and P was once-grown ex Rothamsted, H certificate. Majestic was also included but once-grown seed was not available so a Scotch SS stock was used. Because of fungus diseases this gave only 60% of normal plants (the other varieties gave full plant populations) and was therefore excluded from the analysis. The mean yield of total tubers for Majestic was 9.55 tons, mean % ware 87.7.

Standard errors per plot.
Total tubers: 1.792 or 17.1% (6 d.f.)

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66/Dd/9.2

SUMMARY OF RESULTS

| D | E | P | Mean |
|---|---|---|---|
| | TOTAL TUBERS | | |
| | (±0.896) | | |
| 7.72 | 10.71 | 13.04 | 10.49 |
| | % WARE | | |
| 72.7 | 69.8 | 84.2 | 75.5 |

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# POTATOES

(WP301)

Effects of Verticillium - Woburn Great Hill South West 1966.

Design: 2 blocks of 8 plots split into 3 for seed potato stocks.

Area of each sub plot: 0.0036. Area harvested: 0.0036.

Treatments: All combinations of:-

Whole plots:
1. Nitrogen: None (N0), 2.0 (N1) cwt N as 'Nitro-Chalk'.
2. Phosphate: None (P0), 2.0 (P1) cwt P2O5 as superphosphate.
3. Potash: None (K0), 2.5 (K1) cwt K2O as muriate of potash.

Sub plots:
4. Seed stock: (All of variety King Edward): Once grown ex Rothamsted (A), selected from L1 (B), L3 (C) plots of the Woburn 'Methods of Fertiliser Application Experiment' (see 'Results' 65/C/5.1), which was attacked by Verticillium dahliae.

NOTE: Stock A was free from paracrinkle virus, but B and C were not.

Basal applications, etc.: Manures: None. Fungicide: Mancozeb 1.2 lb in 33 gals on 3 occasions.

Cultivations, etc.: Ploughed: Feb 4, 1966. Fertilisers applied: Apr 4. Rotary cultivated and planted: Apr 28. Earthed up: June 13. Sprayed fungicide: June 29, July 22, Aug 10. Haulm destroyed mechanically: Sept 16. Lifted: Sept 23. Previous crops: Barley 1964 and 1965.

Standard errors per plot. Total tubers:
Whole plot: 2.218 or 25.2% (7 d.f.)
Sub plot: 0.959 or 10.9% (16 d.f.)

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66/Dd/10.2

## SUMMARY OF RESULTS

### TOTAL TUBERS

| | A | B | C | Mean |
|---|---|---|---|---|
| Mean (±0.240) | 9.61 | 8.44 | 8.33 | 8.79 |
| | | (1) and (2) | | (±0.784) |
| N0 | 4.94 | 4.47 | 4.13 | 4.51 |
| N1 | 14.28 | 12.41 | 12.52 | 13.07 |
| P0 | 8.39 | 7.35 | 5.84 | 7.53 |
| P1 | 10.83 | 9.52 | 9.81 | 10.06 |
| K0 | 9.13 | 8.21 | 8.19 | 8.51 |
| K1 | 10.08 | 8.67 | 8.46 | 9.07 |

| | P0 | P1 | K0 | K1 |
|---|---|---|---|---|
| | (±1.109) | | (±1.109) | |
| N0 | 3.42 | 5.60 | 4.63 | 4.39 |
| N1 | 11.63 | 14.51 | 12.39 | 13.75 |

| | (±1.109) | |
|---|---|---|
| P0 | 6.54 | 8.52 |
| P1 | 10.48 | 9.63 |

(1) (±0.832) For use in vertical and diagonal comparisons
(2) (±0.339) For use in horizontal and interaction comparisons

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66/Dd/10.3

% WARE

| | A | B | C | Mean |
|---|---|---|---|---|
| Mean (±1.16) | 84.1 | 80.1 | 80.4 | 81.6 |
| N0 | 78.2 | 73.9 | 73.0 | 75.0 |
| N1 | 90.1 | 86.4 | 87.8 | 88.1 |
| P0 | 81.6 | 75.8 | 77.8 | 78.4 |
| P1 | 86.6 | 84.4 | 83.0 | 84.7 |
| K0 | 82.2 | 78.0 | 80.7 | 80.3 |
| K1 | 86.0 | 82.3 | 80.1 | 82.8 |

| | P0 | P1 | K0 | K1 |
|---|---|---|---|---|
| N0 | 70.6 | 79.4 | 75.5 | 74.6 |
| N1 | 86.3 | 89.9 | 85.2 | 91.0 |

| | | |
|---|---|---|
| P0 | 75.2 | 81.7 |
| P1 | 85.4 | 83.9 |

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66/Dd/11.1

# POTATOES

## (WP 401)

Control of tuber blight (Phytophthora infestans) by fungicide sprays and haulm destruction - Woburn Great Hill South West 1966.

