# Yields of the Field Experiments 1979

Full Table of Content

## Default Title

### Rothamsted Research

Rothamsted Research (1980) *Default Title ;* Yields Of The Field Experiments 1979, pp 1 - 376 **- DOI: https://doi.org/10.23637/ERADOC-1-45**

Rothamsted Experimental Station

Harpenden

Lawes Agricultural Trust

# YIELDS

# of the

# FIELD

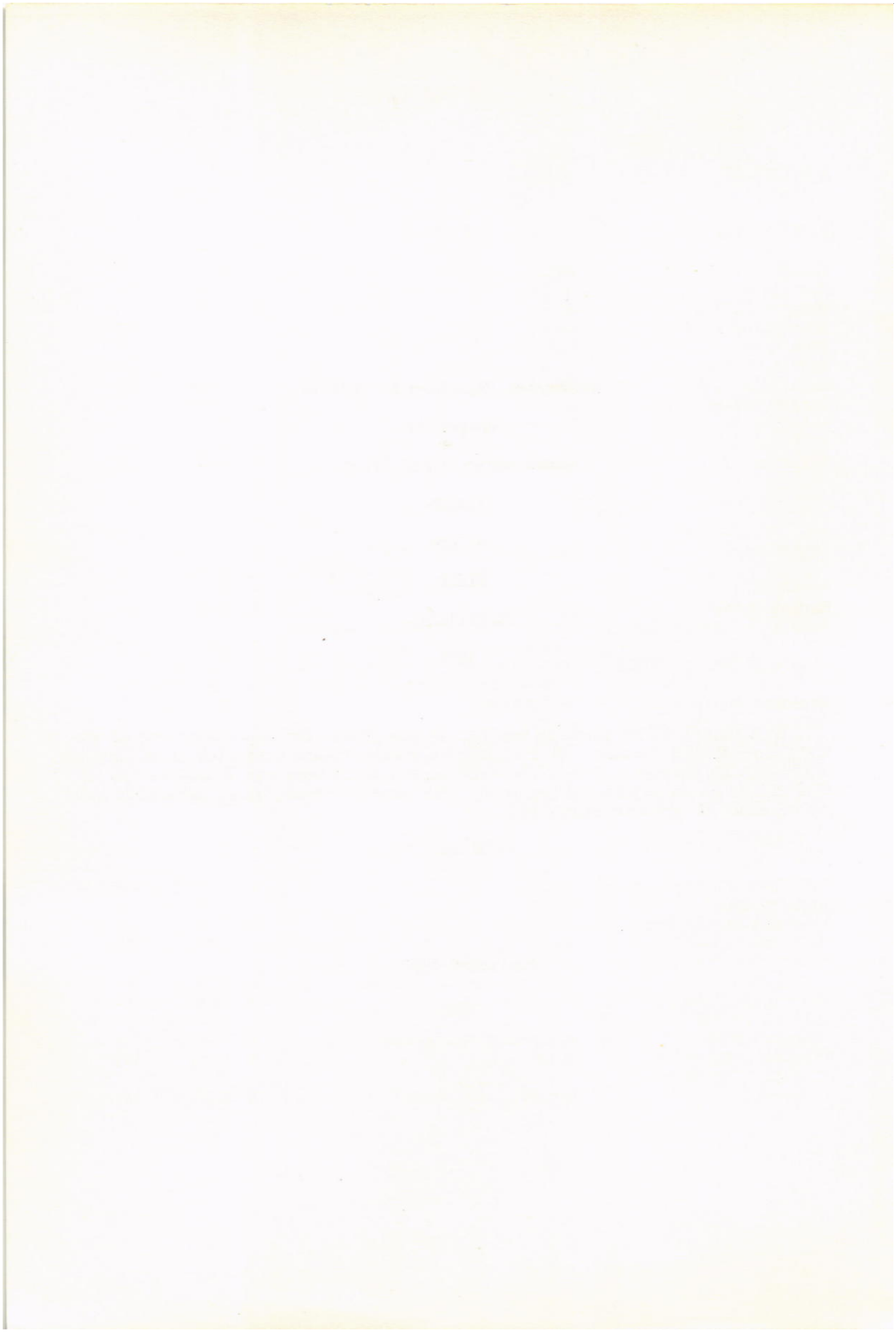
# EXPERIMENTS

# 1979

This report is produced by members of the Statistics Department and of the Field Experiments Section. It includes only experiments conducted at Rothamsted, Woburn and Saxmundham. Only those experiments which have the determination of crop yields as an object are included. For many of these, other determinations are of equal or greater importance.

Price: 7.00

Published 1980



# CONTENTS 1979



*https://doi.org/10.23637/ERADOC-1-45* 

CONTENTS 1979



*https://doi.org/10.23637/ERADOC-1-45* 

CONTENTS 1979

CONTENTS 1979



*https://doi.org/10.23637/ERADOC-1-45* 

# CONVENTIONS 1979

For each experiment current treatments are shown, together with the factor and level names which are used in the tables. The program used for the analyses of these experiments limits level names to eight characters, and factor names similarly, though a suffix of up to 3 digits in brackets may be appended if required.

For each experiment, other than annuals, references are given to previous years. These refer to the '(Numerical)(Results) Yields of the Field Experiments' - (t) indicates a year when treatments were described. Since 1973 treatments have been described annually for all experiments and (t) is not used for these years.

For the classical and some long-term experiments reference is made to 'Details' - separate publications, giving full descriptions of treatments until 1967 & 1973, with full titles 'Details of the Classical and Long Term Experiments up to 1967' and 'Details of the Classical and Long Term Experiments up to 1973'.

The following conventions are observed unless otherwise stated.

All areas are in hectares. All plot dimensions are in metres.

All seed rates, rates of application of fertilisers, sprays etc. are per hectare.

All yields and plant numbers are per hectare.

The following abbreviations are used in variate headings:

Wheat, barley, oats, rye, beans etc.

| | |
|---|---|
| Grain: | Grain (at 85% dry matter) |
| Straw: | Straw (at 85% dry matter) |

Sugar beet

| | |
|---|---|
| Roots: | Roots (washed) |
| Sugar %: | Sugar percentage |

All crops

| | |
|---|---|
| Mean D.M. %: | Mean dry matter % as harvested |

For any other crop, details of abbreviations are given as necessary.

'Nitro-Chalk' refers to the grade containing 26% N unless otherwise stated.

Compound fertilisers indicated thus - (20:10:10) = compound fertiliser (20% N, 10% P205, 10% K20), granular unless otherwise stated.

The compound fertiliser (13:13:20) used in our experiments is the grade containing sulphate of potash.

Treatment of cereal seed with organomercury and/or gamma HCH should be assumed in this report, exceptions are noted.



*https://doi.org/10.23637/ERADOC-1-45* *pp 8*

## Harvest areas for cereals

On most of those cereal experiments at Rothamsted and Woburn (but not Saxmundham) which are harvested by combine the 'blank-row' technique is used to distinguish the areas taken for yield from the discard areas. When seed is drilled in rows 7 in. (18 cm.) apart (the most common arrangement), appropriate coulters are prevented from sowing and 8 or 16 rows are left for yield according to the cutter-bar width of the combine to be used. If the row-spacing is other than 7 in. a similar arrangement is used but with a different number of rows.

The ends of plots are separated from each other or from headlands by 3 ft (91 cm.) fallow paths made after the crop has established.

The 'Area harvested' in the 'Yields', when the blank-row technique is used, is the product:-

number of rows harvested x distance between rows x length of rows.

A series of experiments at Rothamsted showed that on average the yield of 16 rows (50 ft (15 m) long) was 7.8% greater with blank rows than without. (Experimental Husbandry 23 pp 16-20 (1972)).

If no rows are left blank and the plot is wider than the combine harvester so that discards are left uncut, the 'Area harvested' is the product:-

width of cutter bar x length of rows.

If the plot is narrower than the combine so that the whole area between paths is cut, the 'Area harvested' is the product:-

number of rows x distance between rows x length of rows.

We do not apply the adjustment used by some workers who take the harvested areas as width x length where each is measured to the centre of 'paths' up to a maximum of 18 in (46 cm).

## Tables of means

Tables of means are presented directly from computer output. Both factor and level names are present in upper case characters. Vertical and horizontal lines are omitted e.g.:-

| FACTOR C | LEVEL C1 | | LEVEL C2 | | LEVEL C3 | |
|---|---|---|---|---|---|---|
| FACTOR B | LEVEL B1 | LEVEL B2 | LEVEL B1 | LEVEL B2 | LEVEL B1 | LEVEL B2 |
| FACTOR A | | | | | | |
| LEVEL A1 | * | * | * | * | * | * |
| LEVEL A2 | * | * | * | * | * | * |

## Standard errors

NOTES: (1) This report gives standard errors of differences, not of means.

(2) Annotations (e.g. * min rep, max-min, max rep) to S.E.Ds are only explained the first time they occur in any experiment.



*https://doi.org/10.23637/ERADOC-1-45* *pp 9*

79/R/BK/1

BROADBALK

Object: To study the effects of organic and inorganic manures on continuous winter wheat. From 1968 two three-year rotations were included: potatoes, beans, wheat and fallow, wheat, wheat. In 1979 the first rotation was changed to fallow, potatoes, wheat.

The 136th year, wheat, fallow, potatoes. The 12th year of the rotations.

For previous years see 'Details' 1967 & 1973, Station Report for 1966, pp. 229-231, Station Report for 1968, Part 2, and 74-78/R/BK/1.

Areas harvested:

| | Section | |
|---|---|---|
| Wheat: | 0 | 0.00434 |
| | 1 | 0.00798 |
| | 5, 6 & 7 | 0.00659 |
| | 8 & 9 | 0.00694 |
| Potatoes: | 4 | 0.00659 |

Treatments:

Whole plots

| PLOT | Plot | Fertilisers and organic manures:- Treatments until 1967 | Treatments from 1968 |
|---|---|---|---|
| 01DN2PK | 01 | - | D N2 P K |
| 21DN2 | 21 | D | D N2 |
| 22D | 22 | D | D |
| 030 | 03 | None | None |
| 05MIN | 05 | P K Na Mg | P K (Na) Mg |
| 06N1MIN | 06 | N1 P K Na Mg | N1 P K (Na) Mg |
| 07N2MIN | 07 | N2 P K Na Mg | N2 P K (Na) Mg |
| 08N3MIN | 08 | N3 P K Na Mg | N3 P K (Na) Mg |
| 09N4MIN | 09 | N*1 P K Na Mg | N4 P K (Na) Mg |
| 10N2 | 10 | N2 | N2 |
| 11N2P | 11 | N2 P | N2 P |
| 12N2PNA | 12 | N2 P Na | N2 P Na |
| 13N2PK | 13 | N2 P K | N2 P K |
| 14N2PKMG | 14 | N2 P Mg | N2 P K Mg |
| 15N3MIN | 15 | N2 P K Na Mg | N3 P K (Na) Mg |
| 16N2MIN | 16 | N*2 P K Na Mg | N2 P K (Na) Mg |
| 17N2MINH | 17 | +N2 | N2 1/2(P K (Na) Mg) |
| 18N2MINH | 18 | + P K Na Mg | N2 1/2(P K (Na) Mg) |
| 19C | 19 | C | C |
| 20NKMG | 20 | N2 K Na Mg | N2 K (Na) Mg |

+ Alternating



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BK/1

N1,N2,N3,N4: 48, 96, 144, 192 kg N (as sulphate of ammonia until 1967, except N* which was nitrate of soda. All as 'Nitro-Chalk' from 1968).
P: 35 kg P as single superphosphate (triple superphosphate in 1974)
K: 90 kg K as sulphate of potash
Na: 55 kg Na as sulphate of soda
(Na): 16 kg Na as sulphate of soda until 1973
Mg: 30 kg Mg annually to Plot 14, 35 kg Mg every third year to other plots since 1974. All as kieserite since 1974, previously as sulphate of magnesia annually
D: Farmyard manure at 35 tonnes
C: Castor meal to supply 96 kg N
MIN: P K (Na) Mg

Strips of sub-plots: Until 1967 wheat alone was grown on the experiment, with some bare fallowing on strips of sub-plots. From 1968, ten sub-plots were started with the following cropping:-

| SECTION | | 1968 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SC0/W28 | Section 0 | W (F 1951) | W | W | W | W | W | W | W | W | W | W | W |
| SC1/W13 | Section 1 | W (F 1966) | W | W | W | W | W | W | W | W | W | W | W |
| - | Section 2 | BE | W | P | BE | W | P | BE | W | P | BE | W | F |
| - | Section 3 | W (F 1967) | W | F | W | W | F | W | W | F | W | W | F |
| POTATOES | Section 4 | W (F 1965) | P | BE | W | P | BE | W | P | BE | W | P | P |
| SC5/W1F | Section 5 | W (F 1965) | F | W | W | F | W | W | F | W | W | F | W |
| SC6/W2F | Section 6 | F | W | W | F | W | W | F | W | W | F | W | W |
| SC7/W1BE | Section 7 | P | BE | W | P | BE | W | P | BE | W | P | BE | W |
| SC8/W7 | Section 8* | W (F 1963) | W | W | W | F | W | W | W | W | W | W | W |
| SC9/W21 | Section 9 | W (F 1958) | W | W | W | W | W | W | W | W | W | W | W |

W = wheat, P = potatoes, BE = beans, F = fallow

* No weedkillers

NOTE: For a fuller record of treatments see 'Details' etc.

Standard applications:
Winter wheat: Manures: Section 1 only: Chalk at 2.9 t. Weedkillers: Glyphosate at 1.5 kg in 220 l (applied to sections 0, 1, 6 and 9 only). Chlortoluron at 3.6 kg in 220 l to all wheat sections except 8. Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.2 kg in 220 l) to all wheat sections except 8. Fungicide: Triadimefon at 0.13 kg in 220 l.
Potatoes: Paraquat at 0.42 kg ion with linuron at 1.1 kg in 220 l. Fungicide: Mancozeb at 1.4 kg in 220 l applied on five occasions, with insecticide on the first three. Insecticide: Pirimicarb at 0.14 kg.
Fallow: Sections 2 & 3: Chalk at 2.9 t. Weedkillers: Glyphosate at 1.5 kg in 220 l.

NOTE: Since autumn 1975 chalk is applied at 2.9 t each autumn to sets of Sections on a three-year cycle. Year 1: Sections 1, 2, 3. Year 2: Sections 6, 7, 8 & 9. Year 3: Sections 0, 4, 5. Chalk is applied to all plots of each section.

Seed: Wheat: Flanders, sown at 200 kg.
Potatoes: Pentland Crown.



*https://doi.org/10.23637/ERADOC-1-45* *pp 11*

79/R/BK/1

Cultivations, etc.:-

ALL SECTIONS: Sulphate of potash, sulphate of soda, kieserite and castor meal applied: 2 Oct, 1978. Superphosphate applied: 3 Oct. FYM applied: 4 Oct. Ploughed: 5 Oct.

CROPPED SECTIONS: Wheat: Glyphosate applied: 22 Sept, 1978. Chalk applied: 3 Oct. Disc harrowed and rotary harrowed: 9 Oct. Seed sown: 10 Oct. Chlortoluron applied: 12 Oct. N applied: 3 May, 1979. 'Banlene Plus' applied: 9 May. Triadimefon applied: 27 June. Combine harvested: 28 Aug.

Potatoes: Spring-tine cultivated: 1 May. N applied, spike rotary cultivated, potatoes planted: 14 May. Grubbed twice: 18 May and 3 July. Weedkillers applied: 30 May. Insecticide and fungicide applied: 26 June, 5 July, 20 July. Fungicide applied: 3 Aug and 15 Aug. Haulm pulverized: 4 Sept. Lifted: 14 Sept.

FALLOW SECTION: Chalk applied: 3 Oct. Spring-tine cultivated: 1 May. Ploughed twice: 23 May, 10 July. Heavy spring-tine cultivated twice: 14 June and 31 July.

POTATOES

***** TABLES OF MEANS *****

| PLOT | TOTAL TUBERS TONNES/ HECTARE | % WARE 3.81 CM(1.5 INCH) RIDDLE |
|---|---|---|
| 01DN2PK | 25.6 | 92.8 |
| 21DN2 | 29.7 | 95.6 |
| 22D | 24.0 | 95.2 |
| 030 | 6.1 | 84.7 |
| 05MIN | 9.8 | 89.7 |
| 06N1MIN | 18.7 | 86.5 |
| 07N2MIN | 25.7 | 92.7 |
| 08N3MIN | 30.0 | 91.4 |
| 09N4MIN | 31.1 | 94.7 |
| 10N2 | 7.7 | 90.8 |
| 11N2P | 7.9 | 80.3 |
| 12N2PNA | 8.8 | 78.2 |
| 13N2PK | 15.9 | 84.3 |
| 14N2PKMG | 22.9 | 92.4 |
| 15N3MIN | 30.0 | 93.8 |
| 16N2MIN | 23.4 | 92.1 |
| 17N2MINH | 20.6 | 93.7 |
| 18N2MINH | 20.9 | 91.9 |
| 19C | 13.5 | 93.5 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 12*

79/R/BK/1 WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SECTION PLOT | SC7/W1BE | SC5/W1F | SC6/W2F | SC1/W13 | SC9/W21 | SC0/W28 | SC8/W7 | MEAN |
|---|---|---|---|---|---|---|---|---|
| 01DN2PK | 8.70 | 7.96 | 8.34 | * | * | * | * | 8.34 |
| 21DN2 | 8.27 | 8.31 | 8.34 | 7.31 | 7.92 | 6.64 | 4.06 | 7.26 |
| 22D | 6.91 | 7.68 | 5.55 | 5.76 | 5.72 | 5.31 | 3.02 | 5.71 |
| 030 | 2.65 | 2.43 | 0.83 | 1.15 | 1.04 | 1.05 | 1.26 | 1.49 |
| 05MIN | 3.58 | 2.33 | 0.83 | 1.03 | 1.35 | 1.54 | 1.99 | 1.81 |
| 06N1MIN | 5.83 | 5.15 | 3.85 | 3.67 | 3.96 | 3.91 | 2.18 | 4.08 |
| 07N2MIN | 7.08 | 7.22 | 6.35 | 5.83 | 6.04 | 5.94 | 3.13 | 5.94 |
| 08N3MIN | 7.33 | 7.63 | 7.36 | 6.33 | 6.60 | 6.28 | 4.05 | 6.51 |
| 09N4MIN | 7.60 | 7.41 | 7.77 | 7.02 | 7.31 | 6.63 | 5.07 | 6.97 |
| 10N2 | 4.63 | 4.61 | 4.18 | 2.28 | 2.04 | 2.80 | 2.09 | 3.23 |
| 11N2P | 5.82 | 5.30 | 5.44 | 3.94 | 2.98 | 4.64 | 2.59 | 4.39 |
| 12N2PNA | 6.28 | 5.87 | 6.04 | 5.14 | 4.61 | 5.49 | 2.55 | 5.14 |
| 13N2PK | 6.70 | 6.30 | 6.12 | 6.13 | 6.04 | 5.77 | 3.89 | 5.85 |
| 14N2PKMG | 6.99 | 6.70 | 6.43 | 6.67 | 6.27 | 6.25 | 3.60 | 6.13 |
| 15N3MIN | 6.96 | 7.46 | 6.99 | 6.92 | 6.69 | 6.54 | 4.61 | 6.60 |
| 16N2MIN | 6.74 | 6.74 | 6.04 | 5.84 | 6.34 | 5.72 | 4.07 | 5.93 |
| 17N2MINH | 7.00 | 6.74 | 6.10 | 5.13 | 6.37 | 5.28 | 4.86 | 5.93 |
| 18N2MINH | 7.21 | 6.94 | 6.37 | 5.34 | 6.54 | 5.58 | 4.52 | 6.07 |
| 19C | 4.47 | 4.94 | 3.13 | 2.88 | 3.25 | 2.71 | 2.24 | 3.37 |
| 20NKMG | * | * | * | 1.58 | * | 2.35 | * | 1.96 |

GRAIN MEAN DM% 83.4

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| SECTION PLOT | SC7/W1BE | SC5/W1F | SC61/W2F | SC1/W13 | SC9/W21 | SC0/W28 | SC8/W7 | MEAN |
|---|---|---|---|---|---|---|---|---|
| 01DN2PK | 6.03 | 5.62 | 5.66 | * | * | * | * | 5.77 |
| 21DN2 | 6.55 | 6.18 | 5.73 | 5.20 | 5.71 | 4.17 | 5.17 | 5.53 |
| 22D | 3.74 | 5.10 | 3.35 | 3.86 | 3.64 | 3.69 | 3.27 | 3.81 |
| 030 | 1.13 | 1.22 | 0.33 | 0.60 | 0.47 | 0.61 | 0.92 | 0.75 |
| 05MIN | 1.78 | 1.31 | 0.33 | 0.53 | 0.62 | 0.49 | 1.94 | 1.00 |
| 06N1MIN | 2.01 | 3.11 | 2.22 | 1.74 | 2.17 | 2.23 | 4.38 | 2.55 |
| 07N2MIN | 4.60 | 4.58 | 3.80 | 3.40 | 3.91 | 3.70 | 3.97 | 4.00 |
| 08N3MIN | 4.55 | 4.35 | 4.51 | 3.32 | 4.60 | 3.67 | 4.31 | 4.19 |
| 09N4MIN | 5.10 | 4.36 | 5.24 | 4.45 | 4.42 | 4.74 | 4.28 | 4.66 |
| 10N2 | 2.02 | 2.04 | 2.07 | 1.19 | 1.02 | 1.48 | 2.40 | 1.75 |
| 11N2P | 2.63 | 2.63 | 2.65 | 1.61 | 1.10 | 2.30 | 2.59 | 2.22 |
| 12N2PNA | 2.93 | 3.13 | 3.21 | 2.05 | 2.26 | 3.43 | 3.05 | 2.87 |
| 13N2PK | 4.26 | 4.56 | 3.90 | 3.97 | 4.35 | 4.38 | 4.62 | 4.29 |
| 14N2PKMG | 3.93 | 4.30 | 4.13 | 3.76 | 4.19 | 3.92 | 4.18 | 4.06 |
| 15N3MIN | 4.08 | 4.83 | 5.03 | 3.74 | 4.72 | 4.13 | 4.69 | 4.46 |
| 16N2MIN | 4.30 | 4.30 | 3.86 | 3.62 | 4.09 | 3.42 | 4.09 | 3.95 |
| 17N2MINH | 4.35 | 3.85 | 3.85 | 3.12 | 4.26 | 3.66 | 4.22 | 3.90 |
| 18N2MINH | 4.86 | 4.68 | 3.98 | 3.24 | 4.07 | 3.66 | 4.22 | 4.10 |
| 19C | 2.34 | 2.67 | 1.54 | 1.19 | 1.70 | 1.58 | 2.26 | 1.90 |
| 20NKMG | * | * | * | 0.86 | * | 1.24 | * | 1.05 |

STRAW MEAN DM% 91.0



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/HB/2

HOOSFIELD

Object: To study the effects of organic and inorganic manures on continuous spring barley. From 1968 to 1978 a rotation of potatoes, beans and barley was practised. In 1979 the rotation was discontinued and the experiment reverted to continuous barley.

The 128th year, barley.

For previous years see 'Details' 1967 & 1973, Station Report for 1966 and 74-78/R/HB/2.

Treatments: All combinations of:-

1. MANURE — Fertilisers, organic manures and frequency of barley cropping:

| | Form of N 1852-1966 | Additional treatments 1852-1979 | Frequency of barley cropping since last non-cereal |
|---|---|---|---|
| ---B12F | None | - | 12th after fallow 1967 |
| -P-B12F | None | P | 12th after fallow 1967 |
| --KB12F | None | K (Na) Mg | 12th after fallow 1967 |
| -PKB12F | None | P K (Na) Mg | 12th after fallow 1967 |
| A--B12F | A | - | 12th after fallow 1967 |
| AP-B12F | A | P | 12th after fallow 1967 |
| A-KB12F | A | K (Na) Mg | 12th after fallow 1967 |
| APKB12F | A | P K (Na) Mg | 12th after fallow 1967 |
| N--B12F | N | - | 12th after fallow 1967 |
| NP-B12F | N | P | 12th after fallow 1967 |
| N-KB12F | N | K (Na) Mg | 12th after fallow 1967 |
| NPKB12F | N | P K (Na) Mg | 12th after fallow 1967 |
| N--SB12F | N | Si | 12th after fallow 1967 |
| NP-SB12F | N | P Si | 12th after fallow 1967 |
| N-KSB12F | N | K (Na) Mg Si | 12th after fallow 1967 |
| NPKSB12F | N | P K (Na) Mg Si | 12th after fallow 1967 |
| N--B1BE | N | - | 1st after beans 1978 |
| NP-B1BE | N | P | 1st after beans 1978 |
| N-KB1BE | N | K (Na) Mg | 1st after beans 1978 |
| NPKB1BE | N | P K (Na) Mg | 1st after beans 1978 |
| N--SB1BE | N | Si | 1st after beans 1978 |
| NP-SB1BE | N | P Si | 1st after beans 1978 |
| N-KSB1BE | N | K (Na) Mg Si | 1st after beans 1978 |
| NPKSB1BE | N | P K (Na) Mg Si | 1st after beans 1978 |
| C--B12F | C | - | 12th after fallow 1967 |
| CP-B12F | C | P | 12th after fallow 1967 |
| C-KB12F | C | K (Na) Mg | 12th after fallow 1967 |
| CPKB12F | C | P K (Na) Mg | 12th after fallow 1967 |
| C--B2BE | C | - | 2nd after beans 1977 |
| CP-B2BE | C | P | 2nd after beans 1977 |
| C-KB2BE | C | K (Na) Mg | 2nd after beans 1977 |
| CPKB2BE | C | P K (Na) Mg | 2nd after beans 1977 |
| C--B1BE | C | - | 1st after beans 1978 |
| CP-B1BE | C | P | 1st after beans 1978 |
| C-KB1BE | C | K (Na) Mg | 1st after beans 1978 |
| CPKB1BE | C | P K (Na) Mg | 1st after beans 1978 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 14*

79/R/HB/2

| | | | |
|---|---|---|---|
| C--B1PO | C | - | 1st after potatoes 1978 |
| CP-B1PO | C | P | 1st after potatoes 1978 |
| C-KB1PO | C | K (Na) Mg | 1st after potatoes 1978 |
| CPKB1PO | C | P K (Na) Mg | 1st after potatoes 1978 |
| D B12 | None | D | 12th after fallow 1967 |
| (D) B12 | (D) | - | 12th after fallow 1967 |
| (A) B12 | (Ashes) | - | 12th after fallow 1967 |
| - B12 | None | - | 12th after fallow 1967 |

Form of N: A, sulphate of ammonia: N, nitrate of soda - each to supply 48 kg N
C, castor meal to supply 96 kg N
P: 35 kg P as single superphosphate (triple superphosphate in 1974)
K: 90 kg K as sulphate of potash
(Na): 16 kg Na as sulphate of soda until 1973
Mg: 35 kg Mg, as kieserite every third year, since 1974 (sulphate of magnesia annually until 1973)
Si: Silicate of soda at 450 kg
D: Farmyard manure at 35 tonnes. (D): until 1871 only
(Ashes): Weed ash 1852-1916, furnace ash 1917-1932, none since

2. N — Nitrogen fertiliser (kg N), as 'Nitro-Chalk', since 1968 (cumulative N applications until 1973, on a cyclic system since 1974):

0
48
96
144

There are four extra plots testing all combinations of:-

1. MANURE — Fertilisers other than magnesium:

| | | |
|---|---|---|
| 551AN2PK | Plot 551 AN2PK | 12th barley after fallow 1967 |
| 561--PK | Plot 561 --PK | 12th barley after fallow 1967 |
| 571NN2-- | Plot 571 NN2 | 12th barley after fallow 1967 |
| 581NN2-- | Plot 581 NN2 | 12th barley after fallow 1967 |

N2: 96 kg N as 'Nitro-Chalk' since 1968. Other symbols as above.

2. MGNESIUM — Magnesium fertiliser (kg Mg) as kieserite every third year since 1974:

0
35

NOTE: For a fuller record see 'Details' etc.

Basal applications: Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 kg) in 220 l. Fungicide: Tridemorph at 0.53 kg in 220 l.

Seed: Julia, sown at 160 kg.

Cultivations, etc.:- P, K and Na applied: 13 Nov, 1978. Chalk applied: 20 Nov. FYM applied: 23 Nov. Ploughed: 24 Nov. Spring-tine cultivated, seed sown: 6 Apr, 1979. N applied: 18 May. Weedkillers applied: 19 May. Fungicide applied: 18 June. Combine harvested: 27 Aug.



*https://doi.org/10.23637/ERADOC-1-45* *pp 15*

79/R/HB/2

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N / MANURE | 0 | 48 | 96 | 144 | MEAN |
|---|---|---|---|---|---|
| ---B12F | 0.87 | 1.54 | 1.49 | 1.98 | 1.47 |
| -P-B12F | 1.18 | 3.16 | 4.25 | 4.76 | 3.34 |
| --KB12F | 0.55 | 2.44 | 2.48 | 2.80 | 2.07 |
| -PKB12F | 0.65 | 2.28 | 4.42 | 4.51 | 2.96 |
| A--B12F | 0.92 | 0.84 | 1.91 | 1.77 | 1.36 |
| AP-B12F | 1.52 | 3.44 | 3.70 | 3.38 | 3.01 |
| A-KB12F | 0.47 | 1.20 | 1.50 | 2.04 | 1.30 |
| APKB12F | 1.04 | 2.92 | 4.19 | 4.75 | 3.23 |
| N--B12F | 0.65 | 1.22 | 1.77 | 1.27 | 1.23 |
| NP-B12F | 1.89 | 4.00 | 4.45 | 4.58 | 3.73 |
| N-KB12F | 0.99 | 2.00 | 2.16 | 2.60 | 1.94 |
| NPKB12F | 0.40 | 3.81 | 4.47 | 4.63 | 3.33 |
| N--SB12F | 1.56 | 2.16 | 2.60 | 3.81 | 2.53 |
| NP-SB12F | 1.25 | 4.31 | 4.64 | 5.29 | 3.87 |
| N-KSB12F | 0.73 | 2.42 | 4.07 | 4.74 | 2.99 |
| NPKSB12F | 0.96 | 3.81 | 5.24 | 5.43 | 3.86 |
| N--B1BE | 1.69 | 2.93 | 4.45 | 3.74 | 3.20 |
| NP-B1BE | 2.25 | 5.07 | 5.86 | 5.70 | 4.72 |
| N-KB1BE | 2.11 | 3.70 | 4.41 | 4.36 | 3.64 |
| NPKB1BE | 1.87 | 4.81 | 6.00 | 6.46 | 4.78 |
| N--SB1BE | 3.09 | 3.81 | 4.55 | 5.30 | 4.19 |
| NP-SB1BE | 2.47 | 4.82 | 5.70 | 5.90 | 4.72 |
| N-KSB1BE | 1.91 | 4.38 | 5.28 | 5.17 | 4.18 |
| NPKSB1BE | 3.55 | 4.96 | 5.57 | 6.00 | 5.02 |
| C--B12F | 0.92 | 3.06 | 4.30 | 4.61 | 3.22 |
| CP-B12F | 1.42 | 3.81 | 5.29 | 5.18 | 3.92 |
| C-KB12F | 1.31 | 2.69 | 4.07 | 4.07 | 3.03 |
| CPKB12F | 1.77 | 3.97 | 5.01 | 5.24 | 4.00 |
| C--B2BE | 2.01 | 3.21 | 4.04 | 4.54 | 3.45 |
| CP-B2BE | 1.13 | 3.16 | 4.76 | 5.14 | 3.55 |
| C-KB2BE | 1.06 | 2.70 | 3.74 | 4.91 | 3.10 |
| CPKB2BE | 2.58 | 3.72 | 5.46 | 4.67 | 4.10 |
| C--B1BE | 1.68 | 3.35 | 4.97 | 5.18 | 3.79 |
| CP-B1BE | 2.19 | 4.39 | 5.74 | 5.35 | 4.42 |
| C-KB1BE | 2.05 | 3.55 | 4.85 | 4.96 | 3.85 |
| CPKB1BE | 3.16 | 5.15 | 4.74 | 5.57 | 4.65 |
| C--B1PO | 1.73 | 4.10 | 4.69 | 4.69 | 3.80 |
| CP-B1PO | 2.26 | 4.28 | 5.82 | 5.18 | 4.38 |
| C-KB1PO | 1.49 | 3.36 | 4.47 | 4.41 | 3.43 |
| CPKB1PO | 2.16 | 4.43 | 5.67 | 5.71 | 4.49 |
| D B12 | 3.31 | 3.99 | 5.78 | 5.18 | 4.56 |
| (D) B12 | 1.28 | 2.27 | 2.61 | 3.49 | 2.41 |
| (A) B12 | 1.08 | 2.04 | 2.85 | 4.13 | 2.53 |
| - B12 | 0.72 | 1.32 | 2.21 | 1.84 | 1.52 |
| MEAN | 1.59 | 3.29 | 4.23 | 4.43 | 3.38 |

GRAIN MEAN DM% 78.6



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/HB/2

BARLEY

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| N / MANURE | 0 | 48 | 96 | 144 | MEAN |
|---|---|---|---|---|---|
| ---B12F | 0.40 | 0.60 | 0.80 | 0.96 | 0.69 |
| -P-B12F | 0.61 | 1.42 | 1.96 | 2.42 | 1.60 |
| --KB12F | 0.39 | 1.19 | 1.37 | 1.55 | 1.12 |
| -PKB12F | 0.39 | 1.19 | 2.77 | 2.61 | 1.74 |
| A--B12F | 0.40 | 0.40 | 0.81 | 0.82 | 0.61 |
| AP-B12F | 0.81 | 1.42 | 1.62 | 1.82 | 1.42 |
| A-KB12F | 0.40 | 0.59 | 0.80 | 1.18 | 0.74 |
| APKB12F | 0.40 | 1.43 | 2.44 | 3.41 | 1.92 |
| D B12 | 1.31 | 2.39 | 3.42 | 4.25 | 2.84 |
| (D) B12 | 0.52 | 1.04 | 1.54 | 1.81 | 1.23 |
| (A) B12 | 0.26 | 0.80 | 1.08 | 2.16 | 1.08 |
| - B12 | 0.26 | 0.80 | 1.05 | 1.05 | 0.79 |
| MEAN | 0.51 | 1.11 | 1.64 | 2.00 | 1.32 |

STRAW MEAN DM% 88.0

PLOT AREA HARVESTED 0.00007

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| MANURE / MGNESIUM | 551AN2PK | 561--PK | 571NN2-- | 581NN2-- | MEAN |
|---|---|---|---|---|---|
| 0 | 3.89 | 0.36 | 2.60 | 0.91 | 1.94 |
| 35 | 4.18 | 0.52 | 1.96 | 1.59 | 2.06 |
| MEAN | 4.04 | 0.44 | 2.28 | 1.25 | 2.00 |

GRAIN MEAN DM% 75.6

PLOT AREA HARVESTED 0.00306



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WF/3

WHEAT AND FALLOW

Object: To study the effects of fallowing for one or three years on unmanured winter wheat - Hoosfield.

The 124th year, winter wheat.

For previous years see 'Details' 1967, 1973 and 74-78/R/WF/3.

Whole plot dimensions: 9.60 x 52.1.

Treatments:

| PLOT | Plot number and phase of fallowing cycle (up to 1979):- | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| - | Plot 1 | F | F | F | W | F | W | F | W | F |
| 2 FALL 3 | Plot 2 | W | F | W | F | W | F | F | F | W |
| - | Plot 3 | F | W | F | F | F | W | F | W | F |
| - | Plot 4 | F | F | W | F | W | F | W | F | F |
| - | Plot 5 | F | W | F | W | F | F | F | W | F |
| 6 FALL 1 | Plot 6 | W | F | F | F | W | F | W | F | W |
| - | Plot 7 | F | W | F | W | F | W | F | F | F |
| 8 FALL 1 | Plot 8 | W | F | W | F | F | F | W | F | W |

W = wheat, F = fallow.

Basal applications: Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 kg in 220 l).

Seed: Flanders, seed dressed chlorfenvinphos, sown at 200 kg.

Cultivations, etc.:-
Wheat plots: Ploughed: 9 Oct, 1978. Rotary harrowed: 10 Oct. Seed sown: 11 Oct. Weedkillers applied: 9 May, 1979. Combine harvested: 28 Aug.
Fallow plots: Ploughed: 9 Oct, 1978. Spring-tine cultivated: 1 May, 1979. Ploughed: 24 May. Heavy spring-tine cultivated: 14 June. Ploughed: 11 July. Heavy spring-tine cultivated: 31 July.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PLOT | 6 FALL 1 | 8 FALL 1 | 2 FALL 3 | MEAN |
|---|---|---|---|---|
| | 1.31 | 1.16 | 1.12 | 1.20 |

GRAIN MEAN DM% 82.8

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| PLOT | 6 FALL 1 | 8 FALL 1 | 2 FALL 3 | MEAN |
|---|---|---|---|---|
| | 0.37 | 0.36 | 0.25 | 0.33 |

STRAW MEAN DM% 91.7

PLOT AREA HARVESTED 0.01483



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/EX/4

EXHAUSTION LAND

Object: To study the residual effects of manures, applied 1856-1901, on the yield of continuous barley - Hoosfield.

The 124th year, barley.

For previous years see 'Details' 1967, 1973 and 74-78/R/EX/4.

Treatments: All combinations of:-

Whole plots

1. PLOTFERT(01) Plot numbers and manuring 1876-1901:

| | |
|---|---|
| 1- | Plot 1 None |
| 2- | Plot 2 None |
| 3D | Plot 3 D |
| 4D | Plot 4 D |
| 5N | Plot 5 N |
| 6N* | Plot 6 N* |
| 7NMIN | Plot 7 N P K Na Mg |
| 8N*MIN | Plot 8 N* P K Na Mg |
| 9P | Plot 9 P |
| 10MIN | Plot 10 P K Na Mg |

N - 96 kg N as ammonium salts
N* - 96 kg N as nitrate of soda
P - 34 kg P as superphosphate
K - 137 kg K as sulphate of potash
Na - 16 kg Na as sulphate of soda
Mg - 11 kg Mg as sulphate of magnesia
D - Farmyard manure at 35 tonnes
MIN - P K Na Mg

Sub plots

2. N Nitrogen fertiliser (kg N) (basal until 1975, on a cyclic system since 1976):

0
48
96
144

For a fuller record of treatments see 'Details' 1967 etc.

Basal applications: Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) and mecoprop at 1.7 kg in 220 l. Fungicide: Tridemorph at 0.53 kg in 220 l.

Seed: Julia, sown at 160 kg.

Cultivations, etc.:- Ploughed: 15 Dec, 1978. Spring-tine cultivated, seed sown: 18 Apr, 1979. N applied: 17 May. Weedkillers applied: 15 June. Fungicide applied: 18 June. Combine harvested: 1 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 19*

79/R/EX/4

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N PLOTFERT(01) | 0 | 48 | 96 | 144 | MEAN |
|---|---|---|---|---|---|
| 1- | 0.44 | 0.86 | 1.28 | 1.22 | 0.95 |
| 2- | 0.31 | 0.63 | 0.73 | 1.03 | 0.67 |
| 3D | 1.50 | 3.54 | 4.57 | 4.62 | 3.56 |
| 4D | 1.00 | 3.15 | 2.80 | 4.08 | 2.76 |
| 5N | 0.51 | 0.95 | 1.19 | 1.60 | 1.06 |
| 6N* | 0.40 | 0.57 | 0.33 | 0.65 | 0.49 |
| 7NMIN | 1.37 | 2.71 | 3.93 | 4.27 | 3.07 |
| 8N*MIN | 0.59 | 2.29 | 1.05 | 1.96 | 1.47 |
| 9P | 1.29 | 3.17 | 4.15 | 3.89 | 3.12 |
| 10MIN | 0.50 | 2.08 | 1.32 | 2.33 | 1.56 |
| MEAN | 0.79 | 2.00 | 2.13 | 2.57 | 1.87 |

GRAIN MEAN DM% 81.6

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| N PLOTFERT(01) | 0 | 48 | 96 | 144 | MEAN |
|---|---|---|---|---|---|
| 1- | 0.37 | 0.22 | 0.51 | 0.51 | 0.40 |
| 2- | 0.14 | 0.15 | 0.22 | 0.37 | 0.22 |
| 3D | 0.30 | 1.76 | 2.64 | 2.73 | 1.86 |
| 4D | 0.15 | 1.33 | 1.17 | 2.05 | 1.18 |
| 5N | 0.15 | 0.44 | 0.52 | 0.74 | 0.46 |
| 6N* | 0.15 | 0.15 | 0.15 | 0.22 | 0.17 |
| 7NMIN | 0.29 | 1.25 | 1.97 | 2.76 | 1.57 |
| 8N*MIN | 0.29 | 0.88 | 0.36 | 0.73 | 0.57 |
| 9P | 0.30 | 1.24 | 2.04 | 2.44 | 1.50 |
| 10MIN | 0.22 | 0.81 | 0.43 | 1.02 | 0.62 |
| MEAN | 0.23 | 0.82 | 1.00 | 1.36 | 0.85 |

STRAW MEAN DM% 90.9

SUB PLOT AREA HARVESTED 0.00728



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/PG/5

# PARK GRASS

Object: To study the effects of organic and inorganic manures and lime on old grass (for hay).

The 124th year, hay.

For previous years see 'Details' 1967 and 1973 and 74-78/R/PG/5.

Treatments:

Whole plots

| MANURE | Fertilisers and organic manures:- | |
|---|---|---|
| N1 | Plot 1 | N1 |
| 0(D) | Plot 2 | None (D until 1863) |
| 0/PLOT3 | Plot 3 | None |
| P | Plot 4-1 | P |
| N2P | Plot 4-2 | N2 P |
| N1MIN | Plot 6 | N1 P K Na Mg |
| MIN | Plot 7 | P K Na Mg |
| PNAMG | Plot 8 | P Na Mg |
| N2MIN | Plot 9 | N2 P K Na Mg |
| N2PNAMG | Plot 10 | N2 P Na Mg |
| N3MIN | Plot 11-1 | N3 P K Na Mg |
| N3MINSI | Plot 11-2 | N3 P K Na Mg Si |
| 0/PLOT12 | Plot 12 | None |
| D/F | Plot 13 | D/F |
| N2*MIN | Plot 14 | N2* P K Na Mg |
| MIN(N2*) | Plot 15 | P K Na Mg (N2* until 1875) |
| N1*MIN | Plot 16 | N1* P K Na Mg |
| N1* | Plot 17 | N1* |
| N2KNAMG | Plot 18 | N2 K Na Mg |
| D | Plot 19 | D |
| D/N*PK | Plot 20 | D/N*P K |

| | |
|---|---|
| N1, N2, N3: | 48, 96, 144 kg N as sulphate of ammonia |
| N1*, N2*: | 48, 96 kg N as nitrate of soda (30 kg N to Plot 20, only in years with no farmyard manure) |
| P: | 35 kg P (15 kg P to Plot 20, only in years with no farmyard manure) as single superphosphate (triple superphosphate in 1974) |
| K: | 225 kg K (45 kg K to Plot 20, only in years with no farmyard manure) as sulphate of potash |
| Na: | 15 kg Na as sulphate of soda |
| Mg: | 10 kg Mg as sulphate of magnesia |
| Si: | Silicate of soda at 450 kg |
| D: | Farmyard manure at 35 tonnes every fourth year |
| F: | Fish meal every fourth year to supply 63 kg N |
| MIN: | P K Na Mg |



*https://doi.org/10.23637/ERADOC-1-45* *pp 21*

79/R/PG/5

Sub plots

| LIME | Liming:- |
|---|---|
| A | a Ground chalk applied as necessary to achieve pH7 |
| B | b Ground chalk applied as necessary to achieve pH6 |
| C | c Ground chalk applied as necessary to achieve pH5 |
| D | d None |

NOTE: Lime was applied regularly, and at the same rate, to all a and b sub plots of Plots 1 to 17 (except 12) from 1924. Differential liming started in 1965 on certain b and c sub plots (except on Plot 12) and in 1976 on certain a sub plots (including Plot 12) and 12b.

Additional sub plots (Plots 18, 19 and 20 only) (tonnes $CaCO_3$ applied every fourth year 1920-1964):-

| | | |
|---|---|---|
| N2KNAMG0 | 18-1 | None |
| N2KNAMG2 | 18-2 | 13.5 |
| N2KNAMG1 | 18-3 | 7.9 |
| D0 | 19-1 | None |
| D2 | 19-2 | 6.3 |
| D1 | 19-3 | 1.1 |
| D/N*PK0 | 20-1 | None |
| D/N*PK2 | 20-2 | 5.6 |
| D/N*PK1 | 20-3 | 1.1 |

Since 1965 Plot 18-1 has been split into two for treatments 'c' and 'd' above and Plot 18-3 split into two for treatments 'a' and 'b'. The remaining sub-plots of Plots 18, 19 and 20 are treated as 'a'.

NOTE: For a fuller record of treatments see 'Details' etc.

Cultivations, etc.:- Superphosphate applied: 17 Nov, 1978. Remaining mineral fertilisers applied: 20 Nov. Fish meal applied: 21 Nov. First N dressing applied: 15 May, 1979. Second N dressing applied: 12 June. Cut twice: 20 June and 2 Oct.



*https://doi.org/10.23637/ERADOC-1-45* *pp 22*

79/R/PG/5

1ST CUT (20/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| LIME / MANURE | A | B | C | D | MEAN |
|---|---|---|---|---|---|
| N1 | 2.11 | 2.68 | 2.17 | 0.45 | 1.85 |
| O(D) | 2.00 | 2.15 | 1.63 | 1.37 | 1.79 |
| O/PLOT3 | 2.13 | 2.34 | 1.25 | 1.26 | 1.74 |
| P | 2.51 | 3.24 | 2.14 | 2.07 | 2.49 |
| N2P | 2.58 | 2.52 | 2.77 | 1.29 | 2.29 |
| N1MIN | 4.55 | 4.08 | | | 4.31 |
| MIN | 4.02 | 4.59 | 2.71 | 1.99 | 3.33 |
| PNAMG | 2.83 | 2.76 | 2.92 | 2.49 | 2.75 |
| N2MIN | 4.60 | 4.46 | 4.23 | 3.07 | 4.09 |
| N2PNAMG | 3.44 | 3.31 | 3.44 | 2.32 | 3.13 |
| N3MIN | 4.16 | 5.14 | 4.16 | 2.01 | 3.87 |
| N3MINSI | 4.77 | 4.75 | 4.91 | 3.04 | 4.37 |
| O/PLOT12 | 2.94 | 2.65 | 2.16 | 2.27 | 2.51 |
| D/F | 4.35 | 5.35 | 4.50 | 4.45 | 4.66 |
| N2*MIN | 3.77 | 4.58 | 4.36 | 3.65 | 4.09 |
| MIN(N2*) | 3.90 | 3.42 | 1.40 | 1.69 | 2.60 |
| N1*MIN | 4.62 | 4.10 | 3.81 | 3.32 | 3.96 |
| N1* | 2.28 | 2.59 | 2.23 | 1.88 | 2.25 |
| N2KNAMG0 | | | 1.21 | 1.18 | 1.19 |
| N2KNAMG2 | 2.45 | | | | 2.45 |
| N2KNAMG1 | 2.41 | 2.53 | | | 2.47 |
| D0 | 4.16 | | | | 4.16 |
| D2 | 4.13 | | | | 4.13 |
| D1 | 4.40 | | | | 4.40 |
| D/N*PK0 | 4.86 | | | | 4.86 |
| D/N*PK2 | 4.89 | | | | 4.89 |
| D/N*PK1 | 4.41 | | | | 4.41 |

1ST CUT MEAN DM% 23.0



*https://doi.org/10.23637/ERADOC-1-45* *pp 23*

79/R/PG/5

2ND CUT (2/10/78) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| LIME / MANURE | A | B | C | D | MEAN |
|---|---|---|---|---|---|
| N1 | 1.54 | 2.00 | 0.72 | 0.45 | 1.18 |
| O(D) | 1.41 | 1.63 | 0.90 | 1.25 | 1.30 |
| O/PLOT3 | 1.43 | 1.70 | 1.06 | 1.07 | 1.32 |
| P | 1.55 | 1.80 | 1.60 | 1.40 | 1.59 |
| N2P | 1.37 | 1.50 | 0.98 | 1.52 | 1.34 |
| N1MIN | 2.35 | 2.33 | | | 2.34 |
| MIN | 2.70 | 2.90 | 1.68 | 1.23 | 2.13 |
| PNAMG | 1.80 | 1.65 | 1.72 | 1.51 | 1.67 |
| N2MIN | 2.09 | 2.64 | 1.26 | 0.86 | 1.71 |
| N2PNAMG | 1.37 | 1.40 | 1.18 | 0.89 | 1.21 |
| N3MIN | 2.79 | 2.53 | 1.82 | 3.52 | 2.66 |
| N3MINSI | 3.59 | 2.55 | 2.23 | 3.97 | 3.08 |
| O/PLOT12 | 2.81 | 1.23 | 1.36 | 1.35 | 1.69 |
| D/F | 2.76 | 3.04 | 2.33 | 1.99 | 2.53 |
| N2*MIN | 2.19 | 2.77 | 2.76 | 2.25 | 2.49 |
| MIN(N2*) | 2.29 | 2.72 | 1.12 | 1.45 | 1.89 |
| N1*MIN | 1.98 | 2.12 | 1.87 | 1.71 | 1.92 |
| N1* | 1.63 | 2.22 | 1.87 | 1.94 | 1.92 |
| N2KNAMG0 | | | 0.52 | 0.55 | 0.54 |
| N2KNAMG2 | 1.57 | | | | 1.57 |
| N2KNAMG1 | 1.60 | 1.71 | | | 1.66 |
| D0 | 2.01 | | | | 2.01 |
| D2 | 2.39 | | | | 2.39 |
| D1 | 2.15 | | | | 2.15 |
| D/N*PK0 | 2.37 | | | | 2.37 |
| D/N*PK2 | 2.78 | | | | 2.78 |
| D/N*PK1 | 2.75 | | | | 2.75 |

2ND CUT MEAN DM% 31.2



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/PG/5

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| LIME / MANURE | A | B | C | D | MEAN |
|---|---|---|---|---|---|
| N1 | 3.64 | 4.67 | 2.89 | 0.89 | 3.02 |
| O(D) | 3.41 | 3.78 | 2.54 | 2.62 | 3.09 |
| O/PLOT3 | 3.56 | 4.04 | 2.31 | 2.33 | 3.06 |
| P | 4.06 | 5.04 | 3.75 | 3.47 | 4.08 |
| N2P | 3.95 | 4.02 | 3.75 | 2.81 | 3.63 |
| N1MIN | 6.90 | 6.41 | | | 6.66 |
| MIN | 6.72 | 7.49 | 4.39 | 3.23 | 5.46 |
| PNAMG | 4.63 | 4.41 | 4.64 | 4.00 | 4.42 |
| N2MIN | 6.69 | 7.10 | 5.48 | 3.93 | 5.80 |
| N2PNAMG | 4.81 | 4.71 | 4.62 | 3.21 | 4.34 |
| N3MIN | 6.95 | 7.67 | 5.98 | 5.53 | 6.53 |
| N3MINSI | 8.36 | 7.30 | 7.14 | 7.01 | 7.45 |
| O/PLOT12 | 5.75 | 3.88 | 3.52 | 3.63 | 4.20 |
| D/F | 7.11 | 8.40 | 6.82 | 6.44 | 7.19 |
| N2*MIN | 5.96 | 7.35 | 7.11 | 5.91 | 6.58 |
| MIN(N2*) | 6.19 | 6.14 | 2.52 | 3.14 | 4.50 |
| N1*MIN | 6.60 | 6.22 | 5.68 | 5.03 | 5.88 |
| N1* | 3.91 | 4.81 | 4.10 | 3.82 | 4.16 |
| N2KNAMG0 | | | 1.73 | 1.73 | 1.73 |
| N2KNAMG2 | 4.02 | | | | 4.02 |
| N2KNAMG1 | 4.02 | 4.24 | | | 4.13 |
| D0 | 6.17 | | | | 6.17 |
| D2 | 6.53 | | | | 6.53 |
| D1 | 6.54 | | | | 6.54 |
| D/N*PK0 | 7.23 | | | | 7.23 |
| D/N*PK2 | 7.67 | | | | 7.67 |
| D/N*PK1 | 7.16 | | | | 7.16 |

TOTAL OF 2 CUTS MEAN DM% 27.1



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/AG/6

AGDELL

Object: To study, by crop yields and soil analyses, the residual values of phosphate and potash applied in the period 1848-1951 and further dressings since 1964.

The tenth year of revised scheme, ryegrass and beans.

For previous yers see 'Details' 1967 and 1973, and 74-78/R/AG/6.

Treatments: All combinations of:-

Whole plots

1. OLDRESD — Fertilisers and organic manures applied to roots every fourth year, in the period 1848-1948:

| | |
|---|---|
| NONE | None |
| PKNAMG | P K Na Mg |
| NPKNAMGC | N P K Na Mg C |

| | |
|---|---|
| N: | 48 kg N as sulphate of ammonia |
| P: | 41 kg P as superphosphate |
| K: | 224 kg K as sulphate of potash |
| Na: | 16 kg Na as sulphate of soda |
| Mg: | 11 kg Mg as sulphate of magnesia |
| C: | Castor meal at 2240 kg supplying about 112 kg N |

2. RN CROP — Rotation 1848-1951 and crop:

| | |
|---|---|
| F/BEANS | With fallow: Roots (turnips or swedes), barley, fallow, wheat 1848-1951. Beans (after grass/clover 1977 & 1978) |
| L/GRASS | With legume: Roots, barley, legume (clover or beans), wheat 1848-1951. Grass 1977-1979. |

Half plots

3. 1964RESD — Residues of 1964 treatments:

P
K

Quarter plots

4. PREVCROP — Previous cropping 1958-69 on P-test half plots, 1958-70 on K-test half plots:

| | |
|---|---|
| ARABLE | Arable or fallow |
| GRASS | Grass |



*https://doi.org/10.23637/ERADOC-1-45* *pp 26*

79/R/AG/6

Sixteenth plots

5. $P_2O_5$ 64 $K_2O$ 64

Rates of 1964 treatments (kg):

| $P_2O_5$ to P-test half plots | $K_2O$ to K-test half plots |
|---|---|
| 0 | 0 |
| 500 | 315 |
| 1000 | 630 |
| 2000 | 1260 |

Thirty second plots

6.

On P-test half plots:
To RN CROP F/BEANS. Residues of $P_2O_5$ applied 1970-72 (total, kg) and a fresh dressing in 1979 (kg):

$P_2O_5$ 729

(0)0
(375)150

To RN CROP L/GRASS. Residues of $P_2O_5$ applied 1970-72 (total, kg):

$P_2O_5$ 72

0
375

On K-test half plots:
To RN CROP F/BEANS. Residues of $K_2O$ applied 1973-76 (total, kg) and a fresh dressing in 1979 (kg):

$K_2O$ 769

(0)0
(870)300

To RN CROP L/GRASS. Residues of $K_2O$ applied 1973-76 (total, kg):

$K_2O$ 76

0
870

NOTE: L/GRASS plots were ploughed on 18 July. Yields were not taken.

Standard applications: Beans: Manures: P at 65 kg as superphosphate to K-test half plots. K at 250 kg as muriate of potash to P-test half plots.
Weedkiller: Trietazine with simazine (as 'Remtal SC' at 2.8 kg) in 340 l.
Insecticide: Pirimicarb at 0.14 kg in 340 l applied twice.
Grass: Manures: 'Nitro-Chalk' at 380 kg. Weedkiller: Glyphosate at 1.5 kg in 220 l.

Seed: Minden, sown at 220 kg.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/AG/6

Cultivations, etc.:- Beans: Basal P and K applied: 28 Nov, 1978. Test P and K applied: 7 Dec. Ploughed: 23 Jan, 1979. Rotary harrowed, seed sown: 23 Apr. Weedkiller applied: 13 May. Insecticide applied: 22 June and 12 July. Combine harvested: 14 Sept.
Grass: N applied: 7 Mar, 1979. Weedkiller applied: 12 June. Cut: 28 June.

BEANS

P - TEST PLOTS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| | OLDRESD | NONE | | PKNAMG | | NPKNAMGC | |
|---|---|---|---|---|---|---|---|
| | P205 729 | (0)0 | (375)150 | (0)0 | (375)150 | (0)0 | (375)150 |
| PREVCROP | P205 64 | | | | | | |
| ARABLE | 0 | 2.06 | 2.55 | 3.36 | 3.22 | 2.63 | 3.03 |
| | 500 | 2.67 | 3.21 | 2.54 | 2.25 | 3.38 | 2.91 |
| | 1000 | 2.25 | 4.40 | 2.50 | 2.25 | 2.62 | 3.12 |
| | 2000 | 1.69 | 2.32 | 2.73 | 2.56 | 2.01 | 2.49 |
| GRASS | 0 | 1.69 | 2.67 | 2.17 | 1.66 | 1.69 | 2.09 |
| | 500 | 2.48 | 3.14 | 2.14 | 3.05 | 2.34 | 2.90 |
| | 1000 | 3.20 | 3.03 | 2.14 | 1.44 | 2.26 | 2.09 |
| | 2000 | 3.57 | 3.22 | 3.42 | 3.52 | 2.50 | 2.66 |

GRAIN MEAN DM% 86.7

PLOT AREA HARVESTED 0.00128

BEANS

K - TEST PLOTS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| | OLDRESD | NONE | | PKNAMG | | NPKNAMGC | |
|---|---|---|---|---|---|---|---|
| | K20 769 | (0)0 | (870)300 | (0)0 | (870)300 | (0)0 | (870)300 |
| PREVCROP | K20 64 | | | | | | |
| ARABLE | 0 | 0.89 | 1.25 | 2.23 | 2.38 | 2.17 | 2.49 |
| | 315 | 1.16 | 0.99 | 2.31 | 2.55 | 3.28 | 2.48 |
| | 630 | 2.44 | 3.40 | 2.79 | 2.89 | 2.08 | 2.49 |
| | 1260 | 2.58 | 3.05 | 3.05 | 3.03 | 1.69 | 2.40 |
| GRASS | 0 | 1.52 | 2.16 | 1.58 | 3.11 | 2.01 | 2.10 |
| | 315 | 1.44 | 2.94 | 3.03 | 3.03 | 1.52 | 2.24 |
| | 630 | 2.48 | 2.94 | 2.23 | 2.91 | 1.93 | 3.15 |
| | 1260 | 1.78 | 2.29 | 2.86 | 2.92 | 1.93 | 2.58 |

GRAIN MEAN DM% 86.6

PLOT AREA HARVESTED 0.00128



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BN/7

BARNFIELD

Object: The experiment was designed to study the effects of organic and inorganic manures on continuous root crops. It has been progressively modified to study effects on other crops.

Sections 1 and 2 fallow. The fifth year of Italian ryegrass on the rest of the experiment.

For previous years see 'Details' 1967 & 1973 and 74-78/R/BN/7.

Plot dimensions: Ryegrass: 10.7 x 55.9.

Treatments to ryegrass: All combinations of:-

Whole plots

| 1. MANURE | Fertilisers and organic manures: |
|---|---|
| DN | D N |
| DNPK | D N P K |
| NPKMG | N P K (Na) Mg |
| NP | N P |
| NPK | N P K |
| NPMG | N P (Na) Mg |
| N | N |

N: 100 kg N before first cut, 75 kg N after first and second cuts. All as 'Nitro-Chalk'.
P: 35 kg P as single superphosphate (triple superphosphate in 1974).
K: 225 kg K as sulphate of potash
(Na): 90 kg Na as sodium chloride until 1973
Mg: 90 kg Mg as kieserite every fourth year since 1974 (sulphate of magnesia until 1973).
D: Farmyard manure at 35 tonnes (until 1975).

Quarter plots

| 2. NFORMRES | Residues of forms of N (each supplying 96 kg N): |
|---|---|
| NS | Nitrate of soda |
| SA | Sulphate of ammonia |
| SA/CM | Sulphate of ammonia + castor meal |
| CM | Castor meal |

Castor meal last applied 1961, others until 1959.

Plus one plot MANURE NKMG

NOTES: (1) Yields were taken only from half plots cropped with sugar beet in 1973.
(2) P K and D treatments were applied to Sections 1 and 2, fallow in 1979.

Standard applications: Fallow: Weedkiller: Paraquat at 0.84 kg ion in 220 l.



*https://doi.org/10.23637/ERADOC-1-45* *pp 29*

79/R/BN/7

Cultivations, etc.:- Ryegrass and fallow: P applied: 7 Nov, 1978. K applied: 8 Nov.
Ryegrass: N applied: 6 Mar, 1979, 13 June and 27 July. Cut: 30 May, 25 July and 1 Oct.
Fallow: FYM applied: 9 Nov, 1978. Spring-tine cultivated: 1 May, 1979 and 3 Oct. Rotary harrowed: 7 June. Cultivated with thistle bar: 3 July. Heavy spring-tine harrowed: 9 July. Weedkiller applied: 14 Sept.

1ST CUT (30/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| NFORMRES MANURE | NS | SA | SA/CM | CM | MEAN |
|---|---|---|---|---|---|
| DN | 4.03 | 3.34 | 3.18 | 2.79 | 3.33 |
| DNPK | 4.21 | 3.54 | 3.35 | 3.21 | 3.58 |
| NPKMG | 2.76 | 2.34 | 2.31 | 2.23 | 2.41 |
| NP | 2.54 | 1.65 | 1.88 | 1.85 | 1.98 |
| NPK | 2.81 | 1.97 | 2.09 | 1.82 | 2.17 |
| NPMG | 2.17 | 1.53 | 1.77 | 1.93 | 1.85 |
| N | 1.15 | 2.05 | 1.81 | 2.30 | 1.83 |
| MEAN | 2.81 | 2.35 | 2.34 | 2.30 | 2.45 |

MANURE NKMG 2.26

GRAND MEAN 2.44

1ST CUT MEAN DM% 23.4

2ND CUT (25/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| NFORMRES MANURE | NS | SA | SA/CM | CM | MEAN |
|---|---|---|---|---|---|
| DN | 2.69 | 2.70 | 2.55 | 2.70 | 2.66 |
| DNPK | 2.60 | 2.50 | 2.45 | 3.00 | 2.64 |
| NPKMG | 1.42 | 1.50 | 1.67 | 1.60 | 1.55 |
| NP | 0.90 | 0.88 | 1.10 | 1.10 | 1.00 |
| NPK | 1.27 | 1.33 | 1.79 | 1.31 | 1.42 |
| NPMG | 1.02 | 0.68 | 1.11 | 1.23 | 1.01 |
| N | 1.10 | 0.72 | 0.88 | 1.10 | 0.95 |
| MEAN | 1.57 | 1.47 | 1.65 | 1.72 | 1.60 |

MANURE NKMG 0.92

GRAND MEAN 1.58

2ND CUT MEAN DM% 32.1



*https://doi.org/10.23637/ERADOC-1-45* *pp 30*

79/R/BN/7

3RD CUT (1/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| NFORMRES MANURE | NS | SA | SA/CM | CM | MEAN |
|---|---|---|---|---|---|
| DN | 2.95 | 3.00 | 3.54 | 3.35 | 3.21 |
| DNPK | 2.78 | 3.03 | 3.34 | 3.24 | 3.10 |
| NPKMG | 2.79 | 2.75 | 2.88 | 2.72 | 2.78 |
| NP | 2.35 | 2.13 | 2.19 | 2.14 | 2.20 |
| NPK | 2.97 | 2.92 | 2.99 | 2.93 | 2.95 |
| NPMG | 2.48 | 2.07 | 2.58 | 2.30 | 2.36 |
| N | 2.26 | 2.54 | 2.31 | 2.10 | 2.30 |
| MEAN | 2.66 | 2.63 | 2.83 | 2.68 | 2.70 |

MANURE NKMG 2.72

GRAND MEAN 2.70

3RD CUT MEAN DM% 28.2

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| NFORMRES MANURE | NS | SA | SA/CM | CM | MEAN |
|---|---|---|---|---|---|
| DN | 9.67 | 9.04 | 9.28 | 8.83 | 9.21 |
| DNPK | 9.59 | 9.07 | 9.14 | 9.45 | 9.31 |
| NPKMG | 6.97 | 6.59 | 6.85 | 6.54 | 6.74 |
| NP | 5.79 | 4.67 | 5.17 | 5.09 | 5.18 |
| NPK | 7.05 | 6.21 | 6.87 | 6.06 | 6.55 |
| NPMG | 5.67 | 4.29 | 5.46 | 5.47 | 5.22 |
| N | 4.51 | 5.31 | 5.00 | 5.50 | 5.08 |
| MEAN | 7.04 | 6.45 | 6.83 | 6.71 | 6.75 |

MANURE NKMG 5.90

GRAND MEAN 6.73

TOTAL OF 3 CUTS MEAN DM% 27.9

SUB PLOT AREA HARVESTED 0.00568



*https://doi.org/10.23637/ERADOC-1-45* *pp 31*

79/R/GC/8

GARDEN CLOVER

Object: To study yields and pathogens of red clover grown continuously - Manor Garden.

The 126th year, red clover.

For previous years see 'Details' 1967 & 1973, and 74-78/R/GC/8.

Whole plot dimensions: 2.13 x 3.05.

Treatments: All combinations of:-

| | | |
|---|---|---|
| 1. VARIETY | | Varieties: |
| | H(H) | Hungaropoly (resistant to Sclerotinia trifoliorum) in 1979 after Hungaropoly in 1976-78 |
| | H(S) | Hungaropoly in 1979 after S.123 (susceptible to S. trifoliorum) in 1976-78 |
| 2. ALDICARB | | Aldicarb to seedbed: |
| | 10(0) | 10 kg in 1979 after none in 1976-78 |
| | 10(10) | 10 kg in 1979 after 10 kg in 1976-78 |

Basal applications: Manures: Chalk at 7.5 t. (0:14:28) at 540 kg. Mg at 50 kg, as Epsom salts. N at 130 kg, as 'Nitro-Chalk', in seedbed and after each cut except the last.

Seed: Hungaropoly, sown at 34 kg.

Cultivations, etc.:- Hand dug, root stumps carted: 12 Oct, 1978. Chalk applied: 26 Feb, 1979. PK and Mg applied: 17 Apr. Sown, aldicarb and N applied: 20 Apr. Cut and N applied: 25 July, 28 August. Cut: 24 September.

NOTE: Samples of herbage were analysed for percentage N, P, K, Ca and Mg.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/GC/8

1ST CUT (25/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| ALDICARB / VARIETY | 10(0) | 10(10) | MEAN |
|---|---|---|---|
| H(H) | 2.50 | 2.32 | 2.41 |
| H(S) | 2.67 | 2.24 | 2.45 |
| MEAN | 2.58 | 2.28 | 2.43 |

1ST CUT MEAN DM% 23.0

2ND CUT (28/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| ALDICARB / VARIETY | 10(0) | 10(10) | MEAN |
|---|---|---|---|
| H(H) | 3.30 | 3.31 | 3.30 |
| H(S) | 3.21 | 3.13 | 3.17 |
| MEAN | 3.26 | 3.22 | 3.24 |

2ND CUT MEAN DM% 12.3

3RD CUT (24/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| ALDICARB / VARIETY | 10(0) | 10(10) | MEAN |
|---|---|---|---|
| H(H) | 1.22 | 1.26 | 1.24 |
| H(S) | 1.29 | 1.20 | 1.25 |
| MEAN | 1.26 | 1.23 | 1.24 |

3RD CUT MEAN DM% 15.9

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| ALDICARB / VARIETY | 10(0) | 10(10) | MEAN |
|---|---|---|---|
| H(H) | 7.01 | 6.89 | 6.95 |
| H(S) | 7.18 | 6.57 | 6.87 |
| MEAN | 7.09 | 6.73 | 6.91 |

TOTAL OF 3 CUTS MEAN DM% 17.1

PLOT AREA HARVESTED 0.00010



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/1

ROTATION I

Object: To compare nutrient cycles, uptakes of nutrients and responses to fresh P and K. To obtain an estimate of the rate of release of nutrients, particularly K, from Saxmundham soil - Saxmundham.

Sponsor: A.E. Johnston.

The 81st year, grass, grass/clover, winter beans, winter wheat, winter barley.

For previous years see 'Details' 1967 & 1973, and 74-78/S/RN/1.

Whole plot dimensions (new treatments): 5.49 x 17.1.

Treatments: From 1899 to 1969 the experiment followed a four-course rotation of wheat, roots, barley, legumes. Each phase of the rotation was present each year on a separate block. From 1966 each plot was divided, a small area at the south end being continued under the original treatment (OLDTREAT), modified treatments (NEWTREAT) being applied on the larger sub-plots (see below).

In 1970 the rotation was stopped and each pair of blocks was divided for lucerne and grass. In 1978 lucerne was replaced by a grass/clover mixture (the OLDTREAT sub-plots form a part of the Grass area).

| TREATMENT 1899-1965 | OLDTREAT Grass | NEWTREAT Grass/Clover | NEWTREAT Grass |
|---|---|---|---|
| | MANURE | MANURE | MANURE |
| D | (D) | (D) | (D)N |
| B | B | B | BN |
| N | N | (N)P2 | (N)P2N |
| P | P | (P)P1 | (P)P1N |
| K | K | (K)P2K | (K)P2KN |
| - | - | (-)P2 | (-)P2N |
| PK | PK | (PK)P1K | (PK)P1KN |
| NK | NK | (NK)P2K | (NK)P2KN |
| NP | NP | (NP)P1 | (NP)P1N |
| NPK | NPK | (NPK)P1K | (NPK)P1KN |

D: Farmyard manure at 15 tonnes
(D): Farmyard manure at 30 tonnes (1966-1969 15 tonnes on OLDTREAT), 60 tonnes in autumn 1969, none since
B: Bone meal at 0.5 tonnes
N: 1899-1965 - 38 kg N as nitrate of soda. Since 1970 - 100 kg N (38 kg N on OLDTREAT) per cut as 'Nitro-Chalk'
P: 1899-1965 40 kg P205 as single superphosphate. Since 1966 50 kg P205 as triple superphosphate
P1,P2: 50, 100 kg P205 as triple superphosphate
K: 1899-1965 63 kg K20 as muriate of potash. Since 1966 - 126 kg K20 (75 kg K20 on OLDTREAT)

NOTES: (1) For a fuller record of treatments see 'Details' etc.
(2) On OLDTREAT grass, clover appeared naturally on some plots in 1975. To unify the plots white clover was sown on all at 33 kg.
(3) Yields were not taken from OLDTREAT grass. NEWTREAT grass/clover was ploughed on 24 May, 1979, yields were not taken.



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/1

In 1977 lucerne was ploughed on one pair of blocks and the area divided into three for three phases of the arable four-course rotation barley, potatoes, winter beans, wheat. Whole plot treatments are continued on the ploughed area as for NEWTREAT grass/clover except all crops, except beans, are given N and plots previously given farmyard manure now receive phosphate fertiliser. Plots on this area are randomly subdivided for each crop for a test of potash fertiliser. All combinations of the following are present:

1. MANURE

| Winter beans | Winter wheat and winter barley |
|---|---|
| (D)P2 | (D)P2N |
| B | BN |
| (N)P2 | (N)P2N |
| (P)P1 | (P)P1N |
| (K)P2K | (K)P2KN |
| (-)P2 | (-)P2N |
| (PK)P1K | (PK)P1KN |
| (NK)P2K | (NK)P2KN |
| (NP)P1 | (NP)P1N |
| (NPK)P1K | (NPK)P1KN |

Symbols as above except N = 148 kg - 50 kg in autumn 98 kg in spring.

2. POTASH Additional potash fertiliser, as muriate of potash (kg K20):

0
63

NOTE: Bone meal to arable crops was omitted in 1978. Two dressings were applied for 1979 crops.

Standard applications:
Wheat: Weedkillers: Autumn: Isoproturon at 3.1 kg in 220 l. Spring: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 280 l applied with tridemorph and chlormequat. Fungicide: Tridemorph at 0.53 kg. Growth regulator: Chlormequat at 1.7 kg.
Barley: Weedkillers: Autumn: Isoproturon at 3.1 kg in 220 l. Spring: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 280 l applied with the fungicides. Fungicides: Carbendazim (as 'Bavistin' at 0.51 kg), and tridemorph at 0.53 kg.
Beans: Weedkillers: Simazine at 1.1 kg in 220 l. Fungicide: Benomyl at 0.28 kg in 280 l.

Seed: Wheat: Maris Huntsman, sown at 210 kg.
Barley: Sonja, sown at 160 kg.
Beans: Throws MS, sown at 250 kg.
Grass/Clover: Blanca white clover and S23 PRG sown at 40 kg.

Cultivations, etc.:
Wheat and Barley: PK and bone meal applied: 19 Sept, 1978. N applied, seed sown: 4 Oct. Isoproturon applied: 5 Oct. Bone meal and N applied: 10 Apr, 1979.
Wheat: Ploughed: 3 Oct, 1978. Spring weedkiller, fungicide and growth regulator applied: 15 May, 1979. Combine harvested: 21 Aug.



*https://doi.org/10.23637/ERADOC-1-45* *pp 35*

79/S/RN/1

Barley: Spring weedkiller and fungicides applied: 15 May, 1979. Combine harvested: 8 Aug.
Beans: P, K and bone meal applied, seed sown: 13 Oct, 1978. Weedkiller applied: 14 Oct. Bone meal applied: 10 Apr, 1979. Fungicide applied: 16 May. Combine harvested: 22 Aug.
OLDTREAT Grass: N, P and K applied: 6 Mar, 1979. Bone meal applied: 10 Apr.
NEWTREAT Grass: P and K applied: 6 Mar, 1979. Bone meal applied: 10 Apr. N applied twice: 18 Apr, 9 July. Cut twice: 12 June and 11 Sept.
NEWTREAT Grass/Clover (after lucerne 1978): Ploughed: 23 June, 1978. Seed sown: 15 Aug. P and K applied: 6 Mar, 1979. Bone meal applied: 10 Apr.