Design: 6 blocks of 4 plots split into two.

Area of each sub plot: 0.0071.

Treatments:- (fungicide sprays each of 1.5 lb fungicide containing 80% mancozeb in 33 gals).

None: (0) one half plot per block

Sprayed 3 times starting early (E3) one whole plot and two half plots per block on July 1, July 22, Aug 10.

Sprayed twice starting late (I2) one half plot per block on July 22, Aug 10.

NOTES: (1) The remaining 2 half plots used for sampling, no yields were taken.

(2) The intended treatments were modified as above (the test of burning off being abandoned) because the haulm died early for reasons other than blight.

Basal applications: 10 tons dung, 7 cwt (17:11:22).

Cultivations, etc.: Dung applied: Jan 21, 1966. Ploughed: Feb 3. Basal NPK applied: Mar 25. Rotary cultivated, potatoes planted: Apr 4. Grubbed: June 2. Earthed up: June 13. Haulm mechanically destroyed: Sept 16. Lifted: Sept 26 - 27. Variety: King Edward. Previous crops: Barley 1964, barley 1965.

NOTE: (3) Samples of 2 plants from each of six rows of each half plot were taken on 11 occasions from June 29 to Sept 19 for weight of tubers and assessment of blight in tubers.

Standard error per plot.
Total tubers: 2.727 or 21.2% (25 d.f.)

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66/Dd/11.2

SUMMARY OF RESULTS

| 0 | E3 | L2 | Mean |
|---|---|---|---|
| | TOTAL TUBERS | | |
| 13.98 (±1.113) | 12.71 (±0.557) | 12.18 (±1.113) | 12.83 |
| | % WARE | | |
| 91.3 | 90.3 | 90.6 | 90.5 |

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66/De/1.1

# CARROTS

## (WCt 1)

The effects of systemic insecticides on yield through control of motley dwarf virus - Woburn Butt Furlong 1966.

Design: 4 x 4 Latin square.

Area of each plot: 0.0135. Area harvested: 0.0029.

Treatments: All combinations of:-

1. Menazon granules placed: None (O), 0.8 lb menazon (G).
2. Menazon spray: None (O), sprayed 3 times with menazon (Saphicol at 0.5 pints in 47 gals twice, Saphicol at 0.5 pints in 50 gals once) (S).

Basal applications: 8 cwt (10:10:18). Weedkiller: 1 lb linuron in 44 gals.

Cultivations, etc.: Ploughed: Sept 27, 1965. Ground chalk applied at 28 cwt: Mar 14, 1966. Basal NPK applied: May 3. Seed drilled at 2.6 lb, menazon granules placed: May 4. Weedkiller applied: May 7. Menazon sprays applied: June 16, June 29, July 15. Lifted: Aug 31. Variety: Clucas New Model Red Cored. Previous crops: Winter wheat 1964, barley 1965.

NOTE: Sticky trap records were taken and periodical aphid counts were made on plots. Estimates of virus infection and yield from samples were made in late August.

Standard errors per plot.

| | |
|---|---|
| Marketable roots: | 0.517 or 4.5% (6 d.f.) |
| Tops from marketable roots: | 0.358 or 7.9% (6 d.f.) |

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## SUMMARY OF RESULTS

| | O | S | Mean |
|---|---|---|---|
| **MARKETABLE ROOTS** | | | |
| | (±0.258) | | (±0.183) |
| O | 8.00 | 13.76 | 10.88 |
| G | 11.20 | 12.77 | 11.98 |
| Mean (±0.183) | 9.60 | 13.27 | 11.43 |
| **TOPS FROM MARKETABLE ROOTS** | | | |
| | (±0.179) | | (±0.127) |
| O | 3.29 | 5.52 | 4.40 |
| G | 4.35 | 4.99 | 4.67 |
| Mean (±0.127) | 3.82 | 5.25 | 4.54 |

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66/Df/1.1

# KALE

Urea concentrations in NPK fertilisers - Highfield IV 1966.

Design: 3 randomised blocks of 18 plots.

Area of each plot: 0.0019. Area harvested: 0.0011.

Treatments: None (0) (2 plots per block) and all combinations of:-

1. Compound fertilisers (all in proportion N: P2O5: K2O of 2:1:1).
   Compounds with P as triple superphosphate:-
   - N 100% urea (P).
   - N 67% urea and 33% ammonium nitrate (Q).
   - N 33% urea and 67% ammonium nitrate (R).
   - N 100% ammonium nitrate (S).

   Compounds with P and part N as monourea phosphate, remaining N as follows:-
   - 100% urea (T).
   - 66% urea and 33% ammonium nitrate (U).
   - 33% urea and 66% ammonium nitrate (V).
   - 100% ammonium nitrate (W).

   K as muriate of potash in all compounds.
2. Levels: To supply 1.25 (L1), 2.50 (L2) cwt N.

Basal applications: Manures: None.

Cultivations, etc.: Ploughed: Nov 13, 1965. Rotary cultivated, fertilisers broadcast, seed drilled at 10 lb: May 11, 1966. Harvested: Nov 1. Variety: Thousand Head. Previous crops: Winter wheat 1964, barley 1965.

NOTE: Crop samples were taken for germination count, yield and N percentage. Samples were taken at harvest for yield and N percentage.

Standard error per plot.
Fresh weight: 1.628 or 6.6% (34 d.f.)

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SUMMARY OF RESULTS

FRESH WEIGHT

| | O | P | Q | R | S | T | U | V | W | Mean |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (±0.940) | | | | | (±0.332) |
| L1 | | 22.48 | 22.55 | 22.69 | 22.96 | 21.40 | 22.76 | 22.62 | 23.43 | 22.61 |
| L2 | | 30.39 | 28.22 | 27.21 | 30.18 | 28.76 | 30.79 | 29.84 | 27.62 | 29.13 |
| Mean (±0.665) | 14.01 | 26.43 | 25.39 | 24.95 | 26.57 | 25.08 | 26.77 | 26.23 | 25.52 | 24.55* |

* General mean

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## METEOROLOGICAL RECORDS 1966 - ROTHAMSTED

(Departure from long period means in brackets)

| Month | Total sunshine: hours | Mean temperature: °F Air(1) | Dew point | In ground 1 ft. | 4 ft. | Ground(2) frosts | Total rainfall: in. 1/1000 acre gauge | Rain(3) days | Drainage through 20 in. soil: in. | Wind(4) m.p.h. |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 36 ( -17.1) | 35.1 (-2.1) | 32.9 | 36.6 | 42.3 | 20 | 1.32 (-1.20) | 19 | 1.29 | 5.2 |
| Feb | 29 ( -39.0) | 41.9 (+3.7) | 39.2 | 41.5 | 42.4 | 11 | 3.94 (+2.04) | 20 | 3.52 | 6.6 |
| Mar | 120 ( +4.4) | 42.1 (+0.8) | 36.7 | 42.7 | 43.5 | 18 | 0.70 (-1.22) | 12 | 0.02 | 6.4 |
| Apr | 85 ( -68.6) | 45.5 (-0.4) | 41.3 | 45.0 | 44.1 | 6 | 3.26 (+1.32) | 25 | 1.74 | 5.7 |
| May | 207 ( +10.9) | 51.5 (-0.5) | 44.3 | 52.6 | 47.8 | 8 | 2.62 (+0.51) | 13 | 0.85 | 5.3 |
| June | 173 ( -29.5) | 59.3 (+2.0) | 53.0 | 59.0 | 52.2 | 1 | 3.12 (+0.91) | 16 | 0.99 | 4.1 |
| July | 139 ( -52.7) | 58.3 (-2.3) | 51.6 | 59.9 | 55.5 | 0 | 3.12 (+0.57) | 17 | 0.73 | 4.2 |
| Aug | 174 ( -7.7) | 58.4 (-1.7) | 52.6 | 59.6 | 56.3 | 0 | 3.21 (+0.62) | 12 | 1.69 | 4.0 |
| Sept | 167 ( +21.8) | 57.5 (+1.4) | 50.9 | 58.1 | 56.6 | 0 | 1.56 (-0.84) | 9 | 0.17 | 3.7 |
| Oct | 66 ( -37.9) | 50.7 (+1.6) | 48.5 | 53.9 | 55.1 | 3 | 3.55 (+0.62) | 22 | 2.55 | 3.7 |
| Nov | 46 ( -15.1) | 40.5 (-2.0) | 37.1 | 45.2 | 50.9 | 15 | 1.96 (-0.84) | 22 | 1.17 | 6.2 |
| Dec | 33 ( -13.1) | 40.5 (+1.9) | 37.6 | 41.4 | 46.5 | 19 | 3.46 (+0.84) | 24 | 2.90 | 7.2 |
| Year | 1275 (-243.6) | 48.4 (+0.2) | 43.8 | 49.6 | 49.4 | 101 | 31.82 (+3.33) | 211 | 17.62 | 5.2 |