79/S/RN/1 GRASS NEW TREAT

DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| | 1ST CUT(12/6/79) | 2ND CUT(11/9/79) | TOTAL OF 2 CUTS |
|---|---|---|---|
| MANURE | | | |
| (D)N | 5.91 | 1.87 | 7.78 |
| BN | 5.11 | 1.71 | 6.82 |
| (N)P2N | 5.40 | 1.51 | 6.90 |
| (P)P1N | 5.71 | 1.61 | 7.32 |
| (K)P2KN | 6.24 | 1.98 | 8.22 |
| (-)P2N | 5.60 | 1.59 | 7.19 |
| (PK)P1KN | 6.11 | 1.76 | 7.87 |
| (NK)P2KN | 6.18 | 1.94 | 8.12 |
| (NP)P1N | 5.65 | 1.59 | 7.23 |
| (NPK)P1KN | 5.72 | 1.75 | 7.47 |
| MEAN | 5.76 | 1.73 | 7.49 |
| MEAN DM% | 21.9 | 35.4 | 28.7 |

1ST CUT PLOT AREA HARVESTED 0.00089

2ND CUT PLOT AREA HARVESTED 0.00084



*https://doi.org/10.23637/ERADOC-1-45* *pp 36*

79/S/RN//1

WINTER BEANS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| POTASH<br>MANURE | 0 | 63 | MEAN |
|---|---|---|---|
| (D)P2 | 3.31 | 4.02 | 3.67 |
| B | 2.33 | 3.26 | 2.79 |
| (N)P2 | 1.33 | 3.00 | 2.16 |
| (P)P1 | 2.87 | 2.67 | 2.77 |
| (K)P2K | 4.34 | 4.27 | 4.31 |
| (-)P2 | 3.03 | 3.88 | 3.45 |
| (PK)P1K | 4.31 | 4.00 | 4.15 |
| (NK)P2K | 3.96 | 4.24 | 4.10 |
| (NP)P1 | 2.26 | 3.29 | 2.78 |
| (NPK)P1K | 3.50 | 3.65 | 3.57 |
| MEAN | 3.12 | 3.63 | 3.38 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | POTASH | MANURE*<br>POTASH |
|---|---|---|
| SED | 0.070 | 0.222 |

* WITHIN SAME LEVEL OF MANURE ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.251 | 7.4 |
| BLOCK.WP.SP | 10 | 0.222 | 6.6 |

SUB PLOT AREA HARVESTED 0.00075



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/1

WINTER WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| POTASH<br>MANURE | 0 | 63 | MEAN |
|---|---|---|---|
| (D)P2N | 8.63 | 8.52 | 8.57 |
| BN | 7.83 | 7.99 | 7.91 |
| (N)P2N | 7.96 | 8.51 | 8.24 |
| (P)P1N | 7.95 | 8.36 | 8.16 |
| (K)P2KN | 8.44 | 8.53 | 8.49 |
| (-)P2N | 8.60 | 8.08 | 8.34 |
| (PK)P1KN | 8.39 | 8.23 | 8.31 |
| (NK)P2KN | 8.21 | 8.20 | 8.20 |
| (NP)P1N | 7.84 | 8.00 | 7.92 |
| (NPK)P1KN | 7.87 | 7.98 | 7.92 |
| MEAN | 8.17 | 8.24 | 8.21 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | POTASH | MANURE*<br>POTASH |
|---|---|---|
| SED | 0.117 | 0.371 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.283 | 3.4 |
| BLOCK.WP.SP | 10 | 0.371 | 4.5 |

GRAIN MEAN DM% 81.0

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| POTASH<br>MANURE | 0 | 63 | MEAN |
|---|---|---|---|
| (D)P2N | 4.95 | 5.33 | 5.14 |
| BN | 4.78 | 4.78 | 4.78 |
| (N)P2N | 4.61 | 4.98 | 4.79 |
| (P)P1N | 4.89 | 5.14 | 5.02 |
| (K)P2KN | 5.06 | 5.23 | 5.14 |
| (-)P2N | 4.95 | 4.84 | 4.90 |
| (PK)P1KN | 5.29 | 5.00 | 5.14 |
| (NK)P2KN | 4.73 | 5.18 | 4.96 |
| (NP)P1N | 4.42 | 4.72 | 4.57 |
| (NPK)P1KN | 5.12 | 4.94 | 5.03 |
| MEAN | 4.88 | 5.01 | 4.95 |

STRAW MEAN DM% 84.5

SUB PLOT AREA HARVESTED 0.00075



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/1

WINTER BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| POTASH<br>MANURE | 0 | 63 | MEAN |
|---|---|---|---|
| (D)P2N | 7.84 | 7.27 | 7.55 |
| BN | 7.00 | 6.92 | 6.96 |
| (N)P2N | 7.06 | 6.62 | 6.84 |
| (P)P1N | 7.05 | 6.83 | 6.94 |
| (K)P2KN | 6.95 | 6.91 | 6.93 |
| (-)P2N | 5.74 | 7.11 | 6.42 |
| (PK)P1KN | 7.17 | 5.64 | 6.40 |
| (NK)P2KN | 6.79 | 7.24 | 7.02 |
| (NP)P1N | 6.25 | 6.93 | 6.59 |
| (NPK)P1KN | 6.43 | 7.26 | 6.84 |
| MEAN | 6.83 | 6.87 | 6.85 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | POTASH | MANURE*<br>POTASH |
|---|---|---|
| SED | 0.278 | 0.879 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.392 | 5.7 |
| BLOCK.WP.SP | 10 | 0.879 | 12.8 |

GRAIN MEAN DM% 81.8

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| POTASH<br>MANURE | 0 | 63 | MEAN |
|---|---|---|---|
| (D)P2N | 4.59 | 3.72 | 4.16 |
| BN | 3.22 | 3.83 | 3.53 |
| (N)P2N | 3.52 | 3.43 | 3.48 |
| (P)P1N | 3.70 | 3.23 | 3.46 |
| (K)P2KN | 3.58 | 3.86 | 3.72 |
| (-)P2N | 3.32 | 3.76 | 3.54 |
| (PK)P1KN | 4.16 | 3.04 | 3.60 |
| (NK)P2KN | 4.12 | 3.39 | 3.76 |
| (NP)P1N | 2.60 | 3.47 | 3.04 |
| (NPK)P1KN | 3.59 | 4.45 | 4.02 |
| MEAN | 3.64 | 3.62 | 3.63 |

STRAW MEAN DM% 88.3

SUB PLOT AREA HARVESTED 0.00075



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/2

ROTATION II

Object: To measure, by crop yields and soil analysis, the residual value of P applied as FYM or superphosphate in the periods 1899-1964 and 1965-1967 and of fresh dressings since - Saxmundham.

Sponsors: G.E.G. Mattingly, A.E. Johnston.

The tenth year of revised scheme, wheat, barley.

For previous years see 'Details' 1967 & 1973, and 74-78/S/RN/2.

Whole plot dimensions: 5.49 x 39.8.

Treatments: From 1899-1964 the experiment tested farmyard manure and nitrogen and phosphate fertilisers applied to a rotation of crops. Since 1965 the treatments have been changed to evaluate old residues of P (from FYM and superphosphate) and new residues from treatments applied 1965-1967. All crops of the rotation - potatoes, barley, sugar beet, barley - were grown until 1974. The whole experiment was sown to barley in 1975 and 1976, wheat and barley since 1977, and tests combinations of:

Whole plots

1. RESIDUE — Residues of previous treatments:-

| | | Approximate total dressing 1899-1964 | Total dressing 1965-1967 |
|---|---|---|---|
| (0)0 | Plot 1 | None | None |
| (D)0 | Plot 2 | 400 tonnes FYM | None |
| (DP)0 | Plot 3 | 400 tonnes FYM, 2.7 tonnes P205 | None |
| (DP)D2 | Plot 4 | 400 tonnes FYM, 2.7 tonnes P205 | 100 tonnes FYM |
| (DP)D2P1 | Plot 5 | 400 tonnes FYM, 2.7 tonnes P205 | 100 tonnes FYM, 0.56 tonnes P205 |
| (DP)P1 | Plot 6 | 400 tonnes FYM, 2.7 tonnes P205 | 0.56 tonnes P205 |
| (DP)P2 | Plot 7 | 400 tonnes FYM, 2.7 tonnes P205 | 1.13 tonnes P205 |
| (DP52)0 | Plot 8 | 326 tonnes FYM, 4.3 tonnes P205 (until 1952 only) | None |

Wheat in 1979 (after barley 1978) tests in addition to 1:-

Sub plots

2. P — Phosphate (total P205 applied in each period (kg)):

| | 1969-71 | 1973-75 | 1978 (to preceding wheat stubble) |
|---|---|---|---|
| (0)(0)0 | 0 | 0 | 0 |
| (0)(3)0 | 0 | 378 | 0 |
| (1)(3)1 | 126 | 378 | 120 |
| (2)(3)1 | 252 | 378 | 120 |
| (3)(3)0 | 378 | 378 | 0 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 40*

and some of the combinations of 2 with:-

3. N Nitrogen fertiliser (kg N as 'Nitro-Chalk') (in addition to autumn basal N):

40
80
120
160

Barley in 1979 (after wheat 1978) tests in addition to 1:

Sub plots

2. P Phosphate (total P205 applied in each period (kg)):

| | 1969-71 | 1973-75 | 1979 (to preceding wheat stubble) |
|---|---|---|---|
| (0)(0)0 | 0 | 0 | 0 |
| (0)(3)0 | 0 | 378 | 0 |
| (1)(3)1 | 126 | 378 | 120 |
| (2)(3)1 | 252 | 378 | 120 |
| (3)(3)0 | 378 | 378 | 0 |

and some of the combinations of 2 with:-

3. N Nitrogen fertiliser (kg N as 'Nitro-Chalk'):

30
60
90
120

Standard applications:
Both crops: Manures: K20 at 150 kg as muriate of potash. Spring weedkillers: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 220 l applied with the fungicide. Fungicide: Tridemorph at 0.53 kg.
Wheat: Manures: N at 50 kg at drilling as 'Nitro-Chalk 25' combine drilled. Autumn weedkiller: Isoproturon at 3.1 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg, applied with the spring weedkiller.

Seed: Wheat: Maris Huntsman, sown at 210 kg.
Barley: Julia, sown at 190 kg.

Cultivations, etc.:-
Both crops: K applied: 20 Sept, 1978. Ploughed: 22 Sept. Test N applied: 18 Apr, 1979. Combine harvested: 21 Aug.
Wheat: Seed sown: 4 Oct, 1978. Isoproturon applied: 5 Oct. Spring weedkiller, fungicide and growth regulator applied: 15 May, 1979.
Barley: Test P applied: 20 Sept, 1978. Seed sown: 18 Apr, 1979. Weedkiller and fungicide applied: 23 May.



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/2

WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| RESIDUE | N P | 40 | 80 | 120 | 160 |
|---|---|---|---|---|---|
| (0)0 | (0)(0)0 | | | 3.23 | 3.34 |
| (0)0 | (0)(3)0 | 3.46 | 3.94 | | |
| (0)0 | (1)(3)1 | 4.15 | | 5.38 | |
| (0)0 | (2)(3)1 | | 5.15 | | 6.37 |
| (0)0 | (3)(3)0 | | 4.80 | | 5.11 |
| (D)0 | (0)(0)0 | 2.71 | 4.61 | | |
| (D)0 | (0)(3)0 | | | 4.93 | 6.09 |
| (D)0 | (1)(3)1 | | 5.77 | | 6.11 |
| (D)0 | (2)(3)1 | 3.91 | | 6.20 | |
| (D)0 | (3)(3)0 | 3.45 | | 5.32 | |
| (DP)0 | (0)(0)0 | | | 6.12 | 6.03 |
| (DP)0 | (0)(3)0 | 3.84 | 5.85 | | |
| (DP)0 | (1)(3)1 | 4.52 | | 6.37 | |
| (DP)0 | (2)(3)1 | | 5.50 | | 6.86 |
| (DP)0 | (3)(3)0 | | 5.74 | | 6.53 |
| (DP)D2 | (0)(0)0 | 4.27 | 4.70 | | |
| (DP)D2 | (0)(3)0 | | | 5.69 | 6.32 |
| (DP)D2 | (1)(3)1 | 4.38 | | 6.43 | |
| (DP)D2 | (2)(3)1 | | 6.20 | | 6.49 |
| (DP)D2 | (3)(3)0 | | 5.64 | | 5.86 |
| (DP)D2P1 | (0)(0)0 | | | 6.16 | 6.96 |
| (DP)D2P1 | (0)(3)0 | 4.63 | 5.28 | | |
| (DP)D2P1 | (1)(3)1 | 3.96 | | 7.14 | |
| (DP)D2P1 | (2)(3)1 | | 6.30 | | 6.73 |
| (DP)D2P1 | (3)(3)0 | | 6.49 | | 6.80 |
| (DP)P1 | (0)(0)0 | | | 6.22 | 6.50 |
| (DP)P1 | (0)(3)0 | 5.18 | 5.16 | | |
| (DP)P1 | (1)(3)1 | | 5.85 | | 7.39 |
| (DP)P1 | (2)(3)1 | 4.30 | | 6.56 | |
| (DP)P1 | (3)(3)0 | 4.18 | | 7.19 | |
| (DP)P2 | (0)(0)0 | 4.05 | 5.66 | | |
| (DP)P2 | (0)(3)0 | | | 6.38 | 6.38 |
| (DP)P2 | (1)(3)1 | | 5.70 | | 7.10 |
| (DP)P2 | (2)(3)1 | 4.92 | | 6.67 | |
| (DP)P2 | (3)(3)0 | 4.94 | | 6.94 | |
| (DP52)0 | (0)(0)0 | 4.13 | 5.32 | | |
| (DP52)0 | (0)(3)0 | | | 5.70 | 6.82 |
| (DP52)0 | (1)(3)1 | | 5.53 | | 6.36 |
| (DP52)0 | (2)(3)1 | 3.39 | | 6.71 | |
| (DP52)0 | (3)(3)0 | 4.13 | | 6.20 | |

GRAIN MEAN DM% 79.4



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/2

WHEAT

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| RESIDUE | N P | 40 | 80 | 120 | 160 |
|---|---|---|---|---|---|
| (0)0 | (0)(0)0 | | | 1.87 | 1.99 |
| (0)0 | (0)(3)0 | 2.31 | 2.04 | | |
| (0)0 | (1)(3)1 | 2.78 | | 3.46 | |
| (0)0 | (2)(3)1 | | 3.27 | | 3.89 |
| (0)0 | (3)(3)0 | | 3.17 | | 2.93 |
| (D)0 | (0)(0)0 | 1.96 | 2.59 | | |
| (D)0 | (0)(3)0 | | | 2.91 | 3.45 |
| (D)0 | (1)(3)1 | | 3.55 | | 4.02 |
| (D)0 | (2)(3)1 | 1.91 | | 4.31 | |
| (D)0 | (3)(3)0 | 1.89 | | 3.73 | |
| (DP)0 | (0)(0)0 | | | 3.61 | 4.03 |
| (DP)0 | (0)(3)0 | 2.18 | 3.69 | | |
| (DP)0 | (1)(3)1 | 2.67 | | 3.92 | |
| (DP)0 | (2)(3)1 | | 3.44 | | 3.94 |
| (DP)0 | (3)(3)0 | | 3.61 | | 4.59 |
| (DP)D2 | (0)(0)0 | 2.56 | 2.85 | | |
| (DP)D2 | (0)(3)0 | | | 3.03 | 4.11 |
| (DP)D2 | (1)(3)1 | 2.82 | | 4.15 | |
| (DP)D2 | (2)(3)1 | | 3.61 | | 4.10 |
| (DP)D2 | (3)(3)0 | | 3.46 | | 3.59 |
| (DP)D2P1 | (0)(0)0 | | | 4.25 | 4.06 |
| (DP)D2P1 | (0)(3)0 | 2.94 | 3.44 | | |
| (DP)D2P1 | (1)(3)1 | 2.72 | | 4.65 | |
| (DP)D2P1 | (2)(3)1 | | 3.27 | | 4.44 |
| (DP)D2P1 | (3)(3)0 | | 4.37 | | 4.67 |
| (DP)P1 | (0)(0)0 | | | 3.86 | 3.68 |
| (DP)P1 | (0)(3)0 | 3.12 | 3.15 | | |
| (DP)P1 | (1)(3)1 | | 3.42 | | 5.34 |
| (DP)P1 | (2)(3)1 | 3.12 | | 4.16 | |
| (DP)P1 | (3)(3)0 | 2.19 | | 4.27 | |
| (DP)P2 | (0)(0)0 | 2.31 | 3.68 | | |
| (DP)P2 | (0)(3)0 | | | 4.09 | 4.19 |
| (DP)P2 | (1)(3)1 | | 3.31 | | 4.21 |
| (DP)P2 | (2)(3)1 | 2.79 | | 4.14 | |
| (DP)P2 | (3)(3)0 | 2.88 | | 4.59 | |
| (DP52)0 | (0)(0)0 | 2.64 | 3.25 | | |
| (DP52)0 | (0)(3)0 | | | 3.55 | 4.38 |
| (DP52)0 | (1)(3)1 | | 3.55 | | 4.02 |
| (DP52)0 | (2)(3)1 | 2.00 | | 3.95 | |
| (DP52)0 | (3)(3)0 | 2.81 | | 3.85 | |

STRAW MEAN DM% 89.5

SUB PLOT AREA HARVESTED 0.00075



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/2

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| RESIDUE | N P | 30 | 60 | 90 | 120 |
|---|---|---|---|---|---|
| (0)0 | (0)(0)0 | 1.54 | 1.69 | | |
| (0)0 | (0)(3)0 | | | 1.85 | 3.53 |
| (0)0 | (1)(3)1 | | 3.62 | | 4.65 |
| (0)0 | (2)(3)1 | 2.02 | | 3.62 | |
| (0)0 | (3)(3)0 | 1.80 | | 3.91 | |
| (D)0 | (0)(0)0 | | | 3.03 | 3.40 |
| (D)0 | (0)(3)0 | 2.59 | 3.21 | | |
| (D)0 | (1)(3)1 | 2.85 | | 4.85 | |
| (D)0 | (2)(3)1 | | 3.65 | | 5.20 |
| (D)0 | (3)(3)0 | | 4.05 | | 4.61 |
| (DP)0 | (0)(0)0 | 1.91 | 3.12 | | |
| (DP)0 | (0)(3)0 | | | 4.60 | 4.27 |
| (DP)0 | (1)(3)1 | | 3.49 | | 4.40 |
| (DP)0 | (2)(3)1 | 2.75 | | 4.66 | |
| (DP)0 | (3)(3)0 | 2.20 | | 4.11 | |
| (DP)D2 | (0)(0)0 | | | 5.02 | 4.92 |
| (DP)D2 | (0)(3)0 | 2.67 | 3.85 | | |
| (DP)D2 | (1)(3)1 | | 3.71 | | 4.94 |
| (DP)D2 | (2)(3)1 | 2.37 | | 5.32 | |
| (DP)D2 | (3)(3)0 | 2.21 | | 4.53 | |
| (DP)D2P1 | (0)(0)0 | 2.09 | 4.25 | | |
| (DP)D2P1 | (0)(3)0 | | | 4.10 | 5.13 |
| (DP)D2P1 | (1)(3)1 | | 3.55 | | 4.88 |
| (DP)D2P1 | (2)(3)1 | 2.36 | | 4.96 | |
| (DP)D2P1 | (3)(3)0 | 3.01 | | 4.99 | |
| (DP)P1 | (0)(0)0 | 1.77 | 4.25 | | |
| (DP)P1 | (0)(3)0 | | | 5.09 | 4.77 |
| (DP)P1 | (1)(3)1 | 2.52 | | 5.12 | |
| (DP)P1 | (2)(3)1 | | 4.01 | | 5.40 |
| (DP)P1 | (3)(3)0 | | 3.71 | | 5.08 |
| (DP)P2 | (0)(0)0 | | | 4.39 | 4.78 |
| (DP)P2 | (0)(3)0 | 2.37 | 2.67 | | |
| (DP)P2 | (1)(3)1 | 2.09 | | 4.36 | |
| (DP)P2 | (2)(3)1 | | 4.14 | | 5.75 |
| (DP)P2 | (3)(3)0 | | 3.83 | | 4.32 |
| (DP52)0 | (0)(0)0 | | | 3.71 | 3.60 |
| (DP52)0 | (0)(3)0 | 2.05 | 3.74 | | |
| (DP52)0 | (1)(3)1 | 1.83 | | 3.45 | |
| (DP52)0 | (2)(3)1 | | 3.70 | | 4.94 |
| (DP52)0 | (3)(3)0 | | 2.94 | | 4.37 |

GRAIN MEAN DM% 78.0



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/RN/2

BARLEY

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| RESIDUE | N P | 30 | 60 | 90 | 120 |
|---|---|---|---|---|---|
| (0)0 | (0)(0)0 | 1.07 | 1.27 | | |
| (0)0 | (0)(3)0 | | | 1.44 | 2.55 |
| (0)0 | (1)(3)1 | | 2.28 | | 3.00 |
| (0)0 | (2)(3)1 | 1.40 | | 2.56 | |
| (0)0 | (3)(3)0 | 0.76 | | 2.84 | |
| (D)0 | (0)(0)0 | | | 2.39 | 2.76 |
| (D)0 | (0)(3)0 | 1.98 | 1.90 | | |
| (D)0 | (1)(3)1 | 1.68 | | 3.36 | |
| (D)0 | (2)(3)1 | | 2.21 | | 3.50 |
| (D)0 | (3)(3)0 | | 2.58 | | 3.39 |
| (DP)0 | (0)(0)0 | 1.15 | 1.86 | | |
| (DP)0 | (0)(3)0 | | | 3.23 | 3.21 |
| (DP)0 | (1)(3)1 | | 2.35 | | 3.04 |
| (DP)0 | (2)(3)1 | 1.28 | | 3.50 | |
| (DP)0 | (3)(3)0 | 1.31 | | 2.63 | |
| (DP)D2 | (0)(0)0 | | | 3.24 | 3.82 |
| (DP)D2 | (0)(3)0 | 1.36 | 2.60 | | |
| (DP)D2 | (1)(3)1 | | 2.43 | | 3.60 |
| (DP)D2 | (2)(3)1 | 1.47 | | 3.82 | |
| (DP)D2 | (3)(3)0 | 1.26 | | 3.53 | |
| (DP)D2P1 | (0)(0)0 | 1.49 | 2.88 | | |
| (DP)D2P1 | (0)(3)0 | | | 2.81 | 3.62 |
| (DP)D2P1 | (1)(3)1 | | 2.44 | | 3.54 |
| (DP)D2P1 | (2)(3)1 | 1.44 | | 3.97 | |
| (DP)D2P1 | (3)(3)0 | 1.22 | | 3.44 | |
| (DP)P1 | (0)(0)0 | 1.20 | 3.09 | | |
| (DP)P1 | (0)(3)0 | | | 3.68 | 3.56 |
| (DP)P1 | (1)(3)1 | 0.89 | | 3.56 | |
| (DP)P1 | (2)(3)1 | | 2.87 | | 3.83 |
| (DP)P1 | (3)(3)0 | | 2.20 | | 3.87 |
| (DP)P2 | (0)(0)0 | | | 2.93 | 3.52 |
| (DP)P2 | (0)(3)0 | 2.06 | 1.67 | | |
| (DP)P2 | (1)(3)1 | 1.40 | | 3.20 | |
| (DP)P2 | (2)(3)1 | | 2.78 | | 3.84 |
| (DP)P2 | (3)(3)0 | | 2.63 | | 3.26 |
| (DP52)0 | (0)(0)0 | | | 2.62 | 2.99 |
| (DP52)0 | (0)(3)0 | 1.24 | 2.43 | | |
| (DP52)0 | (1)(3)1 | 1.11 | | 2.23 | |
| (DP52)0 | (2)(3)1 | | 2.54 | | 3.36 |
| (DP52)0 | (3)(3)0 | | 1.78 | | 3.45 |

STRAW MEAN DM% 78.3

SUB PLOT AREA HARVESTED 0.00075



*https://doi.org/10.23637/ERADOC-1-45* *pp 45*

79/R/RN/1 and 79/R/RN/2

LEY ARABLE

Object: To study the effects of three-year leys on the fertility of the soil as measured by a sequence of three arable test crops. From 1968, continuous wheat was grown on some blocks after the three test crops to study the build-up and decline of take-all (Gaeumannomyces graminis) after the different cropping sequences. From 1977 new crop sequences were introduced on these blocks - Highfield and Fosters.

Sponsors: A.E. Johnston, D.B. Slope.

The 31st year, old grass, leys, oats, potatoes, beans, barley, wheat.

For previous years see 'Details' 1967 & 1973 and 74-78/R/RN/1&2.

The experiment is duplicated on:-

HIGHFIELD — A site with much organic matter initially (ploughed out from permanent grass) (79/R/RN/1)

FOSTERS — A site with little organic matter initially (79/R/RN/2)

ROTATION — Treatments: The experiment originally tested four six-course rotations, with all phases present each year. In recent years these rotations were:-

| | Treatment crops | Test crops |
|---|---|---|
| LUCERNE | LU, LU, LU, | W, P, B |
| CLOGRA | LC, LC, LC, | W, P, B |
| GRASS | LN, LN, LN, | W, P, B |
| ARABLE | H, SB, O, | W, P, B |

LU = lucerne, LC = clover-grass ley, no nitrogen fertiliser, LN = all-grass ley with much nitrogen fertiliser, H = 1-year seeds hay, SB = sugar beet, O = oats, W = wheat, P = potatoes, B = barley.

From 1968 the order of test crops was changed to P, W, B except for those phases that had already started the sequence W, P, B.

From 1975 the barley test crop was changed to wheat.

RESEEDED — On both fields in the first three years other plots were sown with long-term reseeded grass

OLDGRASS — On Highfield plots of the old turf were left initially un-ploughed, for comparison with the three-year leys

In 1962 and 1963 some of the old and reseeded grass plots were divided for management identical to:-

C — Clover-grass ley
N — All-grass ley



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/1 and 79/R/RN/2

From 1963 (reseeded) and 1968 (old grass) some grass plots were ploughed and cropped with the same test crops as above, thereafter these plots followed the ARABLE rotation. In 1973 some of these plots were returned to reseeded grass.

From 1968 only two phases on each field continued in the original six-course rotation (the museum blocks). The four other phases (the new sequence blocks) were sown to wheat every year at the end of the test-crop cycle. In 1977, 1978 and 1979 one phase, fallowed in the previous year started a new sequence of treatment cropping. In 1979 the remaining phase was fallowed prior to introducing the new sequences in 1980. The new sequences are:

| SEQUENCE | | Treatment crops | Test crops |
|---|---|---|---|
| LUCERNE | (previously LUCERNE) | LU, LU, LU | W, W, W, W |
| CLOGRA | (previously CLOGRA) | LC, LC, LC | W, W, W, W |
| GRASS/G | (previously GRASS) | R, R, R | W, W, W, W |
| ARABLE/A | (previously ARABLE) | O, P, BE | W, W, W, W |
| ARABLE/R | (previously RESEEDED) | B, B, W | W, W, W, W |
| GRASS/OG | (previously OLDGRASS) | R, R, R | W, W, W, W |

R = ryegrass, BE = beans. Other symbols as above. All ploughed at the end of the treatment crop cycle except GRASS/OG - direct drilled to wheat. Treatment crop cycles start after nine previous cereals followed by one fallow. In treatment years yields are taken only from barley and wheat.

Additional treatments to 1st test crop potatoes in the original rotation:-

Sub plots

FYMRES68 Farmyard manure residues, last applied 1968:

NONE None
FYM 30 tonnes on each occasion

Sub plots

N 79 Nitrogen fertiliser (kg N as 'Nitro-Chalk'):

0
80
160
240

Standard applications:
Museum blocks:
1st Treatment crops:
All-grass ley and clover-grass ley: (0:14:28) at 540 kg. Weedkillers: Glyphosate at 1.5 kg in 220 l, paraquat at 0.70 kg ion in 220 l, MCPA at 0.26 kg and MCPB at 1.6 kg in 220 l.
All-grass ley only: 'Nitro-Chalk' at 290 kg.
Lucerne: Manures: (0:20:20) at 380 kg. Weedkillers: Glyphosate at 1.5 kg in 220 l, paraquat at 0.70 kg ion, 2,4-DB at 1.8 kg in 220 l.



*https://doi.org/10.23637/ERADOC-1-45* *pp 47*

79/R/RN/1 and 79/R/RN/2

1-year seeds hay: Manures: (0:14:28) at 540 kg. 'Nitro-Chalk' at 290 kg. Weedkillers: Paraquat at 0.70 kg ion. MCPA at 0.26 kg and MCPB at 1.6 kg in 220 l.

1st Test crop:

Potatoes: Manures: (0:20:20) at 1500 kg. Weedkillers: Paraquat at 0.42 kg ion with linuron at 1.1 kg in 220 l. Fungicide: Mancozeb at 1.3 kg in 220 l applied four times with and twice without pirimicarb. Insecticides: Phorate granules (at planting) at 1.7 kg, pirimicarb at 0.14 kg. Haulm desiccant: Undiluted BOV at 170 l.

Reseeded grass and Old grass: Manures: (0:14:28) at 540 kg.

All-grass half plots: Manures: (25:0:16) at 300 kg in spring, and after each cut except the last.

New sequence blocks:

1st Treatment crops:

All crops: Manures: Chalk at 8.7 t, Highfield only.

Lucerne: Manures: (0:14:28) at 720 kg. Weedkillers: 2,4-DB at 1.8 kg in 220 l.

Clover-grass ley: Manures: (0:14:28) at 720 kg (25:0:16) at 300 kg. Weedkillers: MCPA at 0.26 kg with MCPB at 1.6 kg in 220 l.

Ryegrass: Manures: (0:14:28) at 720 kg. (25:0:16) at 300 kg. Weedkillers: MCPA at 0.26 kg with MCPB at 1.6 kg in 220 l.

Oats and Barley: Manures: (20:14:14) at 350 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) with mecoprop at 1.7 kg in 220 l. Fungicide (to barley only): Tridemorph at 0.53 kg in 220 l.

2nd Treatment crops:

Lucerne: Manures: (0:14:28) at 720 kg. Weedkillers: Propyzamide at 0.70 kg in 220 l.

Clover-grass ley and Ryegrass: Manures: (0:14:28) at 720 kg. (25:0:16) at 300 kg in spring, repeated (ryegrass only) after each cut except the last.

Potatoes: Manures: (13:13:20) at 1500 kg. Weedkillers: Paraquat at 0.42 kg ion with linuron at 1.1 kg in 220 l. Fungicide: Mancozeb at 1.3 kg in 220 l applied four times with and twice without pirimicarb. Insecticides: Phorate granules (at planting) at 1.7 kg, pirimicarb at 0.14 kg. Haulm desiccant: Undiluted BOV at 170 l.

Barley: Manures: (20:14:14) at 350 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) with mecoprop at 1.7 kg in 220 l. Fungicide: Tridemorph at 0.53 kg in 220 l.

3rd Treatment crops:

Lucerne: Manures: (0:14:28) at 720 kg. Weedkillers: Propyzamide at 0.70 kg in 220 l.

Clover-grass ley and Ryegrass: Manures: (0:14:28) at 720 kg. (25:0:16) at 300 kg in spring, repeated (ryegrass only) after each cut except the last.

Beans: Insecticide: Pirimicarb at 0.14 kg in 220 l, applied twice.

Wheat: Manures: (0:20:20) at 250 kg, combine drilled. 'Nitro-Chalk' at 380 kg. Weedkillers: Mecoprop at 2.5 kg with isoproturon at 2.1 kg in 220 l.

Preparatory crops:

Fallow: Weedkillers: Diquat at 0.59 kg ion in 220 l.



*https://doi.org/10.23637/ERADOC-1-45* *pp 48*

79/R/RN/1 and 79/R/RN/2

Seed:

Museum blocks:

All-grass ley: Meadow Fescue S215 at 17 kg. Timothy Erecta RvP at 17 kg. Mixture sown at 34 kg.

Clover-grass ley: Meadow Fescue S215 at 18 kg. Timothy Erecta RvP at 15 kg. New Zealand White Clover Huia at 4 kg. Mixture sown at 37 kg.

Lucerne: Vertus, sown at 28 kg.

1-year seeds hay: Italian Ryegrass RvP sown at 25 kg (both sowings).

Potatoes: Pentland Crown.

New Sequences:

Lucerne: Vertus, sown at 28 kg.

Clover-grass leys: Meadow Fescue S215 at 18 kg. Timothy Erecta RvP at 15 kg. New Zealand White Clover Huia at 4 kg. Mixture sown at 37 kg.

Ryegrass: S24, sown at 22 kg.

Oats: Manod, sown at 200 kg.

Barley: Porthos, sown at 160 kg.

Potatoes: Pentland Crown.

Beans: Minden, sown at 210 kg.

Wheat: Flanders, sown at 190 kg.

Cultivations, etc.:-

Museum blocks:

All-grass ley and clover-grass ley: Glyphosate applied: 20 Nov, 1978. Ploughed: 20 Dec. Paraquat applied: 6 June, 1979. N and PK applied, rotary harrowed twice, seed sown: 8 June. MCPA and MCPB applied: 11 July. Topped: 18 July. Cut for yield once: 27 Sept.

Lucerne: Glyphosate applied: 20 Nov, 1978. Ploughed: 20 Dec. Paraquat applied: 6 June, 1979. PK applied, rotary harrowed twice, seed sown: 8 June. 2,4-DB applied: 11 July. Topped: 31 July. Cut for yield once: 15 Nov.

1-year seeds hay: Ploughed: 30 Oct, 1978. Disc harrowed (and, Highfield only, rotary harrowed): 31 Oct. Seed sown: 3 Nov. Crop failed, heavy spring-tine cultivated twice: 17 May, 1979. Paraquat applied: 6 June. N and PK applied, rotary harrowed twice, seed sown: 8 June. MCPA and MCPB applied: 11 July. Topped: 18 July. Cut for yield once: 27 Sept.

Potatoes: Ploughed: 20 Dec, 1978. Disc harrowed: 10 May, 1979. PK applied: 14 May. Test N applied, spike rotary cultivated, seed planted: 16 May. Weedkillers applied: 4 June. Grubbed: 18 June (Highfield) and 20 June (Fosters). Rotary ridged: 22 June. Fungicide applied with insecticide four times: 26 June, 5 July, 20 July and 3 Aug. Fungicide applied alone: 15 Aug and 4 Sept. Haulm pulverized: 14 Sept. BOV applied: 21 Sept. Lifted: 9 Oct.

Reseeded Grass and Old Grass: PK applied: 14 Nov, 1978. NK applied (to all-grass half plots only): 8 Mar, 1979, 14 June and 27 July. Cut three times: 4 June, 23 July and 27 Sept.

New sequence blocks:

1st Treatment Crops:

All crops: Chalk applied (Highfield only): 10 Nov, 1978. Ploughed: 19 Dec. Spring-tine cultivated: 23 Apr, 1979.

Lucerne: PK applied, rotary harrowed twice, seed sown: 8 June. 2,4-DB applied: 11 July. Topped: 31 July. Cut: 19 Nov.

Clover-grass ley: PK applied, rotary harrowed twice, seed sown: 8 June. MCPA and MCPB applied: 11 July. Topped: 18 July. NK applied: 20 July. Cut: 27 Sept.

Ryegrass: NK and PK applied: 7 June. Rotary harrowed twice, seed sown: 8 June. MCPA and MCPB applied: 11 July. Topped: 18 July. Cut: 27 Sept.

Oats and barley: Barley sown: 23 Apr. Oats sown: 27 Apr. Weedkillers applied: 5 June. Fungicide applied (Barley only): 12 June. Barley combine harvested: 1 Sept. Oats combine harvested: 6 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 49*

79/R/RN/1 and 79/R/RN/2

2nd Treatment crops:

Lucerne: PK applied: 14 Nov, 1978. Weedkiller applied: 18 Dec. Cut: 12 June, 1979, 26 July, 19 Nov.

Clover-grass ley and ryegrass: PK applied: 14 Nov, 1978. Spring NK applied: 8 Mar, 1979. Cut: 6 June, 26 July, 27 Sept. NK applied, to ryegrass only: 14 June, 27 July.

Potatoes: Ploughed: 18 Dec, 1978. Spring-tine cultivated (Fosters only): 19 Apr, 1979. Spring-tine cultivated: 23 Apr. NPK applied: 14 May. Spike rotary cultivated, seed planted: 16 May. Weedkillers applied: 4 June. Grubbed: 18 June (Highfield), 20 June (Fosters). Rotary ridged: 22 June. Fungicide applied with insecticide: 26 June, 5 July, 20 July, 3 Aug. Fungicide applied: 15 Aug, 4 Sept. Haulm pulverized: 14 Sept. BOV applied: 21 Sept. Lifted: 16 Oct.

Barley: Ploughed: 18 Dec, 1978 (Fosters) 21 Dec, (Highfield). Spring-tine cultivated: 19 Apr, 1979 (Fosters), 23 Apr (Highfield). Seed sown: 23 Apr. Weedkillers applied: 5 June. Fungicide applied: 12 June. Combine harvested: 1 Sept.

3rd Treatment Crops:

Lucerne: PK applied: 14 Nov, 1978. Weedkiller applied: 18 Dec. Cut: 12 June, 27 July. Topped: 17 Aug.

Clover-grass ley and ryegrass: PK applied: 14 Nov, 1978. NK applied: 8 Mar, 1979. Cut: 6 June, 26 July. NK applied (to ryegrass only): 14 June. Topped: 17 Aug.

Beans: Ploughed (Highfield only) Deep tine cultivated (Fosters only): 20 Dec, 1978. Spring-tine cultivated (Fosters only): 19 Apr, 1979. Rotary harrowed, seed sown: 23 Apr. Tractor hoed: 6 June. Insecticide applied: 22 June, 12 July. Combine harvested: 20 Sept.

Wheat: Ploughed: 16 Oct, 1978. Rotary harrowed, seed sown: 17 Oct. N applied: 3 May, 1979. Weedkillers applied: 9 May. Combine harvested: 29 Aug.

Preparatory area:

Fallow: Ploughed: 18 Dec, 1978 (Fosters only), 20 Dec (Highfield). Heavy spring-tine cultivated (Highfield only): 17 May, 1979. Rotary cultivated: 18 May, 12 June, 29 June. Cultivated with thistle bar: 2 Aug. Weedkiller applied: 14 Sept. Spring-tine cultivated: 3 Oct. Deep tine cultivated: 30 Oct.

NOTE: In July wheat and barley on the New Sequence blocks were sampled for take-all and Phialophora.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/1 AND 79/R/RN/2

MUSEUM BLOCKS

DRY MATTER: TONNES/HECTARE

***** TABLES OF MEANS *****

| | HIGHFIELD | FOSTERS |
|---|---|---|
| CLOVER-GRASS LEY | | |
| 1ST AND ONLY CUT | 2.16 | 2.40 |
| MEAN DM% | 22.9 | 15.6 |
| ALL GRASS LEY | | |
| 1ST AND ONLY CUT | 3.55 | 2.94 |
| MEAN DM% | 20.6 | 18.6 |
| HAY | | |
| 1ST AND ONLY CUT | 3.16 | 2.83 |
| MEAN DM% | 20.7 | 19.5 |

OLD GRASS

TOTAL OF 3 CUTS

| | HIGHFIELD | |
|---|---|---|
| | C | N |
| 31ST EXPTL YEAR | | |
| BLOCKS 1 & 4 | 4.34 | 9.53 |
| BLOCK 2 | 4.29 | 10.45 |
| MEAN DM% | 20.3 | 24.4 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/1 AND 79/R/RN/2

RESEEDED GRASS

TOTAL OF 3 CUTS

| | | HIGHFIELD | | | FOSTERS | |
|---|---|---|---|---|---|---|
| | BLOCKS | C | N | BLOCKS | C | N |
| 31ST EXPTL YEAR | 1 & 4 | 4.55 | 10.05 | 1 & 3 | 6.00 | 10.07 |
| 31ST EXPTL YEAR (SEEDED 1949 RESEEDED 1973) | 2 & 3 | 5.49 | 10.43 | 2 & 4 | 5.76 | 9.02 |
| MEAN DM% | | 23.6 | 23.3 | | 19.9 | 20.8 |

NEW SEQUENCE BLOCKS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

BARLEY

| | HIGHFIELD | FOSTERS |
|---|---|---|
| | 5.77 | 5.24 |
| MEAN DM% | 83.7 | 83.9 |

WHEAT

| | HIGHFIELD | FOSTERS |
|---|---|---|
| | 4.56 | 5.28 |
| MEAN DM% | 85.3 | 85.7 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/1 HIGHFIELD

POTATOES

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| ROTATION<br>FYMRES68 | LUCERNE | CLOGRA | GRASS | ARABLE | MEAN |
|---|---|---|---|---|---|
| NONE | 39.5 | 44.9 | 39.0 | 29.9 | 38.3 |
| FYM | 40.1 | 44.9 | 39.0 | 27.0 | 37.7 |
| MEAN | 39.8 | 44.9 | 39.0 | 28.4 | 38.0 |

| N 79<br>FYMRES68 | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| NONE | 32.7 | 37.1 | 41.1 | 42.3 | 38.3 |
| FYM | 29.3 | 39.3 | 42.4 | 40.0 | 37.7 |
| MEAN | 31.0 | 38.2 | 41.8 | 41.1 | 38.0 |

| N 79<br>ROTATION | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| LUCERNE | 36.3 | 42.3 | 41.6 | 39.1 | 39.8 |
| CLOGRA | 40.3 | 45.3 | 46.0 | 47.9 | 44.9 |
| GRASS | 33.6 | 36.8 | 42.8 | 42.7 | 39.0 |
| ARABLE | 13.8 | 28.4 | 36.7 | 34.9 | 28.4 |
| MEAN | 31.0 | 38.2 | 41.8 | 41.1 | 38.0 |

| FYMRES68 | N 79<br>ROTATION | 0 | 80 | 160 | 240 |
|---|---|---|---|---|---|
| NONE | LUCERNE | 38.2 | 40.4 | 40.4 | 39.1 |
| | CLOGRA | 39.4 | 45.6 | 47.9 | 46.8 |
| | GRASS | 33.4 | 36.2 | 43.5 | 42.9 |
| | ARABLE | 19.9 | 26.3 | 32.7 | 40.6 |
| FYM | LUCERNE | 34.5 | 44.3 | 42.7 | 39.0 |
| | CLOGRA | 41.2 | 45.0 | 44.2 | 49.1 |
| | GRASS | 33.8 | 37.4 | 42.2 | 42.5 |
| | ARABLE | 7.7 | 30.5 | 40.6 | 29.2 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 53*

79/R/RN/1 HIGHFIELD

POTATOES

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| ROTATION | LUCERNE | CLOGRA | GRASS | ARABLE | MEAN |
|---|---|---|---|---|---|
| FYMRES68 | | | | | |
| NONE | 95.8 | 96.2 | 96.3 | 94.4 | 95.7 |
| FYM | 95.7 | 96.4 | 95.6 | 89.8 | 94.4 |
| MEAN | 95.8 | 96.3 | 96.0 | 92.1 | 95.0 |

| N 79 | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| FYMRES68 | | | | | |
| NONE | 95.6 | 95.4 | 95.8 | 95.8 | 95.7 |
| FYM | 90.6 | 95.7 | 96.3 | 94.9 | 94.4 |
| MEAN | 93.1 | 95.5 | 96.1 | 95.3 | 95.0 |

| N 79 | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| ROTATION | | | | | |
| LUCERNE | 96.1 | 95.7 | 96.3 | 94.9 | 95.8 |
| CLOGRA | 95.9 | 96.5 | 96.3 | 96.3 | 96.3 |
| GRASS | 96.5 | 95.5 | 96.2 | 95.6 | 96.0 |
| ARABLE | 84.0 | 94.4 | 95.5 | 94.6 | 92.1 |
| MEAN | 93.1 | 95.5 | 96.1 | 95.3 | 95.0 |

| | N 79 | 0 | 80 | 160 | 240 |
|---|---|---|---|---|---|
| FYMRES68 | ROTATION | | | | |
| NONE | LUCERNE | 95.5 | 96.5 | 95.6 | 95.5 |
| | CLOGRA | 96.7 | 95.8 | 95.8 | 96.4 |
| | GRASS | 96.8 | 95.5 | 97.7 | 95.2 |
| | ARABLE | 93.4 | 93.8 | 94.3 | 96.2 |
| FYM | LUCERNE | 96.6 | 95.0 | 97.1 | 94.3 |
| | CLOGRA | 95.1 | 97.3 | 96.8 | 96.2 |
| | GRASS | 96.2 | 95.6 | 94.7 | 96.0 |
| | ARABLE | 74.5 | 95.0 | 96.7 | 93.0 |

PLOT AREA HARVESTED 0.00353



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/2 FOSTERS

POTATOES

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| ROTATION FYMRES68 | LUCERNE | CLOGRA | GRASS | ARABLE | MEAN |
|---|---|---|---|---|---|
| NONE | 34.8 | 36.2 | 31.8 | 26.9 | 32.4 |
| FYM | 36.4 | 37.3 | 34.5 | 29.9 | 34.5 |
| MEAN | 35.6 | 36.8 | 33.1 | 28.4 | 33.5 |

| N 79 FYMRES68 | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| NONE | 26.4 | 35.0 | 32.7 | 35.5 | 32.4 |
| FYM | 29.2 | 35.6 | 38.0 | 35.2 | 34.5 |
| MEAN | 27.8 | 35.3 | 35.4 | 35.3 | 33.5 |

| N 79 ROTATION | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| LUCERNE | 31.5 | 37.7 | 35.4 | 37.6 | 35.6 |
| CLOGRA | 33.9 | 38.5 | 37.9 | 36.8 | 36.8 |
| GRASS | 27.5 | 36.3 | 35.7 | 33.1 | 33.1 |
| ARABLE | 18.5 | 28.7 | 32.5 | 33.8 | 28.4 |
| MEAN | 27.8 | 35.3 | 35.4 | 35.3 | 33.5 |

| FYMRES68 | N 79 ROTATION | 0 | 80 | 160 | 240 |
|---|---|---|---|---|---|
| NONE | LUCERNE | 30.5 | 36.7 | 34.2 | 37.7 |
| | CLOGRA | 33.7 | 38.9 | 35.1 | 37.0 |
| | GRASS | 25.6 | 36.3 | 31.6 | 33.6 |
| | ARABLE | 15.8 | 28.2 | 30.0 | 33.6 |
| FYM | LUCERNE | 32.5 | 38.8 | 36.7 | 37.5 |
| | CLOGRA | 34.0 | 38.0 | 40.6 | 36.7 |
| | GRASS | 29.3 | 36.2 | 39.8 | 32.6 |
| | ARABLE | 21.1 | 29.3 | 35.1 | 34.1 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 55*

79/R/RN/2 FOSTERS

POTATOES

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| ROTATION / FYMRES68 | LUCERNE | CLOGRA | GRASS | ARABLE | MEAN |
|---|---|---|---|---|---|
| NONE | 95.2 | 95.4 | 95.3 | 94.6 | 95.1 |
| FYM | 95.2 | 94.3 | 95.3 | 94.4 | 94.8 |
| MEAN | 95.2 | 94.8 | 95.3 | 94.5 | 95.0 |

| N 79 / FYMRES68 | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| NONE | 95.1 | 94.9 | 95.4 | 95.0 | 95.1 |
| FYM | 94.1 | 95.4 | 94.8 | 94.9 | 94.8 |
| MEAN | 94.6 | 95.1 | 95.1 | 95.0 | 95.0 |

| N 79 / ROTATION | 0 | 80 | 160 | 240 | MEAN |
|---|---|---|---|---|---|
| LUCERNE | 94.9 | 94.9 | 95.4 | 95.7 | 95.2 |
| CLOGRA | 94.5 | 95.2 | 95.2 | 94.5 | 94.8 |
| GRASS | 95.1 | 96.0 | 95.4 | 94.7 | 95.3 |
| ARABLE | 93.9 | 94.4 | 94.5 | 95.1 | 94.5 |
| MEAN | 94.6 | 95.1 | 95.1 | 95.0 | 95.0 |

| FYMRES68 / N 79 | ROTATION | 0 | 80 | 160 | 240 |
|---|---|---|---|---|---|
| NONE | LUCERNE | 94.4 | 94.7 | 95.5 | 96.3 |
| | CLOGRA | 95.9 | 94.8 | 96.5 | 94.3 |
| | GRASS | 95.4 | 96.0 | 95.4 | 94.6 |
| | ARABLE | 94.7 | 94.3 | 94.4 | 94.9 |
| FYM | LUCERNE | 95.4 | 95.1 | 95.3 | 95.0 |
| | CLOGRA | 93.1 | 95.7 | 93.8 | 94.6 |
| | GRASS | 94.8 | 96.1 | 95.5 | 94.7 |
| | ARABLE | 93.0 | 94.5 | 94.7 | 95.4 |

PLOT AREA HARVESTED 0.00353



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/3

LEY/ARABLE

Object: To compare the effects on soil fertility of rotations with or without leys - Woburn Stackyard D.

Sponsors: A.E. Johnston, F.G.W. Jones, G.A. Salt.

The 42nd year, leys, barley, oats, wheat.

For previous years see 'Details' 1967 & 1973 and 74-78/W/RN/3.

Design: 5 series of 8 plots, split for treatments other than rotations.

Whole plot dimensions: 8.53 x 40.7.

Treatments: All phases of four five-course rotations were originally present:

ROTATION

| | | |
|---|---|---|
| LEY | Clover/grass ley: | L, L, L, P, W |
| CLO | All legume ley: | SA, SA, SA, P, W until 1971 then CL, CL, CL P, W |
| A | Arable with roots: | P, R, C, P, W until 1971 then P, B, B, P, W |
| A H | Arable with hay: | P, R, H, P, W until 1971 then P, B, H, P, W |

P = potatoes, R = rye, C = carrots, W = wheat, B = barley, H = hay,
L = clover/grass ley, SA = sainfoin ley, CL = red clover ley

Rotations themselves followed different cycles:

On four plots in each block the rotations were repeated (PER)
On four plots in each block arable rotations alternated each five years with ley rotations (ALT)

From 1976 all the rotations were changed on all phases except for the first and second test crops in 1976:

| | |
|---|---|
| LN | (Previous LEY) LN, LN, LN, W, B |
| LC | (Previous CLO) LC, LC, LC, W, B |
| AF | (Previous A) F, F, O, W, B |
| AB | (Previous A H) B, B, O, W, B |

LN = grass ley with N, LC = clover/grass ley no N, O = oats, F = fallow

Plots hitherto in alternating rotations were changed to test eight-year leys:

| | |
|---|---|
| ALT LN | LN, LN, LN, LN, LN, LN, LN, LN, W, B |
| ALT LC | LC, LC, LC, LC, LC, LC, LC, LC, W, B |

The new scheme started by sowing these new leys in spring 1976 on four phases and in spring 1977 on the fifth phase (2nd test crop in 1976). Initially some of the long term leys are ploughed up in less than eight years, depending on the starting point in relation to the test crop, to ensure that ultimately eight-year leys will be available for each test crop period.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/3

Treatments to first test crop wheat and second test crop barley (yields are taken only from the test crops):

ROT CYCL — Combinations of rotations and cycles defined above (all leys ploughed after three years)

LN
LC
AF
AB
ALT LN
ALT LC

Additional treatments to first test crop, wheat:-

1/2 plots

1. FYMRES63 — Farmyard manure residues, last applied 1963:

   NONE — None
   FYM — 38 tonnes on each occasion

1/8 plots

2. N — Nitrogen fertiliser (kg N):

   0
   63
   126
   189

Additional treatments to second test crop, barley:-

1/2 plots

1. FYMRES62 — Farmyard manure residues, last applied 1962:

   NONE — None
   FYM — 38 tonnes on each occasion

1/8 plots

2. N — Nitrogen fertiliser (kg N):

   0
   50
   100
   150



*https://doi.org/10.23637/ERADOC-1-45* *pp 58*

79/W/RN/3

Corrective K dressings (kg $K_2O$) as muriate of potash, applied to first test crop wheat and long-term leys in the wheat block:

| Continuous rotations | No FYM half plots | FYM half plots |
|---|---|---|
| LN | 289 | 251 |
| LC | 63 | 0 |
| AF | 238 | 188 |
| AB | 188 | 201 |
| **Ex-alternating rotations** | | |
| ALT LN ploughed for wheat | 226 | 100 |
| ALT LN not ploughed | 138 | 213 |
| ALT LC ploughed for wheat | 138 | 0 |
| ALT LC not ploughed | 0 | 0 |

Standard applications:-

Grass ley and Clover/grass ley, 1st year: Manures: (0:14:28) at 540 kg. N at 75 kg as 'Nitro-chalk' to grass ley only.

Grass ley, 2nd, 3rd, 4th, 5th, 6th and 7th years: Manures: Magnesian limestone at 5 t to 5th year only. (0:14:28) at 540 kg. (25:0:16) at 300 kg in spring and after the first cut.

Clover/grass ley, 2nd, 3rd, 4th, 5th, 6th and 7th years: Manures: Magnesian limestone at 5 t to 5th year only. (0:14:28) at 540 kg. $K_2O$ at 48 kg in spring and after the first cut.

Barley, 1st and 2nd treatment crops: Manures: (20:14:14) at 400 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil ('Oxytril CM' at 2.1 kg) in 250 l.

2nd test crop: Manures: Magnesian limestone at 5 t. (0:20:20) at 300 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil ('Oxytril CM' at 2.1 kg) in 250 l. Nematicide: Aldicarb at 10 kg.

Oats: Manures: (20:14:14) at 400 kg, combine drilled. Weedkillers: ('Oxytril CM' at 2.1 kg) in 250 l.

Winter wheat: 1st test crop: Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg) in 250 l. Nematicide: Aldicarb at 10 kg.

Varieties: Grass ley: Erecta timothy 17 kg, Meadow fescue S.215 17 kg, sown at 34 kg.
Clover/grass ley: Erecta timothy 20 kg, Meadow fescue S.215 16 kg, Huia white clover 4 kg, sown at 40 kg.
Barley: Porthos, dressed with ethirimol, sown at 160 kg.
Oats: Manod, sown at 200 kg.
Winter wheat: Flanders, sown at 180 kg.

Cultivations, etc.- Treatment crops:

Grass ley and clover/grass ley, 1st year: Ploughed: 21 Nov, 1978. Spring-tine cultivated with crumbler attached: 17 Apr, 1979. PK applied, N applied to grass ley only: 11 May. Rotary cultivated, seeds sown: 4 June. Cut: 4 Sept.

Grass ley and clover/grass ley, 2nd, 3rd, 4th, 5th, 6th and 7th years: Magnesian limestone applied to 5th year only: 9 Oct, 1978. Corrective K applied to 4th year only: 9 Nov. PK applied: 26 Feb, 1979. NK applied to grass ley, K applied to clover/grass ley: 30 Apr, 5 July. Cut: 19 June, 4 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 59*

79/W/RN/3

Barley: 1st and 2nd treatment crops: Ploughed: 21 Nov, 1978. Spring-tine cultivated with crumbler attached twice: 17 Apr, 1979, 21 Apr. Seed sown: 23 Apr. Weedkiller applied: 5 June. Combine harvested: 29 Aug.
Oats: 3rd treatment crop: Ploughed: 21 Nov, 1978. Spring-tine cultivated with crumbler attached twice: 17 Apr, 1979, 21 Apr. Seed sown: 23 Apr. Weedkiller applied: 5 June. Combine harvested: 6 Sept.
Fallow: 1st and 2nd treatment year: Ploughed: 21 Nov, 1978. Spring-tine cultivated with crumbler attached: 17 Apr, 1979. Spring-tine cultivated with crumbler attached 2nd year only: 21 Apr. Rotary cultivated 2nd year only: 11 June. Spring-tine cultivated 1st year only: 12 June. Deep-tine cultivated twice: 12 July, 21 Aug.
Test Crops:
Winter wheat, 1st test crop: Rotary cultivated and ploughed: 8 Nov, 1978. Corrective K applied, aldicarb applied, rotary cultivated, spring-tine cultivated, seed sown: 9 Nov. N applied: 17 Apr, 1979. Weedkiller applied: 15 May. Combine harvested: 30 Aug.
Barley, 2nd test crop: Magnesian limestone applied: 9 Oct, 1978. Ploughed: 21 Nov. Spring-tine cultivated with crumbler attached twice: 17 Apr, 1979, 21 Apr. Aldicarb applied, rotary cultivated, seed sown, N applied: 3 May. Weedkiller applied: 5 June. Combine harvested: 28 Aug.

79/W/RN/3 2ND TEST CROP BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| ROT CYCL | LN | LC | AF | AB | ALT LN | ALT LC | MEAN |
|---|---|---|---|---|---|---|---|
| FYMRES62 | | | | | | | |
| NONE | 5.78 | 5.32 | 4.86 | 4.44 | 4.81 | 5.53 | 5.12 |
| FYM | 5.09 | 5.35 | 4.81 | 4.57 | 5.08 | 5.64 | 5.09 |
| N | | | | | | | |
| 0 | 3.69 | 3.23 | 2.43 | 2.57 | 2.98 | 3.48 | 3.06 |
| 50 | 6.15 | 5.22 | 4.69 | 3.96 | 5.08 | 6.02 | 5.19 |
| 100 | 5.86 | 6.09 | 5.95 | 5.37 | 5.65 | 6.42 | 5.89 |
| 150 | 6.05 | 6.82 | 6.28 | 6.12 | 6.06 | 6.41 | 6.29 |
| MEAN | 5.44 | 5.34 | 4.83 | 4.51 | 4.94 | 5.59 | 5.11 |

| ROT CYCL | N | LN | LC | AF | AB | ALT LN | ALT LC |
|---|---|---|---|---|---|---|---|
| FYMRES62 | | | | | | | |
| NONE | 0 | 3.88 | 3.27 | 2.40 | 2.54 | 2.98 | 3.49 |
| | 50 | 6.40 | 5.03 | 4.91 | 3.74 | 4.79 | 6.04 |
| | 100 | 6.37 | 5.83 | 5.91 | 5.02 | 5.70 | 6.25 |
| | 150 | 6.49 | 7.17 | 6.21 | 6.44 | 5.78 | 6.34 |
| FYM | 0 | 3.50 | 3.19 | 2.45 | 2.61 | 2.98 | 3.47 |
| | 50 | 5.91 | 5.41 | 4.47 | 4.17 | 5.38 | 6.01 |
| | 100 | 5.34 | 6.34 | 5.99 | 5.73 | 5.60 | 6.60 |
| | 150 | 5.61 | 6.48 | 6.34 | 5.79 | 6.34 | 6.49 |

GRAIN MEAN DM% 83.3

PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/3 1ST TEST CROP WINTER WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| ROT CYCL | LN | LC | AF | AB | ALT LN | ALT LC | MEAN |
|---|---|---|---|---|---|---|---|
| FYMRES63 | | | | | | | |
| NONE | 3.10 | 3.89 | 3.92 | 2.74 | 2.72 | 4.43 | 3.47 |
| FYM | 3.13 | 4.21 | 4.16 | 2.74 | 2.78 | 4.59 | 3.60 |
| N | | | | | | | |
| 0 | 1.68 | 3.38 | 0.78 | 1.03 | 1.41 | 3.61 | 1.98 |
| 63 | 3.18 | 4.34 | 4.27 | 3.02 | 2.62 | 4.80 | 3.71 |
| 126 | 3.88 | 4.46 | 5.69 | 3.45 | 3.54 | 4.97 | 4.33 |
| 189 | 3.74 | 4.03 | 5.41 | 3.47 | 3.43 | 4.67 | 4.12 |
| MEAN | 3.12 | 4.05 | 4.04 | 2.74 | 2.75 | 4.51 | 3.54 |

| ROT CYCL | | LN | LC | AF | AB | ALT LN | ALT LC |
|---|---|---|---|---|---|---|---|
| FYMRES63 | N | | | | | | |
| NONE | 0 | 1.79 | 2.98 | 0.63 | 0.78 | 1.25 | 3.52 |
| | 63 | 3.12 | 3.93 | 3.95 | 3.03 | 2.44 | 4.72 |
| | 126 | 3.93 | 4.64 | 5.57 | 3.36 | 3.91 | 4.92 |
| | 189 | 3.56 | 4.01 | 5.55 | 3.79 | 3.30 | 4.56 |
| FYM | 0 | 1.56 | 3.77 | 0.94 | 1.29 | 1.56 | 3.70 |
| | 63 | 3.24 | 4.75 | 4.60 | 3.00 | 2.80 | 4.88 |
| | 126 | 3.83 | 4.28 | 5.81 | 3.55 | 3.17 | 5.01 |
| | 189 | 3.91 | 4.04 | 5.28 | 3.14 | 3.57 | 4.78 |

GRAIN MEAN DM% 86.7

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| ROT CYCL | LN | LC | AF | AB | ALT LN | ALT LC | MEAN |
|---|---|---|---|---|---|---|---|
| FYMRES63 | | | | | | | |
| NONE | 4.79 | 5.32 | 2.90 | 1.93 | 3.50 | 5.31 | 3.96 |
| FYM | 4.60 | 5.53 | 3.12 | 2.04 | 3.65 | 5.35 | 4.05 |
| N | | | | | | | |
| 0 | 1.75 | 3.89 | 0.58 | 0.74 | 1.31 | 3.70 | 2.00 |
| 63 | 4.83 | 5.58 | 2.45 | 1.86 | 3.53 | 5.30 | 3.93 |
| 126 | 5.52 | 5.98 | 4.29 | 2.66 | 4.64 | 6.01 | 4.85 |
| 189 | 6.68 | 6.25 | 4.69 | 2.66 | 4.81 | 6.32 | 5.24 |
| MEAN | 4.69 | 5.43 | 3.01 | 1.98 | 3.57 | 5.33 | 4.00 |

| ROT CYCL | | LN | LC | AF | AB | ALT LN | ALT LC |
|---|---|---|---|---|---|---|---|
| FYMRES63 | N | | | | | | |
| NONE | 0 | 1.84 | 3.89 | 0.54 | 0.59 | 1.20 | 3.66 |
| | 63 | 5.04 | 5.40 | 2.25 | 1.90 | 3.39 | 5.52 |
| | 126 | 5.50 | 5.58 | 4.24 | 2.51 | 4.91 | 5.87 |
| | 189 | 6.77 | 6.40 | 4.55 | 2.71 | 4.49 | 6.21 |
| FYM | 0 | 1.65 | 3.89 | 0.62 | 0.89 | 1.43 | 3.75 |
| | 63 | 4.62 | 5.76 | 2.66 | 1.82 | 3.67 | 5.08 |
| | 126 | 5.53 | 6.39 | 4.34 | 2.81 | 4.38 | 6.15 |
| | 189 | 6.60 | 6.10 | 4.84 | 2.61 | 5.13 | 6.43 |

STRAW MEAN DM% 83.7 PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/4

MARKET GARDEN

Object: To study the residual effects of fertilisers and organic manures applied in the period 1942-67 - Woburn Lansome I.

Sponsor: A.E. Johnston.

The 38th year, ryegrass.

For previous years see 'Details' 1967 & 1973 and 74-78/W/RN/4.

Design: 2 series each of 40 plots divided into 4 blocks of 10 plots. Series B has the plots split into 2.

Whole plot dimensions: 8.53 x 5.18.

NOTE: Yields were not taken and no new treatments were applied.

Basal applications: Manures: 75 kg N in spring and after the first cut.

Seed: RvP Italian ryegrass at 40 kg, sown 16 Sept, 1974.

Cultivations, etc.:- Both series.
N applied: 6 Apr, 1979, 5 July. Cut three times: 18 June, 3 Aug, 3 Sept.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/5

ARABLE REFERENCE PLOTS

Object: To study the long term effects of FYM and N, P and K fertilisers on the yield and mineral content of crops - Great Field IV.

Sponsor: F.V. Widdowson.

The 24th year of the rotation, barley, ley, potatoes, winter wheat, kale.
The 20th year of the same rotation on the additional plots.
The 23rd year of permanent grass.

For previous years see 58/Bc/1(t), 59/Bc/1(t), 60/B/3(t), 61-64/B/2, 65/B/2(t), 66/B/2(t), 67/B/2, 68/B/3(t) and 69-78/R/RN/5.

Design: 1 block of 12 plots for each crop on original plots. 1 block of 7 plots for each crop on additional plots.

Whole plot dimensions: 2.13 x 2.44.

Treatments: Fertilisers and farmyard manure:

MANURE

Original plots

0
N1
P
N1P
K
N1K
PK
N1PK
N2PK
D
N1PKD
N2PKD

N1, 2 (kg N): 19, 38 (ley): 56, 112 (barley): 75, 150 (wheat): 125, 250 (potatoes - 75, 150 until 1975): 125, 250 (kale and permanent grass) as 'Nitro-Chalk'
P: 63 kg $P_2O_5$ as superphosphate
K: 250 kg $K_2O$ as muriate of potash
D: 38 tonnes FYM (permanent grass): 50 tonnes (kale and potatoes): none to other crops.

NOTE: Since 1977 all wheat on these plots receives a standard dressing of 82 kg MgO as Epsom salts. Before 1976 potatoes tested 0 v 82 kg MgO on sub plots, dressing balanced-up after harvest before wheat.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/5

Additional plots

MANURE

| | |
|---|---|
| 0 | None |
| F | N PK |
| FMGCA | N PK Mg Ca |
| FMGS | N PK Mg S |
| FCAS | N PK Ca S |
| FMGCAS | N PK Mg Ca S |
| FMGCASTE | N PK Mg Ca S TE |

F: N PK
N: N2 applied as urea.
P: 126 kg P205 as potassium dihydrogen phosphate
K: 251 kg K20 total. As potassium dihydrogen phosphate (83 kg K20) on all NPK plots. In addition plots without S receive 168 kg K20 as potassium chloride, plots with S receive 92 kg K20 as potassium sulphate plus 76 kg K20 as potassium chloride. Since 1978 all F plots received in addition 126 kg K20 for potatoes - applied in autumn as potassium chloride.
Mg: 126 kg MgO as magnesium chloride
Ca: 126 kg CaO as calcium carbonate
S: 30 kg S supplied by potassium sulphate
TE: Trace element mixture including Mn, Cu, Zn, B, Mo, Ca, Fe. Test varies with crop.

Standard applications:
Barley: Weedkillers: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 280 l.
Fungicide: Tridemorph at 0.53 kg with benodanil at 1.1 kg in 280 l.
Insecticide: Pirimicarb at 0.14 kg in 280 l.
Potatoes: Fungicide: Mancozeb at 1.3 kg in 280 l applied three times to additional plots and four times to original plots. Insecticides: Pirimicarb at 0.14 kg in 280 l applied twice with the first and second fungicide applications. Menazon at 0.28 kg in 280 l alone to additional plots, with mancozeb to original plots.
Wheat: Ioxynil at 0.32 kg and mecoprop at 0.95 kg in 280 l. Fungicides: Tridemorph at 0.53 kg with benodanil at 1.1 kg in 280 l. Insecticide: Pirimicarb at 0.14 kg in 280 l.
Kale: Pirimicarb at 0.07 kg in 280 l.

Seed: Barley: Minak, sown at 200 kg.
Grass-clover ley: Italian ryegrass RvP, and red clover Hungaropoly.
Potatoes: Pentland Crown.
Winter wheat: Maris Hobbit, sown at 210 kg.
Kale: Thousand Head.

Cultivations, etc.:-
Barley: Dug by hand: 20 Nov, 1978. P, K, Mg, Ca and S applied: 26 Feb, 1979. N applied, rotary cultivated, raked by hand, seed sown: 19 Apr. Weedkillers applied: 25 May. Trace elements applied: 5 June. Fungicides applied: 25 June. Insecticide applied: 16 July. Harvested by hand: 28 Aug.
Grass-clover ley: Rotary cultivated, raked by hand, seed sown: 1 Sept, 1978. P, K, Mg and S applied: 20 Nov. N applied: 23 Mar, 1979. Cut: 31 May, 19 July, 21 Sept.
Potatoes: Dug by hand: 6 Dec, 1978. P, K, Mg, Ca and S applied: 26 Feb, 1979. N applied (first half on additional plots), rotary cultivated, raked by hand, potatoes planted: 8 May. Second half N applied to additional plots: 5 June.



*https://doi.org/10.23637/ERADOC-1-45* *pp 64*

Trace elements applied: 11 June. Fungicide with pirimicarb applied: 27 June and 16 July. Fungicide with menazon applied to original plots, additional plots not given manures lifted: 2 Aug. Menazon applied to remaining additional plots, original plots given neither K nor FYM, lifted: 3 Aug. Mancozeb applied to remaining plots: 20 Aug. Remaining plots lifted: 24 Sept.

Wheat: P, K and Mg applied: 21 Sept, 1978. Dug by hand: 22 Sept. Raked by hand, seed sown: 29 Sept. Weedkillers applied: 20 Nov. N applied (first half on additional plots): 23 Mar, 1979. Second half N applied to additional plots: 19 Apr. Fungicides applied: 8 May. Insecticide applied: 16 July. Harvested by hand: 14 Aug.

Kale: FYM applied to original plots, all plots dug: 24 Oct, 1978. P, K, Ca, Mg and S applied: 26 Feb, 1979. N applied (first half on additional plots), rotary cultivated, raked by hand, seed sown: 8 May. Second half N applied to additional plots: 5 June. Trace elements applied to additional plots: 11 June. Insecticide applied: 16 July. Harvested by hand: 11 Oct.

Permanent grass: P and K applied: 20 Nov, 1978. FYM applied: 26 Feb, 1979. N applied: 23 Mar, 31 May, 19 July. Cut: 31 May, 19 July, 20 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 65*

79/R/RN/5

GREAT FIELD IV (R):ORIGINAL PLOTS

TONNES/HECTARE

***** TABLES OF MEANS *****

| | WINTER WHEAT: GRAIN | WINTER WHEAT: STRAW | KALE: FRESH WEIGHT | BARLEY: GRAIN | BARLEY: STRAW | LEY : DRY MATTER 1ST CUT | 2ND CUT | 3RD CUT | TOTAL OF 3 CUTS |
|---|---|---|---|---|---|---|---|---|---|
| MANURE | | | | | | | | | |
| 0 | 4.68 | 4.59 | 10.5 | 2.83 | 2.23 | 1.64 | 2.01 | 1.87 | 5.52 |
| N1 | 5.56 | 5.75 | 11.3 | 4.17 | 3.75 | 2.22 | 1.86 | 1.58 | 5.67 |
| P | 4.70 | 4.66 | 15.3 | 3.37 | 2.73 | 1.67 | 1.95 | 1.58 | 5.20 |
| N1P | 2.19 | 4.05 | 20.9 | 4.89 | 4.68 | 2.45 | 1.38 | 1.05 | 4.89 |
| K | 4.37 | 4.42 | 7.0 | 3.14 | 2.70 | 2.10 | 3.14 | 2.15 | 7.38 |
| N1K | 7.31 | 6.68 | 13.9 | 5.29 | 4.94 | 2.73 | 3.13 | 2.02 | 7.89 |
| PK | 4.72 | 5.04 | 14.8 | 3.61 | 3.18 | 4.00 | 4.92 | 4.22 | 13.15 |
| N1PK | 8.44 | 8.44 | 30.5 | 5.72 | 5.45 | 4.41 | 4.68 | 4.46 | 13.55 |
| N2PK | 9.59 | 8.95 | 53.6 | 6.18 | 6.74 | 4.94 | 4.41 | 3.76 | 13.11 |
| D | 6.03 | 5.92 | 25.7 | 4.62 | 3.74 | 3.74 | 4.62 | 4.19 | 12.54 |
| N1PKD | 9.85 | 9.93 | 44.0 | 6.66 | 6.57 | 4.91 | 5.40 | 5.07 | 15.38 |
| N2PKD | 9.68 | 10.39 | 63.6 | 6.53 | 7.47 | 5.13 | 5.19 | 4.64 | 14.96 |
| MEAN DM% | 79.4 | 68.2 | | 83.7 | 71.8 | 16.5 | 25.0 | 21.6 | 21.0 |

| | POTATOES: TOTAL TUBERS | PERMANENT GRASS : DRY MATTER 1ST CUT | 2ND CUT | 3RD CUT | TOTAL OF 3 CUTS |
|---|---|---|---|---|---|
| MANURE | | | | | |
| 0 | 7.8 | 0.60 | 0.82 | 0.68 | 2.10 |
| N1 | 13.1 | 1.77 | 1.14 | 1.75 | 4.66 |
| P | 20.0 | 0.70 | 0.59 | 0.63 | 1.92 |
| N1P | 12.5 | 1.96 | 1.30 | 1.86 | 5.12 |
| K | 23.1 | 0.90 | 1.01 | 0.93 | 2.83 |
| N1K | 41.3 | 2.57 | 2.08 | 2.01 | 6.66 |
| PK | 32.7 | 1.11 | 1.57 | 1.26 | 3.94 |
| N1PK | 53.8 | 2.36 | 1.91 | 1.85 | 6.12 |
| N2PK | 60.4 | 4.39 | 2.55 | 2.88 | 9.82 |
| D | 43.4 | 3.36 | 1.85 | 1.45 | 6.65 |
| N1PKD | 61.7 | 5.06 | 2.43 | 2.25 | 9.74 |
| N2PKD | 67.5 | 2.70 | 3.97 | 3.61 | 10.28 |
| MEAN DM% | | 21.4 | 31.7 | 28.0 | 27.0 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 66*

79/R/RN/5

GREAT FIELD IV (R): ADDITIONAL PLOTS

TONNES/HECTARE

***** TABLES OF MEANS *****

| | WINTER WHEAT: GRAIN | WINTER WHEAT: STRAW | KALE: FRESH WEIGHT | BARLEY: GRAIN | BARLEY: STRAW | POTATOES TOTAL TUBERS |
|---|---|---|---|---|---|---|
| MANURE | | | | | | |
| 0 | 4.38 | 4.61 | 13.5 | 1.83 | 1.70 | 11.3 |
| F | 9.71 | 9.95 | 56.7 | 6.36 | 7.13 | 58.6 |
| FMGCA | 9.68 | 10.33 | 48.0 | 6.25 | 6.57 | 58.0 |
| FMGS | 8.55 | 8.94 | 53.2 | 6.97 | 7.02 | 59.8 |
| FCAS | 9.93 | 9.71 | 54.5 | 5.81 | 5.40 | 58.2 |
| FMGCAS | 9.31 | 9.76 | 53.6 | 6.49 | 6.94 | 58.6 |
| FMGCASTE | 8.59 | 9.73 | 48.4 | 6.03 | 6.36 | 59.2 |
| MEAN DM% | 80.7 | 73.2 | | 84.4 | 79.5 | |

| | LEY : DRY MATTER 1ST CUT | 2ND CUT | 3RD CUT | TOTAL OF 3 CUTS |
|---|---|---|---|---|
| MANURE | | | | |
| 0 | 2.43 | 2.55 | 1.91 | 6.88 |
| F | 3.67 | 3.34 | 2.77 | 9.78 |
| FMGCA | 5.05 | 4.49 | 4.26 | 13.80 |
| FMGS | 4.56 | 3.64 | 3.64 | 11.83 |
| FCAS | 5.06 | 4.56 | 4.51 | 14.13 |
| FMGCAS | 5.63 | 5.10 | 4.54 | 15.26 |
| FMGCASTE | 4.77 | 4.82 | 4.27 | 13.87 |
| MEAN DM% | 17.3 | 23.8 | 20.7 | 20.6 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 67*

79/W/RN/6

ARABLE REFERENCE PLOTS

Object: To study the long term effects of FYM and N, P and K fertilisers on the yield and mineral content of crops - Woburn Stackyard C.

Sponsor: F.V. Widdowson.

The 20th year, oats, sugar beet, barley, ley, potatoes, permanent grass.

For previous years see 60/B/3(t), 61-65/B/2, 66/B/2(t), 67/B/2(t), 68/B/3(t), 69/W/RN/6, 70/W/RN/6(t) and 71-78/W/RN/6.

Design: 1 block of 12 plots for each crop.

Whole plot dimensions: 2.74 x 2.13.

Treatments: All combinations of:-

Blocks

| | | |
|---|---|---|
| 1. CROP | | Crops:- |
| | | After old grass (1960-73): |
| | BARLEY/G | Barley |
| | | In arable rotation since 1960: |
| | BARLEY/A | Barley |
| | LEY | Ley |
| | POTATOES | Potatoes |
| | S BEET | Sugar beet |
| | OATS | Oats |
| | Also: | |
| | PERMGRAS | Permanent grass, sown autumn 1973 |

Plots

| | | |
|---|---|---|
| 2. MANURE | | Fertilisers and farmyard manure:- |
| | 0 | |
| | N1 | |
| | P | |
| | N1P | |
| | K | |
| | NIK | |
| | PK | |
| | N1PK | |
| | N2PK | |
| | D | |
| | N1PKD | |
| | N2PKD | |

N1,2 (kg N): 31.5, 63 (ley): 63, 126 (barley and oats): 126, 252 (sugar beet and potatoes): 188, 376 (permanent grass) as ammonium nitrate.
P: P205 at 63 kg as triple superphosphate.
K: K20 at 252 kg as potassium bicarbonate.
D: Farmyard manure at 25 tonnes (permanent grass): 50 tonnes (sugar beet and potatoes): none to other crops.



*https://doi.org/10.23637/ERADOC-1-45* *pp 68*

79/W/RN/6

NOTES: (1) The old grass block was dug in autumn 1973 and follows the arable rotation, the crop in 1979 being barley. A new block was sown to permanent grass in 1974.
(2) Potatoes and sugar beet test on sub plots: - v MG (82 kg MgO as Epsom salts). Yields are recorded from potatoes only. Untreated sub plots receive 82 kg MgO after potato and sugar beet harvest.

Standard applications:
Winter oats: Insecticide: Phorate at 2 kg as granules. Weedkillers: Ioxynil at 0.32 kg and mecoprop at 0.94 kg in 280 l; ioxynil at 0.42 kg and mecoprop at 1.3 kg in 280 l, on both occasions with fungicide. Fungicide: Tridemorph at 0.53 kg on two occasions with weedkiller.
Sugar beet: Manures: Boron at 0.92 kg B203 as borax in 1120 l. Insecticide: Pirimicarb at 0.14 kg in 280 l on two occasions.
Barley: Weedkillers: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 280 l, with fungicide. Fungicide: Tridemorph at 0.53 kg on two occasions the first with weedkiller the second with benodanil. Benodanil at 0.56 kg in 280 l with tridemorph.
Potatoes: Weedkillers: Linuron at 1.0 kg plus paraquat at 0.28 kg ion in 280 l. Insecticide: Pirimicarb at 0.14 kg on two occasions, alone in 280 l on the first occasion, with the fungicide on the second occasion. Fungicide: Mancozeb at 1.3 kg in 280 l on two occasions, the first with insecticide.

Seed: Winter oats: Peniarth, sown at 210 kg.
Sugar beet: Klein E, sown at 5.6 kg.
Barley: Julia, sown at 180 kg.
Potatoes: Pentland Crown.
Grass-clover ley: RvP Italian ryegrass and Hungaropoly red clover.
Permanent Grass: S215 Meadow fescue at 20 kg; S24 perennial ryegrass at 20 kg; crested dogstail at 7 kg; Chewings fescue at 7 kg; smooth stalked meadow grass at 7 kg; alsike clover at 4 kg; wild white clover at 2 kg. Mixture sown at 67 kg.

Cultivations, etc.:-
Winter oats: Plots dug by hand, P, K and balancing Mg applied, raked, phorate applied, raked, seed sown, raked in: 2 Oct, 1978. Weedkillers and fungicide applied: 17 Nov. First half N applied: 27 Mar, 1979. Second half N applied: 23 Apr. Weedkillers and fungicide applied: 9 May. Harvested: 26 July.
Sugar beet: FYM applied, plots dug by hand: 14 Nov, 1978. P and K applied: 27 Feb, 1979. First N applied, Mg applied to half plots, rotary cultivated, seed sown, raked in: 23 Mar. Second N and boron applied: 30 Apr. Singled: 7 June. Insecticide applied twice: 27 June, 16 July. Lifted: 10 Oct.
Barley: Balancing Mg applied: 25 Oct, 1978. Plots dug by hand: 13 Nov. P and K applied: 27 Feb, 1979. First N applied, raked, seed sown, raked in: 5 Apr. Second N, weedkillers and tridemorph applied: 9 May. Tridemorph and benodanil applied: 20 June. Harvested: 16 Aug.
Potatoes: FYM applied, plots dug by hand: 5 Dec, 1978. P and K applied: 27 Feb, 1979. First N applied, rotary cultivated, Mg applied to half plots, raked, potatoes planted and earthed up: 9 May. Second N applied, weedkillers applied: 30 May. Insecticide applied: 27 June. Insecticide and fungicide applied: 16 July. Lifted plots without K, fungicide applied to remainder: 20 Aug. Remaining plots lifted: 1 Oct.



*https://doi.org/10.23637/ERADOC-1-45* *pp 69*

79/W/RN/6

Grass-clover ley: Barley stubble lightly cultivated, seeds sown, raked in: 15 Aug, 1978. P and K applied: 17 Nov. N applied: 27 Mar, 1979. Cut: 7 June, 23 July, 18 Sept.
Permanent Grass: P and K applied: 17 Nov, 1978. FYM applied: 27 Feb, 1979. N applied in three equal amounts: 27 Mar, 7 June, 23 July. Cut: 7 June, 23 July, 18 Sept.

NOTES: (1) Samples were taken for determination of dry matter for each crop and percentages of N, P and K.
(2) The percentages of Mg in sugar beet tops, potato tubers and leaves were determined.
(3) The percentages of K in potato leaves in July were determined.

TONNES/HECTARE

***** TABLES OF MEANS *****

| | BARLEY/G | | BARLEY/A | | LEY : DRY MATTER | | | |
|---|---|---|---|---|---|---|---|---|
| | GRAIN | STRAW | GRAIN | STRAW | 1ST CUT | 2ND CUT | 3RD CUT | TOTAL OF 3 CUTS |
| MANURE | | | | | | | | |
| 0 | 1.67 | 1.50 | 1.17 | 1.13 | 0.99 | 1.00 | 1.06 | 3.05 |
| N1 | 2.29 | 2.89 | 2.44 | 2.94 | 2.69 | 1.07 | 1.08 | 4.84 |
| P | 1.73 | 1.52 | 1.17 | 1.18 | 1.27 | 0.96 | 1.13 | 3.36 |
| N1P | 1.85 | 2.61 | 2.21 | 2.88 | 2.69 | 0.75 | 0.53 | 3.97 |
| K | 1.97 | 1.68 | 1.45 | 1.22 | 2.44 | 2.91 | 2.82 | 8.16 |
| N1K | 4.11 | 3.56 | 4.08 | 4.04 | 2.97 | 2.19 | 2.54 | 7.69 |
| PK | 1.84 | 1.58 | 1.71 | 1.46 | 3.05 | 2.45 | 2.68 | 8.18 |
| N1PK | 4.51 | 4.34 | 4.44 | 4.45 | 4.29 | 2.64 | 3.73 | 10.66 |
| N2PK | 5.29 | 6.03 | 5.27 | 6.20 | 5.09 | 2.64 | 2.60 | 10.33 |
| D | 2.82 | 2.28 | 2.43 | 2.10 | 4.21 | 3.12 | 2.46 | 9.79 |
| N1PKD | 5.24 | 5.26 | 4.77 | 4.91 | 5.21 | 2.72 | 2.57 | 10.51 |
| N2PKD | 5.42 | 6.56 | 5.69 | 7.14 | 6.27 | 2.43 | 2.37 | 11.07 |
| MEAN DM% | 81.4 | 77.9 | 82.3 | 79.3 | 19.5 | 29.9 | 22.6 | 24.0 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 70*

79/W/RN/6

TONNES/HECTARE

***** TABLES OF MEANS *****

| | POTATOES TOTAL TUBERS - | MG | MEAN | S BEET ROOTS WASHED | SUGAR % | TOTAL SUGAR | TOPS |
|---|---|---|---|---|---|---|---|
| MANURE | | | | | | | |
| 0 | 8.9 | 9.6 | 9.2 | 12.0 | 15.7 | 1.88 | 10.9 |
| N1 | 6.8 | 8.5 | 7.7 | 19.8 | 15.3 | 3.04 | 23.6 |
| P | 8.9 | 9.6 | 9.2 | 11.3 | 15.9 | 1.79 | 10.4 |
| N1P | 10.6 | 9.6 | 10.1 | 17.6 | 14.9 | 2.62 | 18.8 |
| K | 18.8 | 26.0 | 22.4 | 11.3 | 16.4 | 1.85 | 10.1 |
| N1K | 36.6 | 38.3 | 37.4 | 29.6 | 17.8 | 5.27 | 27.5 |
| PK | 22.2 | 26.7 | 24.4 | 14.4 | 16.5 | 2.37 | 11.6 |
| N1PK | 44.4 | 46.1 | 45.3 | 34.7 | 17.7 | 6.13 | 33.0 |
| N2PK | 40.7 | 27.7 | 34.2 | 35.9 | 16.5 | 5.92 | 39.3 |
| D | 39.3 | 36.9 | 38.1 | 28.4 | 18.3 | 5.20 | 19.5 |
| N1PKD | 52.3 | 49.5 | 50.9 | 41.7 | 18.0 | 7.49 | 32.3 |
| N2PKD | 46.1 | 44.1 | 45.1 | 46.8 | 17.1 | 8.01 | 43.7 |

| | OATS GRAIN | STRAW | PERMGRAS : DRY MATTER 1ST CUT | 2ND CUT | 3RD CUT | TOTAL OF 3 CUTS |
|---|---|---|---|---|---|---|
| MANURE | | | | | | |
| 0 | 1.48 | 2.25 | 2.56 | 0.88 | 0.84 | 4.28 |
| N1 | 4.13 | 4.67 | 3.04 | 1.20 | 1.85 | 6.09 |
| P | 1.29 | 2.04 | 2.47 | 1.00 | 0.71 | 4.19 |
| N1P | 4.28 | 4.77 | 3.22 | 1.16 | 1.81 | 6.18 |
| K | 1.42 | 2.41 | 2.67 | 0.93 | 1.19 | 4.78 |
| N1K | 3.95 | 5.37 | 3.46 | 1.67 | 1.84 | 6.97 |
| PK | 1.62 | 2.70 | 3.32 | 1.21 | 1.13 | 5.66 |
| N1PK | 3.64 | 5.21 | 4.03 | 1.71 | 1.79 | 7.54 |
| N2PK | 6.23 | 9.55 | 4.82 | 1.63 | 1.89 | 8.34 |
| D | 2.27 | 2.93 | 3.53 | 1.18 | 1.35 | 6.05 |
| N1PKD | 4.75 | 7.17 | 2.96 | 1.78 | 2.14 | 6.88 |
| N2PKD | 6.23 | 10.23 | 4.88 | 2.41 | 2.07 | 9.36 |
| MEAN DM% | 71.1 | 45.1 | 21.7 | 35.1 | 23.7 | 26.8 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 71*

79/R/RN/7

## RESIDUAL PHOSPHATE

Object: Originally to study the fresh and residual effects of phosphate fertiliser on the yields of three arable crops grown in rotation. Since 1974 the effects on ley and on yield and pathogens of continuous wheat are also studied - Great Field IV and Sawyers I.

Sponsors: G.E.G. Mattingly, D.B. Slope.

The 20th year, ley (Great Field IV): wheat and ley (Sawyers I).

For previous years see 'Details' 1967 and 1973 and 74-78/R/RN/7.

Design: Great Field IV: 3 series each of 1 randomised block of 12 plots.
Sawyers I: 3 series each of 2 randomised blocks of 12 plots.

Whole plot dimensions:
Great Field IV: 4.27 x 18.3
Sawyers I: 4.27 x 20.1

Treatments:

| P205 | Rates and frequency of applying phosphate:- |
|---|---|
| NONE | 0 |
| | Annual dressings, kg P205: |
| 29 ANN | 29 |
| 57 ANN | 57 |
| 115 ANN | 115 |
| 172 ANN | 172 |
| | Triennial dressings, kg P205 (last applied 1978): |
| 86 TRI | 86 |
| 172 TRI | 172 |
| | Six-yearly dressings, kg P205 (last applied 1973): |
| 344 SIX | 344 |
| 688 SIX | 688 |
| 1032 SIX | 1032 |
| | Single dressing, kg P205 (applied autumn 1959): |
| 376 G(1) | 376 as Gafsa rock phosphate |
| 376 S(1) | 376 as granular superphosphate |

NOTES: (1) Since 1974 the original rotation of potatoes, barley, swedes on both fields has been changed. Blocks after barley were sown to continuous wheat on Sawyers I, to ley on Great Field IV. In 1978 & 1979 one series was sown to ley each year on Sawyers I.
(2) Since 1960 all phosphate has been applied as superphosphate.
(3) The six-yearly dressings were applied half in autumn before ploughing, half in spring.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/7

Standard applications:
Leys: (Great Field IV and Sawyers I: Series III second-year ley): Manures: $K_2O$ at 250 kg as muriate of potash. (Sawyers I: Series II: First-year ley): Manures: Chalk at 2.9 t. N at 60 kg as 'Nitro-Chalk'. $K_2O$ at 250 kg as muriate of potash. Weedkillers: Glyphosate at 1.5 kg in 220 l.
Wheat: (Sawyers I: Series I: Fifth cereal): Manures: $K_2O$ at 90 kg as muriate of potash. N at 125 kg as 'Nitro-Chalk'. Weedkillers: Glyphosate at 1.5 kg in 220 l. Methabenzthiazuron at 3.1 kg in 220 l.

Seed: Ley: (Sawyers I: Series II: First year of ley): Timothy RvP Erecta at 7 kg, Meadow Fescue S215 at 14 kg, New Zealand White Clover Huia at 3 kg, mixture sown at 24 kg.
Wheat: Cappelle, sown at 200 kg.

Cultivations, etc.:-
Leys: (Great Field IV): Standard K applied: 17 Nov, 1978. Test P applied: 6 Mar, 1979. Cut: 6 June, 23 July, 28 Sept.
(Sawyers I: Series III: Second year ley): Standard K applied: 16 Nov, 1978. Test P applied: 6 Mar, 1979. Cut: 6 June, 24 July, 1 Oct.
(Sawyers I: Series II: First year ley): Weedkiller applied: 2 Oct, 1978. Chalk applied: 4 Oct. Ploughed: 26 Oct. Heavy spring-tine cultivated twice: 27 Oct, 17 May, 1979. Standard N and K and test P applied, rotary harrowed, seed sown: 11 June. Cut: 1 Oct.
Wheat: (Sawyers I: Series I: Fifth cereal): Glyphosate applied: 2 Oct, 1978. Ploughed: 26 Oct. Heavy spring-tine cultivated, standard K and test P applied, rotary harrowed, seed sown and methabenzthiazuron applied: 27 Oct. Standard N applied: 23 Apr, 1979. Combine harvested: 31 Aug.

NOTE: Estimates of take-all (Gaeumannomyces graminis) were made on wheat in April and early July.

79/R/RN/7 GREAT FIELD IV

SERIES I LEY

DRY MATTER TONNES/HECTARE

| | CUT 1 (6/6/79) | CUT 2 (23/7/79) | CUT 3 (28/9/79) | TOTAL OF 3 CUTS |
|---|---|---|---|---|
| $P_2O_5$ | | | | |
| NONE | 2.05 | 3.25 | 1.47 | 6.77 |
| 29 ANN | 1.88 | 3.02 | 1.63 | 6.53 |
| 57 ANN | 2.31 | 0.97 | 2.06 | 5.34 |
| 115 ANN | 2.18 | 2.53 | 1.70 | 6.41 |
| 172 ANN | 2.41 | 3.31 | 2.26 | 7.98 |
| 86 TRI | 2.74 | 0.95 | 2.36 | 6.05 |
| 172 TRI | 2.28 | 3.16 | 1.85 | 7.29 |
| 344 SIX | 2.39 | 2.55 | 2.06 | 6.99 |
| 688 SIX | 2.17 | 2.57 | 2.02 | 6.76 |
| 1032 SIX | 2.32 | 3.12 | 2.22 | 7.66 |
| 376 G(1) | 2.17 | 3.21 | 1.38 | 6.75 |
| 376 S(1) | 2.52 | 2.85 | 1.67 | 7.04 |
| MEAN | 2.28 | 2.62 | 1.89 | 6.80 |
| MEAN DM% | 13.5 | 22.6 | 22.0 | 19.4 |

PLOT AREA HARVESTED 0.00186



*https://doi.org/10.23637/ERADOC-1-45* *pp 73*

79/R/RN/7 GREAT FIELD IV

SERIES II LEY

DRY MATTER TONNES/HECTARE

| | CUT 1 (6/6/79) | CUT 2 (23/7/79) | CUT 3 (28/9/79) | TOTAL OF 3 CUTS |
|---|---|---|---|---|
| P205 | | | | |
| NONE | 2.24 | 2.95 | 1.44 | 6.63 |
| 29 ANN | 3.19 | 3.01 | 1.99 | 8.19 |
| 57 ANN | 3.69 | 3.18 | 2.12 | 8.99 |
| 115 ANN | 3.37 | 2.80 | 2.28 | 8.45 |
| 172 ANN | 3.38 | 2.91 | 2.25 | 8.55 |
| 86 TRI | 3.10 | 3.38 | 1.85 | 8.32 |
| 172 TRI | 3.88 | 3.13 | 2.37 | 9.38 |
| 344 SIX | 3.35 | 3.52 | 1.93 | 8.80 |
| 688 SIX | 3.69 | 2.66 | 2.16 | 8.50 |
| 1032 SIX | 3.51 | 3.05 | 2.04 | 8.60 |
| 376 G(1) | 2.69 | 3.51 | 1.46 | 7.66 |
| 376 S(1) | 2.64 | 3.14 | 1.58 | 7.36 |
| MEAN | 3.23 | 3.10 | 1.96 | 8.29 |
| MEAN DM% | 14.3 | 22.7 | 23.5 | 20.1 |

PLOT AREA HARVESTED 0.00186

SERIES III LEY

DRY MATTER TONNES/HECTARE

| | CUT 1 (6/6/79) | CUT 2 (23/7/79) | CUT 3 (28/9/79) | TOTAL OF 3 CUTS |
|---|---|---|---|---|
| P205 | | | | |
| NONE | 2.23 | 2.80 | 1.08 | 6.12 |
| 29 ANN | 3.47 | 3.04 | 1.73 | 8.24 |
| 57 ANN | 3.70 | 3.50 | 2.04 | 9.24 |
| 115 ANN | 4.23 | 2.91 | 1.97 | 9.12 |
| 172 ANN | 4.05 | 2.20 | 2.58 | 8.83 |
| 86 TRI | 3.57 | 3.11 | 1.76 | 8.44 |
| 172 TRI | 3.90 | 2.82 | 2.16 | 8.88 |
| 344 SIX | 4.28 | 3.18 | 1.83 | 9.30 |
| 688 SIX | 3.67 | 2.94 | 1.81 | 8.42 |
| 1032 SIX | 3.53 | 2.87 | 2.27 | 8.67 |
| 376 G(1) | 2.64 | 2.86 | 1.61 | 7.11 |
| 376 S(1) | 2.48 | 3.30 | 1.21 | 6.99 |
| MEAN | 3.48 | 2.96 | 1.84 | 8.28 |
| MEAN DM% | 14.8 | 23.0 | 25.0 | 20.9 |

PLOT AREA HARVESTED 0.00186



*https://doi.org/10.23637/ERADOC-1-45* *pp 74*

79/R/RN/7 SAWYERS I

SERIES II LEY

1ST CUT (1/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| P205 | |
|---|---|
| NONE | 1.20 |
| 29 ANN | 2.20 |
| 57 ANN | 2.57 |
| 115 ANN | 2.91 |
| 172 ANN | 2.67 |
| 86 TRI | 2.11 |
| 172 TRI | 2.35 |
| 344 SIX | 2.40 |
| 688 SIX | 2.37 |
| 1032 SIX | 2.45 |
| 376 G(1) | 1.20 |
| 376 S(1) | 1.91 |
| MEAN | 2.20 |
| SED* | 0.276 |
| CV% | 12.6 |
| MEAN DM% | 20.4 |

* NOTE STRATUM STANDARD ERROR (11 df) is also equal to this figure

PLOT AREA HARVESTED 0.00204

SERIES III LEY

DRY MATTER TONNES/HECTARE

| | CUT 1 (6/6/79) | CUT 2 (25/7/79) | CUT 3 (1/10/79) | TOTAL OF 3 CUTS |
|---|---|---|---|---|
| P205 | | | | |
| NONE | 3.47 | 1.83 | 1.30 | 6.60 |
| 29 ANN | 3.13 | 1.67 | 1.63 | 6.43 |
| 57 ANN | 3.12 | 2.25 | 1.87 | 7.25 |
| 115 ANN | 3.55 | 2.47 | 2.02 | 8.04 |
| 172 ANN | 3.74 | 2.64 | 2.27 | 8.64 |
| 86 TRI | 2.86 | 1.75 | 1.61 | 6.22 |
| 172 TRI | 3.16 | 2.45 | 1.96 | 7.57 |
| 344 SIX | 2.96 | 1.88 | 1.64 | 6.48 |
| 688 SIX | 2.99 | 1.60 | 1.67 | 6.27 |
| 1032 SIX | 3.67 | 2.32 | 2.02 | 8.02 |
| 376 G(1) | 4.04 | 1.72 | 1.39 | 7.16 |
| 376 S(1) | 3.51 | 1.73 | 1.38 | 6.63 |
| MEAN | 3.35 | 2.03 | 1.73 | 7.11 |
| SED* | 0.203 | 0.262 | 0.118 | 0.345 |
| CV% | 6.0 | 12.9 | 6.8 | 4.9 |
| MEAN DM% | 17.1 | 24.8 | 25.5 | 22.5 |

PLOT AREA HARVESTED 0.00204



*https://doi.org/10.23637/ERADOC-1-45* *pp 75*

78/R/RN/7 SAWYERS I

SERIES III LEY

DRY MATTER TONNES/HECTARE

| | CUT 1 (1/9/78) | CUT 2 (30/10/78) | TOTAL OF 2 CUTS |
|---|---|---|---|
| SED* | 0.171 | 0.132 | 0.237 |
| CV% | 8.6 | 27.2 | 9.6 |

79/R/RN/7 SAWYERS I

SERIES I 5TH CEREAL WHEAT

TONNES/HECTARE

***** TABLES OF MEANS *****

| P205 | GRAIN | STRAW |
|---|---|---|
| NONE | 4.39 | 4.26 |
| 29 ANN | 5.12 | 4.89 |
| 57 ANN | 5.10 | 4.93 |
| 115 ANN | 5.28 | 4.84 |
| 172 ANN | 5.37 | 4.89 |
| 86 TRI | 4.91 | 4.54 |
| 172 TRI | 5.13 | 4.95 |
| 344 SIX | 4.72 | 4.42 |
| 688 SIX | 5.51 | 5.33 |
| 1032 SIX | 5.47 | 4.98 |
| 376 G(1) | 4.52 | 4.21 |
| 376 S(1) | 4.16 | 3.89 |
| MEAN | 4.97 | 4.68 |
| SED* | 0.356 | |
| CV% | 7.2 | |
| MEAN DM% | 85.6 | 90.4 |

PLOT AREA HARVESTED 0.00562



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/RN/8

CULTIVATION/WEEDKILLER

Object: To study the long-term effects of weedkillers and different methods of primary cultivation on a sequence of crops - Great Harpenden I.

Sponsors: R. Moffitt, G.V. Dyke, J.A. Currie.

The 19th year, barley.

For previous years see 'Details' 1967 and 1973 and 74-78/R/RN/8.

Design: 2 randomised blocks of 12 plots split into 2.

Whole plot dimensions: 12.8 x 15.2.

Treatments: All combinations of:-

Whole plots

1. CULTIVTN — Primary cultivations annually:

   PLOUGH — Ploughed: 27 Nov, 1978
   ROTAVATE — Rotary cultivated by rotary digger: 28 Nov
   DEEPTINE — Deep-tine cultivated twice: 27 Nov

2. WEEDCNTL(76) — Weed control to beans and potatoes in the rotation beans, wheat, potatoes, barley practised until 1976. Last applied to beans 1976:

   MECHANCL — Mechanical
   RESIDUAL — Residual weedkiller (duplicated)

Sub plots

3. WEEDKLLR(75) — Hormone weedkiller to cereals in the previous rotation, last applied to barley 1975 (basal hormone weedkiller to spring wheat 1977 and barley 1978 and 1979):

   NONE
   HORMONE

4. WEEDKLLR(79) — Paraquat weedkiller to cereal stubbles: 23 Oct, 1978

   NONE
   PARAQUAT

NOTE: The combinations of 3 and 4 are tested on half plots: WEEDKLLR(75) NONE, WEEDKLLR(79) NONE and WEEDKLLR(75) HORMONE, WEEDKLLR(79) PARAQUAT on one block, remaining combinations on the other.

EXTRA — plus three extra whole plot treatments:

   SPNGTINE — Heavy spring-tine cultivated twice: 27 Nov, 1978. Given simazine to beans 1976, with sub plot tests 3 and 4 above.

   (SH)PLGH — Shallow ploughed: 27 Nov, 1978. Given simazine to beans 1976 and paraquat to cereal stubbles with sub plot test 3 above.



*https://doi.org/10.23637/ERADOC-1-45* *pp 77*

79/R/RN/8

STANDARD — Standard cultivations as considered best for each crop. Ploughed 27 Nov, 1978. Given simazine to beans 1976, with sub plot tests 3 and 4 above.

NOTE: Paraquat was applied at 0.56 kg ion in 220 l.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) and mecoprop at 1.7 kg in 220 l. Fungicide: Tridemorph at 0.53 kg in 220 l.

Seed: Porthos, sown at 160 kg.

Cultivations, etc.:- Spring-tine cultivated twice, seed sown: 19 Apr, 1979. Weedkillers applied: 4 June. Fungicide applied: 12 June. Combine harvested: 26 Aug.

EXTRA PLOTS ONLY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| | EXTRA | SPNGTINE | (SH)PLGH | STANDARD |
|---|---|---|---|---|
| WEEDKLLR(75) | | | | |
| | NONE | 4.90 | 4.89 | 4.78 |
| | HORMONE | 5.18 | 5.06 | 4.74 |
| WEEDKLLR(79) | | | | |
| | NONE | 5.01 | | 4.44 |
| | PARAQUAT | 5.08 | 4.98 | 5.08 |
| | MEAN | 5.04 | 4.98 | 4.76 |

GRAIN MEAN DM% 82.7

SUB PLOT AREA HARVESTED 0.00434



*https://doi.org/10.23637/ERADOC-1-45* *pp 78*

79/R/RN/8

OMITTING EXTRA PLOTS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| CULTIVTN | PLOUGH | ROTAVATE | DEEPTINE | MEAN |
|---|---|---|---|---|
| WEEDCNTL(76) | | | | |
| MECHANCL | 4.80 | 4.67 | 4.61 | 4.70 |
| RESIDUAL | 5.04 | 4.64 | 4.68 | 4.79 |
| WEEDKLLR(75) | | | | |
| NONE | 5.03 | 4.63 | 4.74 | 4.80 |
| HORMONE | 4.88 | 4.67 | 4.58 | 4.71 |
| WEEDKLLR(79) | | | | |
| NONE | 5.03 | 4.61 | 4.62 | 4.75 |
| PARAQUAT | 4.89 | 4.69 | 4.70 | 4.76 |
| MEAN | 4.96 | 4.65 | 4.66 | 4.76 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CULTIVTN | WEEDCNTL(76) | WEEDKLLR(75) | WEEDKLLR(79) |
|---|---|---|---|---|
| SED | 0.181 | 0.156 | 0.082 | 0.082 |

| TABLE | CULTIVTN WEEDCNTL(76) | CULTIVTN WEEDKLLR(75) | CULTIVTN WEEDKLLR(79) | |
|---|---|---|---|---|
| SED | 0.313 | | | MIN REP |
| | 0.271 | 0.206 | 0.206 | MAX-MIN |
| | 0.221 | | | MAX REP |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| CULTIVTN | | 0.141 | 0.141 | |

| | WEEDCNTL(76) |
|---|---|
| MIN REP | MECHANCL |
| MAX-MIN | MECHANCL V RESIDUAL |
| MAX REP | RESIDUAL |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.313 | 6.6 |
| BLOCK.WP.SP | 10 | 0.245 | 5.1 |

GRAIN MEAN DM% 82.8

SUB PLOT AREA HARVESTED 0.00434



*https://doi.org/10.23637/ERADOC-1-45* *pp 79*

79/W/RN/12

ORGANIC MANURING

Object: To study, from crop yields and soil analyses, the residual effects of a range of types of organic matter - Woburn, Stackyard B.

Sponsor: G.E.G. Mattingly.

The 15th year, winter wheat, sugar beet, ley.

For previous years see 'Details' 1973 and 74-78/W/RN/12.

Design for winter wheat: 2 blocks of 8 plots split into 8
sugar beet: 2 blocks of 6 plots split into 8
ley: 2 blocks of 2 plots.

Whole plot dimensions: 8.53 x 30.5.

Treatments: From 1966 to 1971 the experiment had a preliminary period designed to build up organic matter, derived from different sources. An arable rotation was started on two blocks in 1972 and the remaining two blocks in 1973. Organic manures were last applied in 1971, the leys were ploughed in autumn 1971 and 1972 before starting the rotation. The experiment now tests all combinations of:-

Whole plots

1. MANURE — Organic manures and fertilisers in the preliminary period:

| | |
|---|---|
| FYM | Farmyard manure |
| STRAW | Straw |
| PEAT | Peat |
| GREENMNR | Green manures |
| FERT-FYM | Fertilisers equivalent to FYM |
| FERT-STR | Fertilisers equivalent to straw |
| CLOVRLEY | Clover/grass ley, no N |
| GRASSLEY | Grass ley with N for each cut |

In the sugar beet blocks treatments PEAT & GREENMNR were sown to clover/grass ley in 1979. (No yields obtained in 1979).

Sub plots

2. N — Fertiliser nitrogen (kg N):

| WHEAT | SUGAR BEET |
|---|---|
| 0 | 0 |
| 30 | 40 |
| 60 | 80 |
| 90 | 120 |
| 120 | 160 |
| 150 | 200 |
| 180 | 240 |
| 210 | 280 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 80*

79/W/RN/12

Standard applications:
Winter wheat: Manures: $P_2O_5$ at 110 kg as superphosphate, $K_2O$ at 60 kg as muriate of potash. Weedkiller: Methabenzthiazuron at 1.5 kg in 220 l.
Sugar beet: Manures: Chalk at 5 t, (0:20:20) at 1210 kg in autumn, (0:20:20) at 605 kg in spring. Mg at 60 kg as kieserite. Boron at 8.0 kg $B_2O_3$ (as 'Solubor') applied with the insecticide. Insecticide: Pirimicarb at 0.14 kg in 250 l.
Clover/grass ley: Manures: Chalk at 5 t, (0:20:20) at 1210 kg in autumn, (0:20:20) at 605 kg in spring, Mg at 60 kg as kieserite.

Seed: Winter wheat: Flanders, sown at 180 kg.
Sugar beet: Klein E, sown at 5.6 kg.
Clover/grass ley: sown at 22.4 kg.

Cultivations, etc.:-
Winter wheat: Heavy spring-tine cultivated, P and K applied, spring-tine cultivated with crumbler attached: 13 Oct, 1978. Seed sown: 14 Oct. Weedkiller applied: 18 Oct. N applied: 18 Apr, 1979. Combine harvested: 29 Aug.
Sugar beet: Chalk applied: 7 Nov, 1978. Autumn PK applied: 24 Nov. Spring PK and Mg applied, spring-tine cultivated: 30 Apr, 1979. Spring-tine cultivated with crumbler attached, seed sown: 1 May. N applied: 4 May. Singled: 11-15 June. Tractor hoed three times: 18 June, 2 July, 16 July. Boron and insecticide applied: 30 June. Lifted: 1 Nov.
Clover/grass ley: Chalk applied: 7 Nov, 1978. Autumn PK applied: 24 Nov. Spring PK and Mg applied, spring-tine cultivated: 30 Apr, 1979. Spring-tine cultivated with crumbler attached: 1 May. N applied: 4 May. Spring-tine cultivated with crumbler attached, seeds sown: 4 June. Topped: 30 July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 81*

79/W/RN/12 WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N / MANURE | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| FYM | 1.82 | 3.82 | 5.77 | 6.06 | 6.88 | 5.64 | 6.18 | 5.89 | 5.26 |
| STRAW | 1.72 | 3.90 | 5.48 | 6.68 | 6.42 | 6.58 | 6.48 | 6.00 | 5.41 |
| PEAT | 1.38 | 3.83 | 5.52 | 6.42 | 6.50 | 7.13 | 5.89 | 6.21 | 5.36 |
| GREENMNR | 1.63 | 3.58 | 5.16 | 5.81 | 4.99 | 4.76 | 5.87 | 5.08 | 4.61 |
| FERT-FYM | 1.16 | 3.45 | 4.73 | 5.83 | 5.01 | 4.76 | 4.44 | 4.71 | 4.26 |
| FERT-STR | 1.81 | 3.69 | 5.44 | 6.49 | 6.87 | 6.33 | 5.99 | 5.81 | 5.30 |
| CLOVRLEY | 2.29 | 4.28 | 6.11 | 6.55 | 6.98 | 6.17 | 6.17 | 6.13 | 5.59 |
| GRASSLEY | 1.57 | 3.60 | 5.19 | 6.52 | 6.25 | 5.79 | 6.52 | 6.29 | 5.22 |
| MEAN | 1.67 | 3.77 | 5.42 | 6.29 | 6.24 | 5.90 | 5.94 | 5.77 | 5.13 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | MANURE | N | MANURE N |
|---|---|---|---|
| SED | 0.679 | 0.151 | 0.787 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| MANURE | | | 0.427 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 7 | 0.679 | 13.2 |
| BLOCK.WP.SP | 56 | 0.427 | 8.3 |

GRAIN MEAN DM% 84.7

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| N / MANURE | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| FYM | 1.52 | 2.96 | 4.27 | 5.38 | 4.78 | 5.40 | 5.82 | 6.75 | 4.61 |
| STRAW | 1.62 | 3.51 | 5.15 | 6.15 | 6.15 | 6.66 | 7.10 | 6.93 | 5.41 |
| PEAT | 1.14 | 2.57 | 3.53 | 5.30 | 5.86 | 4.98 | 6.34 | 5.70 | 4.43 |
| GREENMNR | 1.36 | 3.10 | 4.23 | 5.02 | 4.85 | 4.79 | 5.48 | 5.79 | 4.33 |
| FERT-FYM | 1.17 | 3.10 | 4.17 | 4.89 | 5.40 | 5.72 | 5.39 | 5.32 | 4.40 |
| FERT-STR | 1.54 | 3.10 | 4.79 | 5.29 | 6.39 | 5.76 | 6.33 | 6.36 | 4.95 |
| CLOVRLEY | 1.66 | 3.60 | 5.29 | 6.27 | 6.61 | 7.04 | 6.77 | 7.34 | 5.57 |
| GRASSLEY | 1.31 | 2.79 | 4.31 | 4.97 | 5.92 | 5.72 | 6.27 | 6.53 | 4.73 |
| MEAN | 1.42 | 3.09 | 4.47 | 5.41 | 5.74 | 5.76 | 6.19 | 6.34 | 4.80 |

STRAW MEAN DM% 90.2

SUB PLOT AREA HARVESTED 0.00173



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/12 SUGAR BEET

ROOTS WASHED TONNES/HECTARE

***** TABLES OF MEANS *****

| N | 0 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| MANURE | | | | | | | | | |
| FYM | 14.2 | 25.1 | 29.6 | 32.4 | 33.4 | 30.6 | 29.2 | 32.3 | 28.4 |
| STRAW | 13.1 | 24.9 | 30.1 | 37.6 | 36.8 | 32.3 | 34.6 | 30.8 | 30.0 |
| FERT-FYM | 8.6 | 21.4 | 27.2 | 29.0 | 31.1 | 33.7 | 27.5 | 25.7 | 25.5 |
| FERT-STR | 10.1 | 20.6 | 29.9 | 31.7 | 35.9 | 34.4 | 28.2 | 22.3 | 26.6 |
| CLOVRLEY | 12.3 | 25.4 | 34.4 | 34.4 | 31.3 | 32.8 | 28.8 | 32.9 | 29.0 |
| GRASSLEY | 16.3 | 28.3 | 37.7 | 40.6 | 42.5 | 39.8 | 39.0 | 39.7 | 35.5 |
| MEAN | 12.4 | 24.3 | 31.5 | 34.3 | 35.2 | 33.9 | 31.2 | 30.6 | 29.2 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | MANURE | N | MANURE N |
|---|---|---|---|
| SED | 3.11 | 1.58 | 4.78 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| MANURE | | | 3.88 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 5 | 3.11 | 10.7 |
| BLOCK.WP.SP | 42 | 3.88 | 13.3 |

SUGAR PERCENTAGE

***** TABLES OF MEANS *****

| N | 0 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| MANURE | | | | | | | | | |
| FYM | 18.0 | 18.2 | 18.4 | 17.7 | 16.9 | 16.8 | 16.4 | 15.9 | 17.3 |
| STRAW | 17.7 | 18.0 | 17.7 | 17.4 | 18.1 | 16.5 | 16.1 | 15.8 | 17.2 |
| FERT-FYM | 17.2 | 18.0 | 18.1 | 17.8 | 17.1 | 16.6 | 16.4 | 16.2 | 17.2 |
| FERT-STR | 17.3 | 18.1 | 18.2 | 17.4 | 17.5 | 16.7 | 16.0 | 15.9 | 17.2 |
| CLOVRLEY | 17.6 | 17.8 | 17.7 | 17.2 | 17.1 | 16.8 | 16.0 | 15.8 | 17.0 |
| GRASSLEY | 17.8 | 18.0 | 18.4 | 17.9 | 17.7 | 16.8 | 16.5 | 16.0 | 17.4 |
| MEAN | 17.6 | 18.0 | 18.1 | 17.6 | 17.4 | 16.7 | 16.2 | 16.0 | 17.2 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/12 SUGAR BEET

TOTAL SUGAR TONNES/HECTARE

***** TABLES OF MEANS *****

| N / MANURE | 0 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| FYM | 2.57 | 4.58 | 5.44 | 5.74 | 5.64 | 5.16 | 4.81 | 5.13 | 4.89 |
| STRAW | 2.31 | 4.49 | 5.32 | 6.57 | 6.67 | 5.32 | 5.58 | 4.87 | 5.14 |
| FERT-FYM | 1.48 | 3.84 | 4.93 | 5.17 | 5.31 | 5.58 | 4.51 | 4.16 | 4.37 |
| FERT-STR | 1.76 | 3.73 | 5.45 | 5.51 | 6.29 | 5.76 | 4.56 | 3.56 | 4.58 |
| CLOVRLEY | 2.16 | 4.53 | 6.11 | 5.94 | 5.35 | 5.49 | 4.61 | 5.19 | 4.92 |
| GRASSLEY | 2.91 | 5.09 | 6.90 | 7.24 | 7.51 | 6.71 | 6.46 | 6.36 | 6.15 |
| MEAN | 2.20 | 4.38 | 5.69 | 6.03 | 6.13 | 5.67 | 5.09 | 4.88 | 5.01 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | MANURE | N | MANURE N |
|---|---|---|---|
| SED | 0.540 | 0.282 | 0.842 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| MANURE | | | 0.690 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 5 | 0.540 | 10.8 |
| BLOCK.WP.SP | 42 | 0.690 | 13.8 |

TOPS TONNES/HECTARE

***** TABLES OF MEANS *****

| N / MANURE | 0 | 40 | 80 | 120 | 160 | 200 | 240 | 280 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| FYM | 10.1 | 14.5 | 19.5 | 28.8 | 31.7 | 33.5 | 33.8 | 38.7 | 26.3 |
| STRAW | 8.4 | 19.4 | 21.4 | 30.5 | 33.5 | 39.1 | 42.4 | 33.8 | 28.5 |
| FERT-FYM | 5.8 | 12.4 | 19.4 | 23.4 | 29.6 | 35.6 | 28.9 | 28.2 | 22.9 |
| FERT-STR | 7.5 | 12.2 | 21.1 | 24.8 | 31.7 | 35.4 | 30.2 | 29.1 | 24.0 |
| CLOVRLEY | 8.9 | 16.2 | 25.5 | 29.5 | 29.8 | 35.4 | 36.6 | 35.6 | 27.2 |
| GRASSLEY | 11.7 | 19.2 | 29.5 | 36.3 | 37.8 | 40.8 | 42.9 | 45.3 | 32.9 |
| MEAN | 8.7 | 15.6 | 22.7 | 28.9 | 32.4 | 36.6 | 35.8 | 35.1 | 27.0 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | MANURE | N | MANURE N |
|---|---|---|---|
| SED | 2.85 | 1.34 | 4.18 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| MANURE | | | 3.27 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 5 | 2.85 | 10.6 |
| BLOCK.WP.SP | 42 | 3.27 | 12.1 |

SUB PLOT AREA HARVESTED 0.00130



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/13

## INTENSIVE CEREALS

Object: To study the effects of intensive cereal cropping on yield, incidence of soil-borne pathogens and organic matter in the soil - Woburn Stackyard I.

Sponsors: A.E. Johnston, J. McEwen.

The 14th year, winter wheat, barley.

For previous years see 'Details' 1973 and 74-78/W/RN/13.

Design: For each experiment: 2 randomised blocks of 6 plots, split into 4. DAZOMET tested on blocks.

Whole plot dimensions: 8.53 x 20.4.

Treatments:-
One experiment on winter wheat on part of the site of the classical wheat experiment 1877-1954
One experiment on barley on part of the site of the classical barley experiment 1877-1954
Factors tested on both experiments are the same but crop and nitrogen rates differ. All combinations of:-

Blocks

1. DAZOMET — Dazomet (cumulative to a test of none and aldicarb in 1977 & 1978) applied in autumn (kg):

0
336

Whole plots

2. PREVCROP — Previous crops:

| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 |
|---|---|---|---|---|---|---|---|
| P C2 | C | C | C | L | P | C | C |
| P C3 | C | C | L | P | C | C | C |
| P C4 | C | L | P | C | C | C | C |
| P C5 | L | P | C | C | C | C | C |
| L C2 | P | C | C | C | L | C | C |
| C13 | C | C | C | C | C | C | C |

L = 1 year ley P = Potatoes C = Cereal: wheat or barley. All plots in cereal from 1977.

Sub plots

3. N — Nitrogen fertiliser (kg N as 'Nitro-Chalk'):

| Wheat | Barley | Wheat Autumn | Wheat Spring | Barley Spring |
|---|---|---|---|---|
| 0 + 63 | 50 | 0 + 63 | | 50 |
| 0 + 126 | 100 | 0 + 126 | | 100 |
| 0 + 189 | 150 | 0 + 189 | | 150 |
| 63 + 189 | 200 | 63 + 189 | | 200 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 85*

79/W/RN/13

Standard applications:
Wheat: Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Methabenzthiazuron at 1.5 kg in 220 l.
Barley: Manures: (0:20:20) at 300 kg, combine drilled. Weedkillers: Bromoxynil with ioxynil ('Oxytril CM' at 2.1 kg in 250 l).

Seed: Wheat: Flanders, sown at 180 kg.
Barley: Porthos, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:-
All plots: Ploughed: 30 Aug, 1978. Spring-tine cultivated, with crumbler attached: 31 Aug. Dazomet applied and all plots rotary cultivated: 7 Sept.
Wheat: Rotary cultivated: 11 Oct, 1978. Seed sown: 13 Oct. Autumn N and weedkiller applied: 18 Oct. Spring N applied: 10 Apr, 1979. Combine harvested: 30 Aug.
Barley: Heavy spring-tine cultivated: 16 Oct, 1978. Spring-tine cultivated, with crumbler attached, twice: 16 Apr, 1979, 20 Apr. Seed sown: 23 Apr. N applied: 30 Apr. Weedkiller applied: 5 June. Combine harvested: 28 Aug.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/13

WINTER WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP / DAZOMET | P C2 | P C3 | P C4 | P C5 | L C2 | C13 | MEAN |
|---|---|---|---|---|---|---|---|
| 0 | 4.38 | 4.37 | 4.15 | 4.76 | 3.96 | 4.64 | 4.38 |
| 336 | 5.19 | 5.15 | 4.94 | 5.23 | 4.64 | 4.91 | 5.01 |
| MEAN | 4.79 | 4.76 | 4.54 | 5.00 | 4.30 | 4.77 | 4.69 |

| N / DAZOMET | 0+63 | 0+126 | 0+189 | 63+189 | MEAN |
|---|---|---|---|---|---|
| 0 | 3.50 | 4.61 | 4.80 | 4.60 | 4.38 |
| 336 | 4.96 | 5.67 | 4.95 | 4.47 | 5.01 |
| MEAN | 4.23 | 5.14 | 4.87 | 4.54 | 4.69 |

| N / PREVCROP | 0+63 | 0+126 | 0+189 | 63+189 | MEAN |
|---|---|---|---|---|---|
| P C2 | 4.00 | 5.37 | 4.82 | 4.96 | 4.79 |
| P C3 | 4.25 | 5.15 | 5.08 | 4.56 | 4.76 |
| P C4 | 4.17 | 4.87 | 4.58 | 4.55 | 4.54 |
| P C5 | 4.47 | 5.56 | 5.29 | 4.68 | 5.00 |
| L C2 | 3.80 | 4.86 | 4.31 | 4.23 | 4.30 |
| C13 | 4.68 | 5.01 | 5.16 | 4.24 | 4.77 |
| MEAN | 4.23 | 5.14 | 4.87 | 4.54 | 4.69 |

| DAZOMET / N / PREVCROP | 0+63 | 0+126 | 0+189 | 63+189 |
|---|---|---|---|---|
| 0 P C2 | 3.25 | 4.69 | 4.69 | 4.91 |
| P C3 | 3.36 | 4.87 | 4.55 | 4.69 |
| P C4 | 3.38 | 3.97 | 4.64 | 4.61 |
| P C5 | 3.82 | 5.18 | 5.23 | 4.84 |
| L C2 | 2.92 | 4.19 | 4.43 | 4.32 |
| C13 | 4.26 | 4.75 | 5.27 | 4.27 |
| 336 P C2 | 4.74 | 6.06 | 4.96 | 5.02 |
| P C3 | 5.14 | 5.42 | 5.61 | 4.43 |
| P C4 | 4.97 | 5.76 | 4.53 | 4.48 |
| P C5 | 5.13 | 5.93 | 5.35 | 4.53 |
| L C2 | 4.68 | 5.54 | 4.20 | 4.14 |
| C13 | 5.10 | 5.27 | 5.04 | 4.21 |

GRAIN MEAN DM% 86.4

SUB PLOT AREA HARVESTED 0.00277



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/13

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP / DAZOMET | P C2 | P C3 | P C4 | P C5 | L C2 | C13 | MEAN |
|---|---|---|---|---|---|---|---|
| 0 | 4.52 | 4.28 | 4.72 | 4.28 | 4.42 | 4.03 | 4.38 |
| 336 | 4.96 | 4.99 | 5.06 | 4.71 | 4.70 | 4.86 | 4.88 |
| MEAN | 4.74 | 4.63 | 4.89 | 4.50 | 4.56 | 4.44 | 4.63 |

| N / DAZOMET | 50 | 100 | 150 | 200 | MEAN |
|---|---|---|---|---|---|
| 0 | 2.61 | 4.26 | 5.26 | 5.37 | 4.38 |
| 336 | 3.84 | 5.15 | 5.23 | 5.29 | 4.88 |
| MEAN | 3.22 | 4.71 | 5.25 | 5.33 | 4.63 |

| N / PREVCROP | 50 | 100 | 150 | 200 | MEAN |
|---|---|---|---|---|---|
| P C2 | 3.10 | 4.88 | 5.35 | 5.64 | 4.74 |
| P C3 | 3.28 | 4.83 | 5.11 | 5.31 | 4.63 |
| P C4 | 3.66 | 4.94 | 5.44 | 5.51 | 4.89 |
| P C5 | 2.90 | 4.63 | 5.24 | 5.22 | 4.50 |
| L C2 | 3.34 | 4.43 | 5.18 | 5.28 | 4.56 |
| C13 | 3.06 | 4.52 | 5.16 | 5.03 | 4.44 |
| MEAN | 3.22 | 4.71 | 5.25 | 5.33 | 4.63 |

| DAZOMET / N / PREVCROP | 50 | 100 | 150 | 200 |
|---|---|---|---|---|
| 0 P C2 | 2.29 | 4.52 | 5.58 | 5.70 |
| P C3 | 2.52 | 4.41 | 5.02 | 5.18 |
| P C4 | 3.34 | 4.53 | 5.37 | 5.64 |
| P C5 | 2.03 | 4.36 | 5.30 | 5.44 |
| L C2 | 3.09 | 3.85 | 5.37 | 5.38 |
| C13 | 2.37 | 3.93 | 4.92 | 4.89 |
| 336 P C2 | 3.90 | 5.25 | 5.12 | 5.58 |
| P C3 | 4.05 | 5.25 | 5.20 | 5.44 |
| P C4 | 3.97 | 5.36 | 5.52 | 5.38 |
| P C5 | 3.78 | 4.90 | 5.18 | 5.00 |
| L C2 | 3.59 | 5.02 | 5.00 | 5.18 |
| C13 | 3.75 | 5.12 | 5.40 | 5.17 |

GRAIN MEAN DM% 85.3

SUB PLOT AREA HARVESTED 0.00277



*https://doi.org/10.23637/ERADOC-1-45* *pp 88*

79/W/RN/14

## LONG TERM PHOSPHATE

Object: To study the residual effects of superphosphate on a clover/grass ley - Woburn Stackyard III.

Sponsor: G.E.G. Mattingly.

The 12th year, clover/grass ley.

For previous years see 68/B/8(t), 69/W/RN/14, 70/W/RN/14(t), 71/W/RN/14(t), 72/W/RN/14(t) and 73-78/W/RN/14.

Design: 6 blocks of 6 plots, split into 2.

Whole plot dimensions: 8.53 x 15.8.

Treatments: All combinations of:-

Whole plots

1. P205RES(73) Residues of superphosphate applied autumn 1967 and spring 1973 (kg P205):

| | 1967 | 1973 | Total |
|---|---|---|---|
| 0 | None | None | None (Duplicate plots) |
| 360 | 188 | 172 | 360 |
| 720 | 376 | 344 | 720 |
| 1440 | 753 | 687 | 1440 |
| 2160 | 1130 | 1030 | 2160 |

Sub plots

2. P205RES(72) Residues of superphosphate applied in three equal dressings 1970-72 (kg P205, total):

0
376

Basal applications: Manures: K20 at 240 kg as muriate of potash. MgO at 30 kg as Epsom Salts in winter. K20 at 48 kg as muriate of potash after the first cut.

Cultivations, etc.:- K and Mg applied: 6 Feb, 1979. Cut twice: 21 June, 7 Sept. K applied: 5 July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 89*

79/W/RN/14

1ST CUT (21/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| P205RES(73) / P205RES(72) | 0 | 360 | 720 | 1440 | 2160 | MEAN |
|---|---|---|---|---|---|---|
| 0 | 4.94 | 5.21 | 4.90 | 6.06 | 4.92 | 5.16 |
| 376 | 5.10 | 5.27 | 4.84 | 5.30 | 4.42 | 5.01 |
| MEAN | 5.02 | 5.24 | 4.87 | 5.68 | 4.67 | 5.08 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | P205RES(73) | P205RES(72) | P205RES(73) P205RES(72) | |
|---|---|---|---|---|
| SED | 0.328 | | 0.368 | MIN REP |
| | 0.284 | 0.096 | 0.319 | MAX-MIN |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| P205RES(73) | | | 0.235 | MIN REP |
| | | | 0.167 | MAX REP |

P205RES(73)
MAX REP 0
MAX-MIN 0 V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 26 | 0.568 | 11.2 |
| BLOCK.WP.SP | 31 | 0.408 | 8.0 |

1ST CUT MEAN DM% 20.3

1ST CUT PLOT AREA HARVESTED 0.00145



*https://doi.org/10.23637/ERADOC-1-45* *pp 90*

79/W/RN/14

2ND CUT (7/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| P205RES(73) / P205RES(72) | 0 | 360 | 720 | 1440 | 2160 | MEAN |
|---|---|---|---|---|---|---|
| 0 | 0.77 | 0.97 | 0.71 | 0.93 | 0.76 | 0.82 |
| 376 | 0.90 | 0.80 | 0.84 | 0.84 | 0.66 | 0.82 |
| MEAN | 0.83 | 0.89 | 0.77 | 0.88 | 0.71 | 0.82 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | P205RES(73) | P205RES(72) | P205RES(73) P205RES(72) | |
|---|---|---|---|---|
| SED | 0.170 | | 0.176 | MIN REP |
| | 0.147 | 0.027 | 0.152 | MAX-MIN |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| P205RES(73) | | | 0.067 | MIN REP |
| | | | 0.047 | MAX REP |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 26 | 0.294 | 35.8 |
| BLOCK.WP.SP | 31 | 0.116 | 14.1 |

2ND CUT MEAN DM% 24.6 2ND CUT PLOT AREA HARVESTED 0.00129

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| P205RES(73) / P205RES(72) | 0 | 360 | 720 | 1440 | 2160 | MEAN |
|---|---|---|---|---|---|---|
| 0 | 5.71 | 6.18 | 5.61 | 6.99 | 5.68 | 5.98 |
| 376 | 6.00 | 6.07 | 5.67 | 6.14 | 5.09 | 5.83 |
| MEAN | 5.85 | 6.12 | 5.64 | 6.57 | 5.38 | 5.90 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | P205RES(73) | P205RES(72) | P205RES(73) P205RES(72) | |
|---|---|---|---|---|
| SED | 0.452 | | 0.485 | MIN REP |
| | 0.392 | 0.101 | 0.420 | MAX-MIN |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| P205RES(73) | | | 0.248 | MIN REP |
| | | | 0.176 | MAX REP |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 26 | 0.783 | 13.3 |
| BLOCK.WP.SP | 31 | 0.430 | 7.3 |

TOTAL OF 2 CUTS MEAN DM% 22.5



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/RN/16

EFFECTS OF DEEP PK

Object: To study the residual effects of subsoiling and of incorporating a large dressing of PK in either the subsoil or topsoil, on yields and nutrient uptakes of barley - Woburn Butt Furlong.

Sponsor: J. McEwen.

The sixth year, spring barley.

For previous years see 74-78/W/RN/16.

Design: 4 series of 3 randomised blocks of 4 plots with PREVCROP on series.

Whole plot dimensions: 4.27 x 2.59.

Treatments: All combinations of:-

Series

1. PREVCROP — Previous cropping (1974-1977) (all in barley 1978):

| | |
|---|---|
| P B | Wheat, sugar beet, barley, potatoes |
| W B | Sugar beet, barley, potatoes, wheat |
| S B | Barley, potatoes, wheat, sugar beet |
| B B | Potatoes, wheat, sugar beet, barley |

Plots

2. PK SUB — Extra PK and subsoil treatment (applied autumn 1973):

| | Extra PK | Subsoil (25-50 cm) treatment |
|---|---|---|
| - - | None | None |
| - SUB | None | Subsoiled |
| PKTOP - | To topsoil (0-25 cm) | None |
| - PKSUB | To subsoil | Subsoiled |

NOTES: (1) The rates of P and K were 1930 kg P205, as superphosphate and 460 kg K20 as muriate of potash. These quantities, applied to subsoil, were chosen to equalize available P and K in top and subsoil.
(2) Subsoiling was done by spade, after removing the topsoil which was then replaced. PK to subsoil was worked in by forking.
(3) PK to topsoil was applied half before ploughing in autumn half soon after on the plough furrow.

Basal applications: Manures: All Series: (20:14:14) at 450 kg combine drilled. Weedkillers: Glyphosate at 1.7 kg in 280 l, Mecoprop, bromoxynil and ioxynil ('Brittox' 3.5 kg in 250 l).

Seed: Porthos, dressed with ethirimol, sown at 160 kg.



*https://doi.org/10.23637/ERADOC-1-45* *pp 92*

79/W/RN/16

Cultivations, etc.:- Glyphosate applied: 14 Sept, 1978. Ploughed: 17 Nov. Spring-tine cultivated, with crumbler attached, twice: 16 Apr, 1979, 20 Apr. Seed sown: 23 Apr. 'Brittox' applied: 1 June. Combine harvested: 28 Aug.

NOTE: Samples of grain were analysed for contents of N, P, K, Na, Ca and Mg.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PK SUB / PREVCROP | - - | - SUB | PKTOP - | - PKSUB | MEAN |
|---|---|---|---|---|---|
| P B | 4.17 | 4.98 | 4.24 | 4.74 | 4.53 |
| W B | 3.04 | 3.34 | 3.07 | 3.44 | 3.22 |
| S B | 4.67 | 5.01 | 4.35 | 5.28 | 4.83 |
| B B | 2.82 | 3.21 | 2.80 | 3.11 | 2.99 |
| MEAN | 3.68 | 4.13 | 3.62 | 4.14 | 3.89 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PK SUB | PREVCROP* PK SUB |
|---|---|---|
| SED | 0.150 | 0.300 |

* ONLY WHEN COMPARING MEANS WITH SAME LEVELS OF PREVCROP

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.278 | 7.1 |
| BLOCK.WP.SP | 24 | 0.368 | 9.5 |

GRAIN MEAN DM% 81.8

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| PK SUB / PREVCROP | - - | - SUB | PKTOP - | - PKSUB | MEAN |
|---|---|---|---|---|---|
| P B | 3.33 | 4.45 | 3.82 | 4.21 | 3.95 |
| W B | 3.48 | 3.58 | 3.25 | 3.87 | 3.55 |
| S B | 4.68 | 4.76 | 4.01 | 5.06 | 4.63 |
| B B | 2.95 | 3.35 | 2.86 | 3.23 | 3.10 |
| MEAN | 3.61 | 4.04 | 3.49 | 4.09 | 3.81 |

STRAW MEAN DM% 79.1

SUB PLOT AREA HARVESTED 0.00065



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/10 and 79/W/CS/10

LONG TERM LIMING

Object: To study the effects of different amounts of lime on the yields of a sequence of crops. The effects of P, K and Mg are also studied - Rothamsted (R) Sawyers I and Woburn (W) Stackyard C.

Sponsors: G.E.G. Mattingly, A. Penny.

The 18th year, fallow.

For previous years see 'Details' 1967, 1973 and 74-78/R&W/CS/10.

Design: 2 randomised blocks of 16 plots, split into 2.

Whole plot dimensions: 6.40 x 18.3.

The experiments were fallowed in 1979 but additional treatment ground chalk was applied:

Ground chalk (tonnes):

| R | | W | |
|---|---|---|---|
| Total 1962-63 | 1979 | Total 1962-63 | 1979 |
| 0 | 0 | 0 | 0 |
| 5 | 2 | 5 | 1 |
| 10 | 5 | 12 | 2 |
| 20 | 10 | 19 | 4 |

Basal application:
Sawyers I (R): Weedkiller: Glyphosate at 1.5 kg in 220 l.
Stackyard C (W): Weedkiller: Glyphosate at 1.5 kg in 280 l.

Cultivations, etc.:-
Sawyers I (R): Weedkiller applied: 24 Oct, 1978. Test chalk applied: 29 Nov. Ploughed: 21 Dec. Rotary cultivated: 12 June, 1979. Deep-tine cultivated: 3 July.
Stackyard C (W): Weedkiller applied: 14 Sept, 1978. Test chalk applied: 21 Nov. Ploughed: 22 Nov. Spring-tine cultivated with crumbler attached: 17 Apr, 1979. Rotary cultivated: 6 June. Rotary cultivated twice: 4 July, 16 Aug. Deep-tine cultivated: 21 Aug. Heavy spring-tine cultivated: 11 Sept.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/11

SOIL STRUCTURE

Object: To study the residual effects of peat, at a range of nitrogen levels, on the yield of wheat - Woburn Stackyard II.

Sponsor: A.E. Johnston.

The 16th year, wheat.

For previous years see 64/C/20(t), 65/C/19(t), 66/C/11(t), 67/C/8(t), 68/C/31(t), 69/W/CS/11(t), 70/W/CS/11(t), 71/W/CS/11, 72/W/CS/11(t) and 73-78/W/CS/11.

Design: Single replicate of 5 x 4.

Whole plot dimensions: 2.13 x 3.05.

Treatments: All combinations of:-

1. PEAT — Peat (tonnes dry matter - total applied 1963-72):

   0
   8
   55
   110
   165

2. N — Nitrogen fertiliser as ammonium nitrate (kg N) cumulative to previous treatments:

   0
   50
   100
   150

Basal applications: Manures: P at 85 kg, as triple superphosphate, K at 300 kg, as potassium bicarbonate, Mg at 55 kg, as magnesium sulphate. Weedkillers: Ioxynil 0.32 kg with mecoprop at 0.94 kg in 280 l on the first occasion, ioxynil at 0.42 kg with mecoprop at 1.3 kg in 280 l on the second occasion, applied with tridemorph on both occasions. Fungicides: Tridemorph at 0.53 kg applied with weedkillers. Carbendazim at 0.25 kg with zineb at 1.6 kg in 280 l.

Seed: Maris Hobbit, sown at 210 kg.

Cultivations, etc.:- Hand dug: 12 Sept, 1978. P, K, Mg applied and raked in, seed sown: 3 Oct. Weedkillers and tridemorph applied: 17 Nov. N applied: 23 Apr, 1979. Weedkillers and tridemorph applied: 9 May. Carbendazim and zineb applied: 20 June. Hand harvested: 16 Aug.

NOTE: Soil and crop samples were taken for N, P, K and Mg analysis.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/11

GRAIN TONNES/HECTARE

*****TABLES OF MEANS *****

| PEAT N | 0 | 8 | 55 | 110 | 165 | MEAN |
|---|---|---|---|---|---|---|
| 0 | 3.76 | 3.32 | 3.90 | 5.19 | 4.42 | 4.12 |
| 50 | 7.23 | 7.40 | 6.80 | 7.43 | 6.99 | 7.17 |
| 100 | 7.19 | 8.90 | 8.33 | 7.84 | 8.34 | 8.12 |
| 150 | 8.20 | 7.43 | 8.69 | 7.73 | 8.42 | 8.09 |
| MEAN | 6.59 | 6.76 | 6.93 | 7.05 | 7.05 | 6.88 |

GRAIN MEAN DM% 81.1

STRAW TONNES/HECTARE

*****TABLES OF MEANS *****

| PEAT N | 0 | 8 | 55 | 110 | 165 | MEAN |
|---|---|---|---|---|---|---|
| 0 | 4.47 | 4.26 | 4.63 | 5.54 | 4.93 | 4.77 |
| 50 | 7.55 | 8.05 | 7.01 | 8.13 | 7.75 | 7.70 |
| 100 | 7.63 | 8.59 | 8.51 | 8.24 | 8.64 | 8.32 |
| 150 | 8.53 | 8.13 | 8.58 | 8.51 | 8.92 | 8.53 |
| MEAN | 7.04 | 7.26 | 7.18 | 7.60 | 7.56 | 7.33 |

STRAW MEAN DM% 73.4

PLOT AREA HARVESTED 0.00065



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/13

N LEVELS TO OLD GRASS

Object: To study the effects of a range of nitrogen rates on yield and botanical composition of very old permanent pasture. N fixed by legumes is estimated and the effect of treatments on nutrients available in the soil is also studied - Park Grass Old Plot 6.

Sponsor: A.E. Johnston.

The 15th year, old grass.

For previous years see 'Details' 1973 and 74-78/R/CS/13.

Design: 4 randomised blocks of 10 plots.

Whole plot dimensions: 1.83 x 10.1.

Treatments

| TOTAL N | Fertiliser nitrogen (kg N-total per annum applied in four equal dressings as 25:0:16): |
|---|---|
| 0(S) | 0 (sprayed with ioxynil plus mecoprop to control legumes, duplicated) |
| 0 | 0 (duplicated) |
| 75 | |
| 150 | |
| 225 | |
| 300 | |
| 375 | |
| 450 | |

NOTE: Ioxynil at 0.84 kg with mecoprop at 2.5 kg in 280 l applied on 1 June, 1979.

Basal applications: Manures: 34 kg P as superphosphate. 11 kg Mg as magnesium sulphate.

Cultivations, etc.:- Basal P and Mg applied: 21 Nov, 1978. NK applied: 23 Mar, 1979, 22 May, and 11 July. Cut: 22 May, 11 July, 4 Oct.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/13

1ST CUT (22/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N | 0(S) | 0 | 75 | 150 | 225 | 300 | 375 | 450 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | 0.29 | 1.37 | 1.24 | 1.57 | 2.40 | 3.30 | 3.54 | 3.63 | 1.90 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TOTAL N | |
|---|---|---|
| SED | 0.161 | MIN REP |
| | 0.139 | MAX-MIN |
| | 0.114 | MAX REP |

| | TOTAL N |
|---|---|
| MAX REP | 0(S) V 0 |
| MAX-MIN | 0(S) OR 0 V ANY OF REMAINDER |
| MIN REP | ANY OF REMAINER |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.227 | 12.0 |

1ST CUT MEAN DM% 18.3

1ST CUT PLOT AREA HARVESTED 0.00086

2ND CUT (11/7/79)DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N | 0(S) | 0 | 75 | 150 | 225 | 300 | 375 | 450 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | 0.58 | 3.47 | 2.68 | 3.00 | 3.29 | 3.83 | 3.81 | 3.64 | 2.83 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TOTAL N | |
|---|---|---|
| SED | 0.194 | MIN REP |
| | 0.168 | MAX-MIN |
| | 0.137 | MAX REP |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.274 | 9.7 |

2ND CUT MEAN DM% 23.2

2ND CUT PLOT AREA HARVESTED 0.00092



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/13

3RD CUT (4/10/79)DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N | 0(S) | 0 | 75 | 150 | 225 | 300 | 375 | 450 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | 0.70 | 2.81 | 2.10 | 2.35 | 2.91 | 2.85 | 2.55 | 2.74 | 2.25 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TOTAL N | |
|---|---|---|
| SED | 0.234 | MIN REP |
| | 0.203 | MAX-MIN |
| | 0.165 | MAX REP |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.331 | 14.7 |

3RD CUT MEAN DM% 20.0

3RD CUT PLOT AREA HARVESTED 0.00086

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N | 0(S) | 0 | 75 | 150 | 225 | 300 | 375 | 450 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | 1.57 | 7.65 | 6.02 | 6.92 | 8.59 | 9.98 | 9.90 | 10.01 | 6.99 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TOTAL N | |
|---|---|---|
| SED | 0.381 | MIN REP |
| | 0.330 | MAX-MIN |
| | 0.269 | MAX REP |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.538 | 7.7 |

TOTAL OF 3 CUTS MEAN DM% 20.5



*https://doi.org/10.23637/ERADOC-1-45* *pp 99*

79/R/CS/24

## PK AND TAKE-ALL

Object: To study the effects of different amounts of phosphate and potassium fertiliser on the yields and incidence of take-all (Gaeumannomyces graminis) in continuous wheat - West Barnfield II.

Sponsors: G.E.G. Mattingly, D.B. Slope.

The 12th year, continuous winter wheat (after continuous barley 1968-1973).

For previous years see 'Details' 1973 and 74-78/R/CS/24.

Design: 4 randomised blocks of 10 plots, split into 2.

Whole plot dimensions: 5.33 x 20.1.

Treatments: All combinations of:-

Whole plots

1. P — Phosphate (kg P) as superphosphate:

| | |
|---|---|
| 0 | None |
| 15 A | 15 annually |
| 60 A | 60 annually |
| 90 S | 90 six-yearly, last applied autumn 1973 |
| 360 S | 360 six-yearly, last applied autumn 1973 |

2. K — Potassium (kg K) annually as muriate of potash:

30
120

Sub plots

3. N — Nitrogen fertiliser, applied cumulatively to test applications 1970-1973 and 1978 (basal application only in 1974-1977) (kg N):

50
100
150
200

Basal applications: Autumn weedkiller: Glyphosate at 1.5 kg in 220 l. Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Cappelle, sown at 200 kg.

Cultivations, etc.:- Autumn weedkiller applied: 2 Oct, 1978. Ploughed: 17 Oct. Heavy spring-tine cultivated: 23 Oct. P and K applied: 24 Oct. Disc harrowed, rotary harrowed, seed sown: 25 Oct. N applied: 4 May, 1979. Spring weedkiller applied: 10 May. Combine harvested: 1 Sept.

NOTE: The crop was sampled in July for take-all and eyespot assessments.



*https://doi.org/10.23637/ERADOC-1-45* *pp 100*

79/R/CS/24

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| P / N | 0 | 15 A | 60 A | 90 S | 360 S | MEAN |
|---|---|---|---|---|---|---|
| 50 | 3.55 | 3.98 | 4.24 | 3.96 | 4.24 | 3.99 |
| 100 | 3.51 | 4.67 | 4.87 | 4.56 | 5.07 | 4.54 |
| 150 | 3.82 | 4.17 | 5.34 | 4.42 | 5.15 | 4.58 |
| 200 | 3.82 | 4.44 | 5.44 | 4.03 | 5.03 | 4.55 |
| MEAN | 3.68 | 4.32 | 4.98 | 4.24 | 4.87 | 4.42 |

| N / K | 50 | 100 | 150 | 200 | MEAN |
|---|---|---|---|---|---|
| 30 | 3.85 | 4.23 | 4.12 | 4.23 | 4.11 |
| 120 | 4.14 | 4.84 | 5.04 | 4.88 | 4.73 |
| MEAN | 3.99 | 4.54 | 4.58 | 4.55 | 4.42 |

| P / K | 0 | 15 A | 60 A | 90 S | 360 S | MEAN |
|---|---|---|---|---|---|---|
| 30 | 3.49 | 3.75 | 4.60 | 4.07 | 4.62 | 4.11 |
| 120 | 3.86 | 4.88 | 5.35 | 4.42 | 5.12 | 4.73 |
| MEAN | 3.68 | 4.32 | 4.98 | 4.24 | 4.87 | 4.42 |

| P | N / K | 50 | 100 | 150 | 200 |
|---|---|---|---|---|---|
| 0 | 30 | 3.57 | 3.27 | 3.59 | 3.53 |
| | 120 | 3.54 | 3.75 | 4.05 | 4.12 |
| 15 A | 30 | 3.69 | 4.32 | 3.25 | 3.73 |
| | 120 | 4.26 | 5.03 | 5.09 | 5.15 |
| 60 A | 30 | 3.97 | 4.36 | 4.82 | 5.27 |
| | 120 | 4.51 | 5.39 | 5.87 | 5.62 |
| 90 S | 30 | 3.69 | 4.54 | 4.03 | 4.03 |
| | 120 | 4.24 | 4.57 | 4.82 | 4.04 |
| 360 S | 30 | 4.31 | 4.67 | 4.92 | 4.57 |
| | 120 | 4.16 | 5.47 | 5.38 | 5.48 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | P | K | N | P K |
|---|---|---|---|---|
| SED | 0.139 | 0.088 | 0.125 | 0.197 |

| TABLE | P N | K N | P K N |
|---|---|---|---|
| SED | 0.279 | 0.177 | 0.415 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP+BLOCK.WP.SP | 37 | 0.394 | 8.9 |

GRAIN MEAN DM% 85.0



*https://doi.org/10.23637/ERADOC-1-45* *pp 101*

79/R/CS/24

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| P / N | 0 | 15 A | 60 A | 90 S | 360 S | MEAN |
|---|---|---|---|---|---|---|
| 50 | 3.13 | 3.38 | 3.80 | 3.45 | 3.67 | 3.49 |
| 100 | 3.08 | 4.15 | 4.54 | 4.23 | 4.48 | 4.10 |
| 150 | 3.60 | 4.03 | 4.79 | 4.48 | 4.96 | 4.37 |
| 200 | 3.34 | 4.03 | 4.94 | 3.73 | 4.52 | 4.11 |
| MEAN | 3.29 | 3.90 | 4.52 | 3.97 | 4.41 | 4.02 |

| N / K | 50 | 100 | 150 | 200 | MEAN |
|---|---|---|---|---|---|
| 30 | 3.27 | 3.62 | 3.85 | 3.62 | 3.59 |
| 120 | 3.70 | 4.58 | 4.89 | 4.60 | 4.44 |
| MEAN | 3.49 | 4.10 | 4.37 | 4.11 | 4.02 |

| P / K | 0 | 15 A | 60 A | 90 S | 360 S | MEAN |
|---|---|---|---|---|---|---|
| 30 | 3.12 | 3.20 | 3.92 | 3.72 | 4.00 | 3.59 |
| 120 | 3.46 | 4.59 | 5.12 | 4.23 | 4.82 | 4.44 |
| MEAN | 3.29 | 3.90 | 4.52 | 3.97 | 4.41 | 4.02 |

| P | N / K | 50 | 100 | 150 | 200 |
|---|---|---|---|---|---|
| 0 | 30 | 3.21 | 2.76 | 3.50 | 3.01 |
| | 120 | 3.06 | 3.41 | 3.70 | 3.67 |
| 15 A | 30 | 2.84 | 3.64 | 3.16 | 3.16 |
| | 120 | 3.92 | 4.65 | 4.90 | 4.90 |
| 60 A | 30 | 3.38 | 3.80 | 3.98 | 4.51 |
| | 120 | 4.22 | 5.28 | 5.59 | 5.38 |
| 90 S | 30 | 3.13 | 4.07 | 3.96 | 3.71 |
| | 120 | 3.77 | 4.40 | 4.99 | 3.76 |
| 360 S | 30 | 3.79 | 3.82 | 4.65 | 3.73 |
| | 120 | 3.55 | 5.14 | 5.27 | 5.30 |

STRAW MEAN DM% 87.7

PLOT AREA HARVESTED 0.00270



*https://doi.org/10.23637/ERADOC-1-45* *pp 102*

79/W/CS/34

## NEMATICIDES IN CROP SEQUENCE

Object: To study the effects of a range of nematicides on incidence of Globodera rostochiensis and yield of potatoes. Residual effects of previous treatments are studied in wheat and barley - Woburn Great Hill II and III.

Sponsor: A.G. Whitehead.

The tenth year, potatoes, wheat, barley.

For previous years see 71/W/CS/34(t), 72/W/CS/34(t) and 73-78/W/CS/34.

Design: 4 series of 3 blocks of 10 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: The experiment has four series with the following cropping:-

| | 1969 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Series I | P | P | P* | SB | B | P | P* | W | B | P | P* |
| Series II | P | P | P | P* | SB | B | P | P* | W | B | P |
| Series III | P | B | P | P | P* | SB | B | P | P* | W | B |
| Series IV | P | B | P | P | P | P* | SB | B | P | P* | W |

P = potatoes, SB = sugar beet, B = barley, W = wheat

* Treatments applied to potatoes, later crops test residual effects.

Treatments to potatoes (Series I): All combinations of:-

1. NEMACIDE(79) Nematicides applied 1979:

| | |
|---|---|
| ALDICARB | Aldicarb |
| CARBENDA | Carbendazim |
| TERBUFOS | Terbufos |

2. RATE Rates of nematicide (kg a.i.):

| | |
|---|---|
| SINGLE | Single (2.5 kg for aldicarb and terbufos : 5.0 kg for carbendazim) |
| DOUBLE | Double (5.0 kg for aldicarb and terbufos : 10.0 kg for carbendazim) |
| QUAD | Quadruple (10.0 kg for aldicarb and terbufos : 20.0 kg for carbendazim) |

plus one untreated plot

RATE

NONE

Treatments to potatoes (Series II): All combinations of:-

1. NEMACIDE(76) Residues of nematicides applied 1976:

| | |
|---|---|
| AC 64475 | 'AC 64475' |
| CARBOFUR | Carbofuran |
| PHOXIM | Phoxim |



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/34

2. RATE Rates of nematicide (kg a.i.):

| | | 'AC 64475' | Carbofuran | Phoxim |
|---|---|---|---|---|
| SINGLE | Single | 2.2 | 2.8 | 5.6 |
| DOUBLE | Double | 4.4 | 5.6 | 11.2 |
| QUAD | Quadruple | 8.8 | 11.2 | 22.4 |

plus one untreated plot

RATE

NONE

Treatments to barley (Series III): All combinations of:-

1. NEMACIDE(77) Residues of nematicides applied 1977:

| | |
|---|---|
| AC 64475 | 'AC 64475' |
| CARBOFUR | Carbofuran |
| PHOXIM | Phoxim |

2. RATE Rates of nematicide (kg a.i.):

| | | 'AC 64475" | Carbofuran | Phoxim |
|---|---|---|---|---|
| SINGLE | Single | 2.2 | 2.8 | 5.6 |
| DOUBLE | Double | 4.4 | 5.6 | 11.2 |
| QUAD | Quadruple | 8.8 | 11.2 | 22.4 |

plus one untreated plot

RATE

NONE

Treatments to wheat (Series IV): All combinations of:-

1. NEMACIDE(78) Residues of nematicides applied 1978:

| | |
|---|---|
| BENDIOCA | Bendiocarb |
| THIOPHAN | Thiophanate methyl |
| TERBUFOS | Terbufos |

2. RATE Rates of nematicide (kg a.i.):

5
10
20

plus one untreated plot

RATE

0



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/34

Standard applications:
Potatoes (Series I & II): Manures: (13:13:20) at 1850 kg. Weedkillers: Linuron at 1.0 kg plus paraquat at 0.28 kg ion in 250 l. Fungicide: Mancozeb at 1.3 kg in 250 l on six occasions, with insecticide on the first two. Insecticide: Pirimicarb at 0.14 kg on two occasions, with fungicide. Haulm desiccant: Undiluted BOV at 170 l (Series II only).
Wheat (Series IV): Manures: Magnesian limestone at 5 t. (10:24:24) at 260 kg, combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 250 l).
Barley (Series III): Manures: (20:14:14) at 450 kg, combine drilled. Weedkillers: Bromoxynil with ioxynil ('Oxytril CM' at 2.1 kg in 250 l).

Seed: Potatoes: Pentland Crown.
Wheat: Flanders, sown at 180 kg.
Barley: Porthos, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:-
Potatoes (Series I & II): Heavy spring-tine cultivated: 13 Sept, 1978 (Series II). Heavy spring-tine cultivated: 19 Oct. Ploughed: 3 Apr, 1979. NPK applied: 4 May. Spring-tine cultivated: 8 May. Rotary cultivated, potatoes planted: 9 May (Series II). Treatments applied, spring-tine cultivated: 11 May (Series I). Rotary cultivated, potatoes planted: 14 May (Series I). Weedkillers applied: 25 May. Rotary ridged: 19 June. Fungicide applied: 27 June, 10 July, 23 July, 11 Aug, 25 Aug, 5 Sept. Insecticide applied: 27 June, 10 July. Haulm desiccant applied: 24 Sept (Series II). Haulm mechanically destroyed: 8 Oct. Lifted: 24 Oct.
Wheat (Series IV): Magnesian limestone applied, deep-tine cultivated, spring-tine cultivated with crumbler attached, seed sown: 13 Oct, 1978. N applied: 19 Apr, 1979. Weedkillers applied: 14 May. Combine harvested: 31 Aug.
Barley (Series III): Heavy spring-tine cultivated: 13 Sept, 1978. Ploughed: 3 Apr, 1979. Spring-tine cultivated with crumbler attached: 21 Apr. Seed sown: 23 Apr. Weedkillers applied: 4 June. Combine harvested: 28 Aug.

NOTE: Soil samples were taken before applying treatments and after harvest for counts of cysts, eggs and larvae of Globodera rostochiensis.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/34

POTATOES SERIES I

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| RATE NEMACIDE(79) | SINGLE | DOUBLE | QUAD | MEAN |
|---|---|---|---|---|
| ALDICARB | 39.3 | 48.3 | 42.0 | 43.2 |
| CARBENDA | 18.6 | 20.6 | 27.1 | 22.1 |
| TERBUFOS | 23.6 | 32.1 | 32.0 | 29.2 |
| MEAN | 27.1 | 33.7 | 33.7 | 31.5 |

RATE NONE 14.8

GRAND MEAN 29.8

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEMACIDE(79) | RATE NEMACIDE(79) | RATE & RATE NONE |
|---|---|---|---|
| SED | 1.48 | 1.48 | 2.57 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 18 | 3.15 | 10.6 |

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| RATE NEMACIDE(79) | SINGLE | DOUBLE | QUAD | MEAN |
|---|---|---|---|---|
| ALDICARB | 93.1 | 95.1 | 93.2 | 93.8 |
| CARBENDA | 92.9 | 91.9 | 93.6 | 92.8 |
| TERBUFOS | 92.0 | 91.3 | 93.2 | 92.2 |
| MEAN | 92.7 | 92.8 | 93.3 | 92.9 |

RATE NONE 91.2

GRAND MEAN 92.8

PLOT AREA HARVESTED 0.00130



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/34

POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| RATE NEMACIDE(76) | SINGLE | DOUBLE | QUAD | MEAN |
|---|---|---|---|---|
| AC 64475 | 29.3 | 32.7 | 31.5 | 31.2 |
| CARBOFUR | 29.9 | 27.2 | 28.7 | 28.6 |
| PHOXIM | 25.6 | 24.8 | 25.9 | 25.4 |
| MEAN | 28.3 | 28.2 | 28.7 | 28.4 |

RATE NONE 29.0

GRAND MEAN 28.5

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEMACIDE(76) | RATE NEMACIDE(76) | RATE & RATE NONE |
|---|---|---|---|
| SED | 0.82 | 0.82 | 1.42 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 18 | 1.74 | 6.1 |

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| NEMACIDE(76) | | | | |
|---|---|---|---|---|
| AC 64475 | 94.3 | 95.1 | 93.9 | 94.4 |
| CARBOFUR | 94.2 | 93.6 | 93.6 | 93.8 |
| PHOXIM | 93.0 | 92.1 | 92.3 | 92.5 |
| MEAN | 93.8 | 93.6 | 93.3 | 93.6 |

RATE NONE 94.3

GRAND MEAN 93.7

PLOT AREA HARVESTED 0.00130



*https://doi.org/10.23637/ERADOC-1-45* *pp 107*

79/W/CS/34

WHEAT SERIES IV

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| RATE<br>NEMACIDE(78) | 5 | 10 | 20 | MEAN |
|---|---|---|---|---|
| BENDIOCA | 2.74 | 2.82 | 3.52 | 3.03 |
| THIOPHAN | 2.95 | 2.49 | 3.22 | 2.89 |
| TERBUFOS | 3.24 | 3.74 | 3.94 | 3.64 |
| MEAN | 2.98 | 3.02 | 3.56 | 3.18 |

RATE 0 3.22

GRAND MEAN 3.19

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEMACIDE(78) | RATE NEMACIDE(78) | RATE NEMACIDE(78) RATE & RATE 0 |
|---|---|---|---|
| SED | 0.154 | 0.154 | 0.267 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.328 | 10.3 |

GRAIN MEAN DM% 86.5

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| RATE<br>NEMACIDE(78) | 5 | 10 | 20 | MEAN |
|---|---|---|---|---|
| BENDIOCA | 2.91 | 3.27 | 3.77 | 3.32 |
| THIOPHAN | 3.14 | 2.72 | 3.53 | 3.13 |
| TERBUFOS | 3.00 | 3.51 | 3.40 | 3.30 |
| MEAN | 3.02 | 3.17 | 3.56 | 3.25 |

RATE 0 3.53

GRAND MEAN 3.28

STRAW MEAN DM% 86.4

PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* *pp 108*

79/W/CS/34

BARLEY SERIES III

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| RATE NEMACIDE(77) | SINGLE | DOUBLE | QUAD | MEAN |
|---|---|---|---|---|
| AC 64475 | 3.28 | 3.06 | 3.18 | 3.17 |
| CARBOFUR | 2.88 | 3.19 | 3.21 | 3.09 |
| PHOXIM | 3.19 | 2.79 | 3.08 | 3.02 |
| MEAN | 3.12 | 3.01 | 3.16 | 3.10 |

RATE NONE 3.13

GRAND MEAN 3.10

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEMACIDE(77) | RATE NEMACIDE(77) | RATE & RATE NONE |
|---|---|---|---|
| SED | 0.109 | 0.109 | 0.188 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 18 | 0.230 | 7.4 |

GRAIN MEAN DM% 84.5.

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| RATE NEMACIDE(77) | SINGLE | DOUBLE | QUAD | MEAN |
|---|---|---|---|---|
| AC 64475 | 1.81 | 1.77 | 1.85 | 1.81 |
| CARBOFUR | 1.63 | 1.90 | 1.76 | 1.76 |
| PHOXIM | 1.68 | 1.75 | 1.79 | 1.74 |
| MEAN | 1.71 | 1.81 | 1.80 | 1.77 |

RATE NONE 1.81

GRAND MEAN 1.78

STRAW MEAN DM% 92.0

PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* *pp 109*

79/W/CS/35

NEMATICIDES DOSAGE

Object: To study the effects of rates and methods of applying nematicides on Globodera rostochiensis and yield of potatoes; residual effects are also studied - Woburn Stackyard AII.

Sponsor: A.G. Whitehead.

The eighth year, potatoes, wheat.

For previous years see 72/W/CS/35(t) and 73-78/W/CS/35.

Design: 3 series each 4 randomised blocks of 18 plots.

Whole plot dimensions: 4.27 x 6.10.

Treatments:-

The experiment has three series with the following cropping:-

| | 1968-71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
|---|---|---|---|---|---|---|---|---|---|
| Series I | P | P* | SB | B | P* | P | P | P* | W |
| Series II | P | P | P* | SB | B | P* | P | P | P* |
| Series III | P | P | P | P* | SB | B | P* | P | P |

P = Potatoes, SB = Sugar beet, B = Barley, W = wheat

*Treatments applied to potatoes, following two crops test residual effects.

Treatments:

On Series I, wheat 1979, new sets of treatments were applied for potatoes in 1978 which ignored those applied in earlier years. All combinations of:-

1. A NEM(78) Residual effects of nematicide applied autumn 1977:

   NONE None
   TELONE 'Telone' at 224 kg

2. S NEM(78) Residual effects of nematicide applied spring 1978:

   ALDICARB
   OXAMYL

3. SNEMRATE Rates of spring nematicides (kg):

   2.5
   5.0
   7.5
   10.0

plus two untreated plots per block

RATE

NONE



*https://doi.org/10.23637/ERADOC-1-45* *pp 110*

79/W/CS/35

On Series II the same sets of treatments were applied for potatoes in 1979, ignoring those applied in earlier years. All combinations of:-

1. A NEM(79) Autumn nematicide:

| | |
|---|---|
| NONE | None |
| TELONE | 'Telone' at 224 kg |

2. S NEM(79) Spring nematicide:

ALDICARB
OXAMYL

3. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

NONE

On Series III residual effects of treatments in the previous scheme are tested on potatoes 1979. All combinations of:-

1. VARIETY Residual effects of varieties:

| | 1974 | 1977-79 |
|---|---|---|
| (PC)PC3 | Pentland Crown | Pentland Crown |
| (MP)PC3 | Maris Piper | Pentland Crown |

2. NEM RES(77) Residual effects of nematicides (kg) applied for potatoes 1974 & 1977:

| | |
|---|---|
| NONE | None |
| DAZ 2 | Dazomet at 220 |
| DAZ 3 | Dazomet at 330 |
| DAZ 4 | Dazomet at 440 |
| DAZ 6 | Dazomet at 660 |
| DAZ2+TE2 | Dazomet at 220 plus 'Telone' at 220 |
| TE4 | 'Telone' at 450 |
| OX | Oxamyl at 5.6 |
| TE2+OX | 'Telone' at 220 plus oxamyl at 5.6 |

Standard applications:
Wheat (Series I): Manures: Magnesian limestone at 5 t. (10:24:24) at 260 kg, combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 250 l).
Potatoes (Series II & III): Manures: (13:13:20) at 1850 kg. Weedkillers: Linuron at 1.0 kg plus paraquat at 0.28 kg ion in 250 l (Series III only). Fungicide: Mancozeb at 1.3 kg in 250 l on six occasions, with insecticide on the first two. Insecticide: Pirimicarb at 0.14 kg on two occasions with fungicide. Haulm desiccant: Undiluted BOV at 170 l (Series III only).

Seed: Wheat: Flanders, sown at 180 kg.
Potatoes: Pentland Crown.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/35

Cultivations, etc.:-

Wheat (Series I): Magnesian limestone applied: 9 Oct, 1978. Heavy spring-tine cultivated twice: 10 Oct. Rotary cultivated: 10 Oct. Seed sown: 11 Oct. N applied: 21 Apr, 1979. Weedkillers applied: 15 May. Combine harvested: 30 Aug.

Potatoes (Series II): Heavy spring-tine cultivated twice: 10 Oct, 1978, 16 Oct. Spring-tine cultivated, 'Telone' injected, spring-tine cultivated: 21 Nov. NPK applied: 5 May, 1979. Spring-tine cultivated: 8 May. Aldicarb and oxamyl applied: 9 May. Rotary cultivated, potatoes planted: 10 May. Grubbed: 7 June. Rotary ridged: 19 June. Fungicide applied: 26 June, 10 July, 23 July, 8 Aug, 25 Aug, 6 Sept. Insecticide applied: 26 June, 10 July. Haulm mechanically destroyed: 8 Oct. Lifted: 24 Oct.

Potatoes (Series III): Heavy spring-tine cultivated: 16 Oct, 1978. NPK applied: 5 May, 1979. Spring-tine cultivated: 8 May. Rotary cultivated, potatoes planted: 9 May. Weedkillers applied: 25 May. Rotary ridged: 19 June. Fungicide applied: 26 June, 10 July, 23 July, 8 Aug, 25 Aug, 6 Sept. Haulm desiccant applied and haulm mechanically destroyed: 25 Sept. Lifted: 9 Oct.

NOTES: (1) Soil samples were taken before treatments were applied and after harvest for cyst and egg counts of Globodera rostochiensis.

(2) Because of soil erosion damage the yields of four plots of potatoes, Series II, were lost, those with treatment combinations:

| | | | |
|---|---|---|---|
| A NEM(79) | TELONE | NONE | TELONE |
| S NEM(79) | OXAMYL | ALDICARB | OXAMYL |
| SNEMRATE | 2.5 | 2.5 | 7.5 |

and one RATE NONE plot.

Estimated values were used in the analysis.

(3) Because of storm damage the yields of six plots of wheat, Series I, were lost, those with treatment combinations:

| | | | | | | |
|---|---|---|---|---|---|---|
| A NEM(78) | NONE | NONE | NONE | TELONE | NONE | TELONE |
| S NEM(78) | OXAMYL | ALDICARB | OXAMYL | ALDICARB | ALDICARB | ALDICARB |
| SNEMRATE | 2.5 | 2.5 | 7.5 | 7.5 | 7.5 | 10.0 |

Estimated values were used in the analysis.



*https://doi.org/10.23637/ERADOC-1-45* *pp 112*

79/W/CS/35

POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| S NEM(79) | ALDICARB | OXAMYL | MEAN |
|---|---|---|---|
| A NEM(79) | | | |
| NONE | 49.7 | 52.9 | 51.3 |
| TELONE | 55.5 | 52.7 | 54.1 |
| MEAN | 52.6 | 52.8 | 52.7 |

| SNEMRATE | 2.5 | 5.0 | 7.5 | 10.0 | MEAN |
|---|---|---|---|---|---|
| A NEM(79) | | | | | |
| NONE | 46.4 | 55.3 | 52.4 | 51.3 | 51.3 |
| TELONE | 56.5 | 53.5 | 52.4 | 54.0 | 54.1 |
| MEAN | 51.5 | 54.4 | 52.4 | 52.7 | 52.7 |

| SNEMRATE | 2.5 | 5.0 | 7.5 | 10.0 | MEAN |
|---|---|---|---|---|---|
| S NEM(79) | | | | | |
| ALDICARB | 50.2 | 54.4 | 52.0 | 54.0 | 52.6 |
| OXAMYL | 52.7 | 54.3 | 52.9 | 51.4 | 52.8 |
| MEAN | 51.5 | 54.4 | 52.4 | 52.7 | 52.7 |

| | SNEMRATE | 2.5 | 5.0 | 7.5 | 10.0 |
|---|---|---|---|---|---|
| A NEM(79) | S NEM(79) | | | | |
| NONE | ALDICARB | 44.3 | 54.5 | 48.6 | 51.6 |
| | OXAMYL | 48.6 | 56.0 | 56.1 | 51.0 |
| TELONE | ALDICARB | 56.1 | 54.3 | 55.3 | 56.4 |
| | OXAMYL | 56.9 | 52.6 | 49.6 | 51.7 |

RATE NONE 24.3

GRAND MEAN 49.6

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | A NEM(79) | S NEM(79) | SNEMRATE |
|---|---|---|---|
| SED | 1.68 | 1.68 | 2.37 |

| TABLE | A NEM(79) S NEM(79) | A NEM(79) SNEMRATE | S NEM(79) SNEMRATE | A NEM(79) S NEM(79) SNEMRATE & RATE NONE |
|---|---|---|---|---|
| SED | 2.37 | 3.35 | 3.35 | 4.74<br>4.11* |

* USE ONLY FOR COMPARISONS OF RATE NONE V ANY OF THE REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 48 | 6.71 | 13.5 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/35

POTATOES SERIES II

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| S NEM(79) / A NEM(79) | ALDICARB | OXAMYL | MEAN |
|---|---|---|---|
| NONE | 94.5 | 93.7 | 94.1 |
| TELONE | 94.8 | 93.2 | 94.0 |
| MEAN | 94.6 | 93.5 | 94.1 |

| SNEMRATE / A NEM(79) | 2.5 | 5.0 | 7.5 | 10.0 | MEAN |
|---|---|---|---|---|---|
| NONE | 94.6 | 93.9 | 94.1 | 93.7 | 94.1 |
| TELONE | 94.5 | 93.6 | 94.1 | 93.9 | 94.0 |
| MEAN | 94.6 | 93.8 | 94.1 | 93.8 | 94.1 |

| SNEMRATE / S NEM(79) | 2.5 | 5.0 | 7.5 | 10.0 | MEAN |
|---|---|---|---|---|---|
| ALDICARB | 94.9 | 94.5 | 94.3 | 94.9 | 94.6 |
| OXAMYL | 94.2 | 93.0 | 93.9 | 92.7 | 93.5 |
| MEAN | 94.6 | 93.8 | 94.1 | 93.8 | 94.1 |

| SNEMRATE | 2.5 | 5.0 | 7.5 | 10.0 |
|---|---|---|---|---|
| A NEM(79) / S NEM(79) | | | | |
| NONE / ALDICARB | 95.0 | 94.4 | 94.2 | 94.5 |
| NONE / OXAMYL | 94.3 | 93.5 | 94.0 | 93.0 |
| TELONE / ALDICARB | 94.8 | 94.6 | 94.4 | 95.3 |
| TELONE / OXAMYL | 94.2 | 92.6 | 93.9 | 92.4 |

RATE NONE 89.2

GRAND MEAN 93.5

PLOT AREA HARVESTED 0.00087



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/35 POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY NEM RES(77) | (PC)PC3 | (MP)PC3 | MEAN |
|---|---|---|---|
| NONE | 16.7 | 13.1 | 14.9 |
| DAZ 2 | 9.0 | 11.9 | 10.4 |
| DAZ 3 | 13.3 | 10.5 | 11.9 |
| DAZ 4 | 10.7 | 19.6 | 15.1 |
| DAZ 6 | 12.7 | 21.2 | 17.0 |
| DAZ2+TE2 | 11.5 | 14.2 | 12.8 |
| TE4 | 14.8 | 10.6 | 12.7 |
| OX | 10.5 | 13.7 | 12.1 |
| TE2+OX | 10.7 | 24.8 | 17.7 |
| MEAN | 12.2 | 15.5 | 13.9 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEM RES(77) | VARIETY NEM RES(77) VARIETY |
|---|---|---|
| SED | 2.40 | 1.07 | 3.38 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 47 | 4.55 | 32.8 |

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| VARIETY NEM RES(77) | (PC)PC3 | (MP)PC3 | MEAN |
|---|---|---|---|
| NONE | 85.9 | 84.4 | 85.2 |
| DAZ 2 | 78.6 | 77.8 | 78.2 |
| DAZ 3 | 85.6 | 79.4 | 82.5 |
| DAZ 4 | 83.7 | 90.5 | 87.1 |
| DAZ 6 | 85.2 | 87.1 | 86.1 |
| DAZ2+TE2 | 81.1 | 87.5 | 84.3 |
| TE4 | 83.5 | 73.6 | 78.6 |
| OX | 78.6 | 78.5 | 78.5 |
| TE2+OX | 76.3 | 89.6 | 83.0 |
| MEAN | 82.0 | 83.2 | 82.6 |

PLOT AREA HARVESTED 0.00087



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/35

WHEAT SERIES I

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| S NEM(78) / A NEM(78) | ALDICARB | OXAMYL | MEAN |
|---|---|---|---|
| NONE | 5.15 | 5.31 | 5.23 |
| TELONE | 5.80 | 5.56 | 5.68 |
| MEAN | 5.47 | 5.43 | 5.45 |

| SNEMRATE / A NEM(78) | 2.5 | 5.0 | 7.5 | 10.0 | MEAN |
|---|---|---|---|---|---|
| NONE | 5.35 | 5.55 | 5.14 | 4.90 | 5.23 |
| TELONE | 5.61 | 5.78 | 5.48 | 5.83 | 5.68 |
| MEAN | 5.48 | 5.67 | 5.31 | 5.37 | 5.45 |

| SNEMRATE / S NEM(78) | 2.5 | 5.0 | 7.5 | 10.0 | MEAN |
|---|---|---|---|---|---|
| ALDICARB | 5.37 | 5.73 | 5.24 | 5.55 | 5.47 |
| OXAMYL | 5.58 | 5.60 | 5.37 | 5.18 | 5.43 |
| MEAN | 5.48 | 5.67 | 5.31 | 5.37 | 5.45 |

| A NEM(78) | SNEMRATE / S NEM(78) | 2.5 | 5.0 | 7.5 | 10.0 |
|---|---|---|---|---|---|
| NONE | ALDICARB | 5.07 | 5.61 | 4.96 | 4.98 |
| | OXAMYL | 5.62 | 5.49 | 5.31 | 4.81 |
| TELONE | ALDICARB | 5.68 | 5.86 | 5.53 | 6.12 |
| | OXAMYL | 5.54 | 5.70 | 5.43 | 5.55 |

RATE NONE 5.18

GRAND MEAN 5.42

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | A NEM(78) | S NEM(78) | SNEMRATE |
|---|---|---|---|
| SED | 0.115 | 0.115 | 0.163 |

| TABLE | A NEM(78) S NEM(78) | A NEM(78) SNEMRATE | S NEM(78) SNEMRATE | A NEM(78) S NEM(78) SNEMRATE & RATE NONE |
|---|---|---|---|---|
| SED | 0.163 | 0.230 | 0.230 | 0.326<br>0.282* |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 46 | 0.460 | 8.5 |

GRAIN MEAN DM% 85.7

PLOT AREA HARVESTED 0.00173



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/41

## CULTIVATIONS AND SOIL INVERTEBRATES

Object: To study the effects of cultivations on yield of grass and on populations of soil animals - Road Piece.

Sponsor: C.A. Edwards.

The 11th year, old grass, new grass.

For previous years see 69/R/CS/41(t), 70/R/CS/41(t) and 71-78/R/CS/41.

Design: 4 blocks of 8 plots, randomisation restricted.

Whole plot dimensions: 6.40 x 7.32.

Treatments: Cultivations and reseeding:

CULTIVTN

| | |
|---|---|
| 0 | No treatments to old grass (two plots per block) |
| | Grass ploughed up:- |
| SF | In spring 1969, reseeded after fewest cultivations needed to produce a seedbed |
| SM | In spring 1969, reseeded after many seedbed cultivations |
| AM | In autumn 1969, reseeded spring 1970 after many seedbed cultivations |
| SFR | Every spring since 1969, reseeded each year after fewest cultivations needed to produce a seedbed |
| SMR | Every spring since 1969, reseeded each year after many seedbed cultivations |
| AMR | Every autumn since 1969, reseeded every following spring after many seedbed cultivations |

Basal applications: Manures: Chalk at 7.5 t. (0:14:28) at 500 kg. (25:0:16) at 440 kg in the spring and at 220 kg after each of the first two cuts.

Standard applications: To AMR, SMR, SFR plots: Weedkillers: Benazolin, MCPA and 2,4D-B (as 'Legumex Extra' at 7.0 kg) in 220 l.

Seed mixture for 1979: RvP Erecta timothy at 7 kg. S215 meadow fescue at 14 kg. New Zealand Huia white clover at 3 kg. Mixture sown at 24 kg.

Cultivations, etc.:- Basal PK applied: 16 Nov, 1978. Chalk applied: 14 Dec. AMR plots ploughed: 22 Jan, 1979. NK applied: 5 Mar, 13 June, 26 July. SFR and SMR plots ploughed: 15 Mar. Cut (excluding AMR, SMR, SFR plots): 31 May. AMR, SMR & SFR plots rotary harrowed: 5 June. AMR and SMR plots disc harrowed twice; AMR, SMR, SFR plots rotary harrowed and sown: 11 June. Weedkillers applied to AMR, SMR and SFR plots: 10 July. AMR, SMR and SFR plots topped: 19 July. All plots cut: 24 July, 28 Sept.

NOTE: Soil cores were taken to assess total soil fauna and quadrats were sampled on each plot for earthworms in autumn and spring.



*https://doi.org/10.23637/ERADOC-1-45* *pp 117*

79/R/CS/41

1ST CUTTING OCCASION (31/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CULTIVTN | 0 | SF | SM | AM | MEAN |
|---|---|---|---|---|---|
| | 4.29 | 4.26 | 3.59 | 4.08 | 4.10 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CULTIVTN | |
|---|---|---|
| SED | 0.560 | MIN REP |
| | 0.485 | MAX-MIN |

| | CULTIVTN |
|---|---|
| MAX-MIN | 0 V ANY OF REMAINDER |
| MIN REP | ANY OF REMAINDER |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 13 | 0.792 | 19.3 |

1ST CUTTING OCCASION MEAN DM% 15.8

2ND CUTTING OCCASION (24/7/79)DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CULTIVTN | 0 | SF | SM | AM | MEAN |
|---|---|---|---|---|---|
| | 2.39 | 2.53 | 2.57 | 2.91 | 2.56 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CULTIVTN | |
|---|---|---|
| SED | 0.316 | MIN REP |
| | 0.274 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 13 | 0.447 | 17.5 |

2ND CUTTING OCCASION MEAN DM% 18.7



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/41

3RD CUTTING OCCASION (28/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CULTIVTN | 0 | SF | SM | AM | SFR | SMR | AMR | MEAN |
|---|---|---|---|---|---|---|---|---|
| | 2.74 | 2.27 | 2.45 | 2.39 | 2.25 | 1.79 | 1.92 | 2.32 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CULTIVTN | |
|---|---|---|
| SED | 0.307 | MIN REP |
| | 0.266 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 22 | 0.434 | 18.7 |

3RD CUTTING OCCASION MEAN DM% 23.8

TOTAL OF 3 CUTTING OCCASIONS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CULTIVTN | 0 | SF | SM | AM | SFR | SMR | AMR | MEAN |
|---|---|---|---|---|---|---|---|---|
| | 9.42 | 9.06 | 8.61 | 9.38 | 2.25 | 1.79 | 1.92 | 6.48 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CULTIVTN | |
|---|---|---|
| SED | 0.742 | MIN REP * |
| | 0.642 | MAX-MIN * |
| | 0.274 | ** |

* ONLY FOR LEVELS 0, SF, SM AND AM OF CULTIVTN
** ONLY FOR LEVELS SFR, SMR AND AMR OF CULTIVTN

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP* | 13 | 1.049 | 11.4 |
| BLOCK.WP** | 6 | 0.387 | 19.5 |

TOTAL OF 3 CUTTING OCCASIONS MEAN DM% 20.1

PLOT AREA HARVESTED 0.00074



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/66

## DAZOMET AND NITROGEN

Object: To study the cumulative effects of dazomet and nitrogen on pathogens and yield of maize grown continuously - Woburn Butt Furlong.

Sponsors: A.J. Barnard, D. Hornby.

The ninth year, maize.

For previous years see 71/W/CS/66(t), 72/W/CS/66(t) and 73-78/W/CS/66.

Design: 4 blocks of 2 plots split into 4.

Whole plot dimensions: 2.13 x 16.5.

Treatments: All combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. DAZOMET | Dazomet (kg per annum) cumulative 1971-79: | |
| | 0 | |
| | 450 | |

Sub plots

| | |
|---|---|
| 2. N | Nitrogen fertiliser (kg N as 'Nitro-Chalk') cumulative 1971-79: |
| 50 | 50 to seedbed |
| 100 | 100 to seedbed |
| 150 | 150 to seedbed |
| 50+100 | 100 to seedbed, 50 four weeks before sowing (before 1978 this treatment received 100 to seedbed, 50 five weeks after emergence) |

Basal applications: Manures: (0:14:28) at 870 kg. Weedkiller: Atrazine at 1.1 kg in 340 l.

Seed: Fronica, sown at 103,300 seeds per hectare.

Cultivations, etc.:- Ploughed: 17 Nov, 1978. Spring-tine cultivated: 20 Nov. Dazomet applied, rotary cultivated: 23 Nov. Early N applied: 19 Apr, 1979. PK applied: 7 May. Spring-tine cultivated with crumbler attached: 8 May. Seed sown: 17 May. Seedbed N applied: 4 June. Weedkiller applied: 6 June. Hand harvested: 24 Oct.

NOTES: (1) Soil samples were taken before sowing and after harvest for counts of ectoparasitic nematodes.
(2) Counts were made of common smut (Ustilago maydis) and stalk rots (Fusarium spp.).
(3) Because of bird damage, yields from 2 whole plots were lost, those with DAZOMET 0 and 450. Estimated values were used in the analysis.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/66

FORAGE DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N<br>DAZOMET | 50 | 100 | 150 | 50+100 | MEAN |
|---|---|---|---|---|---|
| 0 | 8.39 | 10.14 | 12.55 | 11.25 | 10.58 |
| 450 | 11.54 | 11.82 | 14.69 | 12.41 | 12.61 |
| MEAN | 9.96 | 10.98 | 13.62 | 11.83 | 11.60 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N | DAZOMET*<br>N |
|---|---|---|
| SED | 0.605 | 0.856 |

* WITHIN THE SAME LEVEL OF DAZOMET ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 12 | 1.211 | 10.4 |

GRAIN MEAN DM% 27.2

SUB PLOT AREA HARVESTED 0.00039



*https://doi.org/10.23637/ERADOC-1-45* *pp 121*

79/W/CS/99

## EFFECTS OF BREAKS ON TAKE-ALL

Object: To study factors affecting the incidence of take-all (Gaeumannomyces graminis) and effects on yields of barley - Woburn, Butt Furlong.

Sponsor: D. Hornby.

The seventh year, barley, beans, oats.

For previous years see 72/W/CS/99(t) and 73-78/W/CS/99.

Design: 2 blocks of 9 plots.

Whole plot dimensions: 5.33 x 15.2.

Treatments: Crop sequences, soil sterilant and inoculum:-

| TREATMNT | 1968-71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
|---|---|---|---|---|---|---|---|---|---|
| B 12 | B | B | B | B | B | B | B | B | B |
| | B | F | B | B | B | B | B | B | F |
| B 6+S | B | F | BE | B | B | B | B | B | B(S) |
| B 5 | B | B | F | BE | B | B | B | B | B |
| B 4 | B | B | B | F | BE | B | B | B | B |
| B 3+S+I | B | B | B | B | F | BE | B | B | B(SI) |
| B 2+I | B | B | B | B | B | F | BE | B | B(I) |
| | B | B | B | B | B | B | F | BE | O |
| | B | B | B | B | B | B | B | F | BE |

B = Barley, BE = Beans, F = Fallow, O = Oats
S = Soil sterilant: Formalin at 1190 l in 54,200 l
I = Inoculum of take-all applied on colonised autoclaved oats and combine drilled in the ratio of three oats to one barley seed, mixture sown at 310 kg.

Standard applications:
Barley and Oats: Manures: (20:14:14) at 450 kg.
Spring beans: Manures: (0:14:28) at 400 kg. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Barley: Porthos, dressed with ethirimol, sown at 160 kg.
Oats: Panema, sown at 180 kg.
Spring beans: Minden, sown at 220 kg.

Cultivations, etc.:-
All plots: Ploughed: 17 Nov, 1978. Spring-tine cultivated with crumbler attached: 14 Apr, 1979.
Fallow: Spring-tine cultivated with crumbler attached: 8 May, 1979. Rotary cultivated: 8 June.
Barley: Formalin applied: 18 Apr, 1979. NPK applied, spring-tine cultivated with crumbler attached, seed sown and seed with inoculum combine drilled: 8 May. Combine harvested: 28 Aug.
Oats: NPK applied, spring-tine cultivated, seed sown: 8 May. Harvested by hand: 4 Oct.
Spring beans: Spring-tine cultivated with crumbler attached, PK applied, seed sown: 8 May. Insecticide applied: 11 July. Combine harvested: 10 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 122*

79/W/CS/99

NOTES: (1) Soil samples were taken before treatments were applied for estimates of Heterodera avenae cysts and eggs and incidence of microflora.
(2) Plant samples were taken in July for incidence of 'take-all'.

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | B 12 | B 6+S | B 5 | B 4 | B 3+S+I | B 2+I | MEAN |
|---|---|---|---|---|---|---|---|
| | 1.97 | 2.36 | 2.48 | 2.34 | 1.24 | 1.56 | 1.99 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT |
|---|---|
| SED | 0.183 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 5 | 0.183 | 9.2 |

GRAIN MEAN DM% 82.3

PLOT AREA HARVESTED 0.00434



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/130

## EFFECTS OF EARTHWORM INOCULATION

Object: To study the effects of different species of earthworms on yield and other characteristics of grass - Fosters O & E.

Sponsor: J.R. Lofty.

The sixth year, ley.

For previous years see 74-78/R/CS/130.

Design: 3 blocks of 4 plots.

Whole plot dimensions: 8.53 x 9.14.

Treatments: Inoculation with earthworm species in 1974, 1975 and 1979:

| WORMSPEC | |
|---|---|
| NONE | None |
| ALLOLOBO | Allolobophora longa at 15,000 per hectare in 1974; 5,000 in 1975; 96,000 in 1979 |
| LUMBRICU | Lumbricus terrestris at 5,000 per hectare in 1974 and 1975; 96,000 in 1979 |
| SIX SPEC | Six species - A. caliginosa, A. chlorotica, A. longa, A. rosea, L. rubellus, L. terrestris at a total of 35,000 per hectare in 1974, 12,000 in 1975, none in 1979 |

NOTES: (1) The experiment was ploughed in error in July 1976 and resown in autumn 1976.
(2) Earthworms for the 1979 crop were applied on 1 Dec, 1978 to one block only. Applications to other blocks were unavoidably postponed.

Basal applications: Manures: (0:14:28) at 500 kg, (25:0:16) at 440 kg in spring, (25:0:16) at 220 kg after the first two cuts.

Seeds mixture: Combi perennial ryegrass at 8.4 kg, S24 perennial ryegrass at 8.4 kg, S23 perennial ryegrass at 5.6 kg, S26 cocksfoot at 5.6 kg, S37 cocksfoot at 5.6 kg, S48 Timothy at 2.8 kg, Pecora Timothy at 2.8 kg, Huia white clover at 2.8 kg, wild white clover at 2.8 kg. Sown at 45 kg.

Cultivations, etc.:- PK applied: 16 Nov, 1978. NK applied: 5 Mar, 1979. Cut three times: 5 June, 23 July, 27 Sept. NK applied: 12 June, 27 July.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/130

1ST CUT (5/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| WORMSPEC | NONE | ALLOLOBO | LUMBRICU | SIX SPEC | MEAN |
|---|---|---|---|---|---|
| | 3.52 | 3.50 | 3.55 | 3.79 | 3.59 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | WORMSPEC |
|---|---|
| SED | 0.239 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.293 | 8.2 |

1ST CUT MEAN DM% 18.3

2ND CUT (23/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| WORMSPEC | NONE | ALLOLOBO | LUMBRICU | SIX SPEC | MEAN |
|---|---|---|---|---|---|
| | 2.19 | 1.77 | 1.81 | 1.96 | 1.93 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | WORMSPEC |
|---|---|
| SED | 0.318 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.390 | 20.2 |

2ND CUT MEAN DM% 30.1



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/130

3RD CUT (27/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| WORMSPEC | NONE | ALLOLOBO | LUMBRICU | SIX SPEC | MEAN |
|---|---|---|---|---|---|
| | 2.18 | 2.39 | 2.19 | 2.35 | 2.28 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | WORMSPEC |
|---|---|
| SED | 0.238 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.292 | 12.8 |

3RD CUT MEAN DM% 26.5

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| WORMSPEC | NONE | ALLOLOBO | LUMBRICU | SIX SPEC | MEAN |
|---|---|---|---|---|---|
| | 7.90 | 7.66 | 7.55 | 8.10 | 7.80 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | WORMSPEC |
|---|---|
| SED | 0.606 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.742 | 9.5 |

TOTAL OF 3 CUTS MEAN DM% 25.0

PLOT AREA HARVESTED 0.00046



*https://doi.org/10.23637/ERADOC-1-45* *pp 126*

79/R/CS/131

## EFFECTS OF EARTHWORM DESTRUCTION

Object: To study the effects of eliminating earthworms on yield and soil structure of old grass - Appletree.

Sponsor: J.R. Lofty.

The sixth year, old grass.

For previous years see 74-78/R/CS/131.

Design: 4 blocks of 4 plots.

Whole plot dimensions: 7.62 x 7.62.

Treatments: Chemicals:-

| CHEMICAL | |
|---|---|
| NONE | None (duplicated) |
| BENOMYL | Benomyl at 5 kg in 1974 and at 2.5 kg in 1976 |
| CHLORDAN | Chlordane at 10 kg in 1974 only |

Basal applications: Manures: (0:14:28) at 500 kg in winter. (25:0:16) at 440 kg in spring and at 220 kg after each of the first two cuts.

Cultivations, etc.:- PK applied: 15 Nov, 1978. NK applied: 5 Mar, 1977. Cut three times: 4 June, 24 July, 27 Sept. NK applied: 14 June, 26 July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 127*

79/R/CS/131

1ST CUT (4/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL | NONE | BENOMYL | CHLORDAN | MEAN |
|---|---|---|---|---|
| | 3.91 | 3.75 | 4.10 | 3.92 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CHEMICAL | |
|---|---|---|
| SED | 0.257 | MIN REP |
| | 0.223 | MAX-MIN |

| | CHEMICAL |
|---|---|
| MAX-MIN | NONE V ANY OF REMAINDER |
| MIN REP | ANY OF REMAINDER |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.364 | 9.3 |

1ST CUT MEAN DM% 16.6

2ND CUT (24/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL | NONE | BENOMYL | CHLORDAN | MEAN |
|---|---|---|---|---|
| | 3.26 | 3.19 | 3.22 | 3.24 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CHEMICAL | |
|---|---|---|
| SED | 0.206 | MIN REP |
| | 0.179 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.292 | 9.0 |

2ND CUT MEAN DM% 22.0



*https://doi.org/10.23637/ERADOC-1-45* *pp 128*

79/R/CS/131

3RD CUT (27/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL | NONE | BENOMYL | CHLORDAN | MEAN |
|---|---|---|---|---|
| | 2.60 | 2.67 | 2.63 | 2.62 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CHEMICAL | |
|---|---|---|
| SED | 0.166 | MIN REP |
| | 0.144 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.235 | 8.9 |

3RD CUT MEAN DM% 28.3

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL | NONE | BENOMYL | CHLORDAN | MEAN |
|---|---|---|---|---|
| | 9.77 | 9.61 | 9.95 | 9.78 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CHEMICAL | |
|---|---|---|
| SED | 0.397 | MIN REP |
| | 0.344 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.561 | 5.7 |

TOTAL OF 3 CUTS MEAN DM% 22.3

PLOT AREA HARVESTED 0.00046



*https://doi.org/10.23637/ERADOC-1-45* *pp 129*

79/R/CS/133

## CONTROL OF PATHOGENS

Object: To study the effects of a range of chemicals on incidence of pathogens and yield of continuous maize - Long Hoos VI/VII 6.

Sponsors: A.J. Barnard, K.E. Fletcher, D.J. Hooper, D. Hornby, R.T. Plumb, T.D. Williams, J.C. Wilson.

The sixth year, forage maize.

For previous years see 74-78/R/CS/133.

Design: 3 randomised blocks of 9 plots split into 3.

Whole plot dimensions: 2.13 x 18.3.

Treatments: All combinations of:-

Whole plots

1. CHEMICAL — Chemicals applied annually except where stated:

| | |
|---|---|
| NONE | None (2 plots per block) |
| ALDICARB | Aldicarb, 4.5 kg as granules to seedbed |
| BENOMYL | Benomyl, 11.2 kg as dust to seedbed |
| DAZOMET | Dazomet, 450 kg as granules in early spring (not applied 1975 & 1979) |
| PERMETH | Permethrin, 0.15 kg as foliar spray on 3 Aug (1979 only) |
| PHORATE | Phorate, 1.68 kg as granules to seedbed |
| PIRIMICA | Pirimicarb, 0.14 kg as foliar spray on 3 Aug (1979 only) |
| BE/DA/PH | Benomyl + dazomet (not applied 1975 & 1979) + phorate, at above rates and times |

Sub plots

2. N — Nitrogen fertiliser (kg N):

50
100
150

NOTE: Treatment sprays were applied in 340 l.

Basal applications: Weedkiller: Atrazine at 1.7 kg in 340 l.

Seed: Caldera 535, sown at 100,000 seeds per hectare.

Cultivations, etc.:- Ploughed: 9 Feb, 1979. Spring-tine cultivated: 16 May. Seedbed treatments applied, power harrowed, seed sown: 8 June. Weedkiller applied: 11 June. Harvested by hand: 8 Nov.

NOTES: (1) Germination was assessed in June.
(2) Frit fly (Oscinella frit) damage was assessed.
(3) N percentages in harvest produce were determined.



*https://doi.org/10.23637/ERADOC-1-45* *pp 130*

79/R/CS/133

FORAGE MAIZE TONNES/HECTARE

***** TABLES OF MEANS *****

| N | 50 | 100 | 150 | MEAN |
|---|---|---|---|---|
| CHEMICAL | | | | |
| NONE | 5.73 | 5.94 | 5.87 | 5.85 |
| ALDICARB | 6.67 | 6.59 | 8.14 | 7.13 |
| BENOMYL | 6.08 | 6.38 | 6.87 | 6.44 |
| DAZOMET | 5.90 | 7.08 | 6.84 | 6.61 |
| PERMETH | 5.83 | 5.97 | 6.50 | 6.10 |
| PHORATE | 6.02 | 6.28 | 6.17 | 6.16 |
| PIRIMICA | 6.60 | 6.57 | 7.25 | 6.81 |
| BE/DA/PH | 6.74 | 6.86 | 7.36 | 6.99 |
| MEAN | 6.14 | 6.40 | 6.76 | 6.44 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CHEMICAL | N | CHEMICAL N | |
|---|---|---|---|---|
| SED | 0.370 | | 0.528 | MIN REP |
| | 0.321 | 0.153 | 0.457 | MAX-MIN |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| CHEMICAL | | | 0.460 | MIN REP |
| | | | 0.326 | MAX REP |

CHEMICAL
MAX REP WITHIN NONE
MAX-MIN NONE V REMAINDER
MIN REP REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.454 | 7.0 |
| BLOCK.WP.SP | 38 | 0.564 | 8.8 |

GRAIN MEAN DM% 20.6

SUB PLOT AREA HARVESTED 0.00059



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/140

## CHEMICAL REFERENCE PLOTS

Object: To study the persistence in soil of four agricultural chemicals applied annually, singly and in combination and their effects on soil microflora and on yield of continuous barley - Long Hoos V 3.

Sponsors: G.G. Briggs, N. Walker, R. MacDonald.

The sixth year, barley.

For previous years see 74-78/R/CS/140.

Design: 32 plots fully randomised.

Whole plot dimensions: 4.06 x 4.57.

Treatments, applied cumulatively 1974-79 except WEEDKLLR - 1974 and 76 only: All combinations of:-

| | |
|---|---|
| 1. FUNGCIDE | Fungicide: |
| NONE | None |
| BENOMYL | Benomyl at 4 kg |
| 2. INSCTCDE | Insecticide: |
| NONE | None |
| CHLORFEN | Chlorfenvinphos at 2 kg |
| 3. NEMACIDE | Nematicide: |
| NONE | None |
| ALDICARB | Aldicarb at 6 kg |
| 4. WEEDKLLR | Weedkiller: |
| NONE | None |
| CHLORTOL | Chlortoluron at 2 kg applied 1974 and 1976 only |

NOTE: Chemicals were applied to the seedbed on 6 Apr, 1979.

Basal applications: Manures: Chalk at 2.9 t, 'Nitro-Chalk' at 450 kg. Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 340 l.

Seed: Porthos (undressed), sown at 160 kg.

Cultivations: Chalk applied: 31 Oct, 1978. Ploughed: 22 Jan, 1979. N applied: 5 Apr. Power harrowed, seed sown: 17 Apr. Weedkillers applied: 30 May. Combine harvested: 28 Aug.

NOTES: (1) Observations were made on the incidence of aphids and mildew. Amounts of chlorfenvinphos and benomyl in plants were measured during the season.

(2) The yields were adjusted for a fertility difference between the North and South halves of the experimental area.



*https://doi.org/10.23637/ERADOC-1-45* *pp 132*

79/R/CS/140

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INSCTCDE | NONE | CHLORFEN | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| NONE | 4.70 | 4.62 | 4.66 |
| BENOMYL | 4.56 | 4.60 | 4.58 |
| MEAN | 4.63 | 4.61 | 4.62 |

| NEMACIDE | NONE | ALDICARB | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| NONE | 4.53 | 4.79 | 4.66 |
| BENOMYL | 4.65 | 4.51 | 4.58 |
| MEAN | 4.59 | 4.65 | 4.62 |

| NEMACIDE | NONE | ALDICARB | MEAN |
|---|---|---|---|
| INSCTCDE | | | |
| NONE | 4.48 | 4.78 | 4.63 |
| CHLORFEN | 4.70 | 4.52 | 4.61 |
| MEAN | 4.59 | 4.65 | 4.62 |

| WEEDKLLR | NONE | CHLORTOL | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| NONE | 4.59 | 4.72 | 4.66 |
| BENOMYL | 4.61 | 4.55 | 4.58 |
| MEAN | 4.60 | 4.64 | 4.62 |

| WEEDKLLR | NONE | CHLORTOL | MEAN |
|---|---|---|---|
| INSCTCDE | | | |
| NONE | 4.66 | 4.60 | 4.63 |
| CHLORFEN | 4.54 | 4.68 | 4.61 |
| MEAN | 4.60 | 4.64 | 4.62 |

| WEEDKLLR | NONE | CHLORTOL | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 4.54 | 4.64 | 4.59 |
| ALDICARB | 4.66 | 4.64 | 4.65 |
| MEAN | 4.60 | 4.64 | 4.62 |

| | NEMACIDE | NONE | ALDICARB |
|---|---|---|---|
| FUNGCIDE | INSCTCDE | | |
| NONE | NONE | 4.44 | 4.95 |
| | CHLORFEN | 4.61 | 4.62 |
| BENOMYL | NONE | 4.51 | 4.61 |
| | CHLORFEN | 4.78 | 4.41 |

| | WEEDKLLR | NONE | CHLORTOL |
|---|---|---|---|
| FUNGCIDE | INSCTCDE | | |
| NONE | NONE | 4.76 | 4.64 |
| | CHLORFEN | 4.43 | 4.80 |
| BENOMYL | NONE | 4.57 | 4.55 |
| | CHLORFEN | 4.64 | 4.56 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/140

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| | WEEDKLLR | NONE | CHLORTOL |
|---|---|---|---|
| FUNGCIDE | NEMACIDE | | |
| NONE | NONE | 4.55 | 4.50 |
| | ALDICARB | 4.64 | 4.94 |
| BENOMYL | NONE | 4.52 | 4.77 |
| | ALDICARB | 4.69 | 4.34 |

| | WEEDKLLR | NONE | CHLORTOL |
|---|---|---|---|
| INSCTCDE | NEMACIDE | | |
| NONE | NONE | 4.57 | 4.38 |
| | ALDICARB | 4.75 | 4.81 |
| CHLORFEN | NONE | 4.50 | 4.89 |
| | ALDICARB | 4.57 | 4.46 |

| | NEMACIDE | NONE | | ALDICARB | |
|---|---|---|---|---|---|
| | WEEDKLLR | NONE | CHLORTOL | NONE | CHLORTOL |
| FUNGCIDE | INSCTCDE | | | | |
| NONE | NONE | 4.68 | 4.20 | 4.83 | 5.08 |
| | CHLORFEN | 4.42 | 4.80 | 4.44 | 4.80 |
| BENOMYL | NONE | 4.46 | 4.56 | 4.68 | 4.54 |
| | CHLORFEN | 4.59 | 4.98 | 4.70 | 4.13 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE | INSCTCDE | NEMACIDE | WEEDKLLR |
|---|---|---|---|---|
| SED | 0.165 | 0.172 | 0.162 | 0.165 |

| TABLE | FUNGCIDE INSCTCDE | FUNGCIDE NEMACIDE | INSCTCDE NEMACIDE | FUNGCIDE WEEDKLLR |
|---|---|---|---|---|
| SED | 0.237 | 0.232 | 0.239 | 0.237 |

| TABLE | INSCTCDE WEEDKLLR | NEMACIDE WEEDKLLR | FUNGCIDE INSCTCDE NEMACIDE | FUNGCIDE INSCTCDE WEEDKLLR |
|---|---|---|---|---|
| SED | 0.246 | 0.232 | 0.333 | 0.342 |

| TABLE | FUNGCIDE NEMACIDE WEEDKLLR | INSCTCDE NEMACIDE WEEDKLLR | FUNGCIDE INSCTCDE NEMACIDE WEEDKLLR |
|---|---|---|---|
| SED | 0.330 | 0.339 | 0.474 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 15 | 0.459 | 9.9 |

GRAIN MEAN DM% 84.7

PLOT AREA HARVESTED 0.00075



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/156

LEATHERJACKET STUDY

Object: To study the effects of protection from bird predation on leatherjacket populations and yield of old grass - Road Piece.

Sponsors: J. Bowden, J.R. Lofty.

The fifth year, old grass.

For previous years see 75-78/R/CS/156.

Design: 3 blocks of 6 plots.

Whole plot dimensions: 2.74 x 3.66.

Treatments:

| TREATMNT | | |
|---|---|---|
| NONE | No protection (duplicated) | |
| NET E | Covered by bird-proof netting | 16 Nov, 1978 - 29 Jan, 1979 |
| NET L | " " " " " | 19 Feb - 17 May |
| NET EL | " " " " " | 16 Nov - 17 May |
| NET EL G | " " " " " at ground level | 16 Nov - 17 May but with a gap |

Basal applications: Manures: (0:14:28) at 500 kg. (25:0:16) at 440 kg in spring and 220 kg after the second cut.

Cultivations, etc.:- PK applied: 16 Nov, 1978. NK applied: 5 Mar, 1979. Cut three times: 31 May, 24 July, 28 Sept. NK applied: 13 June, 24 July.

NOTE: The plots were sampled for leatherjackets several times during the season.



*https://doi.org/10.23637/ERADOC-1-45* *pp 135*

79/R/CS/156

1ST CUT (31/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | NET E | NET L | NET EL | NET EL G | MEAN |
|---|---|---|---|---|---|---|
| | 4.18 | 3.72 | 4.19 | 4.54 | 4.33 | 4.19 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | |
|---|---|---|
| SED | 0.277 | MIN REP |
| | 0.240 | MAX-MIN |

| | TREATMNT |
|---|---|
| MAX-MIN | NONE V ANY OF REMAINDER |
| MIN REP | ANY OF REMAINDER |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.339 | 8.1 |

1ST CUT MEAN DM% 15.6

2ND CUT (24/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | NET E | NET L | NET EL | NET EL G | MEAN |
|---|---|---|---|---|---|---|
| | 2.28 | 2.20 | 2.23 | 1.98 | 2.10 | 2.18 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | |
|---|---|---|
| SED | 0.321 | MIN REP |
| | 0.278 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.393 | 18.1 |

2ND CUT MEAN DM% 20.0



*https://doi.org/10.23637/ERADOC-1-45* *pp 136*

79/R/CS/156

3RD CUT (28/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | NET E | NET L | NET EL | NET EL G | MEAN |
|---|---|---|---|---|---|---|
| | 2.34 | 2.64 | 2.60 | 2.42 | 2.16 | 2.42 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | |
|---|---|---|
| SED | 0.160 | MIN REP |
| | 0.139 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.196 | 8.1 |

3RD CUT MEAN DM% 24.3

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | NET E | NET L | NET EL | NET EL G | MEAN |
|---|---|---|---|---|---|---|
| | 8.80 | 8.56 | 9.02 | 8.94 | 8.58 | 8.78 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | |
|---|---|---|
| SED | 0.631 | MIN REP |
| | 0.546 | MAX-MIN |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.772 | 8.8 |

TOTAL OF 3 CUTS MEAN DM% 20.0

PLOT AREA HARVESTED 0.00037



*https://doi.org/10.23637/ERADOC-1-45* *pp 137*

79/R/CS/161

INJECTED N

Object: To study the cumulative and residual effects of injecting aqueous urea, with or without a nitrification inhibitor, at three rates and two spacings on the yield and nitrogen uptake of old grass cut for silage - Highfield IX.

Sponsors: F.V. Widdowson, A. Penny, J. Ashworth.

The fifth year, old grass.

For previous years see 76-78/R/CS/161.

Design: 2 randomised blocks of 18 plots split into 2.

Whole plot dimensions: 4.27 x 15.2.

Treatments: All combinations of:-

Whole plots

1. LIQUID N — Liquid nitrogen fertiliser:

   UREA — Aqueous solution of urea, no nitrification inhibitor
   UREA+INH — Aqueous solution of urea plus a nitrification inhibitor (ammonium trithiocarbonate in 1976, sodium trithiocarbonate in 1977 and 1978)

2. SPACING — Spacing between tines injecting liquid fertiliser:

   30 CM
   60 CM

3. N RATE — Rate of liquid fertiliser, applied as a single annual dressing (kg N):

   250
   375
   500

Sub plots

4. YEARS — Years of application, cumulative when applied:

   75+6+8+9 — 1975, 1976, 1978 and 1979
   75+6+7+8 — 1975, 1976, 1977 and 1978

plus six whole plots given 'Nitro-Chalk', dressing divided between cuts (kg N, total/annum):

SOLID N

 0
100
200
300
400
500

with sub plots YEARS as above.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

NOTES: (1) The whole area was grazed in 1975, yields were not taken.
(2) Sodium trithiocarbonate was applied at 18 kg to SPACING, 30 CM and at 9 kg to SPACING, 60 CM.

Basal applications: (0:14:28) at 1010 kg.

Cultivations, etc.:- PK applied: 15 Nov, 1978. Aqueous urea and inhibitors injected: 3 Apr, 1979. Solid N applied six times: 3 Apr, 11 May, 7 June, 11 July, 13 Aug and 10 Sept. Cut: 10 May, 6 June, 10 July, 10 Aug, 7 Sept, and 24 Oct.

NOTE: The subsoil was tested for N content before injecting and topsoil was tested weekly throughout the season for ammonium and nitrate content.

1ST CUT (10/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 1.02 | 0.96 | 0.99 |
| UREA+INH | 1.00 | 0.97 | 0.98 |
| MEAN | 1.01 | 0.96 | 0.99 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| LIQUID N | | | | |
| UREA | 0.81 | 1.00 | 1.16 | 0.99 |
| UREA+INH | 0.85 | 0.89 | 1.21 | 0.98 |
| MEAN | 0.83 | 0.94 | 1.18 | 0.99 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| SPACING | | | | |
| 30 CM | 0.93 | 0.96 | 1.15 | 1.01 |
| 60 CM | 0.74 | 0.93 | 1.21 | 0.96 |
| MEAN | 0.83 | 0.94 | 1.18 | 0.99 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 1.42 | 0.56 | 0.99 |
| UREA+INH | 1.39 | 0.58 | 0.98 |
| MEAN | 1.41 | 0.57 | 0.99 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| SPACING | | | |
| 30 CM | 1.59 | 0.43 | 1.01 |
| 60 CM | 1.22 | 0.70 | 0.96 |
| MEAN | 1.41 | 0.57 | 0.99 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 139*

79/R/CS/161

1ST CUT (10/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| N RATE | | | |
| 250 | 1.23 | 0.44 | 0.83 |
| 375 | 1.39 | 0.50 | 0.94 |
| 500 | 1.60 | 0.77 | 1.18 |
| MEAN | 1.41 | 0.57 | 0.99 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 0.93 | 0.96 | 1.18 | 0.69 | 1.03 | 1.14 |
| UREA+INH | 0.92 | 0.96 | 1.13 | 0.79 | 0.82 | 1.29 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 1.61 | 0.43 | 1.23 | 0.68 |
| UREA+INH | 1.57 | 0.43 | 1.20 | 0.73 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 1.22 | 0.41 | 1.49 | 0.50 | 1.56 | 0.76 |
| UREA+INH | 1.24 | 0.47 | 1.28 | 0.50 | 1.65 | 0.77 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 1.49 | 0.36 | 1.53 | 0.39 | 1.76 | 0.55 |
| 60 CM | 0.96 | 0.52 | 1.25 | 0.61 | 1.44 | 0.99 |

| | N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| | YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 1.49 | 0.38 | 1.58 | 0.35 | 1.78 | 0.57 |
| | 60 CM | 0.94 | 0.44 | 1.41 | 0.65 | 1.34 | 0.94 |
| UREA+INH | 30 CM | 1.49 | 0.35 | 1.48 | 0.43 | 1.75 | 0.52 |
| | 60 CM | 0.98 | 0.59 | 1.09 | 0.56 | 1.54 | 1.03 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 0.55 | 0.82 | 1.21 | 1.60 | 1.55 | 1.15 |
| 75+6+7+8 | | 0.26 | 0.42 | 0.69 | 0.40 | 0.56 | 0.47 |
| MEAN | 0.36 | 0.41 | 0.62 | 0.95 | 1.00 | 1.05 | 0.73 |

GRAND MEAN 0.90



*https://doi.org/10.23637/ERADOC-1-45* *pp 140*

79/R/CS/161

1ST CUT (10/5/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.130 | 0.053 | 0.053 | 0.065 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.036<br>0.056* | 0.075 | 0.092 | 0.092 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.157 | 0.064 | 0.064 | 0.078 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.124 | | | |
| LIQUID N | | 0.051 | | |
| SPACING | | | 0.051 | |
| N RATE | | | | 0.062 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.130 | 0.091 | 0.111 | 0.111 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.072 | | |
| LIQUID N.N RATE | | | 0.088 | |
| SPACING N RATE | | | | 0.088 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.157 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.124 |

* USE ONLY IN TABLES INVOLVING SOLID N

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.130 | 14.4 |
| BLOCK.WP.SP | 19 | 0.124 | 13.8 |

1ST CUT MEAN DM% 24.3



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

2ND CUT (6/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING<br>LIQUID N | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| UREA | 3.13 | 3.05 | 3.09 |
| UREA+INH | 2.99 | 3.11 | 3.05 |
| MEAN | 3.06 | 3.08 | 3.07 |

| N RATE<br>LIQUID N | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| UREA | 2.88 | 3.09 | 3.29 | 3.09 |
| UREA+INH | 2.92 | 2.92 | 3.33 | 3.05 |
| MEAN | 2.90 | 3.00 | 3.31 | 3.07 |

| N RATE<br>SPACING | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| 30 CM | 2.93 | 2.99 | 3.26 | 3.06 |
| 60 CM | 2.87 | 3.01 | 3.36 | 3.08 |
| MEAN | 2.90 | 3.00 | 3.31 | 3.07 |

| YEARS<br>LIQUID N | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| UREA | 3.90 | 2.28 | 3.09 |
| UREA+INH | 3.87 | 2.24 | 3.05 |
| MEAN | 3.88 | 2.26 | 3.07 |

| YEARS<br>SPACING | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| 30 CM | 4.07 | 2.06 | 3.06 |
| 60 CM | 3.70 | 2.46 | 3.08 |
| MEAN | 3.88 | 2.26 | 3.07 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

2ND CUT (6/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS<br>N RATE | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| 250 | 3.84 | 1.96 | 2.90 |
| 375 | 3.93 | 2.07 | 3.00 |
| 500 | 3.88 | 2.74 | 3.31 |
| MEAN | 3.88 | 2.26 | 3.07 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 3.00 | 3.07 | 3.33 | 2.77 | 3.11 | 3.26 |
| UREA+INH | 2.87 | 2.92 | 3.20 | 2.96 | 2.92 | 3.46 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 4.13 | 2.13 | 3.67 | 2.43 |
| UREA+INH | 4.00 | 1.99 | 3.73 | 2.49 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 3.76 | 2.01 | 4.04 | 2.13 | 3.90 | 2.69 |
| UREA+INH | 3.92 | 1.91 | 3.82 | 2.01 | 3.86 | 2.79 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 4.01 | 1.86 | 4.13 | 1.85 | 4.06 | 2.47 |
| 60 CM | 3.67 | 2.07 | 3.74 | 2.29 | 3.70 | 3.02 |

| N RATE | | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| YEARS | | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 3.94 | 2.05 | 4.34 | 1.80 | 4.11 | 2.54 |
| | 60 CM | 3.57 | 1.97 | 3.75 | 2.47 | 3.68 | 2.84 |
| UREA+INH | 30 CM | 4.08 | 1.66 | 3.92 | 1.91 | 4.00 | 2.39 |
| | 60 CM | 3.76 | 2.16 | 3.72 | 2.12 | 3.72 | 3.20 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 2.48 | 2.98 | 3.01 | 3.46 | 3.66 | 3.12 |
| 75+6+7+8 | | 1.53 | 1.71 | 2.09 | 1.73 | 2.16 | 1.84 |
| MEAN | 2.36 | 2.01 | 2.34 | 2.55 | 2.60 | 2.91 | 2.46 |

GRAND MEAN 2.87



*https://doi.org/10.23637/ERADOC-1-45* *pp 143*

79/R/CS/161

2ND CUT (6/6/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.184 | 0.075 | 0.075 | 0.092 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.065<br>0.101* | 0.106 | 0.130 | 0.130 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.243 | 0.099 | 0.099 | 0.121 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.224 | | | |
| LIQUID N | | 0.091 | | |
| SPACING | | | 0.091 | |
| N RATE | | | | 0.112 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.184 | 0.140 | 0.172 | 0.172 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.129 | | |
| LIQUID N.N RATE | | | 0.158 | |
| SPACING N RATE | | | | 0.158 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.243 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.224 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.184 | 6.4 |
| BLOCK.WP.SP | 19 | 0.224 | 7.8 |

2ND CUT MEAN% 17.3



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

3RD CUT (10/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 1.19 | 1.29 | 1.24 |
| UREA+INH | 1.16 | 1.27 | 1.22 |
| MEAN | 1.18 | 1.28 | 1.23 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| LIQUID N | | | | |
| UREA | 1.26 | 1.21 | 1.26 | 1.24 |
| UREA+INH | 1.25 | 1.25 | 1.15 | 1.22 |
| MEAN | 1.25 | 1.23 | 1.21 | 1.23 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| SPACING | | | | |
| 30 CM | 1.21 | 1.21 | 1.11 | 1.18 |
| 60 CM | 1.30 | 1.24 | 1.31 | 1.28 |
| MEAN | 1.25 | 1.23 | 1.21 | 1.23 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 1.55 | 0.93 | 1.24 |
| UREA+INH | 1.52 | 0.91 | 1.22 |
| MEAN | 1.53 | 0.92 | 1.23 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| SPACING | | | |
| 30 CM | 1.44 | 0.92 | 1.18 |
| 60 CM | 1.63 | 0.93 | 1.28 |
| MEAN | 1.53 | 0.92 | 1.23 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

3RD CUT (10/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| N RATE | | | |
| 250 | 1.53 | 0.98 | 1.25 |
| 375 | 1.56 | 0.90 | 1.23 |
| 500 | 1.52 | 0.90 | 1.21 |
| MEAN | 1.53 | 0.92 | 1.23 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 1.23 | 1.20 | 1.16 | 1.29 | 1.21 | 1.37 |
| UREA+INH | 1.19 | 1.23 | 1.06 | 1.31 | 1.27 | 1.24 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 1.48 | 0.91 | 1.62 | 0.96 |
| UREA+INH | 1.40 | 0.92 | 1.64 | 0.91 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 1.60 | 0.92 | 1.52 | 0.89 | 1.53 | 0.99 |
| UREA+INH | 1.46 | 1.04 | 1.60 | 0.90 | 1.50 | 0.80 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 1.38 | 1.04 | 1.53 | 0.89 | 1.40 | 0.82 |
| 60 CM | 1.67 | 0.92 | 1.59 | 0.90 | 1.63 | 0.98 |

| | N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| | YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 1.46 | 0.99 | 1.55 | 0.85 | 1.43 | 0.88 |
| | 60 CM | 1.73 | 0.84 | 1.48 | 0.94 | 1.63 | 1.10 |
| UREA+INH | 30 CM | 1.30 | 1.08 | 1.51 | 0.94 | 1.37 | 0.75 |
| | 60 CM | 1.61 | 1.01 | 1.69 | 0.85 | 1.63 | 0.85 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 1.24 | 1.21 | 1.51 | 1.47 | 1.45 | 1.38 |
| 75+6+7+8 | | 0.79 | 0.85 | 0.78 | 0.76 | 0.91 | 0.82 |
| MEAN | 1.25 | 1.01 | 1.03 | 1.15 | 1.11 | 1.18 | 1.12 |

GRAND MEAN 1.19



*https://doi.org/10.23637/ERADOC-1-45* *pp 146*

79/R/CS/161

3RD CUT (10/7/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.132 | 0.054 | 0.054 | 0.066 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.053<br>0.082* | 0.076 | 0.093 | 0.093 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.185 | 0.075 | 0.075 | 0.092 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.182 | | | |
| LIQUID N | | 0.074 | | |
| SPACING | | | 0.074 | |
| N RATE | | | | 0.091 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.132 | 0.107 | 0.131 | 0.131 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.105 | | |
| LIQUID N.N RATE | | | 0.129 | |
| SPACING N RATE | | | | 0.129 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.185 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.182 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.132 | 11.1 |
| BLOCK.WP.SP | 19 | 0.182 | 15.3 |

3RD CUT MEAN DM% 23.4



*https://doi.org/10.23637/ERADOC-1-45* *pp 147*

79/R/CS/161

4TH CUT (10/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 0.58 | 0.50 | 0.54 |
| UREA+INH | 0.45 | 0.50 | 0.48 |
| MEAN | 0.52 | 0.50 | 0.51 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| LIQUID N | | | | |
| UREA | 0.46 | 0.53 | 0.63 | 0.54 |
| UREA+INH | 0.50 | 0.46 | 0.47 | 0.48 |
| MEAN | 0.48 | 0.49 | 0.55 | 0.51 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| SPACING | | | | |
| 30 CM | 0.44 | 0.51 | 0.60 | 0.52 |
| 60 CM | 0.51 | 0.48 | 0.50 | 0.50 |
| MEAN | 0.48 | 0.49 | 0.55 | 0.51 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 0.82 | 0.26 | 0.54 |
| UREA+INH | 0.66 | 0.29 | 0.48 |
| MEAN | 0.74 | 0.27 | 0.51 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| SPACING | | | |
| 30 CM | 0.75 | 0.29 | 0.52 |
| 60 CM | 0.74 | 0.26 | 0.50 |
| MEAN | 0.74 | 0.27 | 0.51 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 148*

79/R/CS/161

4TH CUT (10/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS<br>N RATE | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| 250 | 0.61 | 0.34 | 0.48 |
| 375 | 0.77 | 0.22 | 0.49 |
| 500 | 0.84 | 0.26 | 0.55 |
| MEAN | 0.74 | 0.27 | 0.51 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 0.42 | 0.57 | 0.76 | 0.49 | 0.48 | 0.51 |
| UREA+INH | 0.46 | 0.44 | 0.45 | 0.53 | 0.48 | 0.49 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 0.90 | 0.27 | 0.74 | 0.25 |
| UREA+INH | 0.60 | 0.31 | 0.73 | 0.27 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 0.60 | 0.32 | 0.83 | 0.22 | 1.03 | 0.24 |
| UREA+INH | 0.63 | 0.36 | 0.70 | 0.22 | 0.66 | 0.28 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 0.49 | 0.39 | 0.78 | 0.24 | 0.98 | 0.23 |
| 60 CM | 0.74 | 0.29 | 0.76 | 0.20 | 0.71 | 0.29 |

| N RATE | | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| YEARS | | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 0.48 | 0.36 | 0.92 | 0.22 | 1.29 | 0.22 |
| | 60 CM | 0.71 | 0.28 | 0.74 | 0.22 | 0.76 | 0.27 |
| UREA+INH | 30 CM | 0.49 | 0.43 | 0.63 | 0.25 | 0.66 | 0.24 |
| | 60 CM | 0.77 | 0.30 | 0.78 | 0.18 | 0.65 | 0.32 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 0.65 | 0.56 | 0.58 | 0.59 | 1.05 | 0.69 |
| 75+6+7+8 | | 0.33 | 0.28 | 0.22 | 0.15 | 0.24 | 0.24 |
| MEAN | 0.62 | 0.49 | 0.42 | 0.40 | 0.37 | 0.65 | 0.49 |

GRAND MEAN 0.50



*https://doi.org/10.23637/ERADOC-1-45* *pp 149*

79/R/CS/161

4TH CUT (10/8/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.097 | 0.040 | 0.040 | 0.049 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.038<br>0.059* | 0.056 | 0.069 | 0.069 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.135 | 0.055 | 0.055 | 0.067 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.133 | | | |
| LIQUID N | | 0.054 | | |
| SPACING | | | 0.054 | |
| N RATE | | | | 0.066 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.097 | 0.078 | 0.095 | 0.095 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.078 | | |
| LIQUID N.N RATE | | | 0.094 | |
| SPACING N RATE | | | | 0.094 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.135 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.133 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.097 | 19.3 |
| BLOCK.WP.SP | 19 | 0.133 | 26.4 |

4TH CUT MEAN DM% 27.1



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

5TH CUT (7/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 1.07 | 1.02 | 1.04 |
| UREA+INH | 0.95 | 1.05 | 1.00 |
| MEAN | 1.01 | 1.03 | 1.02 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| LIQUID N | | | | |
| UREA | 0.85 | 1.02 | 1.26 | 1.04 |
| UREA+INH | 0.95 | 0.91 | 1.13 | 1.00 |
| MEAN | 0.90 | 0.97 | 1.20 | 1.02 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| SPACING | | | | |
| 30 CM | 0.88 | 0.93 | 1.22 | 1.01 |
| 60 CM | 0.92 | 1.01 | 1.17 | 1.03 |
| MEAN | 0.90 | 0.97 | 1.20 | 1.02 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 1.49 | 0.60 | 1.04 |
| UREA+INH | 1.44 | 0.56 | 1.00 |
| MEAN | 1.46 | 0.58 | 1.02 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| SPACING | | | |
| 30 CM | 1.42 | 0.60 | 1.01 |
| 60 CM | 1.50 | 0.56 | 1.03 |
| MEAN | 1.46 | 0.58 | 1.02 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 151*

79/R/CS/161

5TH CUT (7/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| N RATE | | | |
| 250 | 1.06 | 0.74 | 0.90 |
| 375 | 1.47 | 0.47 | 0.97 |
| 500 | 1.86 | 0.53 | 1.20 |
| MEAN | 1.46 | 0.58 | 1.02 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 0.85 | 1.04 | 1.33 | 0.84 | 1.01 | 1.19 |
| UREA+INH | 0.91 | 0.82 | 1.12 | 0.99 | 1.01 | 1.15 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 1.51 | 0.63 | 1.47 | 0.56 |
| UREA+INH | 1.33 | 0.57 | 1.54 | 0.56 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 0.98 | 0.71 | 1.56 | 0.49 | 1.93 | 0.59 |
| UREA+INH | 1.13 | 0.76 | 1.38 | 0.45 | 1.79 | 0.48 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 0.89 | 0.86 | 1.37 | 0.49 | 2.00 | 0.44 |
| 60 CM | 1.22 | 0.61 | 1.57 | 0.45 | 1.72 | 0.62 |

| N RATE | | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| YEARS | | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 0.88 | 0.83 | 1.51 | 0.56 | 2.16 | 0.50 |
| | 60 CM | 1.09 | 0.60 | 1.60 | 0.41 | 1.71 | 0.67 |
| UREA+INH | 30 CM | 0.91 | 0.90 | 1.23 | 0.41 | 1.85 | 0.39 |
| | 60 CM | 1.36 | 0.62 | 1.53 | 0.49 | 1.74 | 0.57 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 1.41 | 1.93 | 2.22 | 2.26 | 2.20 | 2.00 |
| 75+6+7+8 | | 0.85 | 0.72 | 0.50 | 0.30 | 0.46 | 0.57 |
| MEAN | 1.04 | 1.13 | 1.33 | 1.36 | 1.28 | 1.33 | 1.24 |

GRAND MEAN 1.10



*https://doi.org/10.23637/ERADOC-1-45* *pp 152*

79/R/CS/161

5TH CUT (7/9/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.121 | 0.049 | 0.049 | 0.061 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.052<br>0.081* | 0.069 | 0.085 | 0.085 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.176 | 0.072 | 0.072 | 0.088 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.181 | | | |
| LIQUID N | | 0.074 | | |
| SPACING | | | 0.074 | |
| N RATE | | | | 0.091 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.121 | 0.102 | 0.125 | 0.125 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.105 | | |
| LIQUID N.N RATE | | | 0.128 | |
| SPACING N RATE | | | | 0.128 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.176 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.181 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.121 | 11.1 |
| BLOCK.WP.SP | 19 | 0.181 | 16.5 |

5TH CUT MEAN DM% 24.3



*https://doi.org/10.23637/ERADOC-1-45* *pp 153*

79/R/CS/161

6TH CUT (24/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 0.22 | 0.30 | 0.26 |
| UREA+INH | 0.22 | 0.28 | 0.25 |
| MEAN | 0.22 | 0.29 | 0.25 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| LIQUID N | | | | |
| UREA | 0.21 | 0.26 | 0.31 | 0.26 |
| UREA+INH | 0.22 | 0.26 | 0.27 | 0.25 |
| MEAN | 0.22 | 0.26 | 0.29 | 0.25 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| SPACING | | | | |
| 30 CM | 0.19 | 0.21 | 0.25 | 0.22 |
| 60 CM | 0.24 | 0.30 | 0.33 | 0.29 |
| MEAN | 0.22 | 0.26 | 0.29 | 0.25 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 0.33 | 0.19 | 0.26 |
| UREA+INH | 0.32 | 0.18 | 0.25 |
| MEAN | 0.32 | 0.19 | 0.25 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| SPACING | | | |
| 30 CM | 0.25 | 0.19 | 0.22 |
| 60 CM | 0.40 | 0.18 | 0.29 |
| MEAN | 0.32 | 0.19 | 0.25 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

6TH CUT (24/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| N RATE | | | |
| 250 | 0.22 | 0.21 | 0.22 |
| 375 | 0.32 | 0.19 | 0.26 |
| 500 | 0.42 | 0.16 | 0.29 |
| MEAN | 0.32 | 0.19 | 0.25 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 0.17 | 0.23 | 0.26 | 0.25 | 0.29 | 0.37 |
| UREA+INH | 0.22 | 0.19 | 0.24 | 0.23 | 0.32 | 0.29 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 0.25 | 0.19 | 0.41 | 0.19 |
| UREA+INH | 0.24 | 0.19 | 0.39 | 0.18 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 0.20 | 0.22 | 0.32 | 0.19 | 0.46 | 0.17 |
| UREA+INH | 0.25 | 0.20 | 0.32 | 0.19 | 0.38 | 0.16 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 0.18 | 0.21 | 0.20 | 0.22 | 0.36 | 0.15 |
| 60 CM | 0.27 | 0.21 | 0.44 | 0.17 | 0.49 | 0.17 |

| N RATE | | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| YEARS | | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 0.14 | 0.20 | 0.22 | 0.24 | 0.38 | 0.14 |
| | 60 CM | 0.26 | 0.24 | 0.43 | 0.15 | 0.55 | 0.19 |
| UREA+INH | 30 CM | 0.22 | 0.22 | 0.19 | 0.20 | 0.33 | 0.15 |
| | 60 CM | 0.28 | 0.18 | 0.45 | 0.19 | 0.43 | 0.16 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 0.39 | 0.41 | 0.38 | 0.49 | 0.57 | 0.45 |
| 75+6+7+8 | | 0.21 | 0.22 | 0.12 | 0.14 | 0.20 | 0.18 |
| MEAN | 0.16 | 0.30 | 0.32 | 0.25 | 0.32 | 0.38 | 0.29 |

GRAND MEAN 0.27



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/161

6TH CUT (24/10/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.053 | 0.022 | 0.022 | 0.027 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.025<br>0.038* | 0.031 | 0.037 | 0.037 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.081 | 0.033 | 0.033 | 0.040 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.086 | | | |
| LIQUID N | | 0.035 | | |
| SPACING | | | 0.035 | |
| N RATE | | | | 0.043 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.053 | 0.047 | 0.057 | 0.057 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.050 | | |
| LIQUID N.N RATE | | | 0.061 | |
| SPACING N RATE | | | | 0.061 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.081 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.086 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.053 | 20.0 |
| BLOCK.WP.SP | 19 | 0.086 | 32.2 |

6TH CUT MEAN DM% 26.2



*https://doi.org/10.23637/ERADOC-1-45* *pp 156*

79/R/CS/161

TOTAL OF 6 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING | 30 CM | 60 CM | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 7.22 | 7.10 | 7.16 |
| UREA+INH | 6.77 | 7.19 | 6.98 |
| MEAN | 7.00 | 7.14 | 7.07 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| LIQUID N | | | | |
| UREA | 6.47 | 7.10 | 7.92 | 7.16 |
| UREA+INH | 6.69 | 6.69 | 7.56 | 6.98 |
| MEAN | 6.58 | 6.89 | 7.74 | 7.07 |

| N RATE | 250 | 375 | 500 | MEAN |
|---|---|---|---|---|
| SPACING | | | | |
| 30 CM | 6.58 | 6.81 | 7.60 | 7.00 |
| 60 CM | 6.57 | 6.98 | 7.88 | 7.14 |
| MEAN | 6.58 | 6.89 | 7.74 | 7.07 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| LIQUID N | | | |
| UREA | 9.51 | 4.82 | 7.16 |
| UREA+INH | 9.19 | 4.77 | 6.98 |
| MEAN | 9.35 | 4.79 | 7.07 |

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| SPACING | | | |
| 30 CM | 9.51 | 4.48 | 7.00 |
| 60 CM | 9.19 | 5.10 | 7.14 |
| MEAN | 9.35 | 4.79 | 7.07 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 157*

79/R/CS/161

TOTAL OF 6 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| YEARS | 75+6+8+9 | 75+6+7+8 | MEAN |
|---|---|---|---|
| N RATE | | | |
| 250 | 8.49 | 4.67 | 6.58 |
| 375 | 9.44 | 4.35 | 6.89 |
| 500 | 10.13 | 5.36 | 7.74 |
| MEAN | 9.35 | 4.79 | 7.07 |

| SPACING | 30 CM | | | 60 CM | | |
|---|---|---|---|---|---|---|
| N RATE | 250 | 375 | 500 | 250 | 375 | 500 |
| LIQUID N | | | | | | |
| UREA | 6.59 | 7.07 | 8.00 | 6.34 | 7.13 | 7.85 |
| UREA+INH | 6.56 | 6.55 | 7.20 | 6.81 | 6.82 | 7.92 |

| SPACING | 30 CM | | 60 CM | |
|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | |
| UREA | 9.88 | 4.56 | 9.13 | 5.07 |
| UREA+INH | 9.14 | 4.40 | 9.24 | 5.13 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | | | | | | |
| UREA | 8.35 | 4.58 | 9.77 | 4.43 | 10.41 | 5.44 |
| UREA+INH | 8.62 | 4.75 | 9.11 | 4.27 | 9.84 | 5.29 |

| N RATE | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|
| YEARS | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| SPACING | | | | | | |
| 30 CM | 8.44 | 4.72 | 9.54 | 4.08 | 10.55 | 4.65 |
| 60 CM | 8.53 | 4.61 | 9.34 | 4.62 | 9.70 | 6.07 |

| N RATE | | 250 | | 375 | | 500 | |
|---|---|---|---|---|---|---|---|
| YEARS | | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 | 75+6+8+9 | 75+6+7+8 |
| LIQUID N | SPACING | | | | | | |
| UREA | 30 CM | 8.39 | 4.80 | 10.12 | 4.01 | 11.14 | 4.86 |
| | 60 CM | 8.31 | 4.37 | 9.41 | 4.85 | 9.68 | 6.01 |
| UREA+INH | 30 CM | 8.49 | 4.63 | 8.97 | 4.14 | 9.97 | 4.44 |
| | 60 CM | 8.76 | 4.86 | 9.26 | 4.39 | 9.71 | 6.13 |

| SOLID N | 0 | 100 | 200 | 300 | 400 | 500 | MEAN |
|---|---|---|---|---|---|---|---|
| YEARS | | | | | | | |
| 75+6+8+9 | | 6.72 | 7.91 | 8.90 | 9.88 | 10.48 | 8.78 |
| 75+6+7+8 | | 3.99 | 4.21 | 4.40 | 3.47 | 4.52 | 4.12 |
| MEAN | 5.80 | 5.35 | 6.06 | 6.65 | 6.67 | 7.50 | 6.34 |

GRAND MEAN 6.83



*https://doi.org/10.23637/ERADOC-1-45* *pp 158*

79/R/CS/161

TOTAL OF 6 CUTS DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOLID N | LIQUID N | SPACING | N RATE |
|---|---|---|---|---|
| SED | 0.417 | 0.170 | 0.170 | 0.209 |

| TABLE | YEARS | LIQUID N SPACING | LIQUID N N RATE | SPACING N RATE |
|---|---|---|---|---|
| SED | 0.147<br>0.228* | 0.241 | 0.295 | 0.295 |

| TABLE | SOLID N YEARS | LIQUID N YEARS | SPACING YEARS | N RATE YEARS |
|---|---|---|---|---|
| SED | 0.551 | 0.225 | 0.225 | 0.275 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOLID N | 0.508 | | | |
| LIQUID N | | 0.207 | | |
| SPACING | | | 0.207 | |
| N RATE | | | | 0.254 |

| TABLE | LIQUID N SPACING N RATE | LIQUID N SPACING YEARS | LIQUID N N RATE YEARS | SPACING N RATE YEARS |
|---|---|---|---|---|
| SED | 0.417 | 0.318 | 0.389 | 0.389 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| LIQUID N.SPACING | | 0.293 | | |
| LIQUID N.N RATE | | | 0.359 | |
| SPACING N RATE | | | | 0.359 |

| TABLE | LIQUID N SPACING N RATE YEARS |
|---|---|
| SED | 0.551 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| LIQUID N.SPACING.N RATE | 0.508 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 17 | 0.417 | 6.1 |
| BLOCK.WP.SP | 19 | 0.508 | 7.4 |

TOTAL OF 6 CUTS MEAN DM% 23.8

SUBPLOT AREA HARVESTED 0.00141



*https://doi.org/10.23637/ERADOC-1-45* *pp 159*

79/R/CS/165

## SCLEROTINIA CONTROL

Object: To study the effects of two fungicides and paraquat on the incidence of Sclerotinia and on yield of red and white clover - Little Knott I.

Sponsor: J.F. Jenkyn.

The second year of treatments, red and white clover.

For previous year see 78/R/CS/165.

Design: 2 randomised blocks of 30 plots.

Whole plot dimensions: 2.13 x 3.05.

Treatments: All combinations of:-

1. VARIETY — Varieties and their resistance to Sclerotinia trifoliorum:

| | |
|---|---|
| BLANC WR | Blanca, white clover, resistant |
| SABED WS | Sabeda, white clover, susceptible |
| HUNGA RR | Hungaropoly, red clover, resistant |
| SABTO RS | Sabtoron, red clover, susceptible |

2. TREATMNT — Chemical sprays and timing (cumulative to 1978 treatments):

| | |
|---|---|
| NONE | None |
| IPROD E | Iprodione early period, 6 Oct, 1978 and 30 Oct |
| IPROD M | Iprodione mid period, 30 Oct and 29 Nov |
| IPROD L | Iprodione late period, 29 Nov and 8 Jan, 1979 |
| IPROD A | Iprodione all periods, 6 Oct, 30 Oct, 29 Nov, 8 Jan, 5 Feb |
| BENOMY A | Benomyl all periods, 6 Oct, 30 Oct, 29 Nov, 1978, 8 Jan, 1979 5 Feb |
| PARAQ W | Paraquat in winter, 29 Nov, 1978 |

plus two extra treatments (cumulative to 1978 treatments):

EXTRA

| | |
|---|---|
| SABED PS | Sabeda, sprayed paraquat in spring, 10 Apr, 1979 |
| SABTO PS | Sabtoron, sprayed paraquat in spring, 10 Apr |

NOTE: Chemical treatments applied as follows:- Iprodione at 0.50 kg in 340 l. Benomyl at 0.50 kg in 340 l (both applied with 'Spreadite', a wetting agent, at 0.25 kg). Paraquat at 0.56 kg ion in 340 l on the first occasion and at 0.28 kg ion in 340 l on the second.

Basal applications: Manures: (0:14:28) at 540 kg.

Cultivations, etc.:- PK applied: 5 Mar, 1979. Cut three times: 13 June, 2 Aug, 18 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 160*

79/R/CS/165

1ST CUT (13/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY<br>TREATMNT | BLANC WR | SABED WS | HUNGA RR | SABTO RS | MEAN |
|---|---|---|---|---|---|
| NONE | 3.84 | 3.20 | 6.02 | 5.73 | 4.70 |
| IPROD E | 3.41 | 3.10 | 6.48 | 5.08 | 4.52 |
| IPROD M | 4.30 | 3.35 | 6.78 | 5.33 | 4.94 |
| IPROD L | 3.44 | 3.02 | 6.59 | 5.63 | 4.67 |
| IPROD A | 3.46 | 3.70 | 6.31 | 5.63 | 4.78 |
| BENOMY A | 4.64 | 4.77 | 6.69 | 6.29 | 5.60 |
| PARAQ W | 3.54 | 3.30 | 6.11 | 3.39 | 4.09 |
| MEAN | 3.81 | 3.49 | 6.43 | 5.30 | 4.75 |

| EXTRA | SABED PS | SABTO PS | MEAN |
|---|---|---|---|
| | 2.51 | 4.28 | 3.40 |

GRAND MEAN 4.66

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | TREATMNT | VARIETY | TREATMNT VARIETY & EXTRA |
|---|---|---|---|---|
| SED | 0.537 | 0.268 | 0.203 | 0.537 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.537 | 11.5 |

1ST CUT MEAN DM% 12.1



*https://doi.org/10.23637/ERADOC-1-45* *pp 161*

79/R/CS/165

2ND CUT (2/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY<br>TREATMNT | BLANC WR | SABED WS | HUNGA RR | SABTO RS | MEAN |
|---|---|---|---|---|---|
| NONE | 2.20 | 2.07 | 4.28 | 3.29 | 2.96 |
| IPROD E | 2.13 | 1.97 | 4.94 | 3.27 | 3.07 |
| IPROD M | 2.43 | 2.11 | 4.97 | 3.91 | 3.36 |
| IPROD L | 2.21 | 2.00 | 4.51 | 3.32 | 3.01 |
| IPROD A | 2.57 | 2.64 | 4.69 | 3.45 | 3.34 |
| BENOMY A | 2.52 | 2.09 | 4.12 | 4.40 | 3.28 |
| PARAQ W | 1.79 | 2.34 | 4.32 | 3.03 | 2.87 |
| MEAN | 2.26 | 2.17 | 4.55 | 3.52 | 3.13 |

| EXTRA | SABED PS | SABTO PS | MEAN |
|---|---|---|---|
| | 2.10 | 3.51 | 2.81 |

GRAND MEAN 3.11

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | TREATMNT | VARIETY | TREATMNT VARIETY & EXTRA |
|---|---|---|---|---|
| SED | 0.330 | 0.165 | 0.125 | 0.330 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.330 | 10.6 |

2ND CUT MEAN DM% 24.3



*https://doi.org/10.23637/ERADOC-1-45* *pp 162*

79/R/CS/165

3RD CUT (18/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY<br>TREATMNT | BLANC WR | SABED WS | HUNGA RR | SABTO RS | MEAN |
|---|---|---|---|---|---|
| NONE | 1.74 | 1.49 | 1.72 | 0.89 | 1.46 |
| IPROD E | 0.95 | 1.28 | 1.64 | 0.87 | 1.18 |
| IPROD M | 1.91 | 1.29 | 1.74 | 1.07 | 1.50 |
| IPROD L | 1.04 | 0.90 | 1.76 | 1.00 | 1.18 |
| IPROD A | 1.28 | 1.51 | 1.80 | 0.85 | 1.36 |
| BENOMY A | 1.00 | 1.23 | 1.76 | 1.72 | 1.43 |
| PARAQ W | 1.01 | 1.20 | 1.72 | 0.85 | 1.19 |
| MEAN | 1.27 | 1.27 | 1.74 | 1.04 | 1.33 |

| EXTRA | SABED PS | SABTO PS | MEAN |
|---|---|---|---|
| | 1.47 | 0.80 | 1.13 |

GRAND MEAN 1.32

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | TREATMNT | VARIETY | TREATMNT VARIETY & EXTRA |
|---|---|---|---|---|
| SED | 0.242 | 0.121 | 0.091 | 0.242 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.242 | 18.4 |

3RD CUT MEAN DM% 23.1



*https://doi.org/10.23637/ERADOC-1-45* *pp 163*

79/R/CS/165

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY / TREATMNT | BLANC WR | SABED WS | HUNGA RR | SABTO RS | MEAN |
|---|---|---|---|---|---|
| NONE | 7.78 | 6.76 | 12.01 | 9.91 | 9.12 |
| IPROD E | 6.48 | 6.34 | 13.06 | 9.23 | 8.78 |
| IPROD M | 8.64 | 6.74 | 13.50 | 10.31 | 9.80 |
| IPROD L | 6.68 | 5.93 | 12.87 | 9.95 | 8.86 |
| IPROD A | 7.32 | 7.85 | 12.80 | 9.93 | 9.47 |
| BENOMY A | 8.16 | 8.09 | 12.57 | 12.41 | 10.31 |
| PARAQ W | 6.33 | 6.83 | 12.15 | 7.27 | 8.15 |
| MEAN | 7.34 | 6.93 | 12.71 | 9.86 | 9.21 |

| EXTRA | SABED PS | SABTO PS | MEAN |
|---|---|---|---|
| | 6.08 | 8.59 | 7.33 |

GRAND MEAN 9.09

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | TREATMNT | VARIETY | TREATMNT VARIETY & EXTRA |
|---|---|---|---|---|
| SED | 0.694 | 0.347 | 0.262 | 0.694 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 0.694 | 7.6 |

TOTAL OF 3 CUTS MEAN DM% 19.8

PLOT AREA HARVESTED 0.00028



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/174

SOWING DATES AND CCN

Object: To study the residual effects of sowing date, a nematicide, a soil sterilant and previous cropping on the incidence of cereal cyst-nematode (Heterodera avenae) (CCN) and on the yield of oats in a soil known to contain a fungal parasite of the nematode - Woburn, Butt Close.

Sponsor: B.R. Kerry.

The fifth year, oats.

For previous years see 75/W/M/1 and 76-78/W/CS/174.

Design: Single replicate of 36 plots split into 2.

Whole plot dimensions: 2.13 x 6.70.

Treatments: All combinations of:-

Whole plots

1. CROP(76) Crop (cumulative 1975-76):

   WHEAT
   BARLEY
   OATS

2. SOW DATE(76) Sowing date (cumulative 1975-76):

   AUTUMN
   SPRING

3. NEMACIDE(78) Nematicide (cumulative 1975-78):

   NONE None
   OXAMYL Oxamyl at 8.8 kg

4. CROP(78) Crop in 1977 & 1978 (all spring sown):

   WHEAT
   BARLEY
   OATS

Sub plots

5. STERILNT Sterilant:

   NONE None
   FORMALIN Formalin at 3000 l in 109000 l. To SOW DATE SPRING in 1976 & 1978 only. To SOW DATE AUTUMN in 1977 only.



*https://doi.org/10.23637/ERADOC-1-45* *pp 165*

79/W/CS/174

Basal applications: Manures: Magnesian limestone at 7.5 t. (20:14:14) at 400 kg combine drilled. Weedkillers: Diquat at 0.78 kg ion in 280 l. Mecoprop, bromoxynil and ioxynil ('Brittox' at 3.5 kg in 340 l). Irrigation (mm water):

| | |
|---|---|
| 13 June | 25 |
| 22 June | 7 |
| 28 June | 6 |
| 5-6 July | 25 |
| 13 July | 25 |
| 18 July | 25 |
| 26 July | 25 |
| Total | 138 |

Seed: Manod, sown at 200 kg.

Cultivations, etc.:- Diquat applied: 8 Sept, 1978. Subsoiled, tines 55 cm deep, 140 cm apart: 20 Oct. Magnesian limestone applied: 19 Dec. Ploughed: 5 Mar, 1979. Spring-tine cultivated with crumbler attached: 16 Apr. Seed sown: 23 Apr. 'Brittox' applied: 1 June. Combine harvested: 1 Sept.

NOTES: (1) Soil samples were taken in April for pre-sowing estimates of Heterodera avenae cysts and eggs, in July for estimates of unhatched cysts and in September for post-harvest estimates of cysts and eggs.

(2) Plant samples were taken at weekly intervals from 27 June to 31 August for estimates of numbers of H. avenae females infected by parasitic fungi.



*https://doi.org/10.23637/ERADOC-1-45* *pp 166*

79/W/CS/174

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SOW DATE(76) | AUTUMN | SPRING | MEAN |
|---|---|---|---|
| CROP(76) | | | |
| WHEAT | 3.01 | 3.11 | 3.06 |
| BARLEY | 2.71 | 2.99 | 2.85 |
| OATS | 2.52 | 2.97 | 2.75 |
| MEAN | 2.75 | 3.02 | 2.89 |

| NEMACIDE(78) | NONE | OXAMYL | MEAN |
|---|---|---|---|
| CROP(76) | | | |
| WHEAT | 2.25 | 3.87 | 3.06 |
| BARLEY | 1.97 | 3.72 | 2.85 |
| OATS | 2.07 | 3.43 | 2.75 |
| MEAN | 2.10 | 3.67 | 2.89 |

| NEMACIDE(78) | NONE | OXAMYL | MEAN |
|---|---|---|---|
| SOW DATE(76) | | | |
| AUTUMN | 2.05 | 3.45 | 2.75 |
| SPRING | 2.15 | 3.90 | 3.02 |
| MEAN | 2.10 | 3.67 | 2.89 |

| CROP(78) | WHEAT | BARLEY | OATS | MEAN |
|---|---|---|---|---|
| CROP(76) | | | | |
| WHEAT | 3.04 | 3.34 | 2.81 | 3.06 |
| BARLEY | 2.90 | 2.66 | 2.97 | 2.85 |
| OATS | 2.76 | 2.88 | 2.60 | 2.75 |
| MEAN | 2.90 | 2.96 | 2.80 | 2.89 |

| CROP(78) | WHEAT | BARLEY | OATS | MEAN |
|---|---|---|---|---|
| SOW DATE(76) | | | | |
| AUTUMN | 2.80 | 2.85 | 2.60 | 2.75 |
| SPRING | 3.00 | 3.07 | 2.99 | 3.02 |
| MEAN | 2.90 | 2.96 | 2.80 | 2.89 |

| CROP(78) | WHEAT | BARLEY | OATS | MEAN |
|---|---|---|---|---|
| NEMACIDE(78) | | | | |
| NONE | 1.91 | 2.18 | 2.20 | 2.10 |
| OXAMYL | 3.89 | 3.74 | 3.39 | 3.67 |
| MEAN | 2.90 | 2.96 | 2.80 | 2.89 |

| STERILNT | NONE | FORMALIN | MEAN |
|---|---|---|---|
| CROP(76) | | | |
| WHEAT | 3.18 | 2.94 | 3.06 |
| BARLEY | 2.88 | 2.81 | 2.85 |
| OATS | 2.93 | 2.57 | 2.75 |
| MEAN | 3.00 | 2.77 | 2.89 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 167*

79/W/CS/174

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| STERILNT<br>SOW DATE(76) | NONE | FORMALIN | MEAN |
|---|---|---|---|
| AUTUMN | 2.93 | 2.57 | 2.75 |
| SPRING | 3.06 | 2.98 | 3.02 |
| MEAN | 3.00 | 2.77 | 2.89 |

| STERILNT<br>NEMACIDE(78) | NONE | FORMALIN | MEAN |
|---|---|---|---|
| NONE | 2.32 | 1.88 | 2.10 |
| OXAMYL | 3.68 | 3.67 | 3.67 |
| MEAN | 3.00 | 2.77 | 2.89 |

| STERILNT<br>CROP(78) | NONE | FORMALIN | MEAN |
|---|---|---|---|
| WHEAT | 3.00 | 2.80 | 2.90 |
| BARLEY | 3.02 | 2.90 | 2.96 |
| OATS | 2.97 | 2.62 | 2.80 |
| MEAN | 3.00 | 2.77 | 2.89 |

| SOW DATE(76) | AUTUMN | | SPRING | |
|---|---|---|---|---|
| NEMACIDE(78) | NONE | OXAMYL | NONE | OXAMYL |
| CROP(76) | | | | |
| WHEAT | 2.16 | 3.87 | 2.34 | 3.88 |
| BARLEY | 1.82 | 3.59 | 2.12 | 3.85 |
| OATS | 2.16 | 2.88 | 1.98 | 3.97 |

| SOW DATE(76) | AUTUMN | | | SPRING | | |
|---|---|---|---|---|---|---|
| CROP(78) | WHEAT | BARLEY | OATS | WHEAT | BARLEY | OATS |
| CROP(76) | | | | | | |
| WHEAT | 3.22 | 3.42 | 2.40 | 2.86 | 3.26 | 3.21 |
| BARLEY | 2.66 | 2.49 | 2.97 | 3.14 | 2.84 | 2.98 |
| OATS | 2.51 | 2.64 | 2.42 | 3.00 | 3.13 | 2.79 |

| NEMACIDE(78) | NONE | | | OXAMYL | | |
|---|---|---|---|---|---|---|
| CROP(78) | WHEAT | BARLEY | OATS | WHEAT | BARLEY | OATS |
| CROP(76) | | | | | | |
| WHEAT | 2.05 | 2.48 | 2.22 | 4.03 | 4.19 | 3.40 |
| BARLEY | 1.99 | 1.66 | 2.26 | 3.81 | 3.67 | 3.69 |
| OATS | 1.68 | 2.42 | 2.11 | 3.84 | 3.35 | 3.09 |

| NEMACIDE(78) | NONE | | | OXAMYL | | |
|---|---|---|---|---|---|---|
| CROP(78) | WHEAT | BARLEY | OATS | WHEAT | BARLEY | OATS |
| SOW DATE(76) | | | | | | |
| AUTUMN | 1.92 | 2.06 | 2.16 | 3.67 | 3.64 | 3.04 |
| SPRING | 1.89 | 2.31 | 2.24 | 4.11 | 3.83 | 3.75 |

| SOW DATE(76) | AUTUMN | | SPRING | |
|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN |
| CROP(76) | | | | |
| WHEAT | 3.09 | 2.94 | 3.28 | 2.94 |
| BARLEY | 2.87 | 2.54 | 2.89 | 3.09 |
| OATS | 2.83 | 2.22 | 3.03 | 2.92 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 168*

79/W/CS/174

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| NEMACIDE(78) | NONE | | OXAMYL | |
|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN |
| CROP(76) | | | | |
| WHEAT | 2.58 | 1.92 | 3.79 | 3.96 |
| BARLEY | 2.10 | 1.85 | 3.66 | 3.78 |
| OATS | 2.27 | 1.87 | 3.58 | 3.27 |

| NEMACIDE(78) | NONE | | OXAMYL | |
|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN |
| SOW DATE(76) | | | | |
| AUTUMN | 2.39 | 1.70 | 3.46 | 3.43 |
| SPRING | 2.24 | 2.06 | 3.89 | 3.90 |

| CROP(78) | WHEAT | | BARLEY | | OATS | |
|---|---|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN | NONE | FORMALIN |
| CROP(76) | | | | | | |
| WHEAT | 3.08 | 2.99 | 3.37 | 3.30 | 3.10 | 2.52 |
| BARLEY | 3.19 | 2.62 | 2.47 | 2.86 | 2.98 | 2.97 |
| OATS | 2.74 | 2.78 | 3.22 | 2.54 | 2.82 | 2.38 |

| CROP(78) | WHEAT | | BARLEY | | OATS | |
|---|---|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN | NONE | FORMALIN |
| SOW DATE(76) | | | | | | |
| AUTUMN | 2.93 | 2.66 | 3.01 | 2.68 | 2.84 | 2.35 |
| SPRING | 3.07 | 2.93 | 3.03 | 3.12 | 3.09 | 2.89 |

| CROP(78) | WHEAT | | BARLEY | | OATS | |
|---|---|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN | NONE | FORMALIN |
| NEMACIDE(78) | | | | | | |
| NONE | 2.13 | 1.69 | 2.37 | 2.00 | 2.45 | 1.95 |
| OXAMYL | 3.88 | 3.91 | 3.67 | 3.80 | 3.48 | 3.30 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CROP(76) | SOW DATE(76) | NEMACIDE(78) | CROP(78) |
|---|---|---|---|---|
| SED | 0.243 | 0.198 | 0.198 | 0.243 |

| TABLE | STERILNT | CROP(76) SOW DATE(76) | CROP(76) NEMACIDE(78) | SOW DATE(76) NEMACIDE(78) |
|---|---|---|---|---|
| SED | 0.076 | 0.343 | 0.343 | 0.280 |

| TABLE | CROP(76) CROP(78) | SOW DATE(76) CROP(78) | NEMACIDE(78) CROP(78) | CROP(76) STERILNT |
|---|---|---|---|---|
| SED | 0.420 | 0.343 | 0.343 | 0.260 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| CROP(76) | | | | 0.131 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 169*

79/W/CS/174

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOW DATE(76) STERILNT | NEMACIDE(78) STERILNT | CROP(78) STERILNT | CROP(76) SOW DATE(76) NEMACIDE(78) |
|---|---|---|---|---|
| SED | 0.212 | 0.212 | 0.260 | 0.485 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOW DATE(76) | 0.107 | | | |
| NEMACIDE(78) | | 0.107 | | |
| CROP(78) | | | 0.131 | |

| TABLE | CROP(76) SOW DATE(76) CROP(78) | CROP(76) NEMACIDE(78) CROP(78) | SOW DATE(76) NEMACIDE(78) CROP(78) | CROP(76) SOW DATE(76) STERILNT |
|---|---|---|---|---|
| SED | 0.595 | 0.595 | 0.485 | 0.368 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| CROP(76).SOW DATE(76) | | | | 0.186 |

| TABLE | CROP(76) NEMACIDE(78) STERILNT | SOW DATE(76) NEMACIDE(78) STERILNT | CROP(76) CROP(78) STERILNT | SOW DATE(76) CROP(78) STERILNT |
|---|---|---|---|---|
| SED | 0.368 | 0.300 | 0.450 | 0.368 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| CROP(76).NEMACIDE(78) | 0.186 | | | |
| SOW DATE(76).NEMACIDE(78) | | 0.152 | | |
| CROP(76).CROP(78) | | | 0.228 | |
| SOW DATE(76).CROP(78) | | | | 0.186 |

| TABLE | NEMACIDE(78) CROP(78) STERILNT |
|---|---|
| SED | 0.368 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | |
| NEMACIDE(78).CROP(78) | 0.186 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 4 | 0.595 | 20.6 |
| WP.SP | 16 | 0.322 | 11.2 |

GRAIN MEAN DM% 79.9



*https://doi.org/10.23637/ERADOC-1-45* *pp 170*

79/W/CS/174

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| SOW DATE(76) | AUTUMN | SPRING | MEAN |
|---|---|---|---|
| CROP(76) | | | |
| WHEAT | 3.20 | 3.09 | 3.14 |
| BARLEY | 2.89 | 3.13 | 3.01 |
| OATS | 2.66 | 3.20 | 2.93 |
| MEAN | 2.92 | 3.14 | 3.03 |

| NEMACIDE(78) | NONE | OXAMYL | MEAN |
|---|---|---|---|
| CROP(76) | | | |
| WHEAT | 2.54 | 3.75 | 3.14 |
| BARLEY | 2.25 | 3.77 | 3.01 |
| OATS | 2.37 | 3.49 | 2.93 |
| MEAN | 2.39 | 3.67 | 3.03 |

| NEMACIDE(78) | NONE | OXAMYL | MEAN |
|---|---|---|---|
| SOW DATE(76) | | | |
| AUTUMN | 2.20 | 3.64 | 2.92 |
| SPRING | 2.57 | 3.70 | 3.14 |
| MEAN | 2.39 | 3.67 | 3.03 |

| CROP(78) | WHEAT | BARLEY | OATS | MEAN |
|---|---|---|---|---|
| CROP(76) | | | | |
| WHEAT | 2.98 | 3.49 | 2.97 | 3.14 |
| BARLEY | 3.23 | 2.66 | 3.14 | 3.01 |
| OATS | 2.71 | 3.25 | 2.82 | 2.93 |
| MEAN | 2.97 | 3.13 | 2.98 | 3.03 |

| CROP(78) | WHEAT | BARLEY | OATS | MEAN |
|---|---|---|---|---|
| SOW DATE(76) | | | | |
| AUTUMN | 2.88 | 3.03 | 2.84 | 2.92 |
| SPRING | 3.07 | 3.23 | 3.11 | 3.14 |
| MEAN | 2.97 | 3.13 | 2.98 | 3.03 |

| CROP(78) | WHEAT | BARLEY | OATS | MEAN |
|---|---|---|---|---|
| NEMACIDE(78) | | | | |
| NONE | 2.25 | 2.40 | 2.52 | 2.39 |
| OXAMYL | 3.70 | 3.87 | 3.43 | 3.67 |
| MEAN | 2.97 | 3.13 | 2.98 | 3.03 |

| STERILNT | NONE | FORMALIN | MEAN |
|---|---|---|---|
| CROP(76) | | | |
| WHEAT | 3.11 | 3.18 | 3.14 |
| BARLEY | 3.05 | 2.97 | 3.01 |
| OATS | 2.88 | 2.98 | 2.93 |
| MEAN | 3.01 | 3.05 | 3.03 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/174

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| STERILNT | NONE | FORMALIN | MEAN |
|---|---|---|---|
| SOW DATE(76) | | | |
| AUTUMN | 3.01 | 2.83 | 2.92 |
| SPRING | 3.01 | 3.26 | 3.14 |
| MEAN | 3.01 | 3.05 | 3.03 |

| STERILNT | NONE | FORMALIN | MEAN |
|---|---|---|---|
| NEMACIDE(78) | | | |
| NONE | 2.42 | 2.35 | 2.39 |
| OXAMYL | 3.60 | 3.74 | 3.67 |
| MEAN | 3.01 | 3.05 | 3.03 |

| STERILNT | NONE | FORMALIN | MEAN |
|---|---|---|---|
| CROP(78) | | | |
| WHEAT | 2.95 | 3.00 | 2.97 |
| BARLEY | 3.14 | 3.13 | 3.13 |
| OATS | 2.94 | 3.01 | 2.98 |
| MEAN | 3.01 | 3.05 | 3.03 |

| SOW DATE(76) | AUTUMN | | SPRING | |
|---|---|---|---|---|
| NEMACIDE(78) | NONE | OXAMYL | NONE | OXAMYL |
| CROP(76) | | | | |
| WHEAT | 2.52 | 3.87 | 2.55 | 3.62 |
| BARLEY | 1.90 | 3.89 | 2.61 | 3.64 |
| OATS | 2.18 | 3.15 | 2.56 | 3.83 |

| SOW DATE(76) | AUTUMN | | | SPRING | | |
|---|---|---|---|---|---|---|
| CROP(78) | WHEAT | BARLEY | OATS | WHEAT | BARLEY | OATS |
| CROP(76) | | | | | | |
| WHEAT | 3.17 | 3.63 | 2.80 | 2.79 | 3.35 | 3.13 |
| BARLEY | 3.00 | 2.52 | 3.16 | 3.47 | 2.80 | 3.11 |
| OATS | 2.48 | 2.95 | 2.56 | 2.95 | 3.55 | 3.09 |

| NEMACIDE(78) | NONE | | | OXAMYL | | |
|---|---|---|---|---|---|---|
| CROP(78) | WHEAT | BARLEY | OATS | WHEAT | BARLEY | OATS |
| CROP(76) | | | | | | |
| WHEAT | 2.32 | 2.80 | 2.51 | 3.64 | 4.18 | 3.43 |
| BARLEY | 2.52 | 1.81 | 2.43 | 3.94 | 3.51 | 3.85 |
| OATS | 1.90 | 2.58 | 2.63 | 3.52 | 3.92 | 3.02 |

| NEMACIDE(78) | NONE | | | OXAMYL | | |
|---|---|---|---|---|---|---|
| CROP(78) | WHEAT | BARLEY | OATS | WHEAT | BARLEY | OATS |
| SOW DATE(76) | | | | | | |
| AUTUMN | 2.04 | 2.13 | 2.44 | 3.72 | 3.94 | 3.25 |
| SPRING | 2.46 | 2.67 | 2.60 | 3.68 | 3.80 | 3.61 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/174

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| SOW DATE(76) | AUTUMN | | SPRING | |
|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN |
| CROP(76) | | | | |
| WHEAT | 3.14 | 3.26 | 3.08 | 3.10 |
| BARLEY | 3.01 | 2.78 | 3.09 | 3.17 |
| OATS | 2.89 | 2.44 | 2.87 | 3.52 |

| NEMACIDE(78) | NONE | | OXAMYL | |
|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN |
| CROP(76) | | | | |
| WHEAT | 2.65 | 2.43 | 3.56 | 3.94 |
| BARLEY | 2.29 | 2.22 | 3.80 | 3.73 |
| OATS | 2.32 | 2.42 | 3.44 | 3.54 |

| NEMACIDE(78) | NONE | | OXAMYL | |
|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN |
| SOW DATE(76) | | | | |
| AUTUMN | 2.43 | 1.98 | 3.59 | 3.68 |
| SPRING | 2.42 | 2.73 | 3.60 | 3.80 |

| CROP(78) | WHEAT | | BARLEY | | OATS | |
|---|---|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN | NONE | FORMALIN |
| CROP(76) | | | | | | |
| WHEAT | 2.79 | 3.17 | 3.46 | 3.52 | 3.07 | 2.86 |
| BARLEY | 3.42 | 3.04 | 2.65 | 2.68 | 3.07 | 3.20 |
| OATS | 2.64 | 2.78 | 3.31 | 3.19 | 2.68 | 2.97 |

| CROP(78) | WHEAT | | BARLEY | | OATS | |
|---|---|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN | NONE | FORMALIN |
| SOW DATE(76) | | | | | | |
| AUTUMN | 2.84 | 2.92 | 3.15 | 2.92 | 3.04 | 2.64 |
| SPRING | 3.06 | 3.08 | 3.13 | 3.34 | 2.84 | 3.38 |

| CROP(78) | WHEAT | | BARLEY | | OATS | |
|---|---|---|---|---|---|---|
| STERILNT | NONE | FORMALIN | NONE | FORMALIN | NONE | FORMALIN |
| NEMACIDE(78) | | | | | | |
| NONE | 2.49 | 2.00 | 2.37 | 2.43 | 2.40 | 2.64 |
| OXAMYL | 3.41 | 4.00 | 3.91 | 3.83 | 3.48 | 3.39 |

STRAW MEAN DM% 74.4

SUB PLOT AREA HARVESTED 0.00041



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/181

# GREEN MANURE

Object: To study the effects of a green manure sown at different dates and interactions with fertiliser nitrogen on the following crop - Woburn Great Hill III, Lansome III.

Sponsors: G.V. Dyke, G.E.G. Mattingly.

The fourth year, barley and potatoes.

For previous years see 76-78/W/CS/181.

Design: 3 series, each a single replicate of 24 plots.

Whole plot dimensions: 4.26 x 6.10.

Treatments:

Series I (barley 1979 after barley 1977 & 1978), Series II (potatoes 1979 after potatoes 1977, barley 1978): All combinations of:-

1. TREFOIL(768) Trefoil to barley in 1976 and 1978:

| | |
|---|---|
| NONE | None |
| US | Undersown in spring |
| US+SS | Undersown in spring, sown into stubble after harvest |
| OS/SS | Oversown in July before harvest and/or sown into stubble after harvest |

2. N Amounts of nitrogen fertiliser (kg N) cumulative in 1977 and 1979 (given basal N at 63 kg in 1978):

| Series I to Barley | Series II to Potatoes | Series I to Barley | Series II Potatoes |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 50 | 100 | 50 to seedbed | 100 to seedbed |
| 100 | 200 | 100 to seedbed | 200 to seedbed |
| 150 | 300 | 150 to seedbed | 300 to seedbed |
| 50+50 | 100+100 | 50 to seedbed + 50 in May | 100 to seedbed + 100 in June |
| 100+50 | 200+100 | 100 to seedbed + 50 in May | 200 to seedbed + 100 in June |

Series IV (barley): All combinations of:-

1. TREFOIL(768) Trefoil to barley in 1976, 1977, 1978 and 1979 (only US in 1979):

| | |
|---|---|
| NONE | None |
| US | Undersown in spring |
| US+SS | Undersown in spring and sown into stubble after harvest |
| OS/SS | Oversown in July and/or sown into stubble after harvest |



*https://doi.org/10.23637/ERADOC-1-45* *pp 174*

2. N — Amounts of nitrogen fertiliser (kg N):

| | 1977, 1978 & 1979 | 1976 |
|---|---|---|
| 0 | 0 | (0) |
| 50 | 50 to seedbed | (30) |
| 100 | 100 to seedbed | (60) |
| 150 | 150 to seedbed | (90) |
| 50+50 | 50 to seedbed + 50 in May | (120) |
| 100+50 | 100 to seedbed + 50 in May | (150) |

NOTES: (1) N to Series IV in 1976 was all applied to the seedbed.
(2) Series III has been abandoned.
(3) English common trefoil, inoculated with Rhizobium, at 26 kg, undersown in spring: 5 June, 1979.

Standard applications:
Barley, Great Hill III, Series I & Lansome III, Series IV: Manures: (0:20:20) at 300 kg, combine drilled. Weedkillers: Bromoxynil with ioxynil ('Oxytril CM' at 2.1 kg in 250 l).
Potatoes, Great Hill III, Series IV: Manures: (0:14:28) at 1280 kg. Weedkillers: Linuron at 1.0 kg plus paraquat at 0.28 kg ion in 250 l. Fungicide: Mancozeb at 1.3 kg in 250 l on six occasions with insecticide on the first two. Insecticide: Pirimicarb at 0.14 kg on two occasions with fungicide. Haulm desiccant: Undiluted BOV at 170 l.

Seed: Barley: Porthos, dressed with ethirimol, sown at 160 kg.
Potatoes: Pentland Crown.

Cultivations, etc.:-
Barley, Great Hill III, Series I: Ploughed: 3 Apr, 1979. Spring-tine cultivated with crumbler attached: 19 Apr. Seed sown: 30 Apr. Seedbed N applied: 2 May. Weedkiller applied: 4 June. Late N applied: 25 June. Combine harvested: 28 Aug.
Barley, Lansome III, Series IV: Ploughed: 6 Mar, 1979. Spring-tine cultivated with crumbler attached: 21 Apr. Seedbed N applied: 27 Apr. Seed sown: 30 Apr. Weedkiller applied: 4 June. Late N applied: 25 June. Combine harvested: 28 Aug.
Potatoes, Great Hill III, Series II: Ploughed: 3 Apr, 1979. Spring-tine cultivated with crumbler attached: 19 Apr. PK applied: 7 May. Seedbed N applied, rotary cultivated, potatoes planted: 9 May. Weedkillers applied: 25 May. Rotary ridged: 19 June. Late N applied: 25 June. Fungicide applied: 26 June, 10 July, 23 July, 8 Aug, 25 Aug, 6 Sept. Insecticide applied: 26 June, 10 July. Haulm mechanically destroyed, haulm desiccant applied: 24 Sept. Lifted: 19 Oct.

NOTE: Samples of trefoil and weeds were dug in March, before ploughing, on Series I & IV for the determination of dry matter and N.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/181 BARLEY SERIES I

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N<br>TREFOIL(768) | 0 | 50 | 100 | 150 | 50+50 | 100+50 | MEAN |
|---|---|---|---|---|---|---|---|
| NONE | 1.02 | 3.07 | 3.39 | 3.84 | 3.20 | 5.22 | 3.29 |
| US | 0.91 | 2.68 | 3.78 | 3.39 | 3.29 | 3.49 | 2.92 |
| US+SS | 1.36 | 2.56 | 5.04 | 4.05 | 4.04 | 3.67 | 3.45 |
| OS/SS | 1.41 | 2.73 | 3.67 | 3.27 | 3.47 | 3.55 | 3.02 |
| MEAN | 1.18 | 2.76 | 3.97 | 3.63 | 3.50 | 3.98 | 3.17 |

GRAIN MEAN DM% 84.1

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| N<br>TREFOIL(768) | 0 | 50 | 100 | 150 | 50+50 | 100+50 | MEAN |
|---|---|---|---|---|---|---|---|
| NONE | 0.53 | 1.56 | 2.20 | 2.56 | 1.48 | 3.46 | 1.96 |
| US | 0.48 | 1.32 | 2.68 | 1.69 | 1.73 | 2.39 | 1.71 |
| US+SS | 0.53 | 1.25 | 3.27 | 3.17 | 2.19 | 2.49 | 2.15 |
| OS/SS | 0.58 | 1.61 | 2.55 | 1.95 | 1.87 | 2.22 | 1.80 |
| MEAN | 0.53 | 1.43 | 2.68 | 2.34 | 1.82 | 2.64 | 1.91 |

STRAW MEAN DM% 87.8 PLOT AREA HARVESTED 0.00173

79/W/CS/181 BARLEY SERIES IV

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N<br>TREFOIL(768) | 0 | 50 | 100 | 150 | 50+50 | 100+50 | MEAN |
|---|---|---|---|---|---|---|---|
| NONE | 0.11 | 2.10 | 2.22 | 2.45 | 1.67 | 3.19 | 1.96 |
| US | 0.17 | 1.50 | 2.28 | 2.90 | 1.66 | 2.71 | 1.87 |
| US+SS | 0.28 | 1.45 | 2.89 | 3.06 | 2.33 | 1.90 | 1.98 |
| OS/SS | 0.17 | 1.55 | 2.28 | 2.46 | 1.28 | 2.34 | 1.68 |
| MEAN | 0.18 | 1.65 | 2.42 | 2.72 | 1.74 | 2.53 | 1.87 |

GRAIN MEAN DM% 82.0

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

| N<br>TREFOIL(768) | 0 | 50 | 100 | 150 | 50+50 | 100+50 | MEAN |
|---|---|---|---|---|---|---|---|
| NONE | 0.10 | 1.05 | 1.47 | 1.72 | 1.11 | 1.93 | 1.23 |
| US | 0.05 | 0.96 | 1.43 | 1.97 | 1.05 | 1.64 | 1.18 |
| US+SS | 0.15 | 0.94 | 1.78 | 1.63 | 1.34 | 1.86 | 1.28 |
| OS/SS | 0.16 | 0.94 | 1.55 | 1.69 | 0.98 | 1.64 | 1.16 |
| MEAN | 0.12 | 0.97 | 1.56 | 1.75 | 1.12 | 1.76 | 1.21 |

STRAW MEAN DM% 86.0 PLOT AREA HARVESTED 0.00173



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/181

POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| N | 0 | 100 | 200 | 300 | 100+100 | 200+100 | MEAN |
|---|---|---|---|---|---|---|---|
| TREFOIL(768) | | | | | | | |
| NONE | 9.5 | 20.0 | 20.5 | 38.4 | 19.5 | 18.2 | 21.0 |
| US | 8.9 | 27.6 | 25.3 | 35.6 | 24.1 | 17.1 | 23.1 |
| US+SS | 4.5 | 15.6 | 20.1 | 18.0 | 23.4 | 24.1 | 17.6 |
| OS/SS | 5.7 | 19.0 | 29.1 | 25.8 | 15.5 | 29.3 | 20.7 |
| MEAN | 7.1 | 20.5 | 23.7 | 29.5 | 20.6 | 22.2 | 20.6 |

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| N | 0 | 100 | 200 | 300 | 100+100 | 200+100 | MEAN |
|---|---|---|---|---|---|---|---|
| TREFOIL(768) | | | | | | | |
| NONE | 89.0 | 94.2 | 94.9 | 97.9 | 89.9 | 96.2 | 93.7 |
| US | 80.5 | 93.7 | 94.5 | 98.1 | 90.0 | 94.6 | 91.9 |
| US+SS | 61.5 | 93.3 | 96.6 | 91.0 | 92.1 | 93.3 | 88.0 |
| OS/SS | 85.7 | 95.8 | 94.0 | 94.2 | 88.1 | 94.5 | 92.0 |
| MEAN | 79.2 | 94.3 | 95.0 | 95.3 | 90.0 | 94.6 | 91.4 |

PLOT AREA HARVESTED 0.00087



*https://doi.org/10.23637/ERADOC-1-45* *pp 177*

79/R/CS/200 and 79/W/CS/200

FACTORS AFFECTING YIELD

Object: To study some of the factors limiting yield of grass, clover and lucerne - Rothamsted (R), Pastures and Woburn (W), Butt Furlong.

Sponsors: J.M. Day, I.F. Henderson, J.F. Jenkyn, A.E. Johnston, B.J. Legg, J. McEwen, R.T. Plumb, R.J. Roughley, A. Spaull, J.F. Witty.

The third year, ryegrass, white clover, lucerne.

For previous years see 77-78/R&W/CS/200.

Design: Single replicate of 2 plots split into 50.

Whole plot dimensions: Pastures (R): 23.8 x 24.5.
Butt Furlong (W): 22.3 x 24.5.

Treatments: Combinations of:-

Whole plots

1. IRRIGATN — Irrigation:

   NONE — None
   FULL — Irrigated to reduce a soil moisture deficit of 25 mm to zero

Sub plots

2. TREATMNT — Treatments, combinations of:

Species:

- Ryegrass, S.23, (RG)
- Ryegrass, S.23 + Clover, Blanca (GB)
- Ryegrass, S.23 + Clover, S.100 (GS)
- Clover, Blanca (CL)
- Lucerne, Vertus (LU)

Cutting frequencies:

- Three times (3)
- Six times (6)

Amounts of nitrogen fertiliser (kg N total per annum, applied as (25:0:16)):

- 0, 100, 200, 300, 400, 500, 600 (N0, N1, N2, N3, N4, N5, N6)

Times of applying nitrogen fertiliser:

- Not applied (--), N0 only
- Divided equally between cuts (DE)
- In spring only (SP)
- Half in spring, half in summer (SS)

Control of pathogens:

- None (-)
- Controlled (C)



*https://doi.org/10.23637/ERADOC-1-45* *pp 178*

79/R/CS/200 and 79/W/CS/200

The following combinations are tested:

| | | |
|---|---|---|
| RG6N0--- | GB3N0--- (duplicated) | CL3N0--- (duplicated) |
| RG6N1DE- | GB3N1DE- | CL3N2DE- " |
| RG6N2DE- | GB3N2DE- | CL3N0--C " |
| RG6N3DE- | GB3N3DE- | CL3N2DEC " |
| RG6N4DE- | GB3N4DE- | |
| RG6N5DE- | | LU3N0--- " |
| RG6N6DE- | GB3N0--C | LU3N0--C " |
| | GB3N1DEC | |
| GB6N0--- | GB3N2DEC | |
| GB6N1DE- | GB3N3DEC | |
| GB6N2DE- | GB3N4DEC | |
| GB6N3DE- | | |
| GB6N4DE- | GB3N1SP- (duplicated) | |
| | GB3N1SS- " | |
| GS6N0--- | GB3N2SS " | |
| GS6N1DE- | | |
| GS6N2DE- | RG3N2DE- " | |
| GS6N3DE- | RG3N2DEC " | |
| GS6N4DE- | | |

NOTES: (1) Pathogen control consisted of:- (1) Aldicarb at 10 kg applied in the spring except to LU which received phorate at 5.0 kg, (2) benomyl foliar spray at 0.56 kg + phorate at 5.0 kg, applied as granules, after each cut, (3) two additional benomyl foliar sprays at 0.56 kg in winter.

(2) Irrigation was applied as follows (mm water):

Pastures (R)

| | |
|---|---|
| 8 June | 12.5 |
| 20 June | 25 |
| 4 July | 25 |
| 11 July | 25 |
| 3 Aug | 20 |
| 29 Aug | 12.5 |
| 19 Sept | 25 |
| Total | 145 |

Butt Furlong (W)

| | |
|---|---|
| 12 June | 12.5 |
| 22 June | 25 |
| 25 June | 25 |
| 5 July | 25 |
| 11 July | 25 |
| 18 July | 25 |
| 25 July | 25 |
| 3 Aug | 12.5 |
| 16 Aug | 12.5 |
| 6 Sept | 25 |
| 10 Sept | 12.5 |
| Total | 225 |

(3) N0 plots received 64 kg K20, as muriate of potash, after the fourth cutting occasion.



*https://doi.org/10.23637/ERADOC-1-45* *pp 179*

79/R/CS/200 and 79/W/CS/200

Standard applications:
Pastures (R) All plots: Manures: (0:14:28) at 1070 kg. Weedkillers: Propyzamide at 0.7 kg in 700 l to CL and LU plots only. Dicamba with mecoprop and MCPA ('Banlene plus' at 4.9 kg) in 220 l to RG plots only. Dicamba with mecoprop and MCPA ('Tetralex plus' at 5.6 kg) in 170 l to RG plots only.
Butt Furlong (W) All plots: Manures: Magnesian limestone at 2.5 t, (0:14:28) at 1080 kg. Weedkillers: Propyzamide at 0.7 kg in 780 l to CL and LU plots only. Dicamba with mecoprop and MCPA ('Banlene plus' at 4.9 kg) in 220 l to RG plots only. Dicamba with mecoprop and MCPA ('Tetralex plus' at 5.6 kg) in 170 l to RG plots only.

Seed: S.23 Perennial ryegrass alone sown at 20 kg.
S.23 Perennial ryegrass sown at 10 kg either with Blanca white clover sown at 4 kg or with S.100 white clover at 4 kg.
Blanca white clover alone, sown at 4 kg.
Lucerne, Vertus sown at 10 kg, inoculated with Rhizobium.

Pastures (R) sown: 20 May, 1977.
Butt Furlong (W) sown: 23 May, 1977.

Cultivations, etc.:-
Pastures (R): Benomyl and phorate applied: 4 Oct, 1978. Propyzamide applied: 10 Oct. PK applied: 7 Nov. Benomyl applied: 9 Nov, 9 Jan, 1979. Aldicarb applied to all C plots except LU and phorate to C plots of LU: 2 Mar. Benomyl and phorate applied: 10 May, 5 June, 3 July, 31 July, 28 Aug, 25 Sept. NK applied six times: 23 Mar, 10 May, 5 June, 3 July, 31 July, 28 Aug. '6-cut' plots cut: 10 May, 5 June, 3 July, 31 July. '3-cut' plots cut: 5 June, 31 July, 25 Sept.
Butt Furlong (W): Benomyl, phorate and magnesian limestone applied: 27 Sept, 1978. Propyzamide applied: 10 Oct. Benomyl applied: 9 Nov. PK applied: 24 Nov. Benomyl applied: 10 Jan, 1979. Aldicarb applied to all C plots except LU and phorate to C plots of LU: 2 Mar. Benomyl and phorate applied: 15 May, 6 June, 5 July, 2 Aug, 29 Aug, 26 Sept.
NK applied six times: 23 Mar, 15 May, 6 June, 5 July, 2 Aug, 29 Aug.
'6-cut' plots cut: 15 May, 6 June, 4 July, 2 Aug, 29 Aug, 26 Sept.
'3-cut' plots cut: 6 June, 2 Aug, 26 Sept.

NOTE: Assessments of pests and diseases were made during the season.
Nitrogen percentages of crop produce were measured.



*https://doi.org/10.23637/ERADOC-1-45* *pp 180*

79/R/CS/200 PASTURES (R)

1ST CUTTING OCCASION (10/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.00 | 0.00 | 0.00 |
| RG6N1DE- | 0.04 | 0.00 | 0.02 |
| RG6N2DE- | 0.05 | 0.07 | 0.06 |
| RG6N3DE- | 0.10 | 0.03 | 0.07 |
| RG6N4DE- | 0.18 | 0.10 | 0.14 |
| RG6N5DE- | 0.28 | 0.11 | 0.19 |
| RG6N6DE- | 0.37 | 0.21 | 0.29 |
| GB6N0--- | 0.03 | 0.00 | 0.01 |
| GB6N1DE- | 0.42 | 0.00 | 0.21 |
| GB6N2DE- | 0.22 | 0.06 | 0.14 |
| GB6N3DE- | 0.32 | 0.08 | 0.20 |
| GB6N4DE- | 0.44 | 0.00 | 0.22 |
| GS6N0--- | 0.08 | 0.01 | 0.05 |
| GS6N1DE- | 0.06 | 0.04 | 0.05 |
| GS6N2DE- | 0.23 | 0.05 | 0.14 |
| GS6N3DE- | 0.28 | 0.08 | 0.18 |
| GS6N4DE- | 0.21 | 0.24 | 0.23 |
| MEAN | 0.20 | 0.06 | 0.13 |

* USE STANDARD ERRORS ONLY TO COMPARE TREATMNT LEVELS
GB3N0---,GB3N1SP-,GB3N1SS-,GB3N2SS-,RG3N2DE-,RG3N2DEC,
CL3N0---,CL3N2DE-,CL3N0--C,CL3N2DEC,LU3N0---,LU3N0--C
AND WITHIN THE SAME LEVEL OF IRRIGATN.

1ST CUTTING OCCASION MEAN DM% 21.9



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/200 PASTURES (R)

2ND CUTTING OCCASION (5/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN / TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.26 | 0.33 | 0.30 |
| RG6N1DE- | 0.91 | 0.73 | 0.82 |
| RG6N2DE- | 1.69 | 1.37 | 1.53 |
| RG6N3DE- | 2.51 | 1.86 | 2.19 |
| RG6N4DE- | 3.51 | 2.85 | 3.18 |
| RG6N5DE- | 3.64 | 3.56 | 3.60 |
| RG6N6DE- | 4.16 | 3.44 | 3.80 |
| GB6N0--- | 2.54 | 1.93 | 2.24 |
| GB6N1DE- | 2.74 | 2.71 | 2.73 |
| GB6N2DE- | 2.98 | 2.81 | 2.90 |
| GB6N3DE- | 3.27 | 2.90 | 3.09 |
| GB6N4DE- | 3.63 | 2.92 | 3.27 |
| GS6N0--- | 2.50 | 2.42 | 2.46 |
| GS6N1DE- | 2.94 | 2.73 | 2.83 |
| GS6N2DE- | 3.33 | 2.68 | 3.01 |
| GS6N3DE- | 3.83 | 3.18 | 3.50 |
| GS6N4DE- | 3.72 | 3.72 | 3.72 |
| GB3N0--- | 2.62 | 1.39 | 2.01 |
| GB3N1DE- | 2.75 | 2.35 | 2.55 |
| GB3N2DE- | 2.54 | 2.10 | 2.32 |
| GB3N3DE- | 3.00 | 1.86 | 2.43 |
| GB3N4DE- | 2.90 | 2.56 | 2.73 |
| GB3N0--C | 2.63 | 2.82 | 2.72 |
| GB3N1DEC | 3.20 | 2.76 | 2.98 |
| GB3N2DEC | 2.86 | 2.22 | 2.54 |
| GB3N3DEC | 2.81 | 2.81 | 2.81 |
| GB3N4DEC | 3.11 | 2.09 | 2.60 |
| GB3N1SP- | 2.76 | 1.68 | 2.22 |
| GB3N1SS- | 2.88 | 2.00 | 2.44 |
| GB3N2SS- | 2.78 | 1.85 | 2.32 |
| RG3N2DE- | 2.00 | 1.61 | 1.80 |
| RG3N2DEC | 2.46 | 1.58 | 2.02 |
| CL3N0--- | 2.17 | 2.20 | 2.18 |
| CL3N2DE- | 2.41 | 1.34 | 1.87 |
| CL3N0--C | 2.46 | 2.00 | 2.23 |
| CL3N2DEC | 2.34 | 2.07 | 2.20 |
| LU3N0--- | 4.28 | 3.17 | 3.72 |
| LU3N0--C | 4.77 | 3.91 | 4.34 |
| MEAN | 2.84 | 2.27 | 2.55 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT* IRRIGATN |
|---|---|---|
| SED | 0.245 | 0.346 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.346 | 13.6 |

2ND CUTTING OCCASION MEAN DM% 13.1



*https://doi.org/10.23637/ERADOC-1-45* *pp 182*

79/R/CS/200 PASTURES (R)

3RD CUTTING OCCASION (3/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.42 | 0.56 | 0.49 |
| RG6N1DE- | 1.27 | 0.73 | 1.00 |
| RG6N2DE- | 2.10 | 1.60 | 1.85 |
| RG6N3DE- | 2.16 | 2.07 | 2.11 |
| RG6N4DE- | 2.14 | 2.66 | 2.40 |
| RG6N5DE- | 2.68 | 2.29 | 2.49 |
| RG6N6DE- | 2.02 | 2.22 | 2.12 |
| GB6N0--- | 2.32 | 2.37 | 2.35 |
| GB6N1DE- | 2.35 | 2.23 | 2.29 |
| GB6N2DE- | 2.58 | 2.34 | 2.46 |
| GB6N3DE- | 2.50 | 2.45 | 2.48 |
| GB6N4DE- | 2.77 | 2.29 | 2.53 |
| GS6N0--- | 2.27 | 2.25 | 2.26 |
| GS6N1DE- | 2.36 | 2.40 | 2.38 |
| GS6N2DE- | 2.26 | 2.29 | 2.27 |
| GS6N3DE- | 2.20 | 2.33 | 2.26 |
| GS6N4DE- | 2.32 | 2.42 | 2.37 |
| MEAN | 2.16 | 2.09 | 2.12 |

3RD CUTTING OCCASION MEAN DM% 16.6



*https://doi.org/10.23637/ERADOC-1-45* *pp 183*

79/R/CS/200 PASTURES (R)

4TH CUTTING OCCASION (31/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.10 | 0.08 | 0.09 |
| RG6N1DE- | 0.09 | 0.45 | 0.27 |
| RG6N2DE- | 0.40 | 1.58 | 0.99 |
| RG6N3DE- | 0.40 | 1.89 | 1.14 |
| RG6N4DE- | 0.64 | 2.79 | 1.71 |
| RG6N5DE- | 0.68 | 3.09 | 1.89 |
| RG6N6DE- | 0.91 | 3.53 | 2.22 |
| GB6N0--- | 0.98 | 2.49 | 1.73 |
| GB6N1DE- | 0.60 | 2.02 | 1.31 |
| GB6N2DE- | 0.84 | 2.46 | 1.65 |
| GB6N3DE- | 1.24 | 2.39 | 1.82 |
| GB6N4DE- | 0.82 | 2.05 | 1.43 |
| GS6N0--- | 0.07 | 2.28 | 1.18 |
| GS6N1DE- | 0.26 | 2.56 | 1.41 |
| GS6N2DE- | 0.91 | 2.53 | 1.72 |
| GS6N3DE- | 1.28 | 2.58 | 1.93 |
| GS6N4DE- | 1.03 | 2.69 | 1.86 |
| GB3N0--- | 2.55 | 3.50 | 3.03 |
| GB3N1DE- | 2.17 | 3.25 | 2.71 |
| GB3N2DE- | 3.16 | 2.84 | 3.00 |
| GB3N3DE- | 2.45 | 3.46 | 2.95 |
| GB3N4DE- | 3.11 | 2.97 | 3.04 |
| GB3N0--C | 3.66 | 4.09 | 3.87 |
| GB3N1DEC | 3.47 | 2.98 | 3.22 |
| GB3N2DEC | 3.10 | 4.44 | 3.77 |
| GB3N3DEC | 3.41 | 3.91 | 3.66 |
| GB3N4DEC | 4.77 | 4.81 | 4.79 |
| GB3N1SP- | 2.90 | 3.79 | 3.35 |
| GB3N1SS- | 2.74 | 2.59 | 2.67 |
| GB3N2SS- | 3.06 | 2.86 | 2.96 |
| RG3N2DE- | 4.46 | 4.27 | 4.37 |
| RG3N2DEC | 4.85 | 5.43 | 5.14 |
| CL3N0--- | 2.17 | 2.22 | 2.20 |
| CL3N2DE- | 2.77 | 2.85 | 2.81 |
| CL3N0--C | 2.93 | 3.76 | 3.35 |
| CL3N2DEC | 1.80 | 3.64 | 2.72 |
| LU3N0--- | 5.47 | 5.04 | 5.25 |
| LU3N0--C | 5.74 | 5.78 | 5.76 |
| MEAN | 2.47 | 3.23 | 2.85 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT*<br>IRRIGATN |
|---|---|---|
| SED | 0.328 | 0.464 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.464 | 16.3 |

4TH CUTTING OCCASION MEAN DM% 22.3



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/200 PASTURES (R)

5TH CUTTING OCCASION (28/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.15 | 0.13 | 0.14 |
| RG6N1DE- | 0.42 | 0.21 | 0.32 |
| RG6N2DE- | 1.19 | 1.13 | 1.16 |
| RG6N3DE- | 1.31 | 1.41 | 1.36 |
| RG6N4DE- | 1.77 | 1.83 | 1.80 |
| RG6N5DE- | 1.90 | 1.47 | 1.69 |
| RG6N6DE- | 1.84 | 2.14 | 1.99 |
| GB6N0--- | 1.40 | 1.36 | 1.38 |
| GB6N1DE- | 1.46 | 1.55 | 1.50 |
| GB6N2DE- | 1.73 | 1.22 | 1.48 |
| GB6N3DE- | 1.45 | 1.69 | 1.57 |
| GB6N4DE- | 1.78 | 1.56 | 1.67 |
| GS6N0--- | 1.24 | 1.46 | 1.35 |
| GS6N1DE- | 1.39 | 1.65 | 1.52 |
| GS6N2DE- | 1.57 | 1.41 | 1.49 |
| GS6N3DE- | 1.91 | 1.60 | 1.75 |
| GS6N4DE- | 1.89 | 1.77 | 1.83 |
| MEAN | 1.44 | 1.39 | 1.41 |

5TH CUTTING OCCASION MEAN DM% 15.3



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/200 PASTURES (R)

6TH CUTTING OCCASION (25/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.00 | 0.12 | 0.06 |
| RG6N1DE- | 0.12 | 0.27 | 0.20 |
| RG6N2DE- | 0.39 | 0.83 | 0.61 |
| RG6N3DE- | 0.51 | 0.89 | 0.70 |
| RG6N4DE- | 0.68 | 1.42 | 1.05 |
| RG6N5DE- | 0.82 | 1.06 | 0.94 |
| RG6N6DE- | 0.60 | 0.92 | 0.76 |
| GB6N0--- | 0.52 | 1.02 | 0.77 |
| GB6N1DE- | 0.47 | 1.13 | 0.80 |
| GB6N2DE- | 0.52 | 1.08 | 0.80 |
| GB6N3DE- | 0.65 | 1.12 | 0.89 |
| GB6N4DE- | 0.62 | 0.90 | 0.76 |
| GS6N0--- | 0.52 | 0.85 | 0.68 |
| GS6N1DE- | 0.45 | 0.99 | 0.72 |
| GS6N2DE- | 0.62 | 1.04 | 0.83 |
| GS6N3DE- | 0.73 | 1.00 | 0.86 |
| GS6N4DE- | 0.73 | 1.28 | 1.00 |
| GB3N0--- | 1.96 | 1.40 | 1.68 |
| GB3N1DE- | 1.33 | 1.51 | 1.42 |
| GB3N2DE- | 2.23 | 2.33 | 2.28 |
| GB3N3DE- | 1.53 | 2.61 | 2.07 |
| GB3N4DE- | 2.06 | 2.57 | 2.32 |
| GB3N0--C | 2.58 | 2.17 | 2.37 |
| GB3N1DEC | 2.56 | 2.59 | 2.57 |
| GB3N2DEC | 2.52 | 3.57 | 3.05 |
| GB3N3DEC | 2.43 | 3.57 | 3.00 |
| GB3N4DEC | 2.69 | 2.59 | 2.64 |
| GB3N1SP- | 1.80 | 1.42 | 1.61 |
| GB3N1SS- | 2.02 | 2.14 | 2.08 |
| GB3N2SS- | 2.39 | 2.39 | 2.39 |
| RG3N2DE- | 2.26 | 1.81 | 2.04 |
| RG3N2DEC | 1.60 | 2.09 | 1.85 |
| CL3N0--- | 1.57 | 1.97 | 1.77 |
| CL3N2DE- | 1.53 | 1.66 | 1.60 |
| CL3N0--C | 2.40 | 1.95 | 2.18 |
| CL3N2DEC | 1.90 | 2.55 | 2.23 |
| LU3N0--- | 3.07 | 3.41 | 3.24 |
| LU3N0--C | 3.48 | 3.56 | 3.52 |
| MEAN | 1.62 | 1.84 | 1.73 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT*<br>IRRIGATN |
|---|---|---|
| SED | 0.216 | 0.306 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.306 | 17.7 |

6TH CUTTING OCCASION MEAN DM% 16.6



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/200 PASTURES (R)

TOTAL OF 6 CUTTING OCCASIONS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.93 | 1.22 | 1.08 |
| RG6N1DE- | 2.85 | 2.39 | 2.62 |
| RG6N2DE- | 5.81 | 6.58 | 6.20 |
| RG6N3DE- | 6.98 | 8.16 | 7.57 |
| RG6N4DE- | 8.91 | 11.65 | 10.28 |
| RG6N5DE- | 10.00 | 11.58 | 10.79 |
| RG6N6DE- | 9.90 | 12.45 | 11.18 |
| GB6N0--- | 7.78 | 9.18 | 8.48 |
| GB6N1DE- | 8.04 | 9.64 | 8.84 |
| GB6N2DE- | 8.88 | 9.97 | 9.42 |
| GB6N3DE- | 9.44 | 10.63 | 10.03 |
| GB6N4DE- | 10.06 | 9.72 | 9.89 |
| GS6N0--- | 6.68 | 9.28 | 7.98 |
| GS6N1DE- | 7.47 | 10.37 | 8.92 |
| GS6N2DE- | 8.91 | 10.00 | 9.46 |
| GS6N3DE- | 10.22 | 10.76 | 10.49 |
| GS6N4DE- | 9.90 | 12.12 | 11.01 |
| GB3N0--- | 7.13 | 6.30 | 6.71 |
| GB3N1DE- | 6.25 | 7.11 | 6.68 |
| GB3N2DE- | 7.93 | 7.27 | 7.60 |
| GB3N3DE- | 6.98 | 7.93 | 7.45 |
| GB3N4DE- | 8.07 | 8.11 | 8.09 |
| GB3N0--C | 8.86 | 9.08 | 8.97 |
| GB3N1DEC | 9.23 | 8.32 | 8.78 |
| GB3N2DEC | 8.48 | 10.23 | 9.36 |
| GB3N3DEC | 8.65 | 10.29 | 9.47 |
| GB3N4DEC | 10.58 | 9.48 | 10.03 |
| GB3N1SP- | 7.47 | 6.89 | 7.18 |
| GB3N1SS- | 7.64 | 6.73 | 7.19 |
| GB3N2SS- | 8.22 | 7.10 | 7.66 |
| RG3N2DE- | 8.72 | 7.70 | 8.21 |
| RG3N2DEC | 8.91 | 9.10 | 9.01 |
| CL3N0--- | 5.91 | 6.39 | 6.15 |
| CL3N2DE- | 6.71 | 5.85 | 6.28 |
| CL3N0--C | 7.79 | 7.70 | 7.75 |
| CL3N2DEC | 6.04 | 8.25 | 7.15 |
| LU3N0--- | 12.82 | 11.62 | 12.22 |
| LU3N0--C | 13.99 | 13.26 | 13.63 |
| MEAN | 8.21 | 8.55 | 8.38 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT*<br>IRRIGATN |
|---|---|---|
| SED | 0.560 | 0.791 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.791 | 9.4 |

TOTAL OF 6 CUTTING OCCASIONS MEAN DM% 14.3

SUB PLOT AREA HARVESTED 0.00038



*https://doi.org/10.23637/ERADOC-1-45* *pp 187*

79/W/CS/200 BUTT FURLONG (W)

1ST CUTTING OCCASION (15/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.00 | 0.16 | 0.08 |
| RG6N1DE- | 0.16 | 0.25 | 0.21 |
| RG6N2DE- | 0.38 | 0.24 | 0.31 |
| RG6N3DE- | 0.79 | 0.85 | 0.82 |
| RG6N4DE- | 1.56 | 0.69 | 1.12 |
| RG6N5DE- | 1.87 | 1.04 | 1.46 |
| RG6N6DE- | 1.97 | 1.07 | 1.52 |
| GB6N0--- | 2.33 | 1.87 | 2.10 |
| GB6N1DE- | 2.23 | 1.80 | 2.02 |
| GB6N2DE- | 2.40 | 2.11 | 2.25 |
| GB6N3DE- | 2.90 | 2.27 | 2.59 |
| GB6N4DE- | 2.81 | 1.76 | 2.28 |
| GS6N0--- | 1.03 | 1.31 | 1.17 |
| GS6N1DE- | 1.69 | 1.02 | 1.35 |
| GS6N2DE- | 1.45 | 1.41 | 1.43 |
| GS6N3DE- | 1.41 | 1.40 | 1.40 |
| GS6N4DE- | 2.14 | 1.69 | 1.91 |
| MEAN | 1.59 | 1.23 | 1.41 |

1ST CUTTING OCCASION MEAN DM% 19.7



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/200 BUTT FURLONG (W)

2ND CUTTING OCCASION (6/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.14 | 0.44 | 0.29 |
| RG6N1DE- | 0.39 | 0.63 | 0.51 |
| RG6N2DE- | 1.18 | 0.85 | 1.02 |
| RG6N3DE- | 1.63 | 1.49 | 1.56 |
| RG6N4DE- | 2.50 | 2.14 | 2.32 |
| RG6N5DE- | 2.25 | 2.87 | 2.56 |
| RG6N6DE- | 2.56 | 2.33 | 2.44 |
| GB6N0--- | 1.55 | 1.94 | 1.74 |
| GB6N1DE- | 1.73 | 1.85 | 1.79 |
| GB6N2DE- | 1.89 | 1.62 | 1.76 |
| GB6N3DE- | 2.00 | 2.04 | 2.02 |
| GB6N4DE- | 2.04 | 2.11 | 2.08 |
| GS6N0--- | 1.16 | 1.60 | 1.38 |
| GS6N1DE- | 1.59 | 1.83 | 1.71 |
| GS6N2DE- | 1.89 | 2.14 | 2.01 |
| GS6N3DE- | 2.08 | 2.19 | 2.13 |
| GS6N4DE- | 2.14 | 2.49 | 2.31 |
| GB3N0--- | 3.68 | 3.14 | 3.41 |
| GB3N1DE- | 3.62 | 3.61 | 3.62 |
| GB3N2DE- | 5.01 | 3.41 | 4.21 |
| GB3N3DE- | 5.44 | 3.57 | 4.51 |
| GB3N4DE- | 4.76 | 3.41 | 4.08 |
| GB3N0--C | 4.01 | 3.06 | 3.54 |
| GB3N1DEC | 4.09 | 4.16 | 4.13 |
| GB3N2DEC | 4.51 | 4.14 | 4.32 |
| GB3N3DEC | 6.02 | 4.05 | 5.04 |
| GB3N4DEC | 5.88 | 5.16 | 5.52 |
| GB3N1SP- | 4.72 | 3.27 | 3.99 |
| GB3N1SS- | 4.11 | 2.73 | 3.42 |
| GB3N2SS- | 4.42 | 3.17 | 3.79 |
| RG3N2DE- | 3.13 | 2.42 | 2.78 |
| RG3N2DEC | 2.56 | 3.29 | 2.93 |
| CL3N0--- | 2.80 | 2.57 | 2.68 |
| CL3N2DE- | 2.79 | 2.60 | 2.69 |
| CL3N0--C | 2.35 | 2.33 | 2.34 |
| CL3N2DEC | 2.73 | 2.68 | 2.70 |
| LU3N0--- | 5.63 | 4.44 | 5.04 |
| LU3N0--C | 4.06 | 4.22 | 4.14 |
| MEAN | 3.16 | 2.78 | 2.97 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT* IRRIGATN |
|---|---|---|
| SED | 0.226 | 0.320 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.320 | 10.8 |

2ND CUTTING OCCASION MEAN DM% 14.3



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/200 BUTT FURLONG (W)

3RD CUTTING OCCASION (4/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.31 | 0.31 | 0.31 |
| RG6N1DE- | 0.61 | 0.54 | 0.58 |
| RG6N2DE- | 1.82 | 1.35 | 1.59 |
| RG6N3DE- | 2.24 | 1.61 | 1.93 |
| RG6N4DE- | 2.52 | 2.51 | 2.52 |
| RG6N5DE- | 2.46 | 2.64 | 2.55 |
| RG6N6DE- | 1.77 | 2.41 | 2.09 |
| GB6N0--- | 1.99 | 2.36 | 2.18 |
| GB6N1DE- | 2.13 | 2.30 | 2.22 |
| GB6N2DE- | 2.44 | 2.46 | 2.45 |
| GB6N3DE- | 2.61 | 2.40 | 2.50 |
| GB6N4DE- | 2.56 | 2.28 | 2.42 |
| GS6N0--- | 1.20 | 1.89 | 1.54 |
| GS6N1DE- | 1.99 | 2.05 | 2.02 |
| GS6N2DE- | 2.10 | 1.97 | 2.03 |
| GS6N3DE- | 2.33 | 1.98 | 2.16 |
| GS6N4DE- | 2.37 | 2.65 | 2.51 |
| MEAN | 1.97 | 1.98 | 1.98 |

3RD CUTTING OCCASION MEAN DM% 19.1



*https://doi.org/10.23637/ERADOC-1-45* *pp 190*

79/W/CS/200 BUTT FURLONG (W)

4TH CUTTING OCCASION (2/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.13 | 0.18 | 0.15 |
| RG6N1DE- | 0.12 | 0.26 | 0.19 |
| RG6N2DE- | 0.27 | 0.80 | 0.53 |
| RG6N3DE- | 0.19 | 1.66 | 0.92 |
| RG6N4DE- | 0.10 | 2.19 | 1.15 |
| RG6N5DE- | 0.22 | 1.86 | 1.04 |
| RG6N6DE- | 0.19 | 2.25 | 1.22 |
| GB6N0--- | 0.08 | 2.19 | 1.14 |
| GB6N1DE- | 0.08 | 1.94 | 1.01 |
| GB6N2DE- | 0.09 | 1.73 | 0.91 |
| GB6N3DE- | 0.15 | 2.20 | 1.17 |
| GB6N4DE- | 0.21 | 2.17 | 1.19 |
| GS6N0--- | 0.09 | 1.79 | 0.94 |
| GS6N1DE- | 0.18 | 2.06 | 1.12 |
| GS6N2DE- | 0.18 | 1.83 | 1.00 |
| GS6N3DE- | 0.09 | 1.50 | 0.79 |
| GS6N4DE- | 0.18 | 1.99 | 1.08 |
| GB3N0--- | 1.07 | 2.43 | 1.75 |
| GB3N1DE- | 1.61 | 2.56 | 2.09 |
| GB3N2DE- | 1.61 | 2.42 | 2.02 |
| GB3N3DE- | 1.85 | 2.77 | 2.31 |
| GB3N4DE- | 2.45 | 2.50 | 2.47 |
| GB3N0--C | 1.95 | 3.58 | 2.77 |
| GB3N1DEC | 2.61 | 3.52 | 3.07 |
| GB3N2DEC | 2.77 | 2.67 | 2.72 |
| GB3N3DEC | 2.12 | 3.75 | 2.94 |
| GB3N4DEC | 3.07 | 4.37 | 3.72 |
| GB3N1SP- | 1.28 | 2.04 | 1.66 |
| GB3N1SS- | 1.54 | 1.79 | 1.66 |
| GB3N2SS- | 1.67 | 2.52 | 2.09 |
| RG3N2DE- | 2.22 | 3.52 | 2.87 |
| RG3N2DEC | 3.23 | 4.93 | 4.08 |
| CL3N0--- | 1.13 | 2.36 | 1.74 |
| CL3N2DE- | 1.11 | 2.05 | 1.58 |
| CL3N0--C | 1.31 | 2.30 | 1.80 |
| CL3N2DEC | 1.42 | 2.59 | 2.01 |
| LU3N0--- | 4.12 | 4.88 | 4.50 |
| LU3N0--C | 4.75 | 5.02 | 4.88 |
| MEAN | 1.45 | 2.59 | 2.02 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT*<br>IRRIGATN |
|---|---|---|
| SED | 0.300 | 0.424 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.424 | 21.0 |

4TH CUTTING OCCASION MEAN DM% 23.2



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/200 PASTURES (R)

5TH CUTTING OCCASION (29/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.00 | 0.14 | 0.07 |
| RG6N1DE- | 0.30 | 0.29 | 0.30 |
| RG6N2DE- | 1.33 | 0.98 | 1.15 |
| RG6N3DE- | 1.02 | 1.76 | 1.39 |
| RG6N4DE- | 0.48 | 1.58 | 1.03 |
| RG6N5DE- | 0.25 | 1.75 | 1.00 |
| RG6N6DE- | 0.36 | 1.93 | 1.15 |
| GB6N0--- | 0.90 | 1.61 | 1.26 |
| GB6N1DE- | 1.14 | 1.48 | 1.31 |
| GB6N2DE- | 1.09 | 1.78 | 1.44 |
| GB6N3DE- | 1.28 | 1.56 | 1.42 |
| GB6N4DE- | 1.24 | 1.38 | 1.31 |
| GS6N0--- | 0.63 | 1.65 | 1.14 |
| GS6N1DE- | 0.82 | 1.53 | 1.17 |
| GS6N2DE- | 1.07 | 1.43 | 1.25 |
| GS6N3DE- | 0.90 | 1.48 | 1.19 |
| GS6N4DE- | 0.60 | 1.86 | 1.23 |
| MEAN | 0.79 | 1.42 | 1.11 |

5TH CUTTING OCCASION MEAN DM% 15.7



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/200 BUTT FURLONG (W)

6TH CUTTING OCCASION (6/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.10 | 0.15 | 0.12 |
| RG6N1DE- | 0.27 | 0.45 | 0.36 |
| RG6N2DE- | 0.56 | 0.75 | 0.66 |
| RG6N3DE- | 0.60 | 1.37 | 0.99 |
| RG6N4DE- | 0.17 | 0.71 | 0.44 |
| RG6N5DE- | 0.12 | 1.72 | 0.92 |
| RG6N6DE- | 0.23 | 1.47 | 0.85 |
| GB6N0--- | 0.43 | 1.07 | 0.75 |
| GB6N1DE- | 0.64 | 0.93 | 0.79 |
| GB6N2DE- | 0.49 | 1.14 | 0.82 |
| GB6N3DE- | 0.44 | 1.14 | 0.79 |
| GB6N4DE- | 0.93 | 1.02 | 0.97 |
| GS6N0--- | 0.41 | 1.46 | 0.93 |
| GS6N1DE- | 0.33 | 1.11 | 0.72 |
| GS6N2DE- | 0.26 | 1.35 | 0.80 |
| GS6N3DE- | 0.30 | 1.32 | 0.81 |
| GS6N4DE- | 0.33 | 1.50 | 0.91 |
| GB3N0--- | 1.12 | 1.46 | 1.29 |
| GB3N1DE- | 1.18 | 1.26 | 1.22 |
| GB3N2DE- | 1.32 | 1.31 | 1.31 |
| GB3N3DE- | 1.83 | 1.44 | 1.64 |
| GB3N4DE- | 2.05 | 1.50 | 1.78 |
| GB3N0--C | 2.27 | 2.33 | 2.30 |
| GB3N1DEC | 2.27 | 2.48 | 2.37 |
| GB3N2DEC | 2.83 | 2.67 | 2.75 |
| GB3N3DEC | 3.02 | 2.38 | 2.70 |
| GB3N4DEC | 3.08 | 2.61 | 2.84 |
| GB3N1SP- | 1.33 | 1.29 | 1.31 |
| GB3N1SS- | 1.43 | 1.20 | 1.31 |
| GB3N2SS- | 1.71 | 1.39 | 1.55 |
| RG3N2DE- | 2.73 | 2.53 | 2.63 |
| RG3N2DEC | 3.04 | 3.25 | 3.14 |
| CL3N0--- | 1.25 | 1.35 | 1.30 |
| CL3N2DE- | 1.07 | 1.24 | 1.16 |
| CL3N0--C | 1.81 | 1.94 | 1.88 |
| CL3N2DEC | 1.73 | 2.14 | 1.94 |
| LU3N0--- | 2.53 | 3.06 | 2.80 |
| LU3N0--C | 2.92 | 3.79 | 3.36 |
| MEAN | 1.44 | 1.72 | 1.58 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT*<br>IRRIGATN |
|---|---|---|
| SED | 0.185 | 0.262 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.262 | 16.6 |

6TH CUTTING OCCASION MEAN DM% 18.9



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/200 BUTT FURLONG (W)

TOTAL OF 6 CUTTING OCCASIONS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN<br>TREATMNT | NONE | FULL | MEAN |
|---|---|---|---|
| RG6N0--- | 0.67 | 1.36 | 1.02 |
| RG6N1DE- | 1.86 | 2.42 | 2.14 |
| RG6N2DE- | 5.54 | 4.97 | 5.26 |
| RG6N3DE- | 6.46 | 8.74 | 7.60 |
| RG6N4DE- | 7.33 | 9.82 | 8.57 |
| RG6N5DE- | 7.18 | 11.87 | 9.52 |
| RG6N6DE- | 7.09 | 11.47 | 9.28 |
| GB6N0--- | 7.28 | 11.05 | 9.17 |
| GB6N1DE- | 7.95 | 10.30 | 9.13 |
| GB6N2DE- | 8.39 | 10.85 | 9.62 |
| GB6N3DE- | 9.38 | 11.61 | 10.50 |
| GB6N4DE- | 9.80 | 10.72 | 10.26 |
| GS6N0--- | 4.52 | 9.69 | 7.11 |
| GS6N1DE- | 6.59 | 9.59 | 8.09 |
| GS6N2DE- | 6.94 | 10.13 | 8.53 |
| GS6N3DE- | 7.11 | 9.87 | 8.49 |
| GS6N4DE- | 7.76 | 12.17 | 9.96 |
| GB3N0--- | 5.87 | 7.04 | 6.45 |
| GB3N1DE- | 6.42 | 7.44 | 6.93 |
| GB3N2DE- | 7.94 | 7.14 | 7.54 |
| GB3N3DE- | 9.13 | 7.78 | 8.46 |
| GB3N4DE- | 9.27 | 7.40 | 8.33 |
| GB3N0--C | 8.23 | 8.98 | 8.60 |
| GB3N1DEC | 8.97 | 10.16 | 9.57 |
| GB3N2DEC | 10.12 | 9.47 | 9.79 |
| GB3N3DEC | 11.16 | 10.18 | 10.67 |
| GB3N4DEC | 12.03 | 12.14 | 12.09 |
| GB3N1SP- | 7.34 | 6.59 | 6.96 |
| GB3N1SS- | 7.07 | 5.71 | 6.39 |
| GB3N2SS- | 7.80 | 7.08 | 7.44 |
| RG3N2DE- | 8.08 | 8.47 | 8.27 |
| RG3N2DEC | 8.83 | 11.47 | 10.15 |
| CL3N0--- | 5.18 | 6.27 | 5.73 |
| CL3N2DE- | 4.96 | 5.89 | 5.43 |
| CL3N0--C | 5.47 | 6.57 | 6.02 |
| CL3N2DEC | 5.88 | 7.41 | 6.65 |
| LU3N0--- | 12.28 | 12.39 | 12.33 |
| LU3N0--C | 11.73 | 13.04 | 12.38 |
| MEAN | 7.52 | 8.66 | 8.09 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT* | TREATMNT*<br>IRRIGATN |
|---|---|---|
| SED | 0.563 | 0.796 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP.SP | 24 | 0.796 | 9.8 |

TOTAL OF 6 CUTTING OCCASIONS MEAN DM% 15.4

SUBPLOT AREA HARVESTED 0.00038



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/201

FACTORS AFFECTING YIELD

Object: To study the residual effects on wheat of a range of treatments applied to field beans in 1977 - Pastures.

Sponsors: R. Bardner, G.G. Briggs, A.J. Cockbain, J.M. Day, K.E. Fletcher, B.J. Legg, J. McEwen, R.J. Roughley, G.A. Salt, H.R. Simpson, R.M. Webb, J.F. Witty.

The third year, winter wheat.

For previous years see 77-78/R/CS/201.

Design: Half replicate of $2^8$ in 8 blocks of 2 plots split into 8.

Whole plot dimensions: 10.4 x 57.6.

Treatments applied in 1977: Combinations of:-

Whole plots

1. IRRIGATN(77) Irrigation:

| | |
|---|---|
| NONE | None |
| FULL | Full (119 mm) |

Sub plots

2. N(77) Nitrogen fertiliser at flowering (kg N):

0
150

3. ALDICARB(77) Aldicarb to seedbed (kg):

0
10

4. FONOFOS(77) Fonofos to seedbed (kg):

0
5

5. BEN 1(77) Benomyl to seedbed (kg):

0
32

6. PERMETH(77) Permethrin foliar spray (kg):

0.00
0.15



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/201

7. PIRIMICA(77) Pirimicarb foliar spray (kg):

0.00
0.14

8. BEN 2(77) Benomyl foliar spray (kg):

0.0
0.6

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. 'Nitro-Chalk' at 380 kg. Weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Atou, sown at 200 kg.

Cultivations, etc.:- Ploughed: 18 Oct, 1978. Rotary harrowed: 19 Oct. Seed sown: 20 Oct. N applied: 27 Apr, 1979. Weedkiller applied: 8 May. Combine harvested: 30 Aug.

NOTES: (1) The crop was sampled in July for take-all and eyespot assessments.
(2) There were marked differences in yields between the outer and inner strips of subplots; the yields presented have been adjusted for this.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N(77) | 0 | 150 | MEAN |
|---|---|---|---|
| IRRIGATN(77) | | | |
| NONE | 4.77 | 4.38 | 4.57 |
| FULL | 4.96 | 4.95 | 4.96 |
| MEAN | 4.86 | 4.67 | 4.77 |

| ALDICARB(77) | 0 | 10 | MEAN |
|---|---|---|---|
| IRRIGATN(77) | | | |
| NONE | 4.89 | 4.26 | 4.57 |
| FULL | 5.08 | 4.84 | 4.96 |
| MEAN | 4.99 | 4.55 | 4.77 |

| ALDICARB(77) | 0 | 10 | MEAN |
|---|---|---|---|
| N(77) | | | |
| 0 | 5.08 | 4.65 | 4.86 |
| 150 | 4.89 | 4.44 | 4.67 |
| MEAN | 4.99 | 4.55 | 4.77 |

| FONOFOS(77) | 0 | 5 | MEAN |
|---|---|---|---|
| IRRIGATN(77) | | | |
| NONE | 4.69 | 4.46 | 4.57 |
| FULL | 4.93 | 4.98 | 4.96 |
| MEAN | 4.81 | 4.72 | 4.77 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 196*

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FONOFOS(77) | 0 | 5 | MEAN |
|---|---|---|---|
| N(77) | | | |
| 0 | 5.00 | 4.73 | 4.86 |
| 150 | 4.63 | 4.71 | 4.67 |
| MEAN | 4.81 | 4.72 | 4.77 |

| FONOFOS(77) | 0 | 5 | MEAN |
|---|---|---|---|
| ALDICARB(77) | | | |
| 0 | 4.99 | 4.98 | 4.99 |
| 10 | 4.63 | 4.46 | 4.55 |
| MEAN | 4.81 | 4.72 | 4.77 |

| BEN 1(77) | 0 | 32 | MEAN |
|---|---|---|---|
| IRRIGATN(77) | | | |
| NONE | 4.54 | 4.61 | 4.57 |
| FULL | 4.74 | 5.17 | 4.96 |
| MEAN | 4.64 | 4.89 | 4.77 |

| BEN 1(77) | 0 | 32 | MEAN |
|---|---|---|---|
| N(77) | | | |
| 0 | 4.71 | 5.02 | 4.86 |
| 150 | 4.57 | 4.76 | 4.67 |
| MEAN | 4.64 | 4.89 | 4.77 |

| BEN 1(77) | 0 | 32 | MEAN |
|---|---|---|---|
| ALDICARB(77) | | | |
| 0 | 4.83 | 5.14 | 4.99 |
| 10 | 4.45 | 4.64 | 4.55 |
| MEAN | 4.64 | 4.89 | 4.77 |

| BEN 1(77) | 0 | 32 | MEAN |
|---|---|---|---|
| FONOFOS(77) | | | |
| 0 | 4.75 | 4.87 | 4.81 |
| 5 | 4.53 | 4.91 | 4.72 |
| MEAN | 4.64 | 4.89 | 4.77 |

| PERMETH(77) | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| IRRIGATN(77) | | | |
| NONE | 4.60 | 4.55 | 4.57 |
| FULL | 5.04 | 4.87 | 4.96 |
| MEAN | 4.82 | 4.71 | 4.77 |

| PERMETH(77) | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| N(77) | | | |
| 0 | 4.96 | 4.77 | 4.86 |
| 150 | 4.68 | 4.65 | 4.67 |
| MEAN | 4.82 | 4.71 | 4.77 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PERMETH(77) ALDICARB(77) | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| 0 | 5.07 | 4.90 | 4.99 |
| 10 | 4.56 | 4.53 | 4.55 |
| MEAN | 4.82 | 4.71 | 4.77 |

| PERMETH(77) FONOFOS(77) | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| 0 | 4.83 | 4.80 | 4.81 |
| 5 | 4.81 | 4.63 | 4.72 |
| MEAN | 4.82 | 4.71 | 4.77 |

| PERMETH(77) BEN 1(77) | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| 0 | 4.76 | 4.52 | 4.64 |
| 32 | 4.87 | 4.90 | 4.89 |
| MEAN | 4.82 | 4.71 | 4.77 |

| PIRIMICA(77) IRRIGATN(77) | 0.00 | 0.14 | MEAN |
|---|---|---|---|
| NONE | 4.62 | 4.53 | 4.57 |
| FULL | 5.01 | 4.91 | 4.96 |
| MEAN | 4.81 | 4.72 | 4.77 |

| PIRIMICA(77) N(77) | 0.00 | 0.14 | MEAN |
|---|---|---|---|
| 0 | 4.85 | 4.88 | 4.86 |
| 150 | 4.78 | 4.56 | 4.67 |
| MEAN | 4.81 | 4.72 | 4.77 |

| PIRIMICA(77) ALDICARB(77) | 0.00 | 0.14 | MEAN |
|---|---|---|---|
| 0 | 4.92 | 5.05 | 4.99 |
| 10 | 4.70 | 4.39 | 4.55 |
| MEAN | 4.81 | 4.72 | 4.77 |

| PIRIMICA(77) FONOFOS(77) | 0.00 | 0.14 | MEAN |
|---|---|---|---|
| 0 | 4.91 | 4.72 | 4.81 |
| 5 | 4.72 | 4.72 | 4.72 |
| MEAN | 4.81 | 4.72 | 4.77 |

| PIRIMICA(77) BEN 1(77) | 0.00 | 0.14 | MEAN |
|---|---|---|---|
| 0 | 4.58 | 4.70 | 4.64 |
| 32 | 5.04 | 4.73 | 4.89 |
| MEAN | 4.81 | 4.72 | 4.77 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PIRIMICA(77) | 0.00 | 0.14 | MEAN |
|---|---|---|---|
| PERMETH(77) | | | |
| 0.00 | 4.84 | 4.80 | 4.82 |
| 0.15 | 4.79 | 4.64 | 4.71 |
| MEAN | 4.81 | 4.72 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| IRRIGATN(77) | | | |
| NONE | 4.65 | 4.50 | 4.57 |
| FULL | 4.84 | 5.08 | 4.96 |
| MEAN | 4.74 | 4.79 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| N(77) | | | |
| 0 | 4.82 | 4.91 | 4.86 |
| 150 | 4.67 | 4.67 | 4.67 |
| MEAN | 4.74 | 4.79 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| ALDICARB(77) | | | |
| 0 | 4.94 | 5.03 | 4.99 |
| 10 | 4.55 | 4.55 | 4.55 |
| MEAN | 4.74 | 4.79 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| FONOFOS(77) | | | |
| 0 | 4.77 | 4.85 | 4.81 |
| 5 | 4.72 | 4.72 | 4.72 |
| MEAN | 4.74 | 4.79 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| BEN 1(77) | | | |
| 0 | 4.59 | 4.69 | 4.64 |
| 32 | 4.90 | 4.88 | 4.89 |
| MEAN | 4.74 | 4.79 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| PERMETH(77) | | | |
| 0.00 | 4.78 | 4.85 | 4.82 |
| 0.15 | 4.71 | 4.72 | 4.71 |
| MEAN | 4.74 | 4.79 | 4.77 |

| BEN 2(77) | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| PIRIMICA(77) | | | |
| 0.00 | 4.80 | 4.82 | 4.81 |
| 0.14 | 4.69 | 4.75 | 4.72 |
| MEAN | 4.74 | 4.79 | 4.77 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS (INDIVIDUAL VALUES) *****

| IRRIGATN(77) | N(77) | ALDICARB(77) | FONOFOS(77) | BEN 1(77) | PERMETH(77) | PIRIMICA(77) | BEN 2(77) | GRAIN |
|---|---|---|---|---|---|---|---|---|
| NONE | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.0 | 5.49 |
| NONE | 0 | 0 | 0 | 0 | 0.00 | 0.14 | 0.6 | 5.95 |
| NONE | 0 | 0 | 0 | 0 | 0.15 | 0.00 | 0.6 | 4.56 |
| NONE | 0 | 0 | 0 | 0 | 0.15 | 0.14 | 0.0 | 4.01 |
| NONE | 0 | 0 | 0 | 32 | 0.00 | 0.00 | 0.6 | 5.76 |
| NONE | 0 | 0 | 0 | 32 | 0.00 | 0.14 | 0.0 | 5.62 |
| NONE | 0 | 0 | 0 | 32 | 0.15 | 0.00 | 0.0 | 4.88 |
| NONE | 0 | 0 | 0 | 32 | 0.15 | 0.14 | 0.6 | 6.85 |
| NONE | 0 | 0 | 5 | 0 | 0.00 | 0.00 | 0.6 | 4.29 |
| NONE | 0 | 0 | 5 | 0 | 0.00 | 0.14 | 0.0 | 5.73 |
| NONE | 0 | 0 | 5 | 0 | 0.15 | 0.00 | 0.0 | 2.85 |
| NONE | 0 | 0 | 5 | 0 | 0.15 | 0.14 | 0.6 | 4.98 |
| NONE | 0 | 0 | 5 | 32 | 0.00 | 0.00 | 0.0 | 5.28 |
| NONE | 0 | 0 | 5 | 32 | 0.00 | 0.14 | 0.6 | 4.72 |
| NONE | 0 | 0 | 5 | 32 | 0.15 | 0.00 | 0.6 | 3.96 |
| NONE | 0 | 0 | 5 | 32 | 0.15 | 0.14 | 0.0 | 5.83 |
| NONE | 0 | 10 | 0 | 0 | 0.00 | 0.00 | 0.6 | 4.29 |
| NONE | 0 | 10 | 0 | 0 | 0.00 | 0.14 | 0.0 | 4.29 |
| NONE | 0 | 10 | 0 | 0 | 0.15 | 0.00 | 0.0 | 4.97 |
| NONE | 0 | 10 | 0 | 0 | 0.15 | 0.14 | 0.6 | 5.95 |
| NONE | 0 | 10 | 0 | 32 | 0.00 | 0.00 | 0.0 | 5.55 |
| NONE | 0 | 10 | 0 | 32 | 0.00 | 0.14 | 0.6 | 3.04 |
| NONE | 0 | 10 | 0 | 32 | 0.15 | 0.00 | 0.6 | 4.92 |
| NONE | 0 | 10 | 0 | 32 | 0.15 | 0.14 | 0.0 | 4.53 |
| NONE | 0 | 10 | 5 | 0 | 0.00 | 0.00 | 0.0 | 4.33 |
| NONE | 0 | 10 | 5 | 0 | 0.00 | 0.14 | 0.6 | 3.99 |
| NONE | 0 | 10 | 5 | 0 | 0.15 | 0.00 | 0.6 | 4.46 |
| NONE | 0 | 10 | 5 | 0 | 0.15 | 0.14 | 0.0 | 4.58 |
| NONE | 0 | 10 | 5 | 32 | 0.00 | 0.00 | 0.6 | 4.00 |
| NONE | 0 | 10 | 5 | 32 | 0.00 | 0.14 | 0.0 | 5.01 |
| NONE | 0 | 10 | 5 | 32 | 0.15 | 0.00 | 0.0 | 5.25 |
| NONE | 0 | 10 | 5 | 32 | 0.15 | 0.14 | 0.6 | 2.67 |

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS (INDIVIDUAL VALUES) *****

| IRRIGATN(77) | N(77) | ALDICARB(77) | FONOFOS(77) | BEN 1(77) | PERMETH(77) | PIRIMICA(77) | BEN 2(77) | GRAIN |
|---|---|---|---|---|---|---|---|---|
| NONE | 150 | 0 | 0 | 0 | 0.00 | 0.00 | 0.6 | 4.88 |
| NONE | 150 | 0 | 0 | 0 | 0.00 | 0.14 | 0.0 | 4.77 |
| NONE | 150 | 0 | 0 | 0 | 0.15 | 0.00 | 0.0 | 5.72 |
| NONE | 150 | 0 | 0 | 0 | 0.15 | 0.14 | 0.6 | 4.32 |
| NONE | 150 | 0 | 0 | 32 | 0.00 | 0.00 | 0.0 | 3.95 |
| NONE | 150 | 0 | 0 | 32 | 0.00 | 0.14 | 0.6 | 4.28 |
| NONE | 150 | 0 | 0 | 32 | 0.15 | 0.00 | 0.6 | 4.80 |
| NONE | 150 | 0 | 0 | 32 | 0.15 | 0.14 | 0.0 | 4.68 |
| NONE | 150 | 0 | 5 | 0 | 0.00 | 0.00 | 0.0 | 4.44 |
| NONE | 150 | 0 | 5 | 0 | 0.00 | 0.14 | 0.6 | 5.24 |
| NONE | 150 | 0 | 5 | 0 | 0.15 | 0.00 | 0.6 | 3.69 |
| NONE | 150 | 0 | 5 | 0 | 0.15 | 0.14 | 0.0 | 5.50 |
| NONE | 150 | 0 | 5 | 32 | 0.00 | 0.00 | 0.6 | 6.15 |
| NONE | 150 | 0 | 5 | 32 | 0.00 | 0.14 | 0.0 | 3.39 |
| NONE | 150 | 0 | 5 | 32 | 0.15 | 0.00 | 0.0 | 6.03 |
| NONE | 150 | 0 | 5 | 32 | 0.15 | 0.14 | 0.6 | 3.96 |
| NONE | 150 | 10 | 0 | 0 | 0.00 | 0.00 | 0.0 | 3.93 |
| NONE | 150 | 10 | 0 | 0 | 0.00 | 0.14 | 0.6 | 5.24 |
| NONE | 150 | 10 | 0 | 0 | 0.15 | 0.00 | 0.6 | 3.90 |
| NONE | 150 | 10 | 0 | 0 | 0.15 | 0.14 | 0.0 | 3.37 |
| NONE | 150 | 10 | 0 | 32 | 0.00 | 0.00 | 0.6 | 3.42 |
| NONE | 150 | 10 | 0 | 32 | 0.00 | 0.14 | 0.0 | 4.24 |
| NONE | 150 | 10 | 0 | 32 | 0.15 | 0.00 | 0.0 | 4.87 |
| NONE | 150 | 10 | 0 | 32 | 0.15 | 0.14 | 0.6 | 3.02 |
| NONE | 150 | 10 | 5 | 0 | 0.00 | 0.00 | 0.6 | 3.40 |
| NONE | 150 | 10 | 5 | 0 | 0.00 | 0.14 | 0.0 | 3.46 |
| NONE | 150 | 10 | 5 | 0 | 0.15 | 0.00 | 0.0 | 4.99 |
| NONE | 150 | 10 | 5 | 0 | 0.15 | 0.14 | 0.6 | 3.78 |
| NONE | 150 | 10 | 5 | 32 | 0.00 | 0.00 | 0.0 | 4.14 |
| NONE | 150 | 10 | 5 | 32 | 0.00 | 0.14 | 0.6 | 4.82 |
| NONE | 150 | 10 | 5 | 32 | 0.15 | 0.00 | 0.6 | 4.60 |
| NONE | 150 | 10 | 5 | 32 | 0.15 | 0.14 | 0.0 | 3.15 |



https://doi.org/10.23637/ERADOC-1-45 pp 201

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS (INDIVIDUAL VALUES) *****

| IRRIGATN(77) | N(77) | ALDICARB(77) | FONOFOS(77) | BEN 1(77) | PERMETH(77) | PIRIMICA(77) | BEN 2(77) | GRAIN |
|---|---|---|---|---|---|---|---|---|
| FULL | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.6 | 5.69 |
| FULL | 0 | 0 | 0 | 0 | 0.00 | 0.14 | 0.0 | 4.17 |
| FULL | 0 | 0 | 0 | 0 | 0.15 | 0.00 | 0.0 | 4.17 |
| FULL | 0 | 0 | 0 | 0 | 0.15 | 0.14 | 0.6 | 3.78 |
| FULL | 0 | 0 | 0 | 32 | 0.00 | 0.00 | 0.0 | 5.98 |
| FULL | 0 | 0 | 0 | 32 | 0.00 | 0.14 | 0.6 | 6.21 |
| FULL | 0 | 0 | 0 | 32 | 0.15 | 0.00 | 0.6 | 5.26 |
| FULL | 0 | 0 | 0 | 32 | 0.15 | 0.14 | 0.0 | 4.72 |
| FULL | 0 | 0 | 5 | 0 | 0.00 | 0.00 | 0.0 | 6.04 |
| FULL | 0 | 0 | 5 | 0 | 0.00 | 0.14 | 0.6 | 5.22 |
| FULL | 0 | 0 | 5 | 0 | 0.15 | 0.00 | 0.6 | 5.92 |
| FULL | 0 | 0 | 5 | 0 | 0.15 | 0.14 | 0.0 | 5.57 |
| FULL | 0 | 0 | 5 | 32 | 0.00 | 0.00 | 0.6 | 4.09 |
| FULL | 0 | 0 | 5 | 32 | 0.00 | 0.14 | 0.0 | 5.41 |
| FULL | 0 | 0 | 5 | 32 | 0.15 | 0.00 | 0.0 | 3.11 |
| FULL | 0 | 0 | 5 | 32 | 0.15 | 0.14 | 0.6 | 6.56 |
| FULL | 0 | 10 | 0 | 0 | 0.00 | 0.00 | 0.0 | 5.47 |
| FULL | 0 | 10 | 0 | 0 | 0.00 | 0.14 | 0.6 | 4.77 |
| FULL | 0 | 10 | 0 | 0 | 0.15 | 0.00 | 0.6 | 5.93 |
| FULL | 0 | 10 | 0 | 0 | 0.15 | 0.14 | 0.0 | 4.77 |
| FULL | 0 | 10 | 0 | 32 | 0.00 | 0.00 | 0.6 | 5.40 |
| FULL | 0 | 10 | 0 | 32 | 0.00 | 0.14 | 0.0 | 3.01 |
| FULL | 0 | 10 | 0 | 32 | 0.15 | 0.00 | 0.0 | 5.44 |
| FULL | 0 | 10 | 0 | 32 | 0.15 | 0.14 | 0.6 | 4.45 |
| FULL | 0 | 10 | 5 | 0 | 0.00 | 0.00 | 0.6 | 3.95 |
| FULL | 0 | 10 | 5 | 0 | 0.00 | 0.14 | 0.0 | 4.20 |
| FULL | 0 | 10 | 5 | 0 | 0.15 | 0.00 | 0.0 | 2.44 |
| FULL | 0 | 10 | 5 | 0 | 0.15 | 0.14 | 0.6 | 3.94 |
| FULL | 0 | 10 | 5 | 32 | 0.00 | 0.00 | 0.0 | 5.83 |
| FULL | 0 | 10 | 5 | 32 | 0.00 | 0.14 | 0.6 | 5.87 |
| FULL | 0 | 10 | 5 | 32 | 0.15 | 0.00 | 0.6 | 5.56 |
| FULL | 0 | 10 | 5 | 32 | 0.15 | 0.14 | 0.0 | 5.84 |

79/R/CS/201

GRAIN TONNES/HECTARE

***** TABLES OF MEANS (INDIVIDUAL VALUES) *****

| IRRIGATN(77) | N(77) | ALDICARB(77) | FONOFOS(77) | BEN 1(77) | PERMETH(77) | PIRIMICA(77) | BEN 2(77) | GRAIN |
|---|---|---|---|---|---|---|---|---|
| FULL | 150 | 0 | 0 | 0 | 0.00 | 0.00 | 0.0 | 3.74 |
| FULL | 150 | 0 | 0 | 0 | 0.00 | 0.14 | 0.6 | 3.96 |
| FULL | 150 | 0 | 0 | 0 | 0.15 | 0.00 | 0.6 | 3.40 |
| FULL | 150 | 0 | 0 | 0 | 0.15 | 0.14 | 0.0 | 5.60 |
| FULL | 150 | 0 | 0 | 32 | 0.00 | 0.00 | 0.6 | 5.10 |
| FULL | 150 | 0 | 0 | 32 | 0.00 | 0.14 | 0.0 | 5.61 |
| FULL | 150 | 0 | 0 | 32 | 0.15 | 0.00 | 0.0 | 6.04 |
| FULL | 150 | 0 | 0 | 32 | 0.15 | 0.14 | 0.6 | 5.87 |
| FULL | 150 | 0 | 5 | 0 | 0.00 | 0.00 | 0.6 | 5.37 |
| FULL | 150 | 0 | 5 | 0 | 0.00 | 0.14 | 0.0 | 5.45 |
| FULL | 150 | 0 | 5 | 0 | 0.15 | 0.00 | 0.0 | 4.46 |
| FULL | 150 | 0 | 5 | 0 | 0.15 | 0.14 | 0.6 | 5.68 |
| FULL | 150 | 0 | 5 | 32 | 0.00 | 0.00 | 0.0 | 6.16 |
| FULL | 150 | 0 | 5 | 32 | 0.00 | 0.14 | 0.6 | 4.25 |
| FULL | 150 | 0 | 5 | 32 | 0.15 | 0.00 | 0.6 | 6.15 |
| FULL | 150 | 0 | 5 | 32 | 0.15 | 0.14 | 0.0 | 3.78 |
| FULL | 150 | 10 | 0 | 0 | 0.00 | 0.00 | 0.6 | 6.07 |
| FULL | 150 | 10 | 0 | 0 | 0.00 | 0.14 | 0.0 | 5.88 |
| FULL | 150 | 10 | 0 | 0 | 0.15 | 0.00 | 0.0 | 5.19 |
| FULL | 150 | 10 | 0 | 0 | 0.15 | 0.14 | 0.6 | 3.80 |
| FULL | 150 | 10 | 0 | 32 | 0.00 | 0.00 | 0.0 | 3.30 |
| FULL | 150 | 10 | 0 | 32 | 0.00 | 0.14 | 0.6 | 5.38 |
| FULL | 150 | 10 | 0 | 32 | 0.15 | 0.00 | 0.6 | 4.97 |
| FULL | 150 | 10 | 0 | 32 | 0.15 | 0.14 | 0.0 | 4.73 |
| FULL | 150 | 10 | 5 | 0 | 0.00 | 0.00 | 0.0 | 3.71 |
| FULL | 150 | 10 | 5 | 0 | 0.00 | 0.14 | 0.6 | 4.94 |
| FULL | 150 | 10 | 5 | 0 | 0.15 | 0.00 | 0.6 | 4.79 |
| FULL | 150 | 10 | 5 | 0 | 0.15 | 0.14 | 0.0 | 3.61 |
| FULL | 150 | 10 | 5 | 32 | 0.00 | 0.00 | 0.6 | 5.57 |
| FULL | 150 | 10 | 5 | 32 | 0.00 | 0.14 | 0.0 | 5.47 |
| FULL | 150 | 10 | 5 | 32 | 0.15 | 0.00 | 0.0 | 5.91 |
| FULL | 150 | 10 | 5 | 32 | 0.15 | 0.14 | 0.6 | 4.54 |



https://doi.org/10.23637/ERADOC-1-45 pp 203

79/R/CS/201

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

SED 0.144*
0.203**
0.287***

* USE ONLY ON MARGINS OF A TWO WAY TABLE,EXCEPT FOR IRRIGATN(77) .
** USE FOR THE BODY OF A TWO WAY TABLE,ONLY WITHIN THE SAME LEVEL OF IRRIGATN(77) (IF APPLICABLE).
*** USE FOR THREE WAY TABLES (IF CONSTRUCTED FROM INDIVIDUAL VALUES), ONLY WITHIN THE SAME LEVEL OF IRRIGATN(77) (IF APPLICABLE) .
DO NOT USE SED FOR THE FOLLOWING TABLES
ALDICARB(77).FONOFOS(77).BEN 1(77)
N(77).BEN 1(77).PERMETH(77)
N(77).FONOFOS(77).PIRIMICA(77)
ALDICARB(77).PERMETH(77).PIRIMICA(77)
N(77).ALDICARB(77).BEN 2(77)
FONOFOS(77).PERMETH(77).BEN 2(77)
BEN 1(77).PIRIMICA(77).BEN 2(77)
AS NO SED'S ARE AVAILABLE FOR THESE TABLES .

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 27 | 0.798 | 16.7 |

GRAIN MEAN DM% 85.0

SUB PLOT AREA HARVESTED 0.00259



*https://doi.org/10.23637/ERADOC-1-45* *pp 204*

79/R/CS/202

## EFFECTS OF PHIALOPHORA

Object: To study the effects of ryegrass, oats and wheat, and of soil inoculation on populations of Phialophora radicicola graminicola (Prg) and on take-all (Gauemannomyces graminis) and yield of following wheat crops - Whittlocks.

Sponsors: E. Lester, D.B. Slope, R.J. Gutteridge.

The third year, wheat.

For previous years see 77-78/R/CS/202.

Design: 3 randomised blocks of 8 plots.

Whole plot dimensions: 2.67 x 6.10.

Treatments:

| | |
|---|---|
| CRP INOC | Crops in 1977 (all wheat 1978 & 1979) and inoculation in 1977 and 1978: |
| GRASS | Ryegrass |
| GRASS(I) | Ryegrass + Prg inoculum 1977 |
| OATS | Spring oats |
| OATS(I) | Spring oats + Prg inoculum 1977 |
| OATS I | Spring oats + Prg inoculum to 1978 wheat |
| OATS DI | Spring oats + dummy inoculum (sand) to 1978 wheat |
| WHEAT | Spring wheat |
| WHEAT(I) | Spring wheat + Prg inoculum 1977 |

NOTE: Phialophora inoculum was a culture macerated in coarse sand. Coarse sand alone was applied as dummy inoculum.

Basal applications: Manures: (0:20:20) at 250 kg. 'Nitro-Chalk' at 380 kg. Autumn weedkiller: Terbutryne and related triazines at 2.8 kg (as 'Prebane' at 5.6 kg in 220 l). Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Flanders, sown at 200 kg.

Cultivations, etc.:- Ploughed: 9 Oct, 1978. Rotary harrowed, seed sown: 11 Oct. Autumn weedkiller applied: 16 Oct. N applied: 23 Apr. Spring weedkiller applied: 15 May. Combine harvested: 30 Aug.

NOTE: Estimates of take-all and Phialophora were made on the crop in April and early July. Bio-assays of soils for take-all and Phialophora were made after harvest, before ploughing.



*https://doi.org/10.23637/ERADOC-1-45* *pp 205*

79/R/CS/202

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| CRP INOC | |
|---|---|
| GRASS | 6.99 |
| GRASS(I) | 6.78 |
| OATS | 6.75 |
| OATS(I) | 6.12 |
| OATS I | 6.96 |
| OATS DI | 6.43 |
| WHEAT | 5.73 |
| WHEAT(I) | 5.27 |
| MEAN | 6.38 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CRP INOC |
|---|---|
| SED | 0.424 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 14 | 0.520 | 8.1 |

GRAIN MEAN DM% 86.7

PLOT AREA HARVESTED 0.00116



*https://doi.org/10.23637/ERADOC-1-45* *pp 206*

79/R/CS/203

## SPECIES MIXTURES AND PHIALOPHORA

Object: To study the effects of lucerne, grass and clover, singly and in mixtures, and of soil inoculation on populations of Phialophora radicicola graminicola (Prg) and on take-all (Gaeumannomyces graminis) and yield of following wheat crops - Stubbings.

Sponsors: E. Lester, D.B. Slope, R.J. Gutteridge.

The third year, wheat; the first year of yields.

Design: 4 randomised blocks of 9 plots, split into 4.

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

1. Whole plots

| CRP INOC | Crops in 1977 and 1978 (all wheat 1979) and inoculation:- 1977 | 1978 |
|---|---|---|
| C C | White clover | White clover |
| G G | Ryegrass | Ryegrass |
| GC GC | Ryegrass/white clover mixture | Ryegrass/white clover |
| LU LU | Lucerne | Lucerne |
| LU LU I | Lucerne | Lucerne + Prg inoculum to 1979 wheat |
| GLU GLU | Ryegrass/lucerne in alternate rows | Ryegrass/lucerne |
| W G | Spring wheat | Ryegrass, sown into spring wheat stubble |
| WG G | Spring wheat undersown with ryegrass | Ryegrass |
| WGI G | Spring wheat, inoculated Prg, undersown with ryegrass | Ryegrass |

2. Sub plots

| N | Nitrogen fertiliser (kg N) in 1979 only: |
|---|---|
| 0 | |
| 50 | |
| 100 | |
| 150 | |

NOTES: (1) The inoculum used for the I treatments was an agar culture of Prg mixed with sand. It was broadcast and power harrowed into the soil before sowing.
(2) All lucerne was inoculated with 'Nodulaid'.



*https://doi.org/10.23637/ERADOC-1-45* *pp 207*

79/R/CS/203

Standard applications: 1977 & 1978:

| Nitrogen (kg N): | 1977 | 1978 |
|---|---|---|
| C C and LU LU | 0 | 0 |
| G G | 75 per cut | 75 per cut |
| GC GC | 30 per cut | 30 per cut |
| GLU GLU | 0 | 30 per cut |
| W G and WG G | 75 to seedbed | 75 per cut |

NOTE: The first N per cut was applied to herbage crops in the seedbed in the year of sowing, in spring thereafter. Subsequent dressings were applied after each cut except the last.

PK: (0:14:28) at 690 kg to all plots for 1977. None in 1978. Weedkillers: Glyphosate at 1.8 kg in 220 l to all plots for 1977. MCPB (as 'Tropotox' at 7.0 kg in 340 l) to C, GC, and G treatments for 1977. 2,4-DB at 2.5 kg in 340 l to LU and GLU treatments for 1977. None in 1978.

Varieties and seed rates (kg) 1977:

| | Grass RvP | Clover Blanca | Lucerne Vertus | S. wheat Sappo |
|---|---|---|---|---|
| C | - | 11 | - | - |
| G | 22 | - | - | - |
| GC | 22 | 2.2 | - | - |
| LU | - | - | 13 | - |
| GLU | 11 | - | 13 | - |
| W | - | - | - | 190 |
| WG | 22 | - | - | 190 |

NOTE: GC: Grass and clover seeds were mixed. GLU: Grass and lucerne seeds were sown in alternate rows.

Varieties and seed rate 1978: Only grass was sown in 1978; W G: RvP sown at 22 kg.

Cultivations, etc. for 1977:- Glyphosate applied: 20 Sept, 1976. Ploughed: 29 Oct. Spring-tine cultivated: 5 Apr, 1977. PK applied: 6 Apr. Spring-tine cultivated, power harrowed for W and WG only: 7 Apr. Power harrowed for G, rolled G, W and WG: 8 Apr. Seed sown for G, W and WG: 9 Apr. First standard N applied: 19 May. LU, C, GC and GLU power harrowed, G and GC sown: 27 May. LU and GLU sown: 1 June. G and GC cut: 21 July. N applied to G only: 27 July. 'Tropotox' applied: 28 July. 2,4-DB applied: 4 Aug. All wheat cut green: 5 Aug. All plots cut: 8 Nov. Previous cropping: Potatoes 1975, wheat 1976.

Cultivations, etc. for 1978:- W G heavy spring-tine cultivated: 16 Sept, 1977. W G disc harrowed twice: 28 Sept. Seed sown for W G treatments: 3 Oct. N applied: 20 Mar, 1978. Grass cut, N applied (as 'Nitra-Shell 34'): 9 June. Grass cut: 24 July.

Basal applications for 1979: Manures: (0:20:20) at 250 kg, combine drilled. Weedkillers: Paraquat at 0.84 kg ion in 220 l. Mecoprop at 2.5 kg and isoproturon at 2.2 kg in 220 l.



*https://doi.org/10.23637/ERADOC-1-45* *pp 208*

79/R/CS/203

Seed for 1979: Flanders, sown at 200 kg.

Cultivations for 1979: Paraquat applied: 3 Aug, 1978. Heavy spring-tine cultivated: 10 Aug (twice), 25 Aug, 8 Sept, 15 Sept. Power harrowed: 10 Oct. Seed sown: 11 Oct. N applied to half of site: 12 Apr, 1979. N applied to remaining plots: 17 Apr. Isoproturon and mecoprop applied: 9 May. Combine harvested: 30 Aug.

NOTE: Estimates of take-all and Phialophora were made on crop in April and early July. Bio-assays of soils for take-all and Phialophora were made after harvest, before ploughing.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N | 0 | 50 | 100 | 150 | MEAN |
|---|---|---|---|---|---|
| CRP INOC | | | | | |
| C C | 4.46 | 6.46 | 7.88 | 8.28 | 6.77 |
| G G | 3.99 | 5.49 | 6.50 | 6.62 | 5.65 |
| GC GC | 3.64 | 5.82 | 6.76 | 6.86 | 5.77 |
| LU LU | 4.33 | 6.25 | 7.43 | 7.49 | 6.38 |
| LU LU I | 4.13 | 6.40 | 7.72 | 7.78 | 6.51 |
| GLU GLU | 3.47 | 5.69 | 6.56 | 7.70 | 5.86 |
| W G | 3.63 | 5.41 | 6.12 | 6.98 | 5.54 |
| WG G | 3.23 | 5.29 | 5.75 | 6.46 | 5.18 |
| WGI G | 3.55 | 5.61 | 6.31 | 6.61 | 5.52 |
| MEAN | 3.83 | 5.83 | 6.78 | 7.20 | 5.91 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CRP INOC | N | CRP INOC N |
|---|---|---|---|
| SED | 0.264 | 0.144 | 0.458 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| CRP INOC | | | 0.432 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 24 | 0.374 | 6.3 |
| BLOCK.WP.SP | 81 | 0.611 | 10.3 |

GRAIN MEAN DM% 86.1

SUB PLOT AREA HARVESTED 0.00127



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/204

## CLOVER VARIETIES IN GRASS/CLOVER MIXTURES

Object: To study the effects of controlling pests and diseases on the persistence of different varieties of white clover in mixed grass/clover swards - Long Hoos IV 2.

Sponsors: I.F. Henderson, R.T. Plumb, J.F. Jenkyn.

The third year, white clover, ryegrass.

For previous years see 77-78/R/CS/204

Design: 2 randomised blocks of 40 plots.

Whole plot dimensions: 1.83 x 6.10.

Treatments: All combinations of:-

1. VARIETY — Varieties and species:

| | |
|---|---|
| S23 | S.23 ryegrass |
| S23/BLAN | S.23 ryegrass + Blanca white clover |
| S23/KWW | S.23 ryegrass + Kent wild white clover |
| S23/LAD | S.23 ryegrass + Ladino white clover |
| S23/MIL | S.23 ryegrass + Milkanova white clover |

2. CHEMICAL — Chemicals for pest and disease control:

| | |
|---|---|
| NONE | None |
| ALDICARB | Aldicarb at 5 kg |
| BENOMYL | Benomyl at 0.5 kg |
| PHOR+MET | Phorate at 5 kg + metaldehyde at 1.8 kg |

3. NITROGEN — Nitrogen fertiliser (kg N as (20:14:14)):

| | |
|---|---|
| N 1 | 100 in spring |
| N 2 | 100 in spring + 50 after each cut except the last |

NOTES: (1) Aldicarb was applied on 2 Apr, 1979 and 10 Aug
(2) Benomyl was applied on 8 Jan and 26 Feb
(3) Phorate and metaldehyde were applied on 6 June, 5 July, 10 Aug, 14 Sept.

Standard applications: Weedkillers (to S.23 only): Dicamba with mecoprop and MCPA (as 'Tetralex Plus' at 6.7 kg) in 220 l.

Cultivations, etc.:- Spring NPK applied: 23 Mar, 1979. Cut: 1 June, 4 July, 8 Aug, 13 Sept, 18 Oct. NPK applied: 1 June, 4 July, 8 Aug, 13 Sept.

NOTE: The proportions of grass and clover, and monocotyledonous and dicotyledonous weeds were determined at each cut. Plots were vacuum sampled for insect pests at monthly intervals during the season.



*https://doi.org/10.23637/ERADOC-1-45* *pp 210*

79/R/CS/204

1ST CUT (1/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL VARIETY | NONE | ALDICARB | BENOMYL | PHOR+MET | MEAN |
|---|---|---|---|---|---|
| S23 | 4.54 | 4.25 | 4.26 | 4.42 | 4.37 |
| S23/BLAN | 4.81 | 5.00 | 4.85 | 4.74 | 4.85 |
| S23/KWW | 4.93 | 5.13 | 4.58 | 4.90 | 4.88 |
| S23/LAD | 4.08 | 4.09 | 4.40 | 4.23 | 4.20 |
| S23/MIL | 4.61 | 4.90 | 5.11 | 5.17 | 4.95 |
| MEAN | 4.59 | 4.68 | 4.64 | 4.69 | 4.65 |

| NITROGEN VARIETY | N 1 | N 2 | MEAN |
|---|---|---|---|
| S23 | 3.48 | 5.26 | 4.37 |
| S23/BLAN | 4.60 | 5.10 | 4.85 |
| S23/KWW | 4.67 | 5.10 | 4.88 |
| S23/LAD | 3.93 | 4.47 | 4.20 |
| S23/MIL | 4.86 | 5.04 | 4.95 |
| MEAN | 4.31 | 4.99 | 4.65 |

| NITROGEN CHEMICAL | N 1 | N 2 | MEAN |
|---|---|---|---|
| NONE | 4.29 | 4.90 | 4.59 |
| ALDICARB | 4.20 | 5.16 | 4.68 |
| BENOMYL | 4.67 | 4.61 | 4.64 |
| PHOR+MET | 4.07 | 5.31 | 4.69 |
| MEAN | 4.31 | 4.99 | 4.65 |

| VARIETY | NITROGEN CHEMICAL | N 1 | N 2 |
|---|---|---|---|
| S23 | NONE | 3.47 | 5.60 |
| | ALDICARB | 3.71 | 4.79 |
| | BENOMYL | 3.36 | 5.16 |
| | PHOR+MET | 3.37 | 5.47 |
| S23/BLAN | NONE | 4.54 | 5.09 |
| | ALDICARB | 4.79 | 5.22 |
| | BENOMYL | 4.91 | 4.79 |
| | PHOR+MET | 4.17 | 5.30 |
| S23/KWW | NONE | 5.27 | 4.59 |
| | ALDICARB | 4.42 | 5.84 |
| | BENOMYL | 4.65 | 4.50 |
| | PHOR+MET | 4.33 | 5.47 |
| S23/LAD | NONE | 3.75 | 4.41 |
| | ALDICARB | 3.86 | 4.33 |
| | BENOMYL | 4.33 | 4.47 |
| | PHOR+MET | 3.78 | 4.68 |
| S23/MIL | NONE | 4.43 | 4.79 |
| | ALDICARB | 4.20 | 5.61 |
| | BENOMYL | 6.10 | 4.12 |
| | PHOR+MET | 4.70 | 5.63 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/204

1ST CUT (1/6/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | CHEMICAL | NITROGEN | VARIETY CHEMICAL |
|---|---|---|---|---|
| SED | 0.243 | 0.217 | 0.154 | 0.486 |

| TABLE | VARIETY NITROGEN | CHEMICAL NITROGEN | VARIETY CHEMICAL NITROGEN |
|---|---|---|---|
| SED | 0.343 | 0.307 | 0.687 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 39 | 0.687 | 14.8 |

1ST CUT MEAN DM% 15.4

2ND CUT (4/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL VARIETY | NONE | ALDICARB | BENOMYL | PHOR+MET | MEAN |
|---|---|---|---|---|---|
| S23 | 2.04 | 1.61 | 1.72 | 2.26 | 1.91 |
| S23/BLAN | 2.69 | 2.99 | 2.70 | 2.99 | 2.84 |
| S23/KWW | 2.13 | 2.60 | 2.60 | 2.57 | 2.48 |
| S23/LAD | 2.45 | 2.76 | 2.60 | 2.85 | 2.66 |
| S23/MIL | 2.72 | 2.89 | 3.10 | 2.96 | 2.92 |
| MEAN | 2.40 | 2.57 | 2.55 | 2.73 | 2.56 |

| NITROGEN VARIETY | N 1 | N 2 | MEAN |
|---|---|---|---|
| S23 | 2.04 | 1.78 | 1.91 |
| S23/BLAN | 2.93 | 2.75 | 2.84 |
| S23/KWW | 2.56 | 2.39 | 2.48 |
| S23/LAD | 2.73 | 2.60 | 2.66 |
| S23/MIL | 3.04 | 2.79 | 2.92 |
| MEAN | 2.66 | 2.46 | 2.56 |

| NITROGEN CHEMICAL | N 1 | N 2 | MEAN |
|---|---|---|---|
| NONE | 2.45 | 2.36 | 2.40 |
| ALDICARB | 2.67 | 2.47 | 2.57 |
| BENOMYL | 2.67 | 2.42 | 2.55 |
| PHOR+MET | 2.85 | 2.60 | 2.73 |
| MEAN | 2.66 | 2.46 | 2.56 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 212*

79/R/CS/204

2ND CUT (4/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY | NITROGEN CHEMICAL | N 1 | N 2 |
|---|---|---|---|
| S23 | NONE | 2.03 | 2.04 |
| | ALDICARB | 1.56 | 1.67 |
| | BENOMYL | 1.95 | 1.50 |
| | PHOR+MET | 2.60 | 1.93 |
| S23/BLAN | NONE | 2.80 | 2.58 |
| | ALDICARB | 3.15 | 2.83 |
| | BENOMYL | 2.80 | 2.59 |
| | PHOR+MET | 2.99 | 3.00 |
| S23/KWW | NONE | 2.04 | 2.22 |
| | ALDICARB | 2.85 | 2.35 |
| | BENOMYL | 2.62 | 2.58 |
| | PHOR+MET | 2.73 | 2.41 |
| S23/LAD | NONE | 2.55 | 2.35 |
| | ALDICARB | 2.92 | 2.60 |
| | BENOMYL | 2.65 | 2.56 |
| | PHOR+MET | 2.82 | 2.88 |
| S23/MIL | NONE | 2.84 | 2.60 |
| | ALDICARB | 2.88 | 2.89 |
| | BENOMYL | 3.34 | 2.86 |
| | PHOR+MET | 3.13 | 2.80 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | CHEMICAL | NITROGEN | VARIETY CHEMICAL |
|---|---|---|---|---|
| SED | 0.104 | 0.093 | 0.066 | 0.208 |

| TABLE | VARIETY NITROGEN | CHEMICAL NITROGEN | VARIETY CHEMICAL NITROGEN |
|---|---|---|---|
| SED | 0.147 | 0.131 | 0.294 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 39 | 0.294 | 11.5 |

2ND CUT MEAN DM% 17.3



*https://doi.org/10.23637/ERADOC-1-45* *pp 213*

79/R/CS/204

3RD CUT (8/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL<br>VARIETY | NONE | ALDICARB | BENOMYL | PHOR+MET | MEAN |
|---|---|---|---|---|---|
| S23 | 0.51 | 0.51 | 0.55 | 0.52 | 0.52 |
| S23/BLAN | 0.96 | 1.02 | 0.74 | 1.02 | 0.94 |
| S23/KWW | 0.71 | 0.79 | 0.61 | 0.80 | 0.73 |
| S23/LAD | 0.94 | 1.02 | 1.04 | 1.28 | 1.07 |
| S23/MIL | 1.03 | 1.00 | 0.98 | 1.11 | 1.03 |
| MEAN | 0.83 | 0.87 | 0.79 | 0.95 | 0.86 |

| NITROGEN<br>VARIETY | N 1 | N 2 | MEAN |
|---|---|---|---|
| S23 | 0.34 | 0.70 | 0.52 |
| S23/BLAN | 0.88 | 0.99 | 0.94 |
| S23/KWW | 0.70 | 0.75 | 0.73 |
| S23/LAD | 1.01 | 1.12 | 1.07 |
| S23/MIL | 1.06 | 1.00 | 1.03 |
| MEAN | 0.80 | 0.91 | 0.86 |

| NITROGEN<br>CHEMICAL | N 1 | N 2 | MEAN |
|---|---|---|---|
| NONE | 0.77 | 0.88 | 0.83 |
| ALDICARB | 0.79 | 0.94 | 0.87 |
| BENOMYL | 0.71 | 0.86 | 0.79 |
| PHOR+MET | 0.92 | 0.97 | 0.95 |
| MEAN | 0.80 | 0.91 | 0.86 |

| VARIETY | NITROGEN<br>CHEMICAL | N 1 | N 2 |
|---|---|---|---|
| S23 | NONE | 0.33 | 0.68 |
| | ALDICARB | 0.37 | 0.65 |
| | BENOMYL | 0.30 | 0.80 |
| | PHOR+MET | 0.37 | 0.67 |
| S23/BLAN | NONE | 0.99 | 0.92 |
| | ALDICARB | 0.85 | 1.19 |
| | BENOMYL | 0.68 | 0.81 |
| | PHOR+MET | 1.01 | 1.04 |
| S23/KWW | NONE | 0.62 | 0.79 |
| | ALDICARB | 0.77 | 0.80 |
| | BENOMYL | 0.62 | 0.61 |
| | PHOR+MET | 0.81 | 0.79 |
| S23/LAD | NONE | 0.90 | 0.97 |
| | ALDICARB | 0.94 | 1.10 |
| | BENOMYL | 1.02 | 1.06 |
| | PHOR+MET | 1.20 | 1.36 |
| S23/MIL | NONE | 1.02 | 1.05 |
| | ALDICARB | 1.05 | 0.95 |
| | BENOMYL | 0.96 | 1.01 |
| | PHOR+MET | 1.22 | 1.01 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/204

3RD CUT (8/8/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | CHEMICAL | NITROGEN | VARIETY CHEMICAL |
|---|---|---|---|---|
| SED | 0.072 | 0.065 | 0.046 | 0.145 |

| TABLE | VARIETY NITROGEN | CHEMICAL NITROGEN | VARIETY CHEMICAL NITROGEN |
|---|---|---|---|
| SED | 0.102 | 0.092 | 0.205 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 39 | 0.205 | 23.9 |

3RD CUT MEAN DM% 28.7

4TH CUT (13/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL VARIETY | NONE | ALDICARB | BENOMYL | PHOR+MET | MEAN |
|---|---|---|---|---|---|
| S23 | 1.06 | 1.08 | 0.90 | 1.26 | 1.07 |
| S23/BLAN | 1.38 | 1.52 | 1.33 | 1.51 | 1.43 |
| S23/KWW | 1.31 | 1.65 | 1.12 | 1.78 | 1.46 |
| S23/LAD | 1.68 | 1.80 | 1.80 | 1.92 | 1.80 |
| S23/MIL | 1.32 | 1.55 | 1.41 | 1.58 | 1.47 |
| MEAN | 1.35 | 1.52 | 1.31 | 1.61 | 1.45 |

| NITROGEN VARIETY | N 1 | N 2 | MEAN |
|---|---|---|---|
| S23 | 0.68 | 1.47 | 1.07 |
| S23/BLAN | 1.37 | 1.50 | 1.43 |
| S23/KWW | 1.36 | 1.57 | 1.46 |
| S23/LAD | 1.79 | 1.81 | 1.80 |
| S23/MIL | 1.44 | 1.49 | 1.47 |
| MEAN | 1.33 | 1.57 | 1.45 |

| NITROGEN CHEMICAL | N 1 | N 2 | MEAN |
|---|---|---|---|
| NONE | 1.28 | 1.42 | 1.35 |
| ALDICARB | 1.37 | 1.68 | 1.52 |
| BENOMYL | 1.17 | 1.45 | 1.31 |
| PHOR+MET | 1.49 | 1.72 | 1.61 |
| MEAN | 1.33 | 1.57 | 1.45 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 215*

79/R/CS/204

4TH CUT (13/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY | NITROGEN / CHEMICAL | N 1 | N 2 |
|---|---|---|---|
| S23 | NONE | 0.71 | 1.41 |
| | ALDICARB | 0.68 | 1.48 |
| | BENOMYL | 0.46 | 1.34 |
| | PHOR+MET | 0.87 | 1.64 |
| S23/BLAN | NONE | 1.32 | 1.44 |
| | ALDICARB | 1.56 | 1.49 |
| | BENOMYL | 1.17 | 1.48 |
| | PHOR+MET | 1.43 | 1.59 |
| S23/KWW | NONE | 1.39 | 1.23 |
| | ALDICARB | 1.43 | 1.88 |
| | BENOMYL | 1.03 | 1.21 |
| | PHOR+MET | 1.59 | 1.96 |
| S23/LAD | NONE | 1.67 | 1.69 |
| | ALDICARB | 1.73 | 1.87 |
| | BENOMYL | 1.85 | 1.76 |
| | PHOR+MET | 1.90 | 1.94 |
| S23/MIL | NONE | 1.32 | 1.31 |
| | ALDICARB | 1.45 | 1.66 |
| | BENOMYL | 1.34 | 1.48 |
| | PHOR+MET | 1.67 | 1.49 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | CHEMICAL | NITROGEN | VARIETY CHEMICAL |
|---|---|---|---|---|
| SED | 0.066 | 0.059 | 0.042 | 0.132 |

| TABLE | VARIETY NITROGEN | CHEMICAL NITROGEN | VARIETY CHEMICAL NITROGEN |
|---|---|---|---|
| SED | 0.093 | 0.083 | 0.186 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 39 | 0.186 | 12.9 |

4TH CUT MEAN DM% 26.6



*https://doi.org/10.23637/ERADOC-1-45* *pp 216*

79/R/CS/204

5TH CUT (18/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL VARIETY | NONE | ALDICARB | BENOMYL | PHOR+MET | MEAN |
|---|---|---|---|---|---|
| S23 | 0.42 | 0.38 | 0.37 | 0.46 | 0.41 |
| S23/BLAN | 0.40 | 0.47 | 0.41 | 0.50 | 0.45 |
| S23/KWW | 0.33 | 0.58 | 0.41 | 0.53 | 0.46 |
| S23/LAD | 0.50 | 0.67 | 0.53 | 0.61 | 0.58 |
| S23/MIL | 0.38 | 0.46 | 0.34 | 0.55 | 0.43 |
| MEAN | 0.41 | 0.51 | 0.41 | 0.53 | 0.47 |

| NITROGEN VARIETY | N 1 | N 2 | MEAN |
|---|---|---|---|
| S23 | 0.19 | 0.63 | 0.41 |
| S23/BLAN | 0.35 | 0.54 | 0.45 |
| S23/KWW | 0.31 | 0.62 | 0.46 |
| S23/LAD | 0.51 | 0.65 | 0.58 |
| S23/MIL | 0.35 | 0.51 | 0.43 |
| MEAN | 0.34 | 0.59 | 0.47 |

| NITROGEN CHEMICAL | N 1 | N 2 | MEAN |
|---|---|---|---|
| NONE | 0.29 | 0.52 | 0.41 |
| ALDICARB | 0.38 | 0.64 | 0.51 |
| BENOMYL | 0.32 | 0.50 | 0.41 |
| PHOR+MET | 0.38 | 0.68 | 0.53 |
| MEAN | 0.34 | 0.59 | 0.47 |

| VARIETY | NITROGEN CHEMICAL | N 1 | N 2 |
|---|---|---|---|
| S23 | NONE | 0.19 | 0.65 |
| | ALDICARB | 0.19 | 0.57 |
| | BENOMYL | 0.16 | 0.58 |
| | PHOR+MET | 0.22 | 0.70 |
| S23/BLAN | NONE | 0.34 | 0.47 |
| | ALDICARB | 0.32 | 0.63 |
| | BENOMYL | 0.33 | 0.50 |
| | PHOR+MET | 0.43 | 0.57 |
| S23/KWW | NONE | 0.20 | 0.47 |
| | ALDICARB | 0.41 | 0.75 |
| | BENOMYL | 0.30 | 0.52 |
| | PHOR+MET | 0.32 | 0.75 |
| S23/LAD | NONE | 0.41 | 0.59 |
| | ALDICARB | 0.58 | 0.76 |
| | BENOMYL | 0.53 | 0.54 |
| | PHOR+MET | 0.52 | 0.71 |
| S23/MIL | NONE | 0.31 | 0.45 |
| | ALDICARB | 0.40 | 0.51 |
| | BENOMYL | 0.30 | 0.38 |
| | PHOR+MET | 0.41 | 0.68 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/204

5TH CUT (18/10/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | CHEMICAL | NITROGEN | VARIETY CHEMICAL |
|---|---|---|---|---|
| SED | 0.035 | 0.031 | 0.022 | 0.069 |

| TABLE | VARIETY NITROGEN | CHEMICAL NITROGEN | VARIETY CHEMICAL NITROGEN |
|---|---|---|---|
| SED | 0.049 | 0.044 | 0.098 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 39 | 0.098 | 21.0 |

5TH CUT MEAN DM% 19.3

TOTAL OF 5 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL<br>VARIETY | NONE | ALDICARB | BENOMYL | PHOR+MET | MEAN |
|---|---|---|---|---|---|
| S23 | 8.56 | 7.83 | 7.80 | 8.92 | 8.28 |
| S23/BLAN | 10.24 | 11.01 | 10.03 | 10.76 | 10.51 |
| S23/KWW | 9.42 | 10.75 | 9.32 | 10.58 | 10.02 |
| S23/LAD | 9.64 | 10.35 | 10.38 | 10.89 | 10.32 |
| S23/MIL | 10.06 | 10.79 | 10.95 | 11.36 | 10.79 |
| MEAN | 9.58 | 10.15 | 9.70 | 10.50 | 9.98 |

| NITROGEN<br>VARIETY | N 1 | N 2 | MEAN |
|---|---|---|---|
| S23 | 6.72 | 9.83 | 8.28 |
| S23/BLAN | 10.14 | 10.88 | 10.51 |
| S23/KWW | 9.60 | 10.43 | 10.02 |
| S23/LAD | 9.97 | 10.66 | 10.32 |
| S23/MIL | 10.76 | 10.82 | 10.79 |
| MEAN | 9.44 | 10.52 | 9.98 |

| NITROGEN<br>CHEMICAL | N 1 | N 2 | MEAN |
|---|---|---|---|
| NONE | 9.09 | 10.08 | 9.58 |
| ALDICARB | 9.41 | 10.88 | 10.15 |
| BENOMYL | 9.55 | 9.84 | 9.70 |
| PHOR+MET | 9.71 | 11.29 | 10.50 |
| MEAN | 9.44 | 10.52 | 9.98 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 218*

79/R/CS/204

TOTAL OF 5 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY | NITROGEN CHEMICAL | N 1 | N 2 |
|---|---|---|---|
| S23 | NONE | 6.73 | 10.39 |
| | ALDICARB | 6.51 | 9.16 |
| | BENOMYL | 6.23 | 9.37 |
| | PHOR+MET | 7.43 | 10.41 |
| S23/BLAN | NONE | 9.99 | 10.50 |
| | ALDICARB | 10.67 | 11.35 |
| | BENOMYL | 9.89 | 10.17 |
| | PHOR+MET | 10.02 | 11.51 |
| S23/KWW | NONE | 9.53 | 9.31 |
| | ALDICARB | 9.88 | 11.61 |
| | BENOMYL | 9.21 | 9.42 |
| | PHOR+MET | 9.78 | 11.38 |
| S23/LAD | NONE | 9.27 | 10.01 |
| | ALDICARB | 10.03 | 10.66 |
| | BENOMYL | 10.37 | 10.39 |
| | PHOR+MET | 10.22 | 11.57 |
| S23/MIL | NONE | 9.91 | 10.20 |
| | ALDICARB | 9.98 | 11.61 |
| | BENOMYL | 12.04 | 9.86 |
| | PHOR+MET | 11.11 | 11.61 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | CHEMICAL | NITROGEN | VARIETY CHEMICAL |
|---|---|---|---|---|
| SED | 0.2880 | 0.2576 | 0.1821 | 0.5759 |

| TABLE | VARIETY NITROGEN | CHEMICAL NITROGEN | VARIETY CHEMICAL NITROGEN |
|---|---|---|---|
| SED | 0.4072 | 0.3643 | 0.8145 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 39 | 0.8145 | 8.2 |

TOTAL OF 5 CUTS MEAN DM% 21.5

AVERAGE PLOT AREA HARVESTED 0.00053



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/211

## FACTORS AFFECTING EYESPOT

Object: To study the effects of a range of treatments on the incidence of eyespot (Pseudocercosporella herpotrichoides) and on the yield of wheat - Meadow.

Sponsors: R.D. Prew, A. Bainbridge.

The second year, wheat.

For previous year see 78/R/CS/211.

Design: 2 randomised blocks of 2 whole plots split into 6 sub plots split into 3 sub sub plots.

Whole plot dimensions: 94.0 x 9.14.

Treatments: All combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. STRAW | | Treatment of straw in autumn 1977 & 1978: |
| | BURNT | Burnt on site after spreading |
| | CARTED | Baled and carted off |

Sub plots

| | | |
|---|---|---|
| 2. DRILLING | | Cultivations and drilling in autumn 1977 & 1978: |
| | CNVNTIAL | Cultivated and conventionally drilled |
| | DIRECT | Uncultivated, direct drilled |
| 3. SOW DATE | | Dates of sowing, autumn 1978: |
| | 26 SEPT | 26 September |
| | 12 OCT | 12 October |
| | 10 NOV | 10 November |

Sub sub plots

| | |
|---|---|
| 4. SEEDRATE | Seed rates, autumn 1978 (kg): |
| 100 | |
| 150 | |
| 200 | |

NOTE: All treatments involving the combinations of STRAW CARTED & DRILLING DIRECT were severely infested with sterile brome grass and were cut green, no yields, on 18 June. Regrowth was cut again on 23 July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 220*

79/R/CS/211

Basal applications: Manures: (10:23:23) at 250 kg, combine drilled. 'Nitro-Chalk' at 500 kg. Weedkillers: Paraquat at 0.56 kg ion in 220 l. Methabenzthiazuron at 1.6 kg in 220 l. Mecoprop at 2.5 kg in 220 l.

Seed: Kador.

Cultivations, etc.:- Straw treatments applied: 9-12 Sept, 1978. Unburnt stubble cut and removed: 20 Sept. Paraquat applied: 22 Sept. CNVNTIAL treatments ploughed, and CNVNTIAL 26 SEPT treatments rotary harrowed, seed sown for all 26 SEPT treatments, CNVNTIAL treatments tine harrowed in, DIRECT treatments disc harrowed in and rolled: 26 Sept. CNVNTIAL 12 OCT treatments rotary harrowed, all 12 OCT treatments sown, CNVNTIAL treatments tine harrowed in, DIRECT treatments disc harrowed in and both treatments rolled: 12 Oct. CNVNTIAL 10 NOV treatments rotary harrowed, all 10 NOV treatments sown, CNVNTIAL treatments tine harrowed in, DIRECT treatments disc harrowed in and both treatments rolled: 10 Nov. Methabenzthiazuron applied: 11 Nov. N applied: 18 Apr, 1979. Mecoprop applied: 9 May. Combine harvested: 30 Aug. Previous crops: Wheat 1977 and 1978.

NOTE: Plants were assessed for infection with eyespot and the incidence of eyespot spores was measured throughout the year. Take-all was assessed at harvest.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SOW DATE | 26 SEPT | 12 OCT | 10 NOV | MEAN |
|---|---|---|---|---|
| STRAW DRILLING | | | | |
| BURNT CNVNTIAL | 5.14 | 5.29 | 4.53 | 4.98 |
| BURNT DIRECT | 5.96 | 5.75 | 5.58 | 5.76 |
| CARTED CNVNTIAL | 5.94 | 5.44 | 4.90 | 5.43 |
| MEAN | 5.68 | 5.49 | 5.00 | 5.39 |

| SEEDRATE | 100 | 150 | 200 | MEAN |
|---|---|---|---|---|
| STRAW DRILLING | | | | |
| BURNT CNVNTIAL | 4.90 | 4.99 | 5.07 | 4.98 |
| BURNT DIRECT | 5.59 | 5.68 | 6.01 | 5.76 |
| CARTED CNVNTIAL | 5.36 | 5.48 | 5.44 | 5.43 |
| MEAN | 5.28 | 5.38 | 5.51 | 5.39 |

| SEEDRATE | 100 | 150 | 200 | MEAN |
|---|---|---|---|---|
| SOW DATE | | | | |
| 26 SEPT | 5.73 | 5.52 | 5.78 | 5.68 |
| 12 OCT | 5.30 | 5.57 | 5.60 | 5.49 |
| 10 NOV | 4.81 | 5.05 | 5.14 | 5.00 |
| MEAN | 5.28 | 5.38 | 5.51 | 5.39 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 221*

79/R/CS/211

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| STRAW DRILLING | SEEDRATE SOW DATE | 100 | 150 | 200 |
|---|---|---|---|---|
| BURNT CNVNTIAL | 26 SEPT | 5.29 | 4.99 | 5.14 |
| | 12 OCT | 5.18 | 5.44 | 5.24 |
| | 10 NOV | 4.23 | 4.55 | 4.82 |
| BURNT DIRECT | 26 SEPT | 5.72 | 5.59 | 6.55 |
| | 12 OCT | 5.61 | 5.79 | 5.85 |
| | 10 NOV | 5.45 | 5.65 | 5.63 |
| CARTED CNVNTIAL | 26 SEPT | 6.18 | 5.99 | 5.65 |
| | 12 OCT | 5.13 | 5.47 | 5.72 |
| | 10 NOV | 4.77 | 4.97 | 4.96 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOW DATE | SEEDRATE | STRAW* DRILLING | SOW DATE SEEDRATE |
|---|---|---|---|---|
| SED | 0.255 | 0.127 | 0.255 | 0.312 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| SOW DATE | | | | 0.221 |

| TABLE | STRAW* DRILLING SOW DATE | STRAW* DRILLING SEEDRATE | STRAW* DRILLLING SEEDRATE SOW DATE |
|---|---|---|---|
| SED | 0.442 | 0.312 | 0.541 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| STRAW.DRILLING | | 0.221 | |
| STRAW.DRILLING.SOW DATE | | | 0.382 |

* WITHIN THE SAME LEVEL OF STRAW ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 7 | 0.442 | 8.2 |
| BLOCK.WP.SP.SSP | 18 | 0.382 | 7.1 |

GRAIN MEAN DM% 87.7

SUB PLOT AREA HARVESTED

DRILLING CNVNTIAL 0.00253
DRILLING DIRECT 0.00248



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/212

## SEASONAL EFFECTS OF TAKE-ALL

Object: To study the incidence of take-all (Gaeumannomyces graminis) in continuous wheat and in first and second wheats after a break - Great Harpenden I.

Sponsor: D. Hornby.

The second year, beans, wheat.

For previous year see 78/R/CS/212.

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 5.33 x 31.39.

Treatments:

| CRP SEQ | Crop sequences: | | | | | |
|---|---|---|---|---|---|---|
| | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
| 1 | W | W | W | W | W | W |
| 2 | W | BE | W | W | BE | W |
| 3 | W | W | BE | W | W | BE |
| 4 | BE | W | W | BE | W | W |

BE = spring beans, W = wheat

NOTE: Yields are recorded from wheat only, and means are presented for the separate sequences although treatments of CRP SEQ 1 and 3 do not yet differ.

Standard applications:-
Wheat: Manures: (0:20:20) at 310 kg, combine drilled. 'Nitro-Chalk' at 350 kg. Weedkiller: Mecoprop at 2.5 kg in 220 l.
Beans: Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Wheat: Flanders, sown at 190 kg.
Beans: Minden, sown at 220 kg.

Cultivations, etc.:-
All plots: Ploughed: 13 Oct, 1978.
Wheat: Rotary harrowed, seed sown: 16 Oct, 1978. N applied: 23 Apr, 1979. Weedkiller applied: 10 May. Combine harvested: 29 Aug.
Beans: Rotary harrowed, seed sown: 23 Apr, 1979. Tractor hoed: 6 June. Insecticide applied: 22 June. Combine harvested: 20 Sept.

NOTE: Soil and plant samples were taken throughout the season. An additional soil sample was taken after harvest. Samples were assessed for take-all.



*https://doi.org/10.23637/ERADOC-1-45* *pp 223*

79/R/CS/212

WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| CRP SEQ | 1 | 3 | 4 | MEAN |
|---|---|---|---|---|
| | 5.83 | 5.70 | 7.03 | 6.19 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CRP SEQ |
|---|---|
| SED | 0.136 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 4 | 0.166 | 2.7 |

GRAIN MEAN DM% 85.6

PLOT AREA HARVESTED 0.00434



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/216 and 79/W/CS/216

EFFECTS OF SUBSOILING & DEEP PK

Object: To study the effects of subsoiling and of incorporating a large dressing of PK in the subsoil on yields and nutrient uptakes of a sequence of crops - Rothamsted (R) Delharding and Woburn (W) Road Piece.

Sponsors: J. McEwen, A.E. Johnston (R), M.K.V. Carr, R.J. Godwin (National College of Agricultural Engineering), P.T. Gooderham, I.B. Warboys, J.M. Wilkes (Wye College).

The second year, beans.

For previous year see 78/R&W/CS/216.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 4.27 x 13.7.

Treatments (applied autumn 1977 only, before spring barley 1978):

| TREATMNT | Machines and incorporation of P and K into the subsoil: |
|---|---|
| NONE | Not subsoiled, no P or K |
| FARM 0 | Farm standard, unwinged, subsoiler, no P or K |
| NCAE 0 | N.C.A.E. winged subsoiler, no P or K |
| NCAE PK | N.C.A.E. winged subsoiler, P and K applied |
| WYE 0 | Wye double digger, no P or K |
| WYE PK | Wye double digger, P and K applied |

NOTES: (1) The rates of P and K were 1930 kg $P_2O_5$, as triple superphosphate and 460 kg $K_2O$ as muriate of potash.
(2) The Farm standard, unwinged, subsoiler was set to work at a depth of 38 cm at intervals of 50 cm Delharding (R) and at a depth of 50 cm at intervals of 70 cm Road Piece (W).
(3) The N.C.A.E. winged subsoiler was set to work at a depth of 40 cm at intervals of 60 cm on plots not given P and K and at alternate depths of 30 cm and 40 cm spaced 30 cm apart on plots given P and K. Fertiliser was applied behind the subsoiling points.
(4) The Wye double digger turns a furrow with a conventional plough to a depth of 23 cm, and at the same time rotary cultivates the bottom of the furrow to a further depth of 15 cm. When applying P and K this was distributed ahead of the rotary cultivator.

Basal applications:
Delharding (R): Weedkillers: Glyphosate at 1.5 kg in 220 l. Trietazine with simazine ('Remtal SC' at 2.8 kg in 220 l). Insecticide: Pirimicarb at 0.14 kg in 220 l.
Road Piece (W): Weedkillers: Diquat at 0.79 kg ion in 280 l. Trietazine with simazine ('Remtal SC' at 2.4 kg in 280 l). Insecticide: Pirimicarb at 0.14 kg in 250 l.

Seed: Minden, sown at 220 kg on both sites.

Cultivations, etc.:-
Delharding (R): Glyphosate applied: 24 Oct, 1978. Ploughed: 16 Nov. Heavy spring-tine cultivated: 20 Apr, 1979. Rotary harrowed: 21 Apr. Seed sown: 23 Apr. Trietazine with simazine applied: 13 May. Insecticide applied: 22 June. Combine harvested: 21 Sept.



*https://doi.org/10.23637/ERADOC-1-45* *pp 225*

79/R/CS/216 and 79/W/CS/216

Road Piece (W): Diquat applied: 8 Sept, 1978. Heavy spring-tine cultivated: 13 Sept. Ploughed: 16 Nov. Spring-tine cultivated with crumbler attached: 16 Apr, 1979. Seed sown: 19 Apr. Trietazine with simazine applied: 1 May. Insecticide applied: 22 June. Combine harvested: 10 Sept.

NOTES: (1) On Road Piece (W) water use was measured during the season using a neutron probe.
(2) On both sites samples were taken at intervals during the season to measure above-ground dry matter and nutrient uptake. Grain samples were analysed for N, P, K, Ca, Na and Mg.

79/R/CS/216 DELHARDING (R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | FARM 0 | NCAE 0 | NCAE PK | WYE 0 | WYE PK | MEAN |
|---|---|---|---|---|---|---|---|
| | 3.61 | 3.61 | 3.66 | 3.49 | 3.76 | 4.10 | 3.71 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT |
|---|---|
| SED | 0.201 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.247 | 6.7 |

GRAIN MEAN DM% 80.3 PLOT AREA HARVESTED 0.00300

79/W/CS/216 ROAD PIECE (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | FARM 0 | NCAE 0 | NCAE PK | WYE 0 | WYE PK | MEAN |
|---|---|---|---|---|---|---|---|
| | 1.41 | 1.22 | 1.33 | 1.29 | 1.52 | 1.89 | 1.44 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT |
|---|---|
| SED | 0.375 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.460 | 31.9 |

GRAIN MEAN DM% 87.3 PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* *pp 226*

79/R/CS/223

LATE N

Object: To study the residual effects on wheat of a range of fertilisers applied to potatoes in 1978 - Long Hoos III.

Sponsors: T.M. Addiscott, J. Ashworth, A. Penny, F.V. Widdowson.

The second year, wheat.

For previous year see 78/R/CS/223.

Design: 3 randomised blocks of 18 plots.

Whole plot dimensions: 9.14 x 4.27.

Treatments: All combinations of:-

1. N FORM(78) Forms of nitrogen fertiliser in 1978:

| | |
|---|---|
| AA | Aqueous ammonia, injected before planting |
| AA+NITRA | Aqueous ammonia + nitrapyrin at 1.1 kg, injected before planting |
| AA+STC | Aqueous ammonia + sodium trithiocarbonate at 22 kg injected before planting |
| AU | Aqueous urea, injected before planting |
| AN E | Ammonium nitrate, all to the seedbed |
| AN E+L | Ammonium nitrate, half to the seedbed, half top-dressed |
| IBDU | Isobutylidene diurea, medium granules all to the seedbed |

2. N RATE(1) Rates of nitrogen fertiliser in 1978 (kg N):

200
300

plus four extra treatments given ammonium nitrate, all to the seedbed in 1978 (kg N):

EXTRA

AN E 150
AN E 250
AN E 350
AN E 400

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. 'Nitro-Chalk' at 370 kg. Weedkillers: Mecoprop at 2.5 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg in 220 l.

Seed: Flanders, sown at 190 kg.

Cultivations, etc.:- Heavy spring-tine cultivated twice: 26 Oct, 1978. Seed sown: 27 Oct. N applied: 30 Apr, 1979. Weedkiller applied: 9 May. Growth regulator applied: 1 June. Combine harvested: 29 Aug.

NOTE: Grain samples were taken for N determinations.



*https://doi.org/10.23637/ERADOC-1-45* *pp 227*

79/R/CS/223

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N RATE(1) / N FORM | 200 | 300 | MEAN |
|---|---|---|---|
| AA | 6.30 | 6.42 | 6.36 |
| AA+NITRA | 6.51 | 6.40 | 6.45 |
| AA+STC | 6.40 | 6.47 | 6.44 |
| AU | 6.41 | 6.57 | 6.49 |
| AN E | 6.53 | 6.44 | 6.49 |
| AN E+L | 6.39 | 6.59 | 6.49 |
| IBDU | 6.71 | 6.59 | 6.65 |
| MEAN | 6.47 | 6.50 | 6.48 |

| EXTRA | AN E 150 | AN E 250 | AN E 350 | AN E 400 | MEAN |
|---|---|---|---|---|---|
| | 6.25 | 6.52 | 6.57 | 6.70 | 6.51 |

GRAND MEAN 6.49

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | N FORM | N RATE(1) | N FORM N RATE(1) & EXTRA |
|---|---|---|---|---|
| SED | 0.145 | 0.102 | 0.055 | 0.145 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 34 | 0.177 | 2.7 |

GRAIN MEAN DM% 86.4

PLOT AREA HARVESTED 0.00290



*https://doi.org/10.23637/ERADOC-1-45* *pp 228*

79/R/CS/232

## AQUEOUS UREA AND NITRIFICATION INHIBITORS

Object: To study the residual effects of adding nitrification inhibitors to liquid fertilisers on the yield and nitrogen uptake of grass cut for silage - Rothamsted (R) Great Harpenden I.

Sponsors: J. Ashworth, A. Penny, M.V. Hewitt.

The second year, ley.

For previous year see 78/R/G/1.

Design: 2 randomised blocks of 28 plots.

Whole plot dimensions: 2.43 x 9.14.

Treatments (applied for the 1978 crop only, no fresh treatments applied for 1979): All combinations of:-

1. U T1 N — Rates of nitrogen fertiliser applied as aqueous urea as a single application, injection tines spaced 30 cm apart (kg N):

| | |
|---|---|
| 2 | 250 |
| 3 | 375 |

2. N TIME — Times of applying aqueous urea:

| | |
|---|---|
| AUTUMN | 25 Nov, 1977 |
| SPRING | 10 Mar, 1978 |

3. NI FORM — Forms of nitrification inhibitors added to aqueous urea:

| | |
|---|---|
| NONE | None |
| NITRAPYR | Nitrapyrin |
| SOD TRI | Sodium trithiocarbonate |
| NIT CS | Nitrapyrin + carbon disulphide |

plus twelve extra treatments:

EXTRA

Aqueous urea, tines spaced 60 cm apart, no inhibitors:

| | |
|---|---|
| UT2 N2A | Supplying 250 kg N in autumn |
| UT2 N2S | Supplying 250 kg N in spring |
| UT2 N3A | Supplying 375 kg N in autumn |
| UT2 N3S | Supplying 375 kg N in spring |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/232

Aqueous urea + ammonium nitrate, tines spaced 30 cm apart, supplying 375 kg N applied in spring

| | |
|---|---|
| UATIN3SO | No nitrification inhibitor |
| UATIN3ST | Sodium trithiocarbonate |
| UATIN3SN | Nitrapyrin |
| UATIN3SM | Mixture of nitrapyrin and carbon disulphide |

'Nitro-Chalk', dressing divided (kg N total):

| | |
|---|---|
| NC N2 | 250 |
| NC N3 | 375 |
| NC N4 | 500 |
| NONE | None |

Basal applications: Manures: (0:14:28) at 500 kg. N at 30 kg as 'Nitro-Chalk'.

Cultivations, etc.: Grass cut (no yields) 14 Nov, 1978. PK applied: 16 Nov. N applied: 12 Apr, 1979. Grass cut: 4 June.

NOTE: Grass samples were assessed for N content.

1ST AND ONLY CUT (4/6/79) DRY MATTER TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | U TI N | N TIME | NI FORM |
|---|---|---|---|---|
| SED | 0.270 | 0.095 | 0.095 | 0.135 |

| TABLE | U TI N N TIME | U TI N NI FORM | N TIME NI FORM | U TI N N TIME NI FORM &EXTRA |
|---|---|---|---|---|
| SED | 0.135 | 0.191 | 0.191 | 0.270 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 27 | 0.270 | 12.4 |

PLOT AREA HARVESTED 0.00078



*https://doi.org/10.23637/ERADOC-1-45* *pp 230*

79/R/CS/232

1ST AND ONLY CUT (4/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME | AUTUMN | SPRING | MEAN |
|---|---|---|---|
| U T1 N | | | |
| 2 | 1.81 | 2.00 | 1.91 |
| 3 | 2.23 | 2.05 | 2.14 |
| MEAN | 2.02 | 2.03 | 2.02 |

| NI FORM | NONE | NITRAPYR | SOD TRI | NIT CS | MEAN |
|---|---|---|---|---|---|
| U T1 N | | | | | |
| 2 | 1.84 | 2.06 | 1.92 | 1.80 | 1.91 |
| 3 | 1.98 | 2.12 | 2.31 | 2.15 | 2.14 |
| MEAN | 1.91 | 2.09 | 2.11 | 1.98 | 2.02 |

| NI FORM | NONE | NITRAPYR | SOD TRI | NIT CS | MEAN |
|---|---|---|---|---|---|
| N TIME | | | | | |
| AUTUMN | 1.81 | 2.06 | 2.17 | 2.04 | 2.02 |
| SPRING | 2.02 | 2.12 | 2.06 | 1.91 | 2.03 |
| MEAN | 1.91 | 2.09 | 2.11 | 1.98 | 2.02 |

| | NI FORM | NONE | NITRAPYR | SOD TRI | NIT CS |
|---|---|---|---|---|---|
| U T1 N | N TIME | | | | |
| 2 | AUTUMN | 1.73 | 1.97 | 1.81 | 1.74 |
| | SPRING | 1.96 | 2.16 | 2.02 | 1.86 |
| 3 | AUTUMN | 1.89 | 2.16 | 2.53 | 2.34 |
| | SPRING | 2.07 | 2.08 | 2.09 | 1.96 |

| EXTRA | |
|---|---|
| UT2 N2A | 1.93 |
| UT2 N2S | 1.85 |
| UT2 N3A | 2.16 |
| UT2 N3S | 2.29 |
| UATIN3SO | 1.98 |
| UATIN3ST | 1.90 |
| UATIN3SN | 2.17 |
| UATIN3SM | 2.66 |
| NC N2 | 3.11 |
| NC N3 | 2.86 |
| NC N4 | 3.83 |
| NONE | 1.79 |
| MEAN | 2.38 |

GRAND MEAN 2.17



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/239

LATE N

Object: To study the effects of a range of fertilisers that release nitrogen later in the growing season than traditional forms on the growth and yield of potatoes - Horsepool.

Sponsors: F.V. Widdowson, A. Penny, J. Ashworth, T.M. Addiscott.

The first year, potatoes.

Design: 3 randomised blocks of 16 plots.

Whole plot dimensions: 4.27 x 13.1.

Treatments: All combinations of:-

1. N FORM — Forms of nitrogen fertiliser:

| | |
|---|---|
| AQ U | Aqueous urea, injected before planting |
| AQ U+CS2 | Aqueous urea + carbon disulphide at 10.0 kg, injected before planting |
| AQ U+NIT | Aqueous urea + nitrapyrin at 1.0 kg, injected before planting |
| NC E | 'Nitro-Chalk', all to the seedbed |
| NC E+L | 'Nitro-Chalk', half to the seedbed, half in June |
| IBDU | Isobutylidene diurea, all to the seedbed |

2. N RATE(1) — Rates of nitrogen fertiliser (kg N):

200
300

plus four extra treatments all given 'Nitro-Chalk':

EXTRA

| | |
|---|---|
| NC E100 | At 100 kg N, all to the seedbed |
| NC E400 | At 400 kg N, all to the seedbed |
| NC EL100 | At 100 kg N, half to the seedbed, half in June |
| NC EL400 | At 400 kg N, half to the seedbed, half in June |

NOTE: Aqueous fertilisers were injected on 3 May, 1979, IBDU and 'Nitro-Chalk' were applied on 4 May. Late 'Nitro-Chalk' was applied on 18 June.

Basal applications: Manures: (0:14:28) at 1880 kg. Weedkillers: Linuron at 1.0 kg plus paraquat at 0.28 kg ion in 250 l. Fungicide: Mancozeb at 1.3 kg in 250 l on six occasions with insecticide on the first two. Insecticide: Pirimicarb at 0.14 kg on two occasions with fungicide. Haulm desiccant: Undiluted BOV at 170 l.

Seed: Pentland Crown.



*https://doi.org/10.23637/ERADOC-1-45* *pp 232*

79/W/CS/239

Cultivations, etc.:- Heavy spring-tine cultivated: 6 Sept, 1978. Subsoiled with tines 140 cm apart and 70 cm deep: 12 Nov. Rotary cultivated: 19 Nov. Ploughed: 24 Nov. PK applied: 7 May, 1979. Heavy spring-tine cultivated: 8 May. Rotary cultivated, potatoes planted: 10 May. Weedkillers applied: 25 May. Rotary ridged: 19 June. Fungicide applied: 27 June, 10 July, 23 July, 10 Aug, 25 Aug, 6 Sept. Insecticide applied: 27 June, 10 July. Haulm desiccant applied: 25 Sept. Lifted: 11 Oct. Previous crops: Winter wheat 1977, winter oats 1978.

NOTE: Plots were assessed for dry matter of tubers and haulm and for numbers of tubers on several occasions during the season. Samples of tubers were analysed for nitrogen percentages.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/CS/239

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| N RATE(1) / N FORM | 200 | 300 | MEAN |
|---|---|---|---|
| AQ U | 51.9 | 40.9 | 46.4 |
| AQ U+CS2 | 45.3 | 39.8 | 42.6 |
| AQ U+NIT | 43.4 | 43.4 | 43.4 |
| NC E | 43.1 | 43.0 | 43.0 |
| NC E+L | 42.9 | ¢44.0 | 43.5 |
| IBDU | 34.2 | 40.6 | 37.4 |
| MEAN | 43.5 | 41.9 | 42.7 |

| EXTRA | NC E100 | NC E400 | NC EL100 | NC EL400 | MEAN |
|---|---|---|---|---|---|
| | 33.5 | 38.0 | 36.6 | 48.9 | 39.2 |

GRAND MEAN 41.8

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N FORM | N RATE(1) | EXTRA | N FORM N RATE(1) & EXTRA |
|---|---|---|---|---|
| SED | 3.77 | 2.17 | 5.32 | 5.32 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 30 | 6.52 | 15.6 |

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| N RATE(1) / N FORM | 200 | 300 | MEAN |
|---|---|---|---|
| AQ U | 91.2 | 85.8 | 88.5 |
| AQ U+CS2 | 89.8 | 89.0 | 89.4 |
| AQ U+NIT | 87.6 | 89.6 | 88.6 |
| NC E | 89.2 | 89.9 | 89.5 |
| NC E+L | 90.9 | 87.5 | 89.2 |
| IBDU | 81.9 | 86.8 | 84.3 |
| MEAN | 88.4 | 88.1 | 88.3 |

| EXTRA | NC E100 | NC E400 | NC EL100 | NC EL400 | MEAN |
|---|---|---|---|---|---|
| | 79.1 | 85.5 | 83.5 | 89.8 | 84.5 |

GRAND MEAN 87.3

PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/240

## EFFECTS OF MYCORRHIZA ON RESPONSE TO P

Object: To study the effects of two methods of inoculating mycorrhiza on the response of potatoes and leeks to a range of rates of phosphate fertiliser - Delharding.

Sponsors: D.P. Stribley, P.B. Tinker.

The first year early potatoes followed by leeks.

Design: Single replicate of 28 plots.

Whole plot dimensions: 2.84 x 3.35.

Treatments: All combinations of:-

1. MYCO INF — Methods of mycorrhizal infection:

| | |
|---|---|
| NONE | None |
| CULTURE | Live culture of a yellow vacuolate mycorrhizal endophyte |
| INF SOIL | Soil from a site known to have mycorrhizal infection |

2. P — Rates of phosphate fertiliser (kg P) as superphosphate:

0
20
40
60
80
100
120
140

Above treatments were applied to potatoes planted 30 cm (12 in.) apart in rows spaced 71 cm (28 in.) apart.

Four extra treatments were included, applied to potatoes planted 15 cm (6 in.) apart in rows 71 cm apart:

XTR CLOS

| | |
|---|---|
| IOPO | No inoculum, no phosphate |
| IOP40 | No inoculum, 40 kg P |
| ISOILPO | Mycorrhizal infected soil, no phosphate |
| ISOILP40 | Mycorrhizal infected soil, 40 kg P |

NOTES: (1) Inoculum for CULTURE was coarse sand containing 240 spores of Glomus mosseae per kg applied at 250 g per tuber. Inoculum for INF SOIL was soil containing 670 spores per kg of bulbous reticulate mycorrhiza (Gigaspora sp.) applied at 500 g per tuber.
(2) Leeks were not lifted by 31 Dec, 1979 and will be reported on in 'Yields' 1980.
(3) No yields were taken for XTR CLOS plots.

Basal applications: Manures: Chalk at 7.5 t. Muriate of potash at 580 kg. (25:0:16) at 720 kg. Kieserite at 340 kg.



*https://doi.org/10.23637/ERADOC-1-45* *pp 235*

79/R/CS/240

Seed: Ulster Sceptre.

Cultivations, etc.:- Chalk applied: 4 Apr, 1979. K, NK and Mg applied: 23 Apr. Test P applied: 27 Apr. Spring-tine cultivated three times: 9 May, 10 May, 14 May. Rotary harrowed, rotary ridged: 14 May. Potatoes planted: 15 May. Lifted: 8 Aug. Previous crops: Winter wheat 1977, fallow 1978.

NOTE: Plots were sampled several times to assess mycorrhizal infection, P content of leaves and of soil.

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| P | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| MYCO INF | | | | | | | | | |
| NONE | 5.2 | 10.2 | 14.9 | 12.9 | 14.5 | 12.7 | 18.5 | 13.8 | 12.8 |
| CULTURE | 5.4 | 8.6 | 12.5 | 13.5 | 16.5 | 14.5 | 13.1 | 11.5 | 12.0 |
| INF SOIL | 15.2 | 11.5 | 14.8 | 21.7 | 21.9 | 21.0 | 15.2 | 14.6 | 17.0 |
| MEAN | 8.6 | 10.1 | 14.1 | 16.0 | 17.6 | 16.1 | 15.6 | 13.3 | 13.9 |

PLOT AREA HARVESTED 0.00026



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/241

# PESTICIDES AND SLOT-SEEDING

Object: To study the effects of aldicarb and phorate, applied at sowing, on the incidence of pests and on the survival and yield of ryegrass sown into an existing grass sward by a slot-seeding drill - Little Knott II.

Sponsors: I.F. Henderson, A.M. Spaull, R.W. Gibson.

The first year, grass.

Design: 3 randomised blocks of 7 plots split into 3.

Whole plot dimensions: 2.0 x 24.0.

Treatments: All combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. | TREATMNT | Treatments, applied to old grass: |
| | 0 0 0 | None |
| | 0 S 0 | Slot seeder used not sowing seed |
| | G S R | Old grass killed with glyphosate, RvP ryegrass sown by slot-seeder |
| | 0 S B | Baroldi ryegrass sown by slot-seeder |
| | 0 S M | Grasslands Manawa ryegrass sown by slot-seeder |
| | 0 S R | RvP ryegrass sown by slot-seeder |
| | 0 S S | S.24 ryegrass sown by slot-seeder |

Sub plots

| | | |
|---|---|---|
| 2. | PESTCIDE | Pesticides applied at sowing:- |
| | NONE | None |
| | ALDICARB | Aldicarb at 10 kg |
| | PHORATE | Phorate at 10 kg |

NOTES: (1) The slot-seeder cut slots in the sward 2.5 cm deep and 30 cm apart, using knife coulters. Seed was sown at 12 kg.
(2) Glyphosate to G S R was applied at 3.0 kg in 1000 l on 4 Apr, 1979.
(3) One replicate of each of the treatment combinations 0 S B ALDICARB, 0 S B NONE, 0 0 0 NONE, 0 0 0 ALDICARB, was sprayed with glyphosate in error. Estimated values were used in the analysis.

Basal applications: Manures: (20:14:14) at 125 kg combine drilled. (Applied by hand in rows 30 cm apart to 0 0 0). (25:0:16) at 200 kg after each cut except the last.

Cultivations, etc.:- Seed sown: 6 Apr, 1979. Cut: 30 May, 27 June, 25 July, 22 Aug, 18 Sept, 17 Oct. NK applied: 6 June, 28 June, 26 July, 24 Aug, 19 Sept.

NOTE: Samples of harvested produce were sorted and weighed to determine amounts of original sward, dicotyledonous weeds and sown species.



*https://doi.org/10.23637/ERADOC-1-45* *pp 237*

79/R/CS/241

1ST CUT (30/5/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE<br>TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 3.08 | 3.10 | 3.44 | 3.21 |
| 0 S 0 | 2.84 | 2.39 | 2.74 | 2.65 |
| G S R | 0.32 | 0.24 | 0.44 | 0.33 |
| 0 S B | 2.45 | 2.98 | 2.63 | 2.69 |
| 0 S M | 2.65 | 2.95 | 2.73 | 2.78 |
| 0 S R | 2.23 | 2.56 | 3.10 | 2.63 |
| 0 S S | 2.56 | 2.54 | 2.50 | 2.53 |
| MEAN | 2.31 | 2.39 | 2.51 | 2.40 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT<br>PESTCIDE |
|---|---|---|---|
| SED | 0.170 | 0.092 | 0.261 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.243 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.208 | 8.7 |
| BLOCK.WP.SP | 24 | 0.298 | 12.4 |

2ND CUT (27/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE<br>TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 1.35 | 1.33 | 1.23 | 1.30 |
| 0 S 0 | 1.69 | 1.41 | 1.76 | 1.62 |
| G S R | 1.63 | 1.90 | 2.08 | 1.87 |
| 0 S B | 1.41 | 1.38 | 1.79 | 1.52 |
| 0 S M | 1.38 | 1.50 | 1.45 | 1.44 |
| 0 S R | 1.53 | 1.68 | 1.49 | 1.56 |
| 0 S S | 1.54 | 1.52 | 1.69 | 1.58 |
| MEAN | 1.50 | 1.53 | 1.64 | 1.56 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT<br>PESTCIDE |
|---|---|---|---|
| SED | 0.204 | 0.062 | 0.244 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.165 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.250 | 16.0 |
| BLOCK.WP.SP | 24 | 0.202 | 13.0 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/241

3RD CUT (25/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 1.09 | 0.76 | 0.86 | 0.90 |
| 0 S 0 | 0.81 | 0.82 | 0.92 | 0.85 |
| G S R | 1.20 | 1.43 | 1.36 | 1.33 |
| 0 S B | 0.84 | 0.96 | 0.75 | 0.85 |
| 0 S M | 0.57 | 0.72 | 0.75 | 0.68 |
| 0 S R | 0.73 | 0.81 | 0.89 | 0.81 |
| 0 S S | 0.59 | 0.91 | 0.87 | 0.79 |
| MEAN | 0.83 | 0.91 | 0.91 | 0.89 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT PESTCIDE |
|---|---|---|---|
| SED | 0.109 | 0.046 | 0.148 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.123 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.133 | 15.0 |
| BLOCK.WP.SP | 24 | 0.150 | 17.0 |

4TH CUT (22/8/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 1.14 | 1.10 | 1.13 | 1.13 |
| 0 S 0 | 0.90 | 1.16 | 1.26 | 1.11 |
| G S R | 1.35 | 1.50 | 1.53 | 1.46 |
| 0 S B | 1.18 | 1.15 | 1.27 | 1.20 |
| 0 S M | 1.05 | 1.20 | 1.12 | 1.12 |
| 0 S R | 1.15 | 1.27 | 1.22 | 1.21 |
| 0 S S | 0.84 | 1.17 | 1.33 | 1.11 |
| MEAN | 1.09 | 1.22 | 1.27 | 1.19 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT PESTCIDE |
|---|---|---|---|
| SED | 0.075 | 0.058 | 0.147 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.155 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.092 | 7.8 |
| BLOCK.WP.SP | 24 | 0.189 | 15.9 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/CS/241

5TH CUT (18/9/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE<br>TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 0.79 | 0.56 | 0.68 | 0.68 |
| 0 S 0 | 0.72 | 0.80 | 0.69 | 0.74 |
| G S R | 0.68 | 0.69 | 0.76 | 0.71 |
| 0 S B | 0.80 | 0.79 | 0.64 | 0.74 |
| 0 S M | 0.60 | 0.68 | 0.69 | 0.66 |
| 0 S R | 0.71 | 0.82 | 0.86 | 0.80 |
| 0 S S | 0.49 | 0.70 | 0.72 | 0.64 |
| MEAN | 0.68 | 0.72 | 0.72 | 0.71 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT<br>PESTCIDE |
|---|---|---|---|
| SED | 0.077 | 0.034 | 0.106 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.089 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.094 | 13.3 |
| BLOCK.WP.SP | 24 | 0.109 | 15.4 |

6TH CUT (17/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE<br>TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 0.47 | 0.72 | 0.62 | 0.60 |
| 0 S 0 | 0.54 | 0.46 | 0.53 | 0.51 |
| G S R | 0.53 | 0.49 | 0.55 | 0.52 |
| 0 S B | 0.40 | 0.41 | 0.56 | 0.46 |
| 0 S M | 0.57 | 0.54 | 0.56 | 0.56 |
| 0 S R | 0.44 | 0.53 | 0.57 | 0.52 |
| 0 S S | 0.50 | 0.51 | 0.57 | 0.52 |
| MEAN | 0.49 | 0.52 | 0.57 | 0.53 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT<br>PESTCIDE |
|---|---|---|---|
| SED | 0.041 | 0.029 | 0.074 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.076 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.050 | 9.6 |
| BLOCK.WP.SP | 24 | 0.093 | 17.6 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 240*

79/R/CS/241

TOTAL OF 6 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| PESTCIDE<br>TREATMNT | NONE | ALDICARB | PHORATE | MEAN |
|---|---|---|---|---|
| 0 0 0 | 7.93 | 7.57 | 7.96 | 7.82 |
| 0 S 0 | 7.50 | 7.03 | 7.89 | 7.48 |
| G S R | 5.71 | 6.24 | 6.72 | 6.23 |
| 0 S B | 7.08 | 7.66 | 7.65 | 7.46 |
| 0 S M | 6.82 | 7.58 | 7.30 | 7.23 |
| 0 S R | 6.78 | 7.68 | 8.14 | 7.53 |
| 0 S S | 6.51 | 7.35 | 7.66 | 7.18 |
| MEAN | 6.90 | 7.30 | 7.62 | 7.28 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT | PESTCIDE | TREATMNT<br>PESTCIDE |
|---|---|---|---|
| SED | 0.222 | 0.143 | 0.381 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| TREATMNT | | | 0.380 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.272 | 3.7 |
| BLOCK.WP.SP | 24 | 0.465 | 6.4 |

1ST CUT MEAN DM% 17.2
2ND CUT MEAN DM% 17.8
3RD CUT MEAN DM% 26.2
4TH CUT MEAN DM% 18.8
5TH CUT MEAN DM% 23.1
6TH CUT MEAN DM% 18.0
TOTAL OF 6 CUTS MEAN DM% 20.2

AVERAGE PLOT AREA HARVESTED 0.00071



*https://doi.org/10.23637/ERADOC-1-45* 

79/S/CS/1

## FUNGICIDES, N AND GROWTH REGULATOR

Object: To study the effects of fungicides, and rates and times of applying nitrogen fertiliser and a growth regulator on the incidence of foliar diseases and on the yield of barley - Saxmundham, Oldershaw's and Garner's plots.

Sponsors: F.V. Widdowson, J.F. Jenkyn, A. Penny.

The 14th year, winter barley.

For previous years see 66/C/30(t), 67/C/23(t), 68/C/39, 69-70/S/CS/1, 71/S/CS/1(t), 72/S/CS/1(t) and 73-78/S/CS/1.

Design: A single replicate of $2^6$ in 4 blocks of 4 plots each split into half and quarter plots, plus one additional plot per block similarly split. Most treatments to wheat 1966-1976 and to barley 1977-1978 have been ignored.

Whole plot dimensions: 5.49 x 40.2.

Treatments: All combinations of:-

Whole plots

1. EYESFUNG — Fungicide to control eyespot: Carbendazim (as 'Bavistin' at 0.51 kg) in 220 l

   NONE — None
   SPRAYED — Sprayed 15 May, 1979

2. MILDFUNG — Fungicide to control mildew: Tridemorph at 0.53 kg in 220 l

   NONE — None
   SPRAYED — Sprayed 15 May

Half plots

3. APRIL N — Nitrogen fertiliser (kg N) applied on 2 May, 1979:

   0
   40

4. GRTH REG — Growth regulator: applied on 16 May

   NONE — None
   MEP+ETH — Mepiquat chloride + ethephon ('Terpal' at 2.46 kg) in 280 l

Quarter plots

5. E N RATE — Rates of early spring nitrogen fertiliser (kg N total):

   80
   120



*https://doi.org/10.23637/ERADOC-1-45* *pp 242*

79/S/CS/1

6. E N TIME — Times of applying early spring nitrogen fertiliser:

| | |
|---|---|
| FEB+MAR | Half on 6 Mar, half on 10 Apr |
| MAR | All on 10 Apr |

XTRA EMR — Plus one additional whole plot per block sprayed with fungicides to control eyespot and mildew and given growth regulator, testing all combinations of:

Half plots

1. SEEDBD N — Nitrogen fertiliser (kg N) applied to seedbed on 26 Sept, 1978:

0
50

2. APRIL N — Nitrogen fertiliser (kg N) applied on 2 May, 1979

0
40

Quarter plots

3. E N RATE — Rates of early spring nitrogen fertiliser (kg N total):

80
120

4. E N TIME — Times of applying early spring nitrogen fertiliser:

| | |
|---|---|
| FEB+MAR | Half on 6 Mar, half on 10 Apr |
| MAR | All on 10 Apr |

NOTE: Plots not receiving test of seedbed N received 50 kg N after drilling.

Basal applications: (0:14:28) at 290 kg. Autumn weedkiller: Chlortoluron at 4.5 kg in 220 l. Spring weedkiller: 'Wheatclene', 2.5 kg of solid (metoxuron and simazine) 2.5 l of liquid (barban) in 220 l.

Seed: Sonja, sown at 160 kg.

Cultivations, etc.:- PK applied: 19 Sept, 1978. Seed sown, chlortoluron applied: 26 Sept. Spring weedkillers applied: 10 Apr, 1979. Combine harvested: 8 Aug.

NOTES: (1) Soils were sampled and assessed for mineral N in March and April, leaf diseases were assessed in May and June and N content of grain was assessed at harvest.
(2) Because of a design error, in the main analysis many interactions are identified with each other and therefore only the main effects are presented.
(3) Because of bird damage the yields from two XTRA EMR sub plots were lost, the treatment combinations are marked with * in the table.



*https://doi.org/10.23637/ERADOC-1-45* *pp 243*

79/S/CS/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| EYESFUNG | NONE | SPRAYED | MEAN |
|---|---|---|---|
| | 6.40 | 6.70 | 6.55 |

| MILDFUNG | NONE | SPRAYED | MEAN |
|---|---|---|---|
| | 6.53 | 6.57 | 6.55 |

| APRIL N | 0 | 40 | MEAN |
|---|---|---|---|
| | 6.29 | 6.81 | 6.55 |

| GRTH REG | NONE | MEP+ETH | MEAN |
|---|---|---|---|
| | 6.45 | 6.65 | 6.55 |

| E N RATE | 80 | 120 | MEAN |
|---|---|---|---|
| | 6.28 | 6.82 | 6.55 |

| E N TIME | FEB+MAR | MAR | MEAN |
|---|---|---|---|
| | 6.64 | 6.46 | 6.55 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EYESFUNG | MILDFUNG | APRIL N | GRTH REG |
|---|---|---|---|---|
| SED | 0.123 | 0.123 | 0.199 | 0.199 |

| TABLE | E N RATE | E N TIME |
|---|---|---|
| SED | 0.071 | 0.071 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 4 | 0.247 | 3.8 |
| BLOCK.WP.HP | 5 | 0.563 | 8.6 |
| BLOCK.WP.HP.QP | 12 | 0.282 | 4.3 |

GRAIN MEAN DM % 84.1

XTRA EMR

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SEEDBD N | APRIL N | E N TIME / E N RATE | FEB+MAR | MAR |
|---|---|---|---|---|
| 0 | 0 | 80 | 2.76 | * |
| | | 120 | 6.59 | 3.78 |
| | 40 | 80 | 6.07 | 5.96 |
| | | 120 | 6.72 | 6.80 |
| 50 | 0 | 80 | 5.11 | 5.75 |
| | | 120 | 6.73 | 6.93 |
| | 40 | 80 | * | 5.03 |
| | | 120 | 5.34 | 6.69 |

GRAIN MEAN DM % 84.2 SUB PLOT AREA HARVESTED 0.00466



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/1 and 79/W/WW/1

WINTER WHEAT

VARIETIES AND N

Object: To study the yields and flour quality of a selection of the newer varieties of winter wheat and the effects of nitrogen on them on land in rotation (pathogen free) and after cereal (pathogen infected) - Rothamsted Fosters Corner (pathogen free RH) and Pastures (pathogen infected RD), Woburn Horsepool Lane Close East (pathogen free WH).

Sponsors: R. Moffitt, R.J. Gutteridge.

Design: 3 randomised blocks of 8 plots split into 4 (except Woburn 4 blocks).

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

Whole plots

1. VARIETY

| | |
|---|---|
| ARMADA | Armada |
| COPAIN | Copain |
| FLANDERS | Flanders |
| HUSTLER | Hustler |
| MARDLER | Mardler |
| HUNTSMAN | Maris Huntsman |
| SENTRY | Sentry |
| SPORTSMN | Sportsman |

Sub plots

2. N

| (RH) | (RD&WH) | Fosters Corner (RH) | Pastures (RD) & Horsepool Lane Close East (WH |
|---|---|---|---|
| 0 | 63 | 0 | 63 in spring |
| 63 | 126 | 63 in spring | 126 in spring |
| 126 | 189 | 126 in spring | 189 in spring |
| 63+63 | 126+63 | 63 in spring + 63 at flowering | 126 in spring + 63 at flowering |

NOTE: Spring N was applied as 'Nitro-Chalk'. N at flowering was applied as aqueous urea (6% N) in two equal applications at 31.5 kg on 19 June, 12 July to Fosters Corner (RH) and Pastures (RD) and as 'Nitro-Chalk' in one application on 25 June, to Horsepool Lane Close East (WH).

Basal applications: Manures: Fosters Corner (RH), Pastures (RD) and Horsepool Lane Close East (WH): (0:20:20) at 310 kg (RH) and (RD) combine drilled, (WH) broadcast. Weedkillers: Fosters Corner (RH): Bromoxynil and ioxynil (as 'Oxytril CM' at 2.1 kg in 220 l). Pastures (RD): Mecoprop at 2.5 kg in 220 l. Horsepool Lane Close East (WH): Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 250 l).



*https://doi.org/10.23637/ERADOC-1-45* *pp 245*

79/R/WW/1 and 79/W/WW/1

Seed: Fosters Corner (RH) and Pastures (RD): Varieties sown at 190 kg.
Horsepool Lane Close East (WH): Varieties sown at 180 kg.

Cultivations, etc.:-
Fosters Corner (RH): Heavy spring-tine cultivated twice, seed sown: 23 Oct, 1978. N applied: 3 May, 1979. Weedkillers applied: 14 May. Combine harvested: 31 Aug. Previous cropping: Beans 1977, potatoes 1978.
Pastures (RD): Ploughed: 17 Oct, 1978. Rotary harrowed, seed sown: 23 Oct. N and weedkiller applied: 8 May, 1979. Combine harvested: 31 Aug. Previous cropping: Beans 1977, wheat 1978.
Horsepool Lane Close East (WH): Heavy spring-tine cultivated twice: 11 Oct, 1978, 13 Oct. PK applied, spring-tine cultivated with crumbler attached: 17 Oct. Seed sown: 20 Oct. N applied: 26 Apr, 1979. Weedkillers applied: 15 May. Combine harvested: 31 Aug. Previous crops: Winter oats 1977, potatoes 1978.

NOTE: Samples were taken in July on Pastures (RD) for estimates of eyespot (Pseudocercosporella herpotrichoides) and take-all (Gaeumannomyces graminis).

79/R/WW/1 FOSTERS CORNER (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N | 0 | 63 | 126 | 63+63 | MEAN |
|---|---|---|---|---|---|
| VARIETY | | | | | |
| ARMADA | 4.14 | 6.49 | 6.82 | 6.65 | 6.03 |
| COPAIN | 3.32 | 6.12 | 7.08 | 6.35 | 5.72 |
| FLANDERS | 3.91 | 6.42 | 6.84 | 6.64 | 5.96 |
| HUSTLER | 3.68 | 6.48 | 6.39 | 6.68 | 5.81 |
| MARDLER | 4.04 | 6.27 | 6.05 | 6.30 | 5.67 |
| HUNTSMAN | 3.82 | 6.53 | 7.09 | 6.61 | 6.01 |
| SENTRY | 3.72 | 6.09 | 5.95 | 5.94 | 5.42 |
| SPORTSMN | 4.44 | 5.63 | 6.07 | 6.50 | 5.66 |
| MEAN | 3.88 | 6.25 | 6.54 | 6.46 | 5.78 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | N | VARIETY N |
|---|---|---|---|
| SED | 0.143 | 0.103 | 0.290 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.292 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 14 | 0.175 | 3.0 |
| BLOCK.WP.SP | 48 | 0.358 | 6.2 |

GRAIN MEAN DM% 83.9

SUB PLOT AREA HARVESTED 0.00173



*https://doi.org/10.23637/ERADOC-1-45* *pp 246*

79/R/WW/1 PASTURES (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N<br>VARIETY | 63 | 126 | 189 | 126+63 | MEAN |
|---|---|---|---|---|---|
| ARMADA | 5.13 | 6.03 | 5.06 | 5.31 | 5.38 |
| COPAIN | 4.95 | 6.30 | 6.63 | 6.26 | 6.03 |
| FLANDERS | 5.22 | 5.80 | 6.00 | 5.91 | 5.73 |
| HUSTLER | 5.34 | 6.22 | 5.49 | 5.87 | 5.73 |
| MARDLER | 5.32 | 5.87 | 5.37 | 5.34 | 5.48 |
| HUNTSMAN | 5.66 | 6.47 | 6.56 | 6.43 | 6.28 |
| SENTRY | 5.15 | 5.78 | 5.99 | 5.72 | 5.66 |
| SPORTSMN | 5.65 | 5.76 | 5.19 | 5.40 | 5.50 |
| MEAN | 5.30 | 6.03 | 5.79 | 5.78 | 5.72 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | N | VARIETY<br>N |
|---|---|---|---|
| SED | 0.191 | 0.112 | 0.334 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.316 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 14 | 0.234 | 4.1 |
| BLOCK.WP.SP | 48 | 0.387 | 6.8 |

GRAIN MEAN DM% 85.5

SUB PLOT AREA HARVESTED 0.00172



*https://doi.org/10.23637/ERADOC-1-45* *pp 247*

79/W/WW/1 HORSEPOOL LANE CLOSE EAST (WH) PATHOGEN FREE

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N VARIETY | 63 | 126 | 189 | 126+63 | MEAN |
|---|---|---|---|---|---|
| ARMADA | 4.93 | 4.78 | 4.45 | 4.82 | 4.75 |
| COPAIN | 4.17 | 4.56 | 4.21 | 4.13 | 4.27 |
| FLANDERS | 4.75 | 4.53 | 4.10 | 4.39 | 4.44 |
| HUSTLER | 4.57 | 4.25 | 3.76 | 4.02 | 4.15 |
| MARDLER | 4.36 | 4.27 | 3.36 | 3.37 | 3.84 |
| HUNTSMAN | 4.63 | 4.51 | 4.15 | 4.08 | 4.34 |
| SENTRY | 4.14 | 4.08 | 3.19 | 3.60 | 3.75 |
| SPORTSMN | 3.64 | 3.05 | 2.64 | 3.03 | 3.09 |
| MEAN | 4.40 | 4.25 | 3.73 | 3.93 | 4.08 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | N | VARIETY N |
|---|---|---|---|
| SED | 0.168 | 0.095 | 0.286 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.267 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 14 | 0.206 | 5.1 |
| BLOCK.WP.SP | 48 | 0.328 | 8.0 |

GRAIN MEAN DM% 82.8

SUB PLOT AREA HARVESTED 0.00173



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/2 and 79/W/WW/2

WINTER WHEAT

AQUEOUS N AND NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to aqueous urea on the yield and nitrogen uptake of winter wheat. At Rothamsted only, the effects of conventional and direct drilling are also studied - Rothamsted (R) Pastures and Woburn (W) Warren Field I.

Sponsors: F.V. Widdowson, J. Ashworth, A. Penny.

Design: 2 randomised blocks each containing 4 sub-blocks of 3 plots, plus 6 extra plots. At Rothamsted another factor (drilling) was applied to half-blocks in a criss-cross manner.

Whole plot dimensions: Pastures (R): 4.27 x 29.0.
Warren Field I (W): 4.27 x 12.2.

Treatments: All combinations of:-

Sub-blocks (SB)

1. AQ N AUT — Rates of nitrogen (kg N) injected in autumn as aqueous urea:

   50
   100

2. TOTAL N — Total rates of nitrogen (kg N), part applied in autumn (AQ N AUT), part in spring as 'Nitro-Chalk':

   150 — Total 150 (100 in spring to AQ N AUT 50, 50 in spring to AQ N AUT 100)
   200 — Total 200 (150 in spring to AQ N AUT 50, 100 in spring to AQ N AUT 100)

Plots (WP)

3. N INHIB — Nitrification inhibitors added to aqueous urea:

   NITRAPYR — Nitrapyrin at 1.5 kg
   PEX 2 — Potassium ethyl xanthate at 2 kg
   PEX 10 — Potassium ethyl xanthate at 10 kg

plus six extra plots given 'Nitro-Chalk' only in spring (kg N):

   EXTRA

   0
   NC 50
   NC 100
   NC 150
   NC 200
   NC 250



*https://doi.org/10.23637/ERADOC-1-45* *pp 249*

79/R/WW/2 and 79/W/WW/2

Half-blocks (HB) (R only)

4. DRILLING Drilling method:

| | |
|---|---|
| CNVNTIAL | Conventional |
| DIRECT | Direct drilled |

NOTE: 'Nitro-Chalk' dressings were divided, two-thirds in April, one-third in May.

Basal applications:
Pastures (R): Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Mecoprop at 2.5 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg in 220 l.
Warren Field I (W): Manures: (0:20:20) at 310 kg. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 kg in 250 l). Growth regulator: Chlormequat at 1.7 kg in 250 l.

Seed: Pastures (R): Flanders, sown at 190 kg.
Warren Field I (W): Maris Kinsman, sown at 190 kg.

Cultivations, etc.:-
Pastures (R): 'CNVNTIAL': Chisel ploughed twice: 6 Oct, 1978. Aqueous N with inhibitors injected: 9 Oct. All plots disc harrowed, seed sown, 'CNVNTIAL' plots harrowed in, 'DIRECT' plots disced in: 12 Oct. Paraquat applied: 23 Oct. 'Nitro-Chalk' applied: 20 Apr, 1979. Mecoprop applied: 9 May. 'Nitro-Chalk' applied: 17 May. Growth regulator applied: 1 June. Combine harvested: 29 Aug. Previous cropping: Beans 1977, wheat 1978.
Warren Field I (W): Heavy spring-tine cultivated: 11 Sept, 1978. Deep-tine cultivated: 18 Sept. Aqueous N with inhibitors injected: 10 Oct. PK applied: 17 Oct. Disc harrowed twice: 13-14 Nov. Seed sown: 14 Nov. 'Nitro-Chalk' applied: 23 Apr, 1979. Weedkiller applied: 15 May. 'Nitro-Chalk' applied: 18 May. Growth regulator applied: 1 June. Combine harvested: 31 Aug. Previous cropping: Potatoes 1977, wheat 1978.

NOTE: At Rothamsted only soil samples were taken at monthly intervals, November to July for measurements of nitrate and ammonia.



*https://doi.org/10.23637/ERADOC-1-45* *pp 250*

79/R/WW/2 PASTURES(R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N INHIB AQ N AUT | NITRAPYR | PEX 2 | PEX 10 | MEAN |
|---|---|---|---|---|
| 50 | 5.70 | 5.17 | 5.55 | 5.47 |
| 100 | 6.01 | 5.61 | 5.42 | 5.68 |
| MEAN | 5.85 | 5.39 | 5.48 | 5.58 |

| TOTAL N AQ N AUT | 150 | 200 | MEAN |
|---|---|---|---|
| 50 | 5.38 | 5.56 | 5.47 |
| 100 | 5.20 | 6.17 | 5.68 |
| MEAN | 5.29 | 5.86 | 5.58 |

| TOTAL N N INHIB | 150 | 200 | MEAN |
|---|---|---|---|
| NITRAPYR | 5.68 | 6.02 | 5.85 |
| PEX 2 | 5.09 | 5.69 | 5.39 |
| PEX 10 | 5.09 | 5.88 | 5.48 |
| MEAN | 5.29 | 5.86 | 5.58 |

| DRILLING AQ N AUT | CNVNTIAL | DIRECT | MEAN |
|---|---|---|---|
| 50 | 5.53 | 5.42 | 5.47 |
| 100 | 5.69 | 5.68 | 5.68 |
| MEAN | 5.61 | 5.55 | 5.58 |

| DRILLING N INHIB | CNVNTIAL | DIRECT | MEAN |
|---|---|---|---|
| NITRAPYR | 5.91 | 5.80 | 5.85 |
| PEX 2 | 5.38 | 5.41 | 5.39 |
| PEX 10 | 5.53 | 5.44 | 5.48 |
| MEAN | 5.61 | 5.55 | 5.58 |

| DRILLING TOTAL N | CNVNTIAL | DIRECT | MEAN |
|---|---|---|---|
| 150 | 5.32 | 5.26 | 5.29 |
| 200 | 5.89 | 5.84 | 5.86 |
| MEAN | 5.61 | 5.55 | 5.58 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 251*

79/R/WW/2 PASTURES(R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N INHIB | NITRAPYR | | PEX 2 | | PEX 10 | |
|---|---|---|---|---|---|---|
| TOTAL N | 150 | 200 | 150 | 200 | 150 | 200 |
| AQ N AUT | | | | | | |
| 50 | 5.61 | 5.78 | 5.01 | 5.33 | 5.51 | 5.58 |
| 100 | 5.75 | 6.27 | 5.17 | 6.05 | 4.67 | 6.18 |

| N INHIB | NITRAPYR | | PEX 2 | | PEX 10 | |
|---|---|---|---|---|---|---|
| DRILLING | CNVNTIAL | DIRECT | CNVNTIAL | DIRECT | CNVNTIAL | DIRECT |
| AQ N AUT | | | | | | |
| 50 | 5.78 | 5.61 | 5.13 | 5.22 | 5.67 | 5.42 |
| 100 | 6.03 | 5.99 | 5.63 | 5.60 | 5.40 | 5.45 |

| TOTAL N | 150 | | 200 | |
|---|---|---|---|---|
| DRILLING | CNVNTIAL | DIRECT | CNVNTIAL | DIRECT |
| AQ N AUT | | | | |
| 50 | 5.48 | 5.28 | 5.58 | 5.55 |
| 100 | 5.16 | 5.23 | 6.21 | 6.12 |

| TOTAL N | 150 | | 200 | |
|---|---|---|---|---|
| DRILLING | CNVNTIAL | DIRECT | CNVNTIAL | DIRECT |
| N INHIB | | | | |
| NITRAPYR | 5.76 | 5.61 | 6.06 | 5.99 |
| PEX 2 | 5.08 | 5.11 | 5.69 | 5.70 |
| PEX 10 | 5.13 | 5.05 | 5.94 | 5.82 |

| | TOTAL N | 150 | | 200 | |
|---|---|---|---|---|---|
| | DRILLING | CNVNTIAL | DIRECT | CNVNTIAL | DIRECT |
| AQ N AUT | N INHIB | | | | |
| 50 | NITRAPYR | 5.65 | 5.58 | 5.91 | 5.64 |
| | PEX 2 | 4.98 | 5.05 | 5.28 | 5.38 |
| | PEX 10 | 5.81 | 5.22 | 5.53 | 5.63 |
| 100 | NITRAPYR | 5.87 | 5.64 | 6.20 | 6.34 |
| | PEX 2 | 5.17 | 5.18 | 6.09 | 6.01 |
| | PEX 10 | 4.44 | 4.89 | 6.35 | 6.00 |

| DRILLING | CNVNTIAL | DIRECT | MEAN |
|---|---|---|---|
| EXTRA | | | |
| 0 | 1.84 | 1.60 | 1.72 |
| NC 50 | 3.03 | 3.60 | 3.31 |
| NC 100 | 4.50 | 4.17 | 4.33 |
| NC 150 | 5.81 | 5.85 | 5.83 |
| NC 200 | 6.22 | 5.19 | 5.71 |
| NC 250 | 5.78 | 6.38 | 6.08 |
| MEAN | 4.53 | 4.47 | 4.50 |

GRAND MEAN 5.22



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/2 PASTURES(R)

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | AQ N AUT | N INHIB | TOTAL N | EXTRA |
|---|---|---|---|---|
| SED | 0.288 | 0.153 | 0.288 | 0.706 |

| TABLE | AQ N AUT N INHIB | AQ N AUT TOTAL N | N INHIB TOTAL N | AQ N AUT* DRILLING |
|---|---|---|---|---|
| SED | 0.338 | 0.408 | 0.338 | 0.330 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| AQ N AUT | 0.217 | | | 0.358 |
| TOTAL N | | | 0.217 | |

| TABLE | N INHIB* DRILLING | TOTAL N* DRILLING | AQ N AUT N INHIB TOTAL N | AQ N AUT* N INHIB DRILLING |
|---|---|---|---|---|
| SED | 0.217 | 0.330 | 0.478 | 0.414 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| N INHIB | 0.379 | | | |
| AQ N AUT | | | | 0.437 |
| TOTAL N | | 0.358 | | |
| AQ N AUT.TOTAL N | | | 0.307 | |
| AQ N AUT.DRILLING | | | | 0.307 |

| TABLE | AQ N AUT* TOTAL N DRILLING | N INHIB* TOTAL N DRILLING | AQ N AUT* N INHIB TOTAL N DRILLING | DRILLING* EXTRA |
|---|---|---|---|---|
| SED | 0.467 | 0.414 | 0.586 | 0.809 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | | |
| TOTAL N | | 0.437 | | |
| AQ N AUT.TOTAL N | 0.424 | | 0.553 | |
| TOTAL N.DRILLING | | 0.307 | | |
| AQ N AUT.TOTAL N.DRILLING | | | 0.434 | |
| EXTRA | | | | 0.622 |

* WITHIN THE SAME LEVEL OF DRILLING ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.SB | 9 | 0.576 | 11.0 |
| BLOCK.SB.HB | 9 | 0.322 | 6.2 |
| BLOCK.SB.HB.WP | 16 | 0.434 | 8.3 |

GRAIN MEAN DM% 84.6

SUB PLOT AREA HARVESTED 0.00290



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/WW/2 WARREN FIELD (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N INHIB<br>AQ N AUT | NITRAPYR | PEX 2 | PEX 10 | MEAN |
|---|---|---|---|---|
| 50 | 4.72 | 4.99 | 5.10 | 4.94 |
| 100 | 4.77 | 4.33 | 4.48 | 4.53 |
| MEAN | 4.74 | 4.66 | 4.79 | 4.73 |

| TOTAL N<br>AQ N AUT | 150 | 200 | MEAN |
|---|---|---|---|
| 50 | 5.20 | 4.68 | 4.94 |
| 100 | 4.16 | 4.89 | 4.53 |
| MEAN | 4.68 | 4.79 | 4.73 |

| TOTAL N<br>N INHIB | 150 | 200 | MEAN |
|---|---|---|---|
| NITRAPYR | 5.09 | 4.39 | 4.74 |
| PEX 2 | 4.42 | 4.91 | 4.66 |
| PEX 10 | 4.53 | 5.05 | 4.79 |
| MEAN | 4.68 | 4.79 | 4.73 |

| AQ N AUT | TOTAL N<br>N INHIB | 150 | 200 |
|---|---|---|---|
| 50 | NITRAPYR | 5.19 | 4.25 |
| | PEX 2 | 5.13 | 4.86 |
| | PEX 10 | 5.27 | 4.93 |
| 100 | NITRAPYR | 4.99 | 4.54 |
| | PEX 2 | 3.70 | 4.97 |
| | PEX 10 | 3.80 | 5.16 |

| EXTRA | 0 | NC 50 | NC 100 | NC 150 | NC 200 | NC 250 | MEAN |
|---|---|---|---|---|---|---|---|
| | 1.79 | 4.31 | 5.28 | 5.15 | 4.48 | 3.59 | 4.10 |

GRAND MEAN 4.52

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | AQ N AUT | N INHIB | TOTAL N |
|---|---|---|---|---|
| SED | 0.330 | 0.135 | 0.062 | 0.135 |

| TABLE | AQ N AUT<br>N INHIB | AQ N AUT<br>TOTAL N | N INHIB<br>TOTAL N | AQ N AUT<br>N INHIB<br>TOTAL N |
|---|---|---|---|---|
| SED | 0.153 | 0.190 | 0.153 | 0.216 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVELS(S) OF: | | | | |
| AQ N AUT | 0.088 | | | |
| TOTAL N | | | 0.088 | |
| AQ N AUT.TOTAL N | | | | 0.124 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.SB | 9 | 0.190 | 4.2 |
| BLOCK.SB.WP | 8 | 0.124 | 2.7 |

GRAIN MEAN DM% 86.6 SUB PLOT AREA HARVESTED 0.0279



*https://doi.org/10.23637/ERADOC-1-45* *pp 254*

79/R/WW/3

WINTER WHEAT

FACTORS LIMITING YIELD

Object: To study the effects of a range of factors on the incidence of pests and diseases and on the growth and yield of wheat - West Barnfield I.

Sponsors: C.F. Banfield, A. Dewar, J. Lacey, A. Penny, R.T. Plumb, R.D. Prew, G.N. Thorne, T.D. Williams.

Associate sponsors: P.J. Welbank, F.V. Widdowson.

Design: Half replicate of $2^8$ + 6 extra plots.

Whole plot dimensions: 3.25 x 15.2.

Treatments: Combinations of:-

1. DRILL — Drills, sowing seed at 380 seeds per $m^2$ in rows 10 cm (4 in) apart:
   - NORDSTEN — Nordsten drill spacing seed irregularly within the row
   - STANHAY — Stanhay precision drill
2. SOWDATE — Dates of sowing:
   - 21 SEPT — 21 September, 1978
   - 13 OCT — 13 October
3. TOTAL N — Total amount of nitrogen fertiliser (kg N) applied:
   - 160
   - 250
4. N TIME — Times of applying nitrogen fertiliser:
   - A — All applied on 6 April
   - M A M — 40 kg of the total applied on 12 March, 30 kg applied on 17 May, remainder on 6 April
5. AUT PEST — Autumn pesticide:
   - NONE — None
   - ALDICARB — Aldicarb at 5 kg worked in to seedbed
6. APHICIDE — Aphicide:
   - NONE — None
   - PIRIMICA — Pirimicarb at 0.14 kg in 340 l applied twice: 26 June and 17 July
7. FUNGCIDE — Fungicide:
   - NONE — None
   - CA+MA+TR — Carbendazim + maneb + tridemorph (as 'Cosmic' at 4.0 kg) in 340 l applied twice: 30 May and 26 June



*https://doi.org/10.23637/ERADOC-1-45* *pp 255*

79/R/WW/3

8. IRRIGATN Irrigation:

| | |
|---|---|
| NONE | None |
| FULL | Full (125 mm) to lessen a deficit of 25 mm to 12.5 mm |

plus six extra plots, all sown by Stanhay drill on 21 Sept, all N applied on 6 Apr, given aldicarb, pirimicarb, carbendazim + maneb + tridemorph and full irrigation, testing rates of nitrogen fertiliser (kg N):

EXTRA

N 0
N 100
N 130
N 190
N 220
N 280

NOTE: Irrigation treatments were as follows:-

| | mm water |
|---|---|
| 5 July | 25 |
| 10/12 July | 50 |
| 19 July | 25 |
| 25 July | 25 |

Basal applications: Manures: (0:14:28) at 360 kg. Weedkillers: Methabenzthiazuron at 1.6 kg in 340 l. Growth regulator: Chlormequat at 1.4 kg in 340 l.

Seed: Maris Hustler, sown at 174 kg.

Cultivations, etc.:- Harrowed: 13 Sept, 1978. PK applied: 14 Sept. Heavy spring-tine cultivated twice: 15 Sept. Power harrowed all early-sown treatments, and those for STANHAY rolled: 20 Sept. Seed sown on all early-sown plots: 21 Sept. Power harrowed all late-sown plots: 12 Oct. Late-sown STANHAY plots rolled, seed sown on all late-sown plots: 13 Oct. Weedkillers applied: 19 Oct. Growth regulator applied to early-sown plots: 18 Apr, 1979. Growth regulator applied to late-sown plots: 8 May. Combine harvested: 31 Aug. Previous cropping: Fallow, oats, barley, wheat 1977, potatoes 1978.

NOTES: (1) The growth regulator was applied to both the early and late sown crops at Zadoks Growth Stage 3.0.
(2) Soil was sampled for nematodes, mineral N and moisture content. Roots were sampled for foot and root rots. The above ground crop was examined for growth stage, aphids, foliar diseases (including BYDV) and general microflora. Plant populations, shoot numbers and sowing depth were measured. Dry weight, leaf area, and N and K content of the above-ground crop and stem nitrate were measured on several occasions.



*https://doi.org/10.23637/ERADOC-1-45* *pp 256*

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| SOWDATE<br>DRILLS | 21 SEPT | 13 OCT | MEAN |
|---|---|---|---|
| NORDSTEN | 9.64 | 9.58 | 9.61 |
| STANHAY | 9.81 | 9.56 | 9.68 |
| MEAN | 9.72 | 9.57 | 9.65 |

| TOTAL N<br>DRILLS | 160 | 250 | MEAN |
|---|---|---|---|
| NORDSTEN | 9.90 | 9.32 | 9.61 |
| STANHAY | 9.93 | 9.43 | 9.68 |
| MEAN | 9.91 | 9.38 | 9.65 |

| TOTAL N<br>SOWDATE | 160 | 250 | MEAN |
|---|---|---|---|
| 21 SEPT | 10.05 | 9.39 | 9.72 |
| 13 OCT | 9.77 | 9.36 | 9.57 |
| MEAN | 9.91 | 9.38 | 9.65 |

| N TIME<br>DRILLS | A | M A M | MEAN |
|---|---|---|---|
| NORDSTEN | 9.46 | 9.76 | 9.61 |
| STANHAY | 9.54 | 9.83 | 9.68 |
| MEAN | 9.50 | 9.79 | 9.65 |

| N TIME<br>SOWDATE | A | M A M | MEAN |
|---|---|---|---|
| 21 SEPT | 9.47 | 9.98 | 9.72 |
| 13 OCT | 9.53 | 9.61 | 9.57 |
| MEAN | 9.50 | 9.79 | 9.65 |

| N TIME<br>TOTAL N | A | M A M | MEAN |
|---|---|---|---|
| 160 | 9.81 | 10.02 | 9.91 |
| 250 | 9.19 | 9.57 | 9.38 |
| MEAN | 9.50 | 9.79 | 9.65 |

| AUT PEST<br>DRILLS | NONE | ALDICARB | MEAN |
|---|---|---|---|
| NORDSTEN | 9.47 | 9.75 | 9.61 |
| STANHAY | 9.57 | 9.80 | 9.68 |
| MEAN | 9.52 | 9.77 | 9.65 |

| AUT PEST<br>SOWDATE | NONE | ALDICARB | MEAN |
|---|---|---|---|
| 21 SEPT | 9.55 | 9.90 | 9.72 |
| 13 OCT | 9.49 | 9.65 | 9.57 |
| MEAN | 9.52 | 9.77 | 9.65 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 257*

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| AUT PEST TOTAL N | NONE | ALDICARB | MEAN |
|---|---|---|---|
| 160 | 9.78 | 10.05 | 9.91 |
| 250 | 9.26 | 9.49 | 9.38 |
| MEAN | 9.52 | 9.77 | 9.65 |

| AUT PEST N TIME | NONE | ALDICARB | MEAN |
|---|---|---|---|
| A | 9.35 | 9.65 | 9.50 |
| M A M | 9.69 | 9.90 | 9.79 |
| MEAN | 9.52 | 9.77 | 9.65 |

| APHICIDE DRILLS | NONE | PIRIMICA | MEAN |
|---|---|---|---|
| NORDSTEN | 9.00 | 10.22 | 9.61 |
| STANHAY | 8.97 | 10.39 | 9.68 |
| MEAN | 8.99 | 10.30 | 9.65 |

| APHICIDE SOWDATE | NONE | PIRIMICA | MEAN |
|---|---|---|---|
| 21 SEPT | 9.03 | 10.41 | 9.72 |
| 13 OCT | 8.94 | 10.19 | 9.57 |
| MEAN | 8.99 | 10.30 | 9.65 |

| APHICIDE TOTAL N | NONE | PIRIMICA | MEAN |
|---|---|---|---|
| 160 | 9.42 | 10.41 | 9.91 |
| 250 | 8.56 | 10.19 | 9.38 |
| MEAN | 8.99 | 10.30 | 9.65 |

| APHICIDE N TIME | NONE | PIRIMICA | MEAN |
|---|---|---|---|
| A | 8.68 | 10.31 | 9.50 |
| M A M | 9.29 | 10.30 | 9.79 |
| MEAN | 8.99 | 10.30 | 9.65 |

| APHICIDE AUT PEST | NONE | PIRIMICA | MEAN |
|---|---|---|---|
| NONE | 8.77 | 10.27 | 9.52 |
| ALDICARB | 9.21 | 10.34 | 9.77 |
| MEAN | 8.99 | 10.30 | 9.65 |

| FUNGCIDE DRILLS | NONE | CA+MA+TR | MEAN |
|---|---|---|---|
| NORDSTEN | 9.12 | 10.10 | 9.61 |
| STANHAY | 9.20 | 10.16 | 9.68 |
| MEAN | 9.16 | 10.13 | 9.65 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE<br>SOWDATE | NONE | CA+MA+TR | MEAN |
|---|---|---|---|
| 21 SEPT | 9.16 | 10.29 | 9.72 |
| 13 OCT | 9.15 | 9.98 | 9.57 |
| MEAN | 9.16 | 10.13 | 9.65 |

| FUNGCIDE<br>TOTAL N | NONE | CA+MA+TR | MEAN |
|---|---|---|---|
| 160 | 9.52 | 10.31 | 9.91 |
| 250 | 8.80 | 9.95 | 9.38 |
| MEAN | 9.16 | 10.13 | 9.65 |

| FUNGCIDE<br>N TIME | NONE | CA+MA+TR | MEAN |
|---|---|---|---|
| A | 9.01 | 9.98 | 9.50 |
| M A M | 9.30 | 10.28 | 9.79 |
| MEAN | 9.16 | 10.13 | 9.65 |

| FUNGCIDE<br>AUT PEST | NONE | CA+MA+TR | MEAN |
|---|---|---|---|
| NONE | 9.01 | 10.03 | 9.52 |
| ALDICARB | 9.31 | 10.24 | 9.77 |
| MEAN | 9.16 | 10.13 | 9.65 |

| FUNGCIDE<br>APHICIDE | NONE | CA+MA+TR | MEAN |
|---|---|---|---|
| NONE | 8.61 | 9.37 | 8.99 |
| PIRIMICA | 9.71 | 10.90 | 10.30 |
| MEAN | 9.16 | 10.13 | 9.65 |

| IRRIGATN<br>DRILLS | NONE | FULL | MEAN |
|---|---|---|---|
| NORDSTEN | 9.69 | 9.53 | 9.61 |
| STANHAY | 9.83 | 9.53 | 9.68 |
| MEAN | 9.76 | 9.53 | 9.65 |

| IRRIGATN<br>SOWDATE | NONE | FULL | MEAN |
|---|---|---|---|
| 21 SEPT | 9.84 | 9.61 | 9.72 |
| 13 OCT | 9.68 | 9.45 | 9.57 |
| MEAN | 9.76 | 9.53 | 9.65 |

| IRRIGATN<br>TOTAL N | NONE | FULL | MEAN |
|---|---|---|---|
| 160 | 9.99 | 9.84 | 9.91 |
| 250 | 9.54 | 9.22 | 9.38 |
| MEAN | 9.76 | 9.53 | 9.65 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 259*

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| N TIME | | | |
| A | 9.66 | 9.34 | 9.50 |
| M A M | 9.87 | 9.72 | 9.79 |
| MEAN | 9.76 | 9.53 | 9.65 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| AUT PEST | | | |
| NONE | 9.56 | 9.48 | 9.52 |
| ALDICARB | 9.97 | 9.58 | 9.77 |
| MEAN | 9.76 | 9.53 | 9.65 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| APHICIDE | | | |
| NONE | 9.14 | 8.84 | 8.99 |
| PIRIMICA | 10.38 | 10.22 | 10.30 |
| MEAN | 9.76 | 9.53 | 9.65 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| NONE | 9.35 | 8.97 | 9.16 |
| CA+MA+TR | 10.17 | 10.09 | 10.13 |
| MEAN | 9.76 | 9.53 | 9.65 |

| SOWDATE | 21 SEPT | | 13 OCT | |
|---|---|---|---|---|
| TOTAL N | 160 | 250 | 160 | 250 |
| DRILLS | | | | |
| NORDSTEN | 10.01 | 9.28 | 9.79 | 9.37 |
| STANHAY | 10.10 | 9.51 | 9.76 | 9.35 |

| SOWDATE | 21 SEPT | | 13 OCT | |
|---|---|---|---|---|
| N TIME | A | M A M | A | M A M |
| DRILLS | | | | |
| NORDSTEN | 9.28 | 10.00 | 9.64 | 9.52 |
| STANHAY | 9.65 | 9.96 | 9.42 | 9.70 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| N TIME | A | M A M | A | M A M |
| DRILLS | | | | |
| NORDSTEN | 9.78 | 10.01 | 9.13 | 9.51 |
| STANHAY | 9.83 | 10.03 | 9.24 | 9.62 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| N TIME | A | M A M | A | M A M |
| SOWDATE | | | | |
| 21 SEPT | 9.93 | 10.18 | 9.00 | 9.78 |
| 13 OCT | 9.68 | 9.87 | 9.37 | 9.35 |

| SOWDATE | 21 SEPT | | 13 OCT | |
|---|---|---|---|---|
| AUT PEST | NONE | ALDICARB | NONE | ALDICARB |
| DRILLS | | | | |
| NORDSTEN | 9.48 | 9.80 | 9.46 | 9.69 |
| STANHAY | 9.62 | 9.99 | 9.51 | 9.60 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 260*

79/R/WW/3

GRAIN RY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| AUT PEST | NONE | ALDICARB | NONE | ALDICARB |
| DRILLS | | | | |
| NORDSTEN | 9.72 | 10.08 | 9.22 | 9.42 |
| STANHAY | 9.83 | 10.03 | 9.30 | 9.56 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| AUT PEST | NONE | ALDICARB | NONE | ALDICARB |
| SOWDATE | | | | |
| 21 SEPT | 9.86 | 10.25 | 9.24 | 9.55 |
| 13 OCT | 9.69 | 9.86 | 9.28 | 9.44 |

| AUT PEST | NONE | ALDICARB | NONE | ALDICARB |
|---|---|---|---|---|
| DRILLS | | | | |
| NORDSTEN | 9.29 | 9.62 | 9.65 | 9.87 |
| STANHAY | 9.40 | 9.67 | 9.73 | 9.92 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| AUT PEST | NONE | ALDICARB | NONE | ALDICARB |
| SOWDATE | | | | |
| 21 SEPT | 9.19 | 9.74 | 9.90 | 10.06 |
| 13 OCT | 9.50 | 9.56 | 9.48 | 9.74 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| AUT PEST | NONE | ALDICARB | NONE | ALDICARB |
| TOTAL N | | | | |
| 160 | 9.65 | 9.97 | 9.90 | 10.14 |
| 250 | 9.04 | 9.33 | 9.48 | 9.65 |

| SOWDATE | 21 SEPT | | 13 OCT | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| DRILLS | | | | |
| NORDSTEN | 9.00 | 10.29 | 9.01 | 10.14 |
| STANHAY | 9.07 | 10.54 | 8.88 | 10.24 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| DRILLS | | | | |
| NORDSTEN | 9.35 | 10.44 | 8.65 | 9.99 |
| STANHAY | 9.48 | 10.39 | 8.47 | 10.39 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| SOWDATE | | | | |
| 21 SEPT | 9.50 | 10.60 | 8.56 | 10.22 |
| 13 OCT | 9.33 | 10.22 | 8.56 | 10.16 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| DRILLS | | | | |
| NORDSTEN | 8.73 | 10.19 | 9.28 | 10.24 |
| STANHAY | 8.64 | 10.43 | 9.30 | 10.35 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME | A | | M A M | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| SOWDATE | | | | |
| 21 SEPT | 8.57 | 10.36 | 9.50 | 10.47 |
| 13 OCT | 8.80 | 10.26 | 9.09 | 10.13 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| TOTAL N | | | | |
| 160 | 9.27 | 10.34 | 9.56 | 10.48 |
| 250 | 8.10 | 10.28 | 9.03 | 10.11 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| DRILLS | | | | |
| NORDSTEN | 8.84 | 10.10 | 9.17 | 10.33 |
| STANHAY | 8.70 | 10.43 | 9.24 | 10.35 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| SOWDATE | | | | |
| 21 SEPT | 8.77 | 10.33 | 9.29 | 10.50 |
| 13 OCT | 8.77 | 10.21 | 9.12 | 10.17 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| TOTAL N | | | | |
| 160 | 9.20 | 10.35 | 9.63 | 10.47 |
| 250 | 8.34 | 10.18 | 8.78 | 10.20 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| APHICIDE | NONE | PIRIMICA | NONE | PIRIMICA |
| N TIME | | | | |
| A | 8.46 | 10.23 | 8.91 | 10.39 |
| M A M | 9.08 | 10.30 | 9.51 | 10.29 |

| SOWDATE | 21 SEPT | | 13 OCT | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| DRILLS | | | | |
| NORDSTEN | 9.10 | 10.19 | 9.14 | 10.02 |
| STANHAY | 9.23 | 10.39 | 9.17 | 9.94 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| DRILLS | | | | |
| NORDSTEN | 9.49 | 10.30 | 8.74 | 9.90 |
| STANHAY | 9.54 | 10.32 | 8.86 | 10.01 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| SOWDATE | | | | |
| 21 SEPT | 9.56 | 10.55 | 8.76 | 10.03 |
| 13 OCT | 9.47 | 10.08 | 8.84 | 9.88 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 262*

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME | A | | M A M | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| DRILLS | | | | |
| NORDSTEN | 8.95 | 9.97 | 9.28 | 10.24 |
| STANHAY | 9.07 | 10.00 | 9.33 | 10.33 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| SOWDATE | | | | |
| 21 SEPT | 8.93 | 10.01 | 9.39 | 10.57 |
| 13 OCT | 9.09 | 9.96 | 9.21 | 10.00 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| TOTAL N | | | | |
| 160 | 9.45 | 10.17 | 9.58 | 10.46 |
| 250 | 8.57 | 9.80 | 9.03 | 10.11 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| DRILLS | | | | |
| NORDSTEN | 8.94 | 10.00 | 9.29 | 10.21 |
| STANHAY | 9.07 | 10.06 | 9.33 | 10.26 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| SOWDATE | | | | |
| 21 SEPT | 8.93 | 10.17 | 9.40 | 10.40 |
| 13 OCT | 9.09 | 9.89 | 9.22 | 10.07 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| TOTAL N | | | | |
| 160 | 9.34 | 10.21 | 9.69 | 10.42 |
| 250 | 8.67 | 9.85 | 8.93 | 10.05 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| N TIME | | | | |
| A | 8.80 | 9.89 | 9.22 | 10.08 |
| M A M | 9.21 | 10.17 | 9.40 | 10.39 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| DRILLS | | | | |
| NORDSTEN | 8.58 | 9.43 | 9.65 | 10.78 |
| STANHAY | 8.63 | 9.32 | 9.77 | 11.01 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| SOWDATE | | | | |
| 21 SEPT | 8.59 | 9.48 | 9.73 | 11.10 |
| 13 OCT | 8.62 | 9.27 | 9.69 | 10.70 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 263*

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| TOTAL N | | | | |
| 160 | 9.08 | 9.75 | 9.95 | 10.88 |
| 250 | 8.13 | 9.00 | 9.47 | 10.91 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| N TIME | | | | |
| A | 8.24 | 9.13 | 9.78 | 10.84 |
| M A M | 8.97 | 9.62 | 9.64 | 10.95 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| FUNGCIDE | NONE | CA+MA+TR | NONE | CA+MA+TR |
| AUT PEST | | | | |
| NONE | 8.32 | 9.22 | 9.69 | 10.84 |
| ALDICARB | 8.89 | 9.52 | 9.73 | 10.95 |

| SOWDATE | 21 SEPT | | 13 OCT | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| DRILLS | | | | |
| NORDSTEN | 9.76 | 9.53 | 9.62 | 9.53 |
| STANHAY | 9.92 | 9.69 | 9.75 | 9.37 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| DRILLS | | | | |
| NORDSTEN | 9.98 | 9.82 | 9.40 | 9.24 |
| STANHAY | 10.00 | 9.86 | 9.67 | 9.19 |

| TOTAL N | 160 | | 250 | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| SOWDATE | | | | |
| 21 SEPT | 10.13 | 9.98 | 9.55 | 9.24 |
| 13 OCT | 9.84 | 9.70 | 9.52 | 9.20 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| DRILLS | | | | |
| NORDSTEN | 9.57 | 9.34 | 9.80 | 9.72 |
| STANHAY | 9.74 | 9.33 | 9.93 | 9.73 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| SOWDATE | | | | |
| 21 SEPT | 9.64 | 9.30 | 10.04 | 9.92 |
| 13 OCT | 9.67 | 9.38 | 9.69 | 9.52 |

| N TIME | A | | M A M | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| TOTAL N | | | | |
| 160 | 9.87 | 9.75 | 10.11 | 9.93 |
| 250 | 9.44 | 8.93 | 9.63 | 9.51 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 264*

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| DRILLS | | | | |
| NORDSTEN | 9.46 | 9.48 | 9.91 | 9.58 |
| STANHAY | 9.65 | 9.48 | 10.02 | 9.58 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| SOWDATE | | | | |
| 21 SEPT | 9.62 | 9.48 | 10.06 | 9.73 |
| 13 OCT | 9.50 | 9.48 | 9.87 | 9.43 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| TOTAL N | | | | |
| 160 | 9.84 | 9.72 | 10.14 | 9.97 |
| 250 | 9.28 | 9.24 | 9.79 | 9.19 |

| AUT PEST | NONE | | ALDICARB | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| N TIME | | | | |
| A | 9.42 | 9.27 | 9.89 | 9.41 |
| M A M | 9.69 | 9.69 | 10.04 | 9.75 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| DRILLS | | | | |
| NORDSTEN | 9.10 | 8.91 | 10.28 | 10.15 |
| STANHAY | 9.18 | 8.77 | 10.49 | 10.29 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| SOWDATE | | | | |
| 21 SEPT | 9.16 | 8.90 | 10.52 | 10.31 |
| 13 OCT | 9.11 | 8.78 | 10.25 | 10.13 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| TOTAL N | | | | |
| 160 | 9.46 | 9.37 | 10.51 | 10.31 |
| 250 | 8.81 | 8.31 | 10.26 | 10.13 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| N TIME | | | | |
| A | 8.93 | 8.44 | 10.38 | 10.24 |
| M A M | 9.35 | 9.24 | 10.39 | 10.20 |

| APHICIDE | NONE | | PIRIMICA | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| AUT PEST | | | | |
| NONE | 8.87 | 8.67 | 10.25 | 10.29 |
| ALDICARB | 9.41 | 9.01 | 10.52 | 10.15 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE | NONE | | CA+MA+TR | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| DRILLS | | | | |
| NORDSTEN | 9.33 | 8.90 | 10.05 | 10.16 |
| STANHAY | 9.37 | 9.03 | 10.30 | 10.03 |

| FUNGCIDE | NONE | | CA+MA+TR | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| SOWDATE | | | | |
| 21 SEPT | 9.38 | 8.94 | 10.30 | 10.27 |
| 13 OCT | 9.32 | 8.99 | 10.05 | 9.91 |

| FUNGCIDE | NONE | | CA+MA+TR | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| TOTAL N | | | | |
| 160 | 9.62 | 9.41 | 10.36 | 10.27 |
| 250 | 9.08 | 8.52 | 9.99 | 9.92 |

| FUNGCIDE | NONE | | CA+MA+TR | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| N TIME | | | | |
| A | 9.31 | 8.71 | 10.00 | 9.97 |
| M A M | 9.38 | 9.23 | 10.35 | 10.22 |

| FUNGCIDE | NONE | | CA+MA+TR | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| AUT PEST | | | | |
| NONE | 9.13 | 8.89 | 9.99 | 10.07 |
| ALDICARB | 9.57 | 9.04 | 10.36 | 10.12 |

| FUNGCIDE | NONE | | CA+MA+TR | |
|---|---|---|---|---|
| IRRIGATN | NONE | FULL | NONE | FULL |
| APHICIDE | | | | |
| NONE | 8.91 | 8.30 | 9.36 | 9.38 |
| PIRIMICA | 9.78 | 9.63 | 10.99 | 10.81 |

| EXTRA | N 0 | N 100 | N 130 | N 190 | N 220 | N 280 | MEAN |
|---|---|---|---|---|---|---|---|
| | 8.01 | 10.27 | 11.90 | 10.79 | 11.06 | 10.64 | 10.45 |

GRAND MEAN 9.68

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

SED FOR ALL TABLES EXCEPT EXTRA

| | |
|---|---|
| ONE FACTOR TABLE | 0.096 |
| TWO FACTOR TABLES | 0.135 |
| THREE FACTOR TABLES | 0.191 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 35 | 0.541 | 5.6 |

GRAIN MEAN DM% 85.1 PLOT AREA HARVESTED 0.00204



*https://doi.org/10.23637/ERADOC-1-45* *pp 266*

79/W/WW/3

WINTER WHEAT

GROWTH AND YIELD ON A CONTRASTED SITE

Object: To study on a contrasted site the effects of some of the factors tested in 79/R/WW/3 Factors Limiting Yield and to determine the extent to which differences between the sites can be eliminated by appropriate combinations of the factors - Woburn Butt Close III.

Sponsors: P.J. Welbank, F.V. Widdowson.

Design: Half replicate of $2^6$, arranged as 16 whole plots split into 2, plus 2 extra plots split into 2.

Whole plot dimensions: 3.25 x 30.5.

Treatments: Combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. | DRILLS | Drills, sowing seed at 380 seeds per $m^2$ in rows 10 cm (4 in) apart: |
| | NORDSTEN | Nordsten drill spacing seed irregularly within the row |
| | STANHAY | Stanhay precision drill |
| 2. | SOWDATE | Dates of sowing: |
| | 22 SEPT | 22 September, 1978 |
| | 12 OCT | 12 October |
| 3. | AUT PEST | Autumn pesticide: |
| | NONE | None |
| | ALDICARB | Aldicarb at 5 kg worked in to seedbed |

Sub plots

| | | |
|---|---|---|
| 4. | TOTAL N | Total amount of nitrogen fertiliser: |
| | 205 | |
| | 295 | |
| 5. | N TIME | Times of applying nitrogen fertiliser: |
| | A | All applied on 5 Apr, 1979 |
| | M A M | 40 kg of total applied on 12 Mar, 45 kg applied on 18 May, remainder on 5 Apr |
| 6. | IRRIGATN | Irrigation: |
| | NONE | None |
| | FULL | Full (120 mm) to lessen a deficit of 30 mm to 12 mm |

plus two extra plots split into two, both whole plots identical and sown by Stanhay drill on 22 September, all N applied on 5 Apr, given aldicarb and full irrigation, testing rates of nitrogen fertiliser (kg N):



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/WW/3

EXTRA
N 0
N 160
N 250
N 340

Irrigation was applied as follows (mm water):

| | |
|---|---|
| 22 June | 10 |
| 28 June | 10 |
| 2 July | 10 |
| 5 July | 10 |
| 9 July | 10 |
| 12 July | 10 |
| 16 July | 10 |
| 19 July | 10 |
| 23 July | 10 |
| 26 July | 10 |
| 30 July | 10 |
| 6 Aug | 10 |
| Total | 120 |

Standard applications: Manures: (0:14:28) at 350 kg. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 3.5 kg on two occasions, on the first in 120 l and the second in 300 l). Growth regulator: Chlormequat at 1.4 kg in 340 l. Fungicide: Carbendazim, tridemorph and maneb ('Cosmic' at 4.0 kg in 340 l) on two occasions. Aphicide: Pirimicarb at 0.14 kg in 340 l.

Seed: Hustler, sown at 174 kg.

Cultivations, etc.:- Heavy spring-tine cultivated, PK applied: 13 Sept, 1978. Aldicarb applied for SOW DATE 22 SEPT and all these plots rotary cultivated: 21 Sept. Aldicarb applied for SOW DATE 12 OCT and all these plots rotary cultivated: 12 Oct. Weedkillers applied: 28 Dec. First N applied: 12 Mar, 1979. Second N applied: 5 Apr. Growth regulator applied to early sowing: 18 Apr. Weedkillers applied: 2 May. Growth regulator applied to late sowing: 8 May. Third N applied: 18 May. Fungicide applied twice: 24 May, 19 June. Aphicide applied: 26 June. Combine harvested: 31 Aug. Previous crops: Beans 1977, early potatoes 1978.

NOTE: Measurements were made of plant and shoot numbers, dry weight of tops and ears, leaf areas and nitrate and potassium content four times during the growing season. Weekly measurements were made for soil moisture and plant moisture stress (between April and August). Disease assessments were made during the growing season. Soil samples were taken in February and April to determine their N content.



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/WW/3

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SOWDATE<br>DRILLS | 22 SEPT | 12 OCT | MEAN |
|---|---|---|---|
| NORDSTEN | 7.88 | 7.66 | 7.77 |
| STANHAY | 8.13 | 7.38 | 7.75 |
| MEAN | 8.00 | 7.52 | 7.76 |

| AUT PEST<br>DRILLS | NONE | ALDICARB | MEAN |
|---|---|---|---|
| NORDSTEN | 7.40 | 8.14 | 7.77 |
| STANHAY | 7.46 | 8.05 | 7.75 |
| MEAN | 7.43 | 8.10 | 7.76 |

| AUT PEST<br>SOWDATE | NONE | ALDICARB | MEAN |
|---|---|---|---|
| 22 SEPT | 7.48 | 8.53 | 8.00 |
| 12 OCT | 7.38 | 7.66 | 7.52 |
| MEAN | 7.43 | 8.10 | 7.76 |

| TOTAL N<br>DRILLS | 205 | 295 | MEAN |
|---|---|---|---|
| NORDSTEN | 7.76 | 7.78 | 7.77 |
| STANHAY | 7.75 | 7.76 | 7.75 |
| MEAN | 7.76 | 7.77 | 7.76 |

| TOTAL N<br>SOWDATE | 205 | 295 | MEAN |
|---|---|---|---|
| 22 SEPT | 7.91 | 8.09 | 8.00 |
| 12 OCT | 7.60 | 7.45 | 7.52 |
| MEAN | 7.76 | 7.77 | 7.76 |

| TOTAL N<br>AUT PEST | 205 | 295 | MEAN |
|---|---|---|---|
| NONE | 7.43 | 7.42 | 7.43 |
| ALDICARB | 8.08 | 8.11 | 8.10 |
| MEAN | 7.76 | 7.77 | 7.76 |

| N TIME<br>DRILLS | A | M A M | MEAN |
|---|---|---|---|
| NORDSTEN | 7.70 | 7.84 | 7.77 |
| STANHAY | 7.58 | 7.93 | 7.75 |
| MEAN | 7.64 | 7.89 | 7.76 |

| N TIME<br>SOWDATE | A | M A M | MEAN |
|---|---|---|---|
| 22 SEPT | 7.95 | 8.06 | 8.00 |
| 12 OCT | 7.33 | 7.71 | 7.52 |
| MEAN | 7.64 | 7.89 | 7.76 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 269*

79/W/WW/3

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME | A | M A M | MEAN |
|---|---|---|---|
| AUT PEST | | | |
| NONE | 7.35 | 7.51 | 7.43 |
| ALDICARB | 7.93 | 8.26 | 8.10 |
| MEAN | 7.64 | 7.89 | 7.76 |

| N TIME | A | M A M | MEAN |
|---|---|---|---|
| TOTAL N | | | |
| 205 | 7.70 | 7.81 | 7.76 |
| 295 | 7.57 | 7.96 | 7.77 |
| MEAN | 7.64 | 7.89 | 7.76 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| DRILLS | | | |
| NORDSTEN | 7.21 | 8.33 | 7.77 |
| STANHAY | 7.13 | 8.38 | 7.75 |
| MEAN | 7.17 | 8.35 | 7.76 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| SOWDATE | | | |
| 22 SEPT | 7.28 | 8.72 | 8.00 |
| 12 OCT | 7.06 | 7.99 | 7.52 |
| MEAN | 7.17 | 8.35 | 7.76 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| AUT PEST | | | |
| NONE | 6.84 | 8.01 | 7.43 |
| ALDICARB | 7.50 | 8.69 | 8.10 |
| MEAN | 7.17 | 8.35 | 7.76 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| TOTAL N | | | |
| 205 | 7.16 | 8.35 | 7.76 |
| 295 | 7.18 | 8.35 | 7.77 |
| MEAN | 7.17 | 8.35 | 7.76 |

| IRRIGATN | NONE | FULL | MEAN |
|---|---|---|---|
| N TIME | | | |
| A | 6.99 | 8.29 | 7.64 |
| M A M | 7.35 | 8.42 | 7.89 |
| MEAN | 7.17 | 8.35 | 7.76 |

| EXTRA | N 0 | N 160 | N 250 | N 340 | MEAN |
|---|---|---|---|---|---|
| | 3.87 | 7.95 | 9.12 | 8.14 | 7.27 |

GRAND MEAN 7.71



*https://doi.org/10.23637/ERADOC-1-45* *pp 270*

79/W/WW/3

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | DRILLS | SOWDATE | AUT PEST |
|---|---|---|---|---|
| SED | 0.786 | 0.183 | 0.185 | 0.186 |

| TABLE | TOTAL N | N TIME | IRRIGATN | DRILLS SOWDATE |
|---|---|---|---|---|
| SED | 0.210 | 0.201 | 0.185 | 0.258 |

| TABLE | DRILLS AUT PEST | SOWDATE AUT PEST | DRILLS TOTAL N | SOWDATE TOTAL N |
|---|---|---|---|---|
| SED | 0.260 | 0.264 | 0.298 | 0.285 |

| TABLE | AUT PEST TOTAL N | DRILLS N TIME | SOWDATE N TIME | AUT PEST N TIME |
|---|---|---|---|---|
| SED | 0.291 | 0.272 | 0.281 | 0.294 |

| TABLE | TOTAL N N TIME | DRILLS IRRIGATN | SOWDATE IRRIGATN | AUT PEST IRRIGATN |
|---|---|---|---|---|
| SED | 0.301 | 0.258 | 0.261 | 0.260 |

| TABLE | TOTAL N IRRIGATN | N TIME IRRIGATN |
|---|---|---|
| SED | 0.288 | 0.285 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 8 | 0.496 | 6.4 |

MEAN DM% 86.8

SUB PLOT AREA HARVESTED 0.00125



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/4

WINTER WHEAT

SEED RATES AND DIVIDED N DRESSINGS

Object: To study the effects of seed rates and rates and times of applying nitrogen fertiliser on the growth and yield of winter wheat - Gt. Harpenden II.

Sponsors: J. McEwen, R. Moffitt.

Design: 2 randomised blocks of 2 x 4 x 3.

Whole plot dimensions: 4.26 x 9.14.

Treatments: All combinations of:-

1. SEEDRATE — Seed rate (kg):

   100
   200

2. TOTAL N — Total nitrogen fertiliser (kg N):

   75
   100
   125
   150

3. N TIME — Times of applying nitrogen fertiliser:

| | |
|---|---|
| MA | 25 kg N of the total applied 23 Mar, remainder 17 Apr |
| A | All applied 17 Apr |
| MAJ | 25 kg N of the total applied 23 Mar, 25 kg N applied 18 June, remainder 17 Apr |

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: Dicamba, mecoprop and MCPA (as 'Banlene Plus' at 4.2 kg in 220 l). Fungicides: Triadimefon at 0.13 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg in 220 l.

Seed: Flanders.

Cultivations, etc.:- Ploughed: 11 Oct, 1978. Rotary harrowed, PK applied: 16 Oct. Rotary harrowed: 17 Oct. Seed sown: 18 Oct. Growth regulator applied: 3 May. Weedkillers applied: 8 May. Fungicide applied: 27 June. Combine harvested: 29 Aug. Previous crops: Barley 1977, beans 1978.

NOTES: (1) Nitrate contents in stems were estimated at intervals during the season.
(2) Tiller counts were made in April and ear counts in July.
(3) 1000 grain weights were measured and grain was analysed for N percentage.



*https://doi.org/10.23637/ERADOC-1-45* *pp 272*

79/R/WW/4

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N / SEEDRATE | 75 | 100 | 125 | 150 | MEAN |
|---|---|---|---|---|---|
| 100 | 5.89 | 6.58 | 6.54 | 6.72 | 6.43 |
| 200 | 6.45 | 6.71 | 7.50 | 7.50 | 7.04 |
| MEAN | 6.17 | 6.64 | 7.02 | 7.11 | 6.74 |

| N TIME / SEEDRATE | MA | A | MAJ | MEAN |
|---|---|---|---|---|
| 100 | 6.79 | 6.47 | 6.05 | 6.43 |
| 200 | 6.92 | 7.29 | 6.91 | 7.04 |
| MEAN | 6.85 | 6.88 | 6.48 | 6.74 |

| N TIME / TOTAL N | MA | A | MAJ | MEAN |
|---|---|---|---|---|
| 75 | 6.86 | 6.37 | 5.27 | 6.17 |
| 100 | 6.38 | 6.77 | 6.77 | 6.64 |
| 125 | 7.07 | 7.23 | 6.77 | 7.02 |
| 150 | 7.10 | 7.13 | 7.10 | 7.11 |
| MEAN | 6.85 | 6.88 | 6.48 | 6.74 |

| SEEDRATE | N TIME / TOTAL N | MA | A | MAJ |
|---|---|---|---|---|
| 100 | 75 | 6.60 | 6.06 | 5.00 |
| | 100 | 6.73 | 6.56 | 6.44 |
| | 125 | 6.77 | 6.76 | 6.10 |
| | 150 | 7.06 | 6.48 | 6.64 |
| 200 | 75 | 7.12 | 6.68 | 5.55 |
| | 100 | 6.03 | 6.98 | 7.11 |
| | 125 | 7.37 | 7.70 | 7.43 |
| | 150 | 7.14 | 7.79 | 7.56 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SEEDRATE | TOTAL N | N TIME | SEEDRATE TOTAL N |
|---|---|---|---|---|
| SED | 0.167 | 0.237 | 0.205 | 0.334 |

| TABLE | SEEDRATE N TIME | TOTAL N N TIME | SEEDRATE TOTAL N N TIME |
|---|---|---|---|
| SED | 0.290 | 0.410 | 0.579 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 23 | 0.579 | 8.6 |

MEAN DM% 83.8

PLOT AREA HARVESTED 0.00290



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/5

# WINTER WHEAT

## FUNGICIDES

Object: To study the effects of a range of fungicides and two methods of application on the incidence of diseases and on the yield of winter wheat - Webbs.

Sponsors: J.F. Jenkyn, R.D. Prew.

Design: 3 randomised blocks of 14 plots.

Whole plot dimensions: 2.13 x 13.4.

Treatments:

| FUNGCIDE | Fungicides and methods of application: |
|---|---|
| NONE | None |
| BAS389 S | 'BAS 389' as a seed dressing at 1 g a.i. per kg of seed |
| BENOD F | Benodanil as a foliar spray at 1.1 kg |
| BTS S | 'BTS 40542' as a seed dressing at 0.2 g a.i. per kg of seed |
| BTS F | 'BTS 40542' as a foliar spray at 0.4 kg |
| CARBOX S | Carboxin as a seed dressing at 1.5 g per kg of seed |
| CARBOX F | Carboxin as a foliar spray at 1.1 kg |
| EL228 S | 'EL 228' as a seed dressing at 0.2 g a.i. per kg of seed |
| EL228 F | 'EL 228' as a foliar spray at 0.04 kg a.i. |
| H719 S | 'H 719' as a seed dressing at 1.5 g a.i. per kg of seed |
| H719 F | 'H 719' as a foliar spray at 1.1 kg a.i. |
| OM S | Organo-mercury as a seed dressing ('Agrosan GN' at 2.2 g per kg of seed) |
| PP296 F | 'PP 296' as a foliar spray at 0.125 kg |
| TRIAD S | Triadimefon as a seed dressing at 0.5 g per kg of seed |

NOTES: (1) All seed dressing treatments (except organo-mercury) were sown at 220 kg. All remaining treatments were sown at 190 kg.
(2) Foliar sprays were applied on 1 June, 1979 in 340 l.

Basal applications: Manures: (10:23:23) at 250 kg. 'Nitro-Chalk' at 460 kg. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 0.25 kg in 220 l).

Seed: Kador.

Cultivations, etc.:- Deep-tine cultivated twice: 31 Aug, 1978 and 1 Sept. Heavy spring-tine cultivated: 14 Sept. NPK applied: 17 Oct. Paraquat applied: 18 Oct. Rolled and disc harrowed: 23 Oct. Seed sown: 24 Oct. N applied: 19 Apr, 1979. 'Brittox' applied: 14 May. Combine harvested: 31 Aug. Previous cropping: Wheat 1977, barley 1978.

NOTE: Foot and root rots were assessed in spring and summer. Leaf diseases were assessed in late summer.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE | |
|---|---|
| NONE | 4.77 |
| BAS389 S | 5.13 |
| BENOD F | 4.50 |
| BTS S | 5.65 |
| BTS F | 5.38 |
| CARBOX S | 5.16 |
| CARBOX F | 4.85 |
| EL228 S | 5.43 |
| EL228 F | 4.89 |
| H719 S | 4.68 |
| H719 F | 5.11 |
| OM S | 5.55 |
| PP296 F | 5.43 |
| TRIAD S | 5.68 |
| MEAN | 5.16 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE |
|---|---|
| SED | 0.407 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 26 | 0.498 | 9.7 |

GRAIN MEAN DM% 86.1

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/6

WINTER WHEAT

EFFECTS OF SEPTORIA

Object: To study the effects of a range of treatments on the incidence of Septoria and on the yield of winter wheat - Gt. Harpenden II.

Sponsors: J.F. Jenkyn, J. King (M.A.F.F.).

Design: 2 randomised blocks of 8, all treatment combinations duplicated in each block.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

1. SEP SEED — Septoria infection of seed:

   NONE
   INFECTED

2. SEEDRESS — Seed dressing:

   NONE — None
   ORG MERC — Organo-mercury (as 'Agrosan GN' at 2.2 g per kg seed)

3. SEP STRW — Septoria infected of straw applied to seedbed on 17 Oct, 1978:

   NONE
   INFECTED

NOTES: (1) An intended test of foliar fungicide was not applied.
(2) Infected straw was applied to plots at 600 kg per ha.
(3) All plots were separated at their sides by 4.27 m and at their ends by 9.14 m. Separations were sown to winter barley, variety Athene, seed dressed with ethirimol.
(4) Irrigation was applied to the whole experimental area once a week, overnight, at 5 mm per occasion, when there had been negligible rain in the preceding week. It was applied on 20 June, 27 June, 4 July, 11 July, 18 July, 25 July.

Basal applications: Manures: (0:20:20) at 310 kg. 'Nitro-Chalk' at 500 kg. Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 4.2 kg in 220 l). Growth regulator: Chlormequat at 1.7 kg in 220 l.

Seed: Atou, sown at 190 kg.

Cultivations, etc.:- Ploughed: 11 Oct, 1978. Rotary harrowed, PK applied: 16 Oct. Power harrowed: 17 Oct. Seed sown: 18 Oct. N applied: 3 May, 1979. Weedkillers applied: 8 May. Growth regulator applied: 1 June. Winter barley separations harvested: 15 Aug. Plots combine harvested: 29 Aug. Previous cropping: Barley 1977, beans 1978.

NOTE: Seedling and leaf infection by Septoria was assessed periodically during the season.



*https://doi.org/10.23637/ERADOC-1-45* *pp 276*

79/R/WW/6

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SEEDRESS | NONE | ORG MERC | MEAN |
|---|---|---|---|
| SEP SEED | | | |
| NONE | 6.33 | 6.22 | 6.27 |
| INFECTED | 6.13 | 6.29 | 6.21 |
| MEAN | 6.23 | 6.25 | 6.24 |

| SEP STRW | NONE | INFECTED | MEAN |
|---|---|---|---|
| SEP SEED | | | |
| NONE | 6.37 | 6.17 | 6.27 |
| INFECTED | 6.20 | 6.22 | 6.21 |
| MEAN | 6.29 | 6.20 | 6.24 |

| SEP STRW | NONE | INFECTED | MEAN |
|---|---|---|---|
| SEEDRESS | | | |
| NONE | 6.33 | 6.13 | 6.23 |
| ORG MERC | 6.24 | 6.26 | 6.25 |
| MEAN | 6.29 | 6.20 | 6.24 |

| SEEDRESS | NONE | | ORG MERC | |
|---|---|---|---|---|
| SEP STRW | NONE | INFECTED | NONE | INFECTED |
| SEP SEED | | | | |
| NONE | 6.46 | 6.19 | 6.28 | 6.15 |
| INFECTED | 6.19 | 6.07 | 6.21 | 6.37 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SEP SEED | SEEDRESS | SEP STRW | SEP SEED SEEDRESS |
|---|---|---|---|---|
| SED | 0.155 | 0.155 | 0.155 | 0.219 |

| TABLE | SEP SEED SEP STRW | SEEDRESS SEP STRW | SEP SEED SEEDRESS SEP STRW |
|---|---|---|---|
| SED | 0.219 | 0.219 | 0.309 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 23 | 0.438 | 7.0 |

GRAIN MEAN DM% 85.0

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/7

WINTER WHEAT

EFFECTS OF SULPHUR

Object: To study the effects of sulphur on amino acid content, flour quality and yield of winter wheat - Webbs.

Sponsors: B.J. Miflin, M.A. Kirkman.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 2.66 x 7.62.

Treatments:

| N S | Rates and times of nitrogen and sulphur fertilisers (kg element): Nitrogen | | Sulphur, as potassium sulphate | |
|---|---|---|---|---|
| | 19 Apr as 'Nitro-Chalk' | 29 June as urea | 3 May | 29 June |
| NE0 S00 | 120 | 0 | 0 | 0 |
| NE0 SE0 | 120 | 0 | 20 | 0 |
| NEL S00 | 120 | 80 | 0 | 0 |
| NEL SE0 | 120 | 80 | 20 | 0 |
| NEL S0L | 120 | 80 | 0 | 20 |
| NEL SEL | 120 | 80 | 20 | 20 |

NOTE: Urea and potassium sulphate were applied, either singly or together, in 1000 l.

Basal applications: Manures: (10:23:23) at 250 kg. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 2.5 kg in 220 l).

Seed: Flinor, sown at 190 kg.

Cultivations, etc.:- Deep-tine cultivated twice: 31 Aug, 1978 and 1 Sept. Heavy spring-tine cultivated: 14 Sept. NPK applied: 17 Oct. Paraquat applied: 18 Oct. Disc harrowed: 23 Oct. Seed sown: 25 Oct. 'Brittox' applied: 14 May. Combine harvested: 30 Aug. Previous cropping: Barley 1977, barley 1978.

NOTE: The grain was tested for bread making quality, N and sulphur content.



*https://doi.org/10.23637/ERADOC-1-45* *pp 278*

79/R/WW/7

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| | N S |
|---|---|
| NEO SOO | 5.24 |
| NEO SEO | 5.39 |
| NEL SOO | 5.27 |
| NEL SEO | 5.26 |
| NEL SOL | 5.60 |
| NEL SEL | 5.15 |
| MEAN | 5.32 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N S |
|---|---|
| SED | 0.249 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.306 | 5.7 |

GRAIN MEAN DM% 87.2

PLOT AREA HARVESTED 0.00203



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/WW/8

WINTER WHEAT

INTEGRATED PEST CONTROL

Object: To study the effects of chemical and biological pest control treatments on the incidence of pests and beneficial insects and on yield of winter wheat - Stackyard.

Sponsors: W. Powell, R. Bardner, G.J.W. Dean, C.A. Edwards, J.R. Lofty, K.E. Fletcher, J.W. Stephenson, A. Dewar, N. Wilding, R.T. Plumb.

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 19.2 x 19.2.

Treatments:

| TREATMNT | Chemical and biological treatments: |
|---|---|
| NONE | None |
| APHICIDE | Aphicide - Pirimicarb at 0.14 kg in 550 l on 26 June, 1979 |
| BIOLOGIC | Biological control of aphids by the release of 14 Sitobion avenae and 12 Metopolophium dirhodum per square metre, both species infected with Entomophthora aphidis, on 22 June, 1979 |
| MULTCHEM | Multiple chemical treatments:<br>Aldicarb at 5 kg to the seedbed on 17 Oct, 1978<br>Metaldehyde at 31 kg on 31 Oct<br>Omethoate at 0.2 kg in 280 l on 15 May, 1979 |

Basal applications: Manures: (10:23:23) at 250 kg, combine drilled. 'Nitro-Chalk' at 500 kg. Autumn weedkiller: Chlortoluron at 5.6 kg in 220 l. Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Flanders, undressed, sown at 190 kg.

Cultivations, etc.:- Ploughed: 12 Oct, 1978. Disc harrowed: 16 Oct. Rotary harrowed: 18 Oct. Seed sown: 19 Oct. Autumn weedkiller applied: 20 Oct. N applied: 27 Apr, 1979. Spring weedkiller applied: 15 May. Combine harvested: 30 Aug. Previous cropping: Wheat 1977, spring oats 1978.

NOTE: Aphid counts were made weekly between June and early August and Entomophthora infection was assessed. Slugs and stem boring insects were counted and the incidence of barley yellow dwarf virus assessed. Polyphagous predators and aphid-specific predators and parasites were sampled regularly between late May and early August.



*https://doi.org/10.23637/ERADOC-1-45* *pp 280*

79/R/WW/8

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TREATMNT | NONE | APHICIDE | BIOLOGIC | MULTCHEM | MEAN |
|---|---|---|---|---|---|
| | 7.21 | 7.14 | 7.03 | 7.44 | 7.20 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | TREATMNT |
|---|---|
| SED | 0.241 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.296 | 4.1 |

GRAIN MEAN DM% 84.3

PLOT AREA HARVESTED 0.00410



*https://doi.org/10.23637/ERADOC-1-45* *pp 281*

79/R/WW/9

WINTER WHEAT

PARASITES AND PREDATORS OF INSECT PESTS

Object: To study the effects of two insecticides, applied separately and together, on the parasites and predators and on the yield of winter wheat - Stackyard.

Sponsors: R. Bardner, J.R. Lofty, K.E. Fletcher.

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 10.7 x 21.4.

Treatments: All combinations of:-

| | | |
|---|---|---|
| 1. | INS E | Insecticide applied early: |
| | NONE | None |
| | ALDICARB | Aldicarb at 5 kg as 10% granules to the seedbed on 17 Oct, 1978 |
| 2. | INS L | Insecticide applied late: |
| | NONE | None |
| | CHLORPYR | Chlorpyrifos at 1.17 kg as a foliar spray in 550 l on 15 May, 1979 |

Basal applications: Manures: (10:23:23) at 250 kg, combine drilled. 'Nitro-Chalk' at 500 kg. Autumn weedkiller: Chlortoluron at 5.6 kg in 220 l. Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Flanders, sown at 190 kg.

Cultivations, etc.:- Ploughed: 12 Oct, 1978. Disc harrowed: 16 Oct. Rotary harrowed, seed sown: 18 Oct. Autumn weedkiller applied: 20 Oct. N applied: 27 Apr, 1979. Spring weedkiller applied: 15 May. Combine harvested: 29 Aug. Previous cropping: Fallow 1977, wheat 1978.

NOTE: Incidence of ground beetles was assessed weekly, of wheat blossom midge larvae and pupae in soil in November and December and all arthropods in soil from April until harvest. Incidence of shoot borers was assessed in April, adult wheat blossom midge and other flying insects in June and thrips in July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 282*

79/R/WW/9

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INS L / INS E | NONE | CHLORPYR | MEAN |
|---|---|---|---|
| NONE | 6.52 | 6.77 | 6.65 |
| ALDICARB | 6.60 | 7.28 | 6.94 |
| MEAN | 6.56 | 7.02 | 6.79 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | INS E | INS L | INS E INS L |
|---|---|---|---|
| SED | 0.128 | 0.128 | 0.181 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.221 | 3.3 |

GRAIN MEAN DM% 86.3

PLOT AREA HARVESTED 0.00607



*https://doi.org/10.23637/ERADOC-1-45* *pp 283*

79/S/WW/1

WINTER WHEAT

RATES AND TIMES OF N AND FUNGICIDE

Object: To study the effects of rates, times and forms of nitrogen fertiliser and of two fungicides on the incidence of diseases and on the yields and nitrogen uptake of wheat - Saxmundham: Grove Plot.

Sponsors: F.V. Widdowson, A. Penny.

Design: Half replicate of $4 \times 2^4$ plus 8 extra plots.

Whole plot dimensions: 2.74 x 6.40.

Treatments: Combinations of:-

| | | |
|---|---|---|
| 1. N AUTUMN | | Nitrogen fertiliser in autumn (4 Oct, 1978): |
| | 0 | None |
| | IBDU 1 | Isobutylidene diurea at 50 kg N |
| 2. N SPRING | | Nitrogen fertiliser in spring (18 Apr, 1979): |
| | 0 | None |
| | NC 1 | 'Nitro-Chalk 25% N' at 50 kg N |
| | NC 2 | 'Nitro-Chalk 25% N' at 100 kg N |
| | NC 3 | 'Nitro-Chalk 25% N' at 150 kg N |
| 3. N SUMMER | | Nitrogen fertiliser in summer: |
| | 0 | None |
| | AG 1 | 'Agsol 26% N' at 50 kg N foliar spray, half on 12 June, half on 5 July |
| 4. FUNGCIDE(1) | | Fungicide: |
| | 0 | None |
| | BN+CA+MA | Benomyl on 16 May, carbendazim + maneb on 12 June and on 5 July |
| 5. FUNGCIDE(2) | | Fungicide: |
| | 0 | None |
| | BENODANI | Benodanil on 12 June and on 5 July |

plus four extra treatments (duplicated), all given FUNGCIDE(1) and FUNGCIDE(2):

EXTRA

| | |
|---|---|
| NCA1NCD2 | 'Nitro-Chalk' in autumn at 50 kg N, 'Nitro-Chalk' in spring/summer at 100 kg N, dressing divided 1/5 on 6 Mar, 3/5 on 18 Apr, and 1/5 on 16 May |
| NCA1NCD3 | As previous treatment but 150 kg N |
| IBA1NCD2 | Isobutylidene diurea in autumn at 50 kg N, 'Nitro-Chalk' in spring/summer at 100 kg N dressing divided as above |
| IBA1NCD3 | As previous treatment but 150 kg N. |



*https://doi.org/10.23637/ERADOC-1-45* *pp 284*

79/S/WW/1

NOTE: Test fungicides were applied in 280 l. Rates: Benomyl at 0.28 kg, carbendazim at 0.25 kg with maneb at 1.6 kg, benodanil at 1.2 kg.

Basal applications: Manures: (0:14:28) at 190 kg. (0:20:20) at 380 kg, combine drilled. Autumn weedkiller: Isoproturon at 2.5 kg in 220 l. Spring weedkiller: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 220 l applied with the growth regulator. Fungicide: Tridemorph at 0.53 kg in 280 l. Growth regulator: Chlormequat at 1.7 kg. Aphicide: Pirimicarb at 0.14 kg in 280 l.

Seed: Maris Huntsman, sown at 180 kg.

Cultivations, etc.:- PK applied: 19 Sept, 1978. Seed sown and autumn test N applied: 4 Oct. Autumn weedkiller applied: 5 Oct. Spring weedkiller and growth regulator applied: 15 May, 1979. Basal fungicide applied: 16 May. Basal insecticide applied: 5 July. Harvested: 21 Aug.

NOTE: Plots were assessed for leaf diseases, numbers of ears, and N percentage in grains.

79/S/WW/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N SPRING | 0 | NC 1 | NC 2 | NC 3 | MEAN |
|---|---|---|---|---|---|
| N AUTUMN | | | | | |
| 0 | 5.16 | 7.19 | 7.98 | 8.02 | 7.09 |
| IBDU 1 | 6.01 | 7.70 | 8.29 | 8.06 | 7.52 |
| MEAN | 5.59 | 7.45 | 8.13 | 8.04 | 7.30 |

| N SUMMER | 0 | AG 1 | MEAN |
|---|---|---|---|
| N AUTUMN | | | |
| 0 | 6.96 | 7.22 | 7.09 |
| IBDU 1 | 7.39 | 7.64 | 7.52 |
| MEAN | 7.18 | 7.43 | 7.30 |

| N SUMMER | 0 | AG 1 | MEAN |
|---|---|---|---|
| N SPRING | | | |
| 0 | 5.36 | 5.82 | 5.59 |
| NC 1 | 7.24 | 7.65 | 7.45 |
| NC 2 | 8.15 | 8.12 | 8.13 |
| NC 3 | 7.95 | 8.14 | 8.04 |
| MEAN | 7.18 | 7.43 | 7.30 |

| FUNGCIDE(1) | 0 | BN+CA+MA | MEAN |
|---|---|---|---|
| N AUTUMN | | | |
| 0 | 6.97 | 7.22 | 7.09 |
| IBDU 1 | 7.32 | 7.71 | 7.52 |
| MEAN | 7.14 | 7.46 | 7.30 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 285*

79/S/WW/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE(1) | 0 | BN+CA+MA | MEAN |
|---|---|---|---|
| N SPRING | | | |
| 0 | 5.64 | 5.54 | 5.59 |
| NC 1 | 7.21 | 7.68 | 7.45 |
| NC 2 | 7.91 | 8.36 | 8.13 |
| NC 3 | 7.82 | 8.27 | 8.04 |
| MEAN | 7.14 | 7.46 | 7.30 |

| FUNGCIDE(1) | 0 | BN+CA+MA | MEAN |
|---|---|---|---|
| N SUMMER | | | |
| 0 | 7.06 | 7.29 | 7.18 |
| AG 1 | 7.23 | 7.64 | 7.43 |
| MEAN | 7.14 | 7.46 | 7.30 |

| FUNGCIDE(2) | 0 | BENODANI | MEAN |
|---|---|---|---|
| N AUTUMN | | | |
| 0 | 7.12 | 7.07 | 7.09 |
| IBDU 1 | 7.51 | 7.52 | 7.52 |
| MEAN | 7.31 | 7.30 | 7.30 |

| FUNGCIDE(2) | 0 | BENODANI | MEAN |
|---|---|---|---|
| N SPRING | | | |
| 0 | 5.53 | 5.64 | 5.59 |
| NC 1 | 7.47 | 7.42 | 7.45 |
| NC 2 | 8.17 | 8.10 | 8.13 |
| NC 3 | 8.07 | 8.02 | 8.04 |
| MEAN | 7.31 | 7.30 | 7.30 |

| FUNGCIDE(2) | 0 | BENODANI | MEAN |
|---|---|---|---|
| N SUMMER | | | |
| 0 | 7.16 | 7.19 | 7.18 |
| AG 1 | 7.46 | 7.40 | 7.43 |
| MEAN | 7.31 | 7.30 | 7.30 |

| FUNGCIDE(2) | 0 | BENODANI | MEAN |
|---|---|---|---|
| FUNGCIDE(1) | | | |
| 0 | 7.18 | 7.11 | 7.14 |
| BN+CA+MA | 7.44 | 7.49 | 7.46 |
| MEAN | 7.31 | 7.30 | 7.30 |

| EXTRA | NCA1NCD2 | NCA1NCD3 | IBA1NCD2 | IBA1NCD3 | MEAN |
|---|---|---|---|---|---|
| | 8.62 | 8.54 | 8.41 | 8.27 | 8.46 |

GRAND MEAN 7.54



*https://doi.org/10.23637/ERADOC-1-45* *pp 286*

79/S/WW/1

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N AUTUMN | N SPRING | N SUMMER | FUNGCIDE(1) |
|---|---|---|---|---|
| SED | 0.092 | 0.131 | 0.092 | 0.092 |

| TABLE | FUNGCIDE(2) | N AUTUMN N SPRING | N AUTUMN N SUMMER | N SPRING N SUMMER |
|---|---|---|---|---|
| SED | 0.092 | 0.185 | 0.131 | 0.185 |

| TABLE | N AUTUMN FUNGCIDE(1) | N SPRING FUNGCIDE(1) | N SUMMER FUNGCIDE(1) | N AUTUMN FUNGCIDE(2) |
|---|---|---|---|---|
| SED | 0.131 | 0.185 | 0.131 | 0.131 |

| TABLE | N SPRING FUNGCIDE(2) | N SUMMER FUNGCIDE(2) | FUNGCIDE(1) FUNGCIDE(2) | EXTRA |
|---|---|---|---|---|
| SED | 0.185 | 0.131 | 0.131 | 0.262 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 10 | 0.262 | 3.5 |

GRAIN MEAN DM% 80.2

PLOT AREA HARVESTED 0.00098



*https://doi.org/10.23637/ERADOC-1-45* *pp 287*

79/R/WS/1

SPRING WHEAT

FUNGICIDES AND GRAIN MICROFLORA

Object: To study the effects of a range of fungicides applied at a range of times on the yield, quality and grain microflora of spring wheat - Whittlocks.

Sponsor: J. Lacey.

Design: 2 randomised blocks of 24 plots.

Whole plot dimensions: 4.27 x 13.1.

Treatments: All combinations of:-

1. FUNGCIDE — Broad spectrum fungicides:

| | |
|---|---|
| CAPTAFOL | Captafol at 1.4 kg |
| CARB+MAN | Carbendazim at 0.25 kg + maneb at 1.6 kg |
| BENOMYL | Benomyl (see Note (2)) |

2. APP TIME — Application times of broad spectrum fungicides:

| | 3 July | 11 July | 3 Aug |
|---|---|---|---|
| NONE | None | None | None |
| E | Sprayed | None | None |
| M | None | Sprayed | None |
| L | None | None | Sprayed |
| E+M | Sprayed | Sprayed | None |
| E+L | Sprayed | None | Sprayed |
| M+L | None | Sprayed | Sprayed |
| E+M+L | Sprayed | Sprayed | Sprayed |

NOTES: (1) Treatment sprays were applied in 340 l.
(2) First benomyl sprays were applied at 1.1 kg in error. The intended rate of 0.28 kg was used for both later applications.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) and mecoprop at 1.7 kg in 220 l.

Seed: Highbury, sown at 190 kg.

Cultivations, etc.:- Deep-tine cultivated twice: 31 Oct, 1978 and 2 Nov. Spring-tine cultivated, seed sown: 20 Apr, 1979. Weedkillers applied: 4 June. Combine harvested: 6 Sept. Previous cropping: Winter oats 1977, potatoes 1978.

NOTE: Grain microflora were assessed at fortnightly intervals after heading. Thousand grain weights were measured, and grain was assessed for germination and seedling growth.



*https://doi.org/10.23637/ERADOC-1-45* *pp 288*

79/R/WS/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| APP TIME / FUNGCIDE | E | M | L | E+M | E+L | M+L | E+M+L | MEAN |
|---|---|---|---|---|---|---|---|---|
| CAPTAFOL | 5.51 | 5.61 | 5.82 | 5.50 | 5.73 | 5.55 | 5.89 | 5.66 |
| CARB+MAN | 5.54 | 5.66 | 5.32 | 5.80 | 5.57 | 5.71 | 5.61 | 5.60 |
| BENOMYL | 5.82 | 5.54 | 5.33 | 5.92 | 5.86 | 5.35 | 6.13 | 5.71 |
| MEAN | 5.62 | 5.60 | 5.49 | 5.74 | 5.72 | 5.54 | 5.87 | 5.66 |

APP TIME NONE 5.36

GRAND MEAN 5.62

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE | APP TIME | FUNGCIDE APP TIME |
|---|---|---|---|
| SED | 0.129 | 0.197 | 0.341 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 25 | 0.341 | 6.1 |

GRAIN MEAN DM% 83.2

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* *pp 289*

79/R/B/1

# WINTER BARLEY

## SOWING DATES, MILDEW CONTROL & GROWTH STUDY

Object: To study the effects of sowing date and mildew control on the incidence of mildew, growth and yield of winter barley - Long Hoos I/II.

Sponsors: A. Bainbridge, J.F. Jenkyn, M.E. Finney, J.N. Gallagher.

Design: 2 blocks of 24 plots with confounding.

Whole plot dimensions: 2.13 x 9.14.

Treatments: All combinations of:-

1. SOW DATE — Dates of sowing:

   6 OCT
   13 OCT
   20 OCT
   1 NOV
   15 NOV
   29 NOV

2. TRIFORIN — Triforine:

   NONE — None
   SEEDRESS — Seed dressed at 2.7 g a.i. per kg of seed

3. TRIDEMOR(1) — Tridemorph in early spring:

   NONE — None
   SPRAYED — Sprayed on 26 Apr, 1979

4. TRIDEMOR(2) — Tridemorph in late spring:

   NONE — None
   SPRAYED — Sprayed on 1 June

NOTES: (1) Tridemorph was applied at 0.53 kg in 340 l
(2) The guard areas between sides of each plot were sown to winter barley, variety Athene, and used for the experiment 'N & Growth Regulator' (see 79/R/B/5).

Basal applications: Manures: (0:20:20) at 310 kg. 'Nitro-Chalk' at 370 kg. Weedkillers: Mecoprop at 2.5 l in 220 l. Irrigation: 25 mm.

Seed: Hoppel, sown at 180 kg.

Cultivations, etc.:- Ploughed: 22 Sept, 1978. Rolled: 27 Sept. PK applied, rotary harrowed: 4 Oct. Irrigation applied: 9 Nov. N applied: 3 May, 1979. Weedkiller applied: 9 May. All plots except SOW DATE 29 NOV harvested: 6 Aug. SOW DATE 29 NOV harvested: 15 Aug. Previous crops: Spring barley 1977, Winter beans 1978.

NOTE: Seedling emergence counts were made in April. Tillers and grains per ear were counted in July. Disease assessments were made in June and July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 290*

79/R/B/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TRIFORIN<br>SOW DATE | NONE | SEEDRESS | MEAN |
|---|---|---|---|
| 6 OCT | 7.82 | 7.88 | 7.85 |
| 13 OCT | 8.03 | 8.03 | 8.03 |
| 20 OCT | 7.93 | 7.82 | 7.87 |
| 1 NOV | 7.82 | 8.32 | 8.07 |
| 15 NOV | 7.03 | 7.56 | 7.29 |
| 29 NOV | 5.83 | 5.52 | 5.68 |
| MEAN | 7.41 | 7.52 | 7.47 |

| TRIDEMOR(1)<br>SOW DATE | NONE | SPRAYED | MEAN |
|---|---|---|---|
| 6 OCT | 7.35 | 8.34 | 7.85 |
| 13 OCT | 7.84 | 8.23 | 8.03 |
| 20 OCT | 7.74 | 8.00 | 7.87 |
| 1 NOV | 7.95 | 8.19 | 8.07 |
| 15 NOV | 7.36 | 7.22 | 7.29 |
| 29 NOV | 5.90 | 5.45 | 5.68 |
| MEAN | 7.36 | 7.57 | 7.47 |

| TRIDEMOR(1)<br>TRIFORIN | NONE | SPRAYED | MEAN |
|---|---|---|---|
| NONE | 7.30 | 7.52 | 7.41 |
| SEEDRESS | 7.42 | 7.63 | 7.52 |
| MEAN | 7.36 | 7.57 | 7.47 |

| TRIDEMOR(2)<br>SOW DATE | NONE | SPRAYED | MEAN |
|---|---|---|---|
| 6 OCT | 7.85 | 7.84 | 7.85 |
| 13 OCT | 7.91 | 8.16 | 8.03 |
| 20 OCT | 7.67 | 8.07 | 7.87 |
| 1 NOV | 7.97 | 8.17 | 8.07 |
| 15 NOV | 7.27 | 7.32 | 7.29 |
| 29 NOV | 5.28 | 6.08 | 5.68 |
| MEAN | 7.32 | 7.61 | 7.47 |

| TRIDEMOR(2)<br>TRIFORIN | NONE | SPRAYED | MEAN |
|---|---|---|---|
| NONE | 7.24 | 7.58 | 7.41 |
| SEEDRESS | 7.41 | 7.64 | 7.52 |
| MEAN | 7.32 | 7.61 | 7.47 |

| TRIDEMOR(2)<br>TRIDEMOR(1) | NONE | SPRAYED | MEAN |
|---|---|---|---|
| NONE | 7.18 | 7.54 | 7.36 |
| SPRAYED | 7.47 | 7.68 | 7.57 |
| MEAN | 7.32 | 7.61 | 7.47 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOW DATE | TRIFORIN | TRIDEMOR(1) | TRIDEMOR(2) |
|---|---|---|---|---|
| SED | 0.222 | 0.128 | 0.128 | 0.128 |

| TABLE | SOW DATE TRIFORIN | SOW DATE TRIDEMOR(1) | TRIFORIN TRIDEMOR(1) | SOW DATE TRIDEMOR(2) |
|---|---|---|---|---|
| SED | 0.314 | 0.314 | 0.181 | 0.314 |

| TABLE | TRIFORIN TRIDEMOR(2) | TRIDEMOR(1) TRIDEMOR(2) |
|---|---|---|
| SED | 0.181 | 0.181 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 20 | 0.444 | 6.0 |

GRAIN MEAN DM% 85.4

PLOT AREA HARVESTED 0.00150



*https://doi.org/10.23637/ERADOC-1-45* *pp 292*

79/W/B/2

# WINTER & SPRING BARLEY

## MILDEW SENSITIVITY TO ETHIRIMOL

Object: To study the effects of dressing barley seed with ethirimol on the subsequent sensitivity of mildew and on the yield of winter and spring barley - Warren Field I.

Sponsor: D.W. Hollamon.

Design: Winter barley: 4 blocks of 4 plots split into 2
Spring barley: 4 blocks of 4 plots

Whole plot dimensions: 8.53 x 8.53.

Treatments:

To WINTER BARLEY All combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. SEEDRESS | | Seed dressing to winter barley: |
| | WO | None |
| | WE | Ethirimol |
| 2. FUNG SB | | Fungicide applied to adjacent plots of spring barley: |
| | S OT | No fungicides to one adjacent plot, tridemorph to the other |
| | S ET | Ethirimol seed dressing to one adjacent plot, tridemorph to the other |

Sub plots

| | | |
|---|---|---|
| 3. POSITION | | Position of winter barley plots in relation to spring barley plots testing seed dressing (S O & S E below): |
| | NORTH | |
| | SOUTH | |

To SPRING BARLEY All combinations of:-

| | | |
|---|---|---|
| 1. SEEDRESS | | Seed dressing to spring barley: |
| | SO | None |
| | SE | Ethirimol |
| 2. FUNG WB | | Fungicide applied to both adjacent plots of winter barley: |
| | W O | None |
| | W E | Ethirimol seed dressing |



*https://doi.org/10.23637/ERADOC-1-45* *pp 293*

79/W/B/2

NOTES: (1) Plot dimensions were 8.53 x 8.53 and plots were arranged in sets of three - a central spring barley plot with flanking plots of winter barley. Sides of sets of three plots were separated by 'plots' of spring barley of the same dimensions sprayed with tridemorph, ends of plots were separated by strips of spring barley 9.14 wide sprayed with tridemorph.
(2) Tridemorph was applied at 0.53 kg in 250 l.

Basal applications: Manures: (0:20:20) at 310 kg, N at 100 kg as 'Nitro-Chalk'. Weedkillers: Mecoprop with bromoxynil and ioxynil ('Brittox' at 2.5 kg in 250 l). Bromoxynil with ioxynil ('Oxytril CM' at 0.7 kg in 250 l).

Seed: Winter barley, Hoppel sown at 170 kg.
Spring barley, Wing sown at 160 kg.

Cultivations, etc.:- Heavy spring-tine cultivated: 11 Sept, 1978. Deep-tine cultivated: 18 Sept. PK applied: 30 Oct. Disced twice: 13 Nov, 14 Nov. Winter barley sown: 15 Nov. Heavy spring-tine cultivated for spring sowing: 17 Apr, 1979. Spring-tine cultivated with crumbler attached: 18. Apr. Spring barley sown: 19 Apr. N applied to all plots: 20 Apr. 'Brittox' applied to winter barley: 15 May. 'Oxytril CM' applied to spring barley: 5 June. Tridemorph applied: 18 June. Winter barley combine harvested: 15 Aug. Spring barley combine harvested: 21 Aug. Previous crops: Potatoes 1977, winter wheat 1978.

NOTE: Leaf samples were taken for mildew (Erysiphe graminis) measurements during June.

SPRING BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNG WB / SEEDRESS | W 0 | W E | MEAN |
|---|---|---|---|
| S0 | 5.37 | 5.28 | 5.32 |
| SE | 5.58 | 5.59 | 5.58 |
| MEAN | 5.47 | 5.43 | 5.45 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SEEDRESS | FUNG WB | SEEDRESS FUNG WB |
|---|---|---|---|
| SED | 0.216 | 0.216 | 0.306 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.432 | 7.9 |

GRAIN MEAN DM% 81.4

PLOT AREA HARVESTED 0.00243



*https://doi.org/10.23637/ERADOC-1-45* *pp 294*

79/W/B/2

WINTER BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNG SB | S OT | S ET | MEAN |
|---|---|---|---|
| SEEDRESS | | | |
| WO | 5.75 | 5.71 | 5.73 |
| WE | 5.92 | 5.91 | 5.91 |
| MEAN | 5.83 | 5.81 | 5.82 |

| POSITION | NORTH | SOUTH | MEAN |
|---|---|---|---|
| SEEDRESS | | | |
| WO | 5.76 | 5.70 | 5.73 |
| WE | 5.66 | 6.16 | 5.91 |
| MEAN | 5.71 | 5.93 | 5.82 |

| POSITION | NORTH | SOUTH | MEAN |
|---|---|---|---|
| FUNG SB | | | |
| S OT | 5.78 | 5.89 | 5.83 |
| S ET | 5.64 | 5.98 | 5.81 |
| MEAN | 5.71 | 5.93 | 5.82 |

| FUNG SB | S OT | | S ET | |
|---|---|---|---|---|
| POSITION | NORTH | SOUTH | NORTH | SOUTH |
| SEEDRESS | | | | |
| WO | 5.96 | 5.53 | 5.56 | 5.87 |
| WE | 5.59 | 6.24 | 5.73 | 6.09 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SEEDRESS | FUNG SB | SEEDRESS FUNG SB |
|---|---|---|---|
| SED | 0.196 | 0.196 | 0.277 |

| TABLE | SEEDRESS* POSITION | FUNG SB* POSITION | SEEDRESS* FUNG SB POSITION |
|---|---|---|---|
| SED | 0.229 | 0.229 | 0.324 |

* ONLY WHEN COMPARING MEANS WITH SAME LEVEL OF POSITION

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.392 | 6.7 |
| BLOCK.WP.SP | 12 | 0.336 | 5.8 |

GRAIN MEAN DM% 84.1

SUB PLOT AREA HARVESTED 0.00243



*https://doi.org/10.23637/ERADOC-1-45* *pp 295*

79/R/B/5

WINTER BARLEY

N & GROWTH REGULATOR

Object: To study the effects of a growth regulator and rates and times of applying nitrogen on the yield of winter barley - Long Hoos I/II.

Sponsors: F.V. Widdowson, J.F. Jenkyn.

Design: 4 randomised blocks of 13 plots.

Whole plot dimensions: 2.13 x 9.14.

Treatments: All combinations of:-

1. E N TIME — Times of applying early nitrogen:

| | |
|---|---|
| FEB/MAR | 30 kg of total early N applied 1 Mar, 1979, remainder 2 Apr. |
| MAR | All early N applied 2 Apr. |

2. E N RATE — Total early nitrogen rate (kg N):

60
90

3. L N G — Late nitrogen (kg N) and growth regulator:

| | |
|---|---|
| NONE | None |
| 30 APR | 30 kg applied 25 Apr. No growth regulator |
| 30 APR+G | 30 kg applied 25 Apr. Mepiquat chloride + ethephon (as 'Terpal' applied at 2.5 l) in 280 l |

plus one extra plot:

| | |
|---|---|
| 90F/M+G | 90 kg N total applied: 30 kg N 1 Mar, 60 kg N 2 Apr. Mepiquat chloride + ethephon applied at above rate on 25 May |

NOTES: (1) Planned dates of applying early nitrogen treatments were not achieved because of wet weather.
(2) The guard areas between sides of each plot were sown to winter barley, variety Hoppel, and used for the experiment 'Sowing Dates, Mildew Control and Growth Study' (see 79/R/B/1).

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: Mecoprop at 2.5 l in 220 l. Irrigation: 25 mm water.

Seed: Athene, sown at 160 kg.

Cultivations, etc.:- Ploughed: 22 Sept, 1978. Rolled: 27 Sept. PK applied, rotary harrowed: 4 Oct. Seed sown: 6 Oct. Irrigated: 9 Nov. Weedkiller applied: 9 May, 1979. Harvested: 6 Aug. Previous crops: Spring barley 1977, Winter beans 1978.

NOTE: Soil samples were taken in spring to a depth of 90 cm to determine mineral N content. Nitrogen percentages of grain were measured. Leaf disease and crop height were assessed in late June.



*https://doi.org/10.23637/ERADOC-1-45* *pp 296*

79/R/B/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| E N RATE | 60 | 90 | MEAN |
|---|---|---|---|
| E N TIME | | | |
| FEB/MAR | 8.30 | 8.67 | 8.49 |
| MAR | 8.46 | 8.98 | 8.72 |
| MEAN | 8.38 | 8.82 | 8.60 |

| L N G | NONE | 30 APR | 30 APR+G | MEAN |
|---|---|---|---|---|
| E N TIME | | | | |
| FEB/MAR | 7.90 | 8.63 | 8.93 | 8.49 |
| MAR | 8.44 | 8.65 | 9.05 | 8.72 |
| MEAN | 8.17 | 8.64 | 8.99 | 8.60 |

| L N G | NONE | 30 APR | 30 APR+G | MEAN |
|---|---|---|---|---|
| E N RATE | | | | |
| 60 | 7.77 | 8.44 | 8.93 | 8.38 |
| 90 | 8.57 | 8.84 | 9.06 | 8.82 |
| MEAN | 8.17 | 8.64 | 8.99 | 8.60 |

| | L N G | NONE | 30 APR | 30 APR+G |
|---|---|---|---|---|
| E N TIME | E N RATE | | | |
| FEB/MAR | 60 | 7.58 | 8.45 | 8.88 |
| | 90 | 8.23 | 8.80 | 8.99 |
| MAR | 60 | 7.97 | 8.42 | 8.98 |
| | 90 | 8.92 | 8.88 | 9.13 |

90F/M+G 8.62

GRAND MEAN 8.60

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | E N TIME | E N RATE | L N G | E N TIME E N RATE |
|---|---|---|---|---|
| SED | 0.119 | 0.119 | 0.146 | 0.168 |

| TABLE | E N TIME L N G | E N RATE L N G | E N TIME E N RATE L N G & 90F/M+G |
|---|---|---|---|
| SED | 0.206 | 0.206 | 0.291 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 36 | 0.412 | 4.8 |

GRAIN MEAN DM% 86.3

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* *pp 297*

79/R/B/6

WINTER BARLEY

TIMES OF APPLYING TRIDEMORPH & DEMETON-S-METHYL

Object: To study the effects of times of applying tridemorph and demeton-s-methyl on the incidence of mildew, aphids and aphid-borne viruses and on the yield of winter barley - Scout.

Sponsors: A. Bainbridge, M.E. Finney, J.F. Jenkyn, R.T. Plumb.

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 2.13 x 6.10.

Treatments: All combinations of:-

1. TRI A — Tridemorph in autumn (17 Nov, 1978):

   NONE
   SPRAYED

2. TRI ES — Tridemorph in early spring (26 Apr, 1979):

   NONE
   SPRAYED

3. TRI LS — Tridemorph in late spring (1 June):

   NONE
   SPRAYED

plus two extra treatments:

| | |
|---|---|
| DEMETON | Times of applying demeton-s-methyl: |
| AUTUMN | 17 Nov, 1978 |
| SPRING | 1 June, 1979 |

NOTES: (1) Tridemorph was applied at 0.53 kg in 340 l.
(2) Demeton-s-methyl was applied at 0.25 kg in 340 l

Basal applications: Manures: FYM at 20 t. (10:23:23) at 250 kg combine drilled. 'Nitro-Chalk' at 380 kg. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Methabenzthiazuron at 2.35 kg in 220 l.

Seed: Sonja, sown at 190 kg.

Cultivations, etc.:- FYM applied: 25 Aug, 1978. Ploughed: 7 Sept. Paraquat applied: 3 Oct. Seed sown: 5 Oct. Methabenzthiazuron applied: 12 Oct. N applied: 17 Apr, 1979. Harvested: 5 Aug. Previous crops: Winter barley 1977 and 1978.

NOTES: (1) Seedling emergence counts were made in November and in April.
(2) Foliar diseases were assessed in November, June and July. Tillers and grains per ear were counted in July.



*https://doi.org/10.23637/ERADOC-1-45* *pp 298*

79/R/B/6

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TRI ES / TRI A | NONE | SPRAYED | MEAN |
|---|---|---|---|
| NONE | 6.63 | 6.93 | 6.78 |
| SPRAYED | 6.91 | 6.81 | 6.86 |
| MEAN | 6.77 | 6.87 | 6.82 |

| TRI LS / TRI A | NONE | SPRAYED | MEAN |
|---|---|---|---|
| NONE | 6.73 | 6.83 | 6.78 |
| SPRAYED | 6.93 | 6.79 | 6.86 |
| MEAN | 6.83 | 6.81 | 6.82 |

| TRI LS / TRI ES | NONE | SPRAYED | MEAN |
|---|---|---|---|
| NONE | 6.64 | 6.90 | 6.77 |
| SPRAYED | 7.02 | 6.72 | 6.87 |
| MEAN | 6.83 | 6.81 | 6.82 |

| TRI A | TRI LS / TRI ES | NONE | SPRAYED |
|---|---|---|---|
| NONE | NONE | 6.49 | 6.78 |
| | SPRAYED | 6.98 | 6.88 |
| SPRAYED | NONE | 6.80 | 7.02 |
| | SPRAYED | 7.06 | 6.56 |

| DEMETON | AUTUMN | SPRING | MEAN |
|---|---|---|---|
| | 6.85 | 6.84 | 6.85 |

GRAND MEAN 6.82

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | DEMETON | TRI A | TRI ES | TRI LS |
|---|---|---|---|---|
| SED | 0.251 | 0.126 | 0.126 | 0.126 |

| TABLE | TRI A TRI ES | TRI A TRI LS | TRI ES TRI LS | TRI A TRI ES TRI LS & DEMETON |
|---|---|---|---|---|
| SED | 0.178 | 0.178 | 0.178 | 0.251 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 18 | 0.308 | 4.5 |

GRAIN MEAN DM% 85.8

PLOT AREA HARVESTED 0.00130



*https://doi.org/10.23637/ERADOC-1-45* *pp 299*

79/R/B/7 and 79/W/B/7

SPRING BARLEY

VARIETIES AND N

Object: To study the yields of some of the newer varieties of barley; a growth regulator and three rates of nitrogen are also tested - Rothamsted (R) Bylands and Woburn (W) Far Field I.

Sponsor: R. Moffitt.

Design: 3 randomised blocks of 10 x 4 criss cross.

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

Column plots

| | | |
|---|---|---|
| 1. VARIETY | Varieties (all seed purchased from standard commercial sources, seed vigour not tested except as stated): | |
| | ATHOS | Athos |
| | DRAM | Dram |
| | GEORG | Georgie |
| | GEORG H | Georgie, high vigour seed ex R.H.M. |
| | GEORG L | Georgie, low vigour seed ex R.H.M. |
| | GOLDMARK | Goldmarker |
| | JUPITER | Jupiter |
| | MAGNUM | Magnum |
| | MINAK | Minak |
| | PORTHOS | Porthos |

Row plots

| | | |
|---|---|---|
| 2. N GR | Nitrogen fertiliser (kg N) and growth regulator: | |
| | 38 | 38 |
| | 75 | 75 |
| | 113 | 113 |
| | 113 M+E | 113 + mepiquat chloride and ethephon (as 'Terpal' at 2.45 kg in 220 l (R), in 250 l (W)) |

Basal applications:
Bylands (R): Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Mecoprop at 1.6 kg and bromoxynil with ioxynil (as 'Oxytril CM' at 1.4 kg) in 220 l. Fungicide: Tridemorph at 0.53 kg in 220 l.
Far Field I (W): Manures: (0:20:20) at 310 kg, combine drilled.
Weedkillers: Bromoxynil with ioxynil ('Oxytril CM' at 2.1 kg in 250 l).

Seed: Bylands (R): Varieties sown at 160 kg.
Far Field I (W): Varieties sown at 160 kg.



*https://doi.org/10.23637/ERADOC-1-45* *pp 300*

79/R/B/7 and 79/W/B/7

Cultivations, etc.:-
Bylands (R): Subsoiled, tines 100 cm apart and 45 cm deep: 15 Nov, 1978. Ploughed: 21 Dec. Rotary harrowed, seed sown: 27 Apr, 1979. N applied: 17 May. Weedkiller applied: 4 June. Fungicide applied: 12 June. Growth regulator applied: 21 June. Combine harvested: 29 Aug. Previous crops: Wheat 1977, barley 1978.
Far Field I (W): Heavy spring-tine cultivated three times: 7 Sept, 1978, 30 Oct, 8 Nov. Subsoiled, tines 140 cm apart and 60 cm deep: 30 Oct. Spring-tine cultivated twice, with crumbler attached: 17 Apr, 1979, 18 Apr. N applied: 18 Apr. Spring-tine cultivated: 19 Apr. Seed sown: 20 Apr. Weedkiller applied: 5 June. Growth regulator applied: 18 June. Combine harvested: 22 Aug. Previous crops: Beans 1977, barley 1978.

79/R/B/7

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N GR | 38 | 75 | 113 | 113 M+E | MEAN |
|---|---|---|---|---|---|
| VARIETY | | | | | |
| ATHOS | 2.86 | 3.53 | 3.79 | 3.53 | 3.43 |
| DRAM | 3.24 | 3.95 | 4.02 | 3.75 | 3.74 |
| GEORG | 3.28 | 3.26 | 4.03 | 3.91 | 3.62 |
| GEORG H | 3.23 | 3.32 | 3.96 | 3.09 | 3.40 |
| GEORG L | 3.16 | 3.90 | 3.80 | 3.65 | 3.63 |
| GOLDMARK | 2.87 | 3.74 | 3.52 | 3.76 | 3.47 |
| JUPITER | 3.11 | 3.39 | 3.77 | 3.52 | 3.45 |
| MAGNUM | 2.09 | 2.72 | 3.16 | 2.78 | 2.69 |
| MINAK | 1.79 | 2.52 | 2.94 | 2.75 | 2.50 |
| PORTHOS | 2.95 | 3.61 | 3.66 | 3.34 | 3.39 |
| MEAN | 2.86 | 3.39 | 3.66 | 3.41 | 3.33 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | N GR | VARIETY N GR |
|---|---|---|---|
| SED | 0.195 | 0.194 | 0.394 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.385 |
| N GR | | | 0.360 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.VARIETY | 18 | 0.238 | 7.2 |
| BLOCK.N GR | 6 | 0.238 | 7.1 |
| BLOCK.VARIETY.N GR | 54 | 0.429 | 12.9 |

GRAIN MEAN DM% 83.2

SUB PLOT AREA HARVESTED 0.00130



*https://doi.org/10.23637/ERADOC-1-45* *pp 301*

79/W/B/7

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N GR / VARIETY | 38 | 75 | 113 | 113 M+E | MEAN |
|---|---|---|---|---|---|
| ATHOS | 3.92 | 5.31 | 5.95 | 5.70 | 5.22 |
| DRAM | 3.72 | 4.26 | 4.26 | 5.28 | 4.38 |
| GEORG | 4.44 | 5.85 | 6.26 | 5.96 | 5.63 |
| GEORG H | 4.25 | 5.57 | 5.77 | 5.88 | 5.37 |
| GEORG L | 4.52 | 5.63 | 5.77 | 5.97 | 5.47 |
| GOLDMARK | 4.61 | 5.80 | 6.53 | 6.52 | 5.87 |
| JUPITER | 4.19 | 5.75 | 5.66 | 5.97 | 5.39 |
| MAGNUM | 3.99 | 5.34 | 5.67 | 5.75 | 5.19 |
| MINAK | 4.24 | 5.38 | 5.62 | 5.50 | 5.18 |
| PORTHOS | 3.89 | 5.13 | 5.93 | 6.08 | 5.26 |
| MEAN | 4.18 | 5.40 | 5.74 | 5.86 | 5.29 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY | N GR | VARIETY N GR |
|---|---|---|---|
| SED | 0.134 | 0.100 | 0.239 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.224 |
| N GR | | | 0.227 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.VARIETY | 18 | 0.164 | 3.1 |
| BLOCK.N GR | 6 | 0.123 | 2.3 |
| BLOCK.VARIETY.N GR | 54 | 0.259 | 4.9 |

GRAIN MEAN DM% 83.7

SUB PLOT AREA HARVESTED 0.00173



*https://doi.org/10.23637/ERADOC-1-45* *pp 302*

79/R/B/8 and 79/W/B/8

SPRING BARLEY

PYTHIUM CONTROL

Object: To study the effects of two fungicides and two methods of application on the incidence of Pythium on roots and on the yield of spring barley - Rothamsted (R) Gt. Harpenden I and Woburn (W) Stackyard C.

Sponsor: G.A. Salt.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

1. FUNGCIDE — Fungicides:

| | |
|---|---|
| ALIETTE | 'Aliette' (Aluminium tris (ethyl phosphonate)) |
| CGA | 'CGA 48988' (DL-methyl N-(2,6 dimethyl phenyl)-N-(2-methoxyacetyl)alaninate |

2. FUNGMETH — Method of applying fungicides:

| | |
|---|---|
| FOLIAR | Foliar spray |
| SEEDBED | Rotavated into the seedbed |

plus one extra treatment, duplicated:

NONE

NOTES: (1) 'Aliette' was applied at 15 kg in the seedbed and at 0.68 kg as a foliar spray.
(2) 'CGA 48988' was applied at 1.5 kg in the seedbed and at 0.07 kg as a foliar spray.

Basal applications:
Gt. Harpenden I (R): Manures: (25:0:16) at 450 kg, combine drilled. Weedkillers: Bromoxynil with ioxynil ('Oxytril CM' at 1.4 kg) and mecoprop at 1.7 kg in 220 l.
Stackyard C (W): Manures: (25:0:16) at 450 kg. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 kg in 250 l).

Seed: Porthos, dressed with ethirimol, sown at 160 kg at both sites.

Cultivations, etc.:-
Gt. Harpenden I (R): Ploughed: 3 Aug, 1978. Deep-tine cultivated: 10 Aug. Heavy spring-tine cultivated twice: 24 Aug, 7 Sept. Spring-tine cultivated: 30 Apr, 1979. Seedbed treatments applied, spike rotary cultivated all plots, seed sown: 3 May. Weedkillers applied: 4 June. Foliar treatments applied: 12 June. Combine harvested: 5 Sept. Previous crops: Ryegrass 1977, 1978.



*https://doi.org/10.23637/ERADOC-1-45* *pp 303*

79/R/B/8 and 79/W/B/8

Stackyard C (W): Ploughed: 22 Nov, 1978. Spring-tine cultivated with crumbler attached, three times: 17 Apr, 1979, 30 Apr, 8 May. NK applied: 27 Apr. Seedbed treatments applied, rotary cultivated, all plots sown: 8 May. Weedkillers applied: 6 June. Foliar treatments applied: 18 June. Combine harvested: 6 Sept. Previous crops: Fallow 1977, 1978.

NOTE: Crop samples were taken in July for assessment of infection by Pythium spp. and other soilborne fungi.

79/R/B/8 GT. HARPENDEN I(R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE<br>FUNGMETH | ALIETTE | CGA | MEAN |
|---|---|---|---|
| FOLIAR | 4.39 | 4.15 | 4.27 |
| SEEDBED | 4.53 | 4.46 | 4.49 |
| MEAN | 4.46 | 4.31 | 4.38 |

NONE 4.48

GRAND MEAN 4.42

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE | FUNGMETH | FUNGCIDE FUNGMETH & NONE |
|---|---|---|---|
| SED | 0.213 | 0.213 | 0.302<br>0.261* |

* FOR COMPARISONS INVOLVING NONE ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.370 | 8.4 |

GRAIN MEAN DM% 86.0

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* 

79/W/B/8 STACKYARD C(W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE<br>FUNGMETH | ALIETTE | CGA | MEAN |
|---|---|---|---|
| FOLIAR | 2.20 | 2.41 | 2.31 |
| SEEDBED | 2.51 | 2.37 | 2.44 |
| MEAN | 2.36 | 2.39 | 2.37 |

NONE 2.59

GRAND MEAN 2.45

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE | FUNGMETH | FUNGCIDE FUNGMETH & NONE |
|---|---|---|---|
| SED | 0.280 | 0.280 | 0.396<br>0.343* |

* FOR COMPARISONS INVOLVING NONE ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 6 | 0.396 | 16.2 |

GRAIN MEAN DM% 84.0

PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/9

SPRING BARLEY

SOWING DATES AND PATHOGEN CONTROL

Object: To study the effects of aphid, virus and fungus control on pathogens and yield of barley sown on two dates - Claycroft.

Sponsors: J.F. Jenkyn, R.T. Plumb.

Design: Half replicate in 2 blocks of 16 plots.

Whole plot dimensions: 6.40 x 18.3.

Treatments: Combinations of:-

| | | |
|---|---|---|
| 1. SOW DATE | Dates of sowing: | |
| | 17 APR | 17 April, 1979 |
| | 8 MAY | 8 May |
| 2. FUNGCIDE(1) | Fungicidal seed dressing: | |
| | NONE | None |
| | ETHIRIMO | Ethirimol |
| 3. FUNGCIDE(2) | Foliar fungicide: | |
| | NONE | None |
| | TRIDEMOR | Tridemorph at 0.53 kg in 220 l on 18 June, 1979 |
| 4. APHICIDE(1) | Aphicide to seedbed: | |
| | NONE | None |
| | PHORATE | Phorate at 5.0 kg |
| 5. APHICIDE(2) | Foliar aphicide: | |
| | NONE | None |
| | DIMETH | Dimethoate at 0.084 kg in 220 l on 5 June, 1979 |
| 6. APHICIDE(3) | Foliar aphicide: | |
| | NONE | None |
| | DIMETH | Dimethoate at 0.34 kg in 220 l on 11 July, 1979 |

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 2.1 kg) and mecoprop at 1.7 kg in 220 l.

Seed: Wing, sown at 160 kg.

Cultivations, etc.:- Subsoiled, tines 100 cm apart and 45 cm deep: 31 Oct, 1978. Ploughed: 2 Nov. Spring-tine cultivated: 16 Apr, 1979. Early-sown plots power harrowed, seed sown: 17 Apr. Late-sown plots power harrowed, seed sown: 8 May. Weedkillers applied: 1 June. Early-sown plots combine harvested: 26 Aug. Late-sown plots combine harvested: 5 Sept. Previous cropping: Beans 1977, wheat 1978.



*https://doi.org/10.23637/ERADOC-1-45* *pp 306*

79/R/B/9

NOTE: Seedling emergence, leaf diseases, numbers of grains per ear and plant populations were assessed.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE(1) | NONE | ETHIRIMO | MEAN |
|---|---|---|---|
| SOW DATE | | | |
| 17 APR | 5.47 | 5.66 | 5.57 |
| 8 MAY | 4.58 | 4.63 | 4.61 |
| MEAN | 5.02 | 5.15 | 5.09 |

| FUNGCIDE(2) | NONE | TRIDEMOR | MEAN |
|---|---|---|---|
| SOW DATE | | | |
| 17 APR | 5.53 | 5.60 | 5.57 |
| 8 MAY | 4.25 | 4.97 | 4.61 |
| MEAN | 4.89 | 5.28 | 5.09 |

| FUNGCIDE(2) | NONE | TRIDEMOR | MEAN |
|---|---|---|---|
| FUNGCIDE(1) | | | |
| NONE | 4.85 | 5.19 | 5.02 |
| ETHIRIMO | 4.93 | 5.37 | 5.15 |
| MEAN | 4.89 | 5.28 | 5.09 |

| APHICIDE(1) | NONE | PHORATE | MEAN |
|---|---|---|---|
| SOW DATE | | | |
| 17 APR | 5.50 | 5.64 | 5.57 |
| 8 MAY | 4.76 | 4.46 | 4.61 |
| MEAN | 5.13 | 5.05 | 5.09 |

| APHICIDE(1) | NONE | PHORATE | MEAN |
|---|---|---|---|
| FUNGCIDE(1) | | | |
| NONE | 4.91 | 5.14 | 5.02 |
| ETHIRIMO | 5.35 | 4.95 | 5.15 |
| MEAN | 5.13 | 5.05 | 5.09 |

| APHICIDE(1) | NONE | PHORATE | MEAN |
|---|---|---|---|
| FUNGCIDE(2) | | | |
| NONE | 4.93 | 4.85 | 4.89 |
| TRIDEMOR | 5.32 | 5.24 | 5.28 |
| MEAN | 5.13 | 5.05 | 5.09 |

| APHICIDE(2) | NONE | DIMETH | MEAN |
|---|---|---|---|
| SOW DATE | | | |
| 17 APR | 5.65 | 5.48 | 5.57 |
| 8 MAY | 4.71 | 4.50 | 4.61 |
| MEAN | 5.18 | 4.99 | 5.09 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 307*

79/R/B/9

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| APHICIDE(2) | NONE | DIMETH | MEAN |
|---|---|---|---|
| FUNGCIDE(1) | | | |
| NONE | 5.18 | 4.87 | 5.02 |
| ETHIRIMO | 5.18 | 5.12 | 5.15 |
| MEAN | 5.18 | 4.99 | 5.09 |

| APHICIDE(2) | NONE | DIMETH | MEAN |
|---|---|---|---|
| FUNGCIDE(2) | | | |
| NONE | 5.01 | 4.77 | 4.89 |
| TRIDEMOR | 5.35 | 5.21 | 5.28 |
| MEAN | 5.18 | 4.99 | 5.09 |

| APHICIDE(2) | NONE | DIMETH | MEAN |
|---|---|---|---|
| APHICIDE(1) | | | |
| NONE | 5.33 | 4.93 | 5.13 |
| PHORATE | 5.04 | 5.05 | 5.05 |
| MEAN | 5.18 | 4.99 | 5.09 |

| APHICIDE(3) | NONE | DIMETH | MEAN |
|---|---|---|---|
| SOW DATE | | | |
| 17 APR | 5.48 | 5.65 | 5.57 |
| 8 MAY | 4.43 | 4.79 | 4.61 |
| MEAN | 4.95 | 5.22 | 5.09 |

| APHICIDE(3) | NONE | DIMETH | MEAN |
|---|---|---|---|
| FUNGCIDE(1) | | | |
| NONE | 4.90 | 5.15 | 5.02 |
| ETHIRIMO | 5.01 | 5.29 | 5.15 |
| MEAN | 4.95 | 5.22 | 5.09 |

| APHICIDE(3) | NONE | DIMETH | MEAN |
|---|---|---|---|
| FUNGCIDE(2) | | | |
| NONE | 4.78 | 5.00 | 4.89 |
| TRIDEMOR | 5.13 | 5.43 | 5.28 |
| MEAN | 4.95 | 5.22 | 5.09 |

| APHICIDE(3) | NONE | DIMETH | MEAN |
|---|---|---|---|
| APHICIDE(1) | | | |
| NONE | 5.09 | 5.17 | 5.13 |
| PHORATE | 4.82 | 5.27 | 5.05 |
| MEAN | 4.95 | 5.22 | 5.09 |

| APHICIDE(3) | NONE | DIMETH | MEAN |
|---|---|---|---|
| APHICIDE(2) | | | |
| NONE | 5.04 | 5.32 | 5.18 |
| DIMETH | 4.87 | 5.12 | 4.99 |
| MEAN | 4.95 | 5.22 | 5.09 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/9

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SOW DATE | FUNGCIDE(1) | FUNGCIDE(2) | APHICIDE(1) |
|---|---|---|---|---|
| SED | 0.151 | 0.151 | 0.151 | 0.151 |

| TABLE | APHICIDE