(1) Mean of maximum and minimum.
(2) Number of nights grass min. was below 32°F.
(3) Number of days rainfall was 0.01 in. or more.
(4) At 2 metres above ground level.

66/E/1.1

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METEOROLOGICAL RECORDS 1966 - WOBURN

(Departure from long period means in brackets)

| Month | Total sunshine: hours | Mean temperature: °F Air(1) | In ground 1 ft. | Grass minimum °F | Total rainfall: in 8 in. gauge | Rain(2) days |
|---|---|---|---|---|---|---|
| January | 37 (-14.3) | 35.7 (-2.0) | 37.1 | 27.7 | 1.26 (-0.86) | 18 |
| February | 36 (-30.2) | 42.8 (+4.5) | 41.8 | 36.2 | 2.99 (+1.39) | 19 |
| March | 115 ( -2.0) | 42.9 (+1.0) | 43.1 | 29.6 | 0.58 (-1.08) | 12 |
| April | 90 (-51.6) | 45.3 (-1.1) | 45.4 | 36.3 | 3.31 (+1.45) | 23 |
| May | 216 (+27.9) | 51.0 (-1.1) | 53.7 | 37.7 | 1.88 (-0.19) | 12 |
| June | 199 ( +3.4) | 59.5 (+2.0) | 59.8 | 47.6 | 4.30 (+2.42) | 12 |
| July | 145 (-37.3) | 58.3 (-2.7) | 62.0 | 46.1 | 2.38 (+0.05) | 17 |
| August | 187 (+10.5) | 57.2 (-3.2) | 61.1 | 47.1 | 3.84 (+1.38) | 14 |
| September | 158 (+19.0) | 56.7 (+0.2) | 58.6 | 46.4 | 1.92 (-0.20) | 8 |
| October | 85 (-18.4) | 50.3 (+0.6) | 53.7 | 39.7 | 4.38 (+2.14) | 18 |
| November | 50 ( -9.6) | 40.9 (-2.2) | 44.4 | 31.0 | 2.48 (+0.06) | 25 |
| December | 37 ( -7.5) | 41.2 (+2.1) | 41.4 | 31.0 | 3.29 (+1.10) | 25 |
| Year* | 1355(-110.1) | 48.5 (-0.1) | 50.2 | 38.0 | 32.61 (+7.66) | 203 |

(1) Mean of maximum and minimum.
(2) Number of days rainfall was 0.01 inches or more.

* Mean or total.

66/E/1.2

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# CONVERSION FACTORS

## Factors for the Conversion of Imperial to Metric Units

| | |
|---|---|
| 1 inch (in.) | = 2·540 centimetres (cm) |
| 1 foot (ft) (=12 in.) | = 30·48 cm |
| 1 yard (yd) (=3 ft) | = 0·9144 metre (m) |
| 1 square yard (yd²) | = 0·8361 m² |
| 1 acre (ac) (=4840 yd²) | = 0·4047 hectare (ha) |
| 1 ounce (oz) | = 28·35 grams (g) |
| 1 pound (lb) | = 0·4536 kilogram (kg) |
| 1 hundredweight (cwt) (=112 lb) | = 50·80 kg |
| 1 ton (=2240 lb) | = 1016 kg = 1·016 metric tons (tonnes) (t) |
| 1 pint | = 0·5682 litre (l) |
| 1 gallon (gal) (=8 pints) | = 4·546 litres |
| 1 fluid ounce = 1/20 pint | = 0·02841 litre = 28·41 ml |
| 1 cubic foot | = 28·32 litres |

| *To convert* | *Multiply by* |
|---|---|
| oz $ac^{-1}$ to g $ha^{-1}$ | 70·06 |
| lb $ac^{-1}$ to kg $ha^{-1}$ | 1·121 |
| cwt $ac^{-1}$ to kg $ha^{-1}$ | 125·5 |
| cwt $ac^{-1}$ to t $ha^{-1}$ | 0·1255 |
| ton $ac^{-1}$ to kg $ha^{-1}$ | 2511 |
| ton $ac^{-1}$ to t $ha^{-1}$ | 2·511 |
| gal $ac^{-1}$ to l $ha^{-1}$ | 11·233 |

***The following factors are accurate to about 2 parts in 100:***

1 lb $ac^{-1}$ = 1·1 kg $ha^{-1}$
1 gal $ac^{-1}$ = 11 litres $ha^{-1}$
1 ton $ac^{-1}$ = 2·5 t $ha^{-1}$

***In general reading of the text there will be no great inaccuracy in regarding:***

1 lb = 0·5 kg
1 lb $ac^{-1}$ = 1 kg $ha^{-1}$

## Temperatures

To convert °F into °C subtract 32 and multiply by $\frac{5}{9}$ (0.556)
To convert °C into °F multiply by $\frac{9}{5}$ (1·8) and add 32



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# CONVERSION FACTORS

## Factors for the Conversion of Metric to Imperial Units

| | | |
|---|---|---|
| 1 centimetre (cm) | = | 0·3937 inch (in.) = 0·03281 ft |
| 1 metre (m) | = | 1·094 yards (yd) |
| 1 square metre ($m^2$) | = | 1·196 square yards ($yd^2$) |
| 1 hectare (ha) | = | 2·471 acres (ac) |
| 1 gram (g) | = | 0·03527 ounce (oz) |
| 1 kilogram (kg) | = | 2·205 pounds (lb) |
| 1 kg | = | 0·01968 hundredweight (cwt) = 0·0009842 ton |
| 1 metric ton (tonne) (t) | = | 0·9842 ton |
| 1 litre | = | 1·760 pints = 0·2200 gallon (gal) |

1 litre = 1000 millilitres (ml) = 35·20 fluid ounces = 0·03531 cubic foot ($ft^3$)

| *To convert* | *Multiply by* |
|---|---|
| g $ha^{-1}$ to oz $ac^{-1}$ | 0·01427 |
| kg $ha^{-1}$ to lb $ac^{-1}$ | 0·8921 |
| kg $ha^{-1}$ to cwt $ac^{-1}$ | 0·007966 |
| t $ha^{-1}$ to cwt $ac^{-1}$ | 7·966 |
| kg $ha^{-1}$ to tons $ac^{-1}$ | 0·0003983 |
| t $ha^{-1}$ to tons $ac^{-1}$ | 0·3983 |
| l $ha^{-1}$ to gal $ac^{-1}$ | 0·08902 |

## Plant nutrients

Plant nutrients are best stated in terms of amounts of the elements (P, K, Na, Ca, Mg, S); the old 'oxide' terminology ($P_2O_5$, $K_2O$, $Na_2O$, CaO, MgO, $SO_3$) is still used in work involving fertilisers and liming since Regulations require statements of $P_2O_5$, $K_2O$, etc.

### *For quick conversions*

(accurate to within 2%) the following factors may be used:

| | |
|---|---|
| $2\frac{1}{3} \times P = P_2O_5$ | $\frac{3}{7} \times P_2O_5 = P$ |
| $1\frac{1}{5} \times K = K_2O$ | $\frac{5}{6} \times K_2O = K$ |
| $1\frac{2}{5} \times Ca = CaO$ | $\frac{7}{10} \times CaO = Ca$ |
| $1\frac{2}{3} \times Mg = MgO$ | $\frac{3}{5} \times MgO = Mg$ |

### *For accurate conversions:*

| *To convert* | *Multiply by* | *To convert* | *Multiply by* |
|---|---|---|---|
| $P_2O_5$ to P | 0·4364 | P to $P_2O_5$ | 2·2915 |
| $K_2O$ to K | 0·8301 | K to $K_2O$ | 1·2047 |
| CaO to Ca | 0·7146 | Ca to CaO | 1·3994 |
| MgO to Mg | 0·6031 | Mg to MgO | 1·6581 |



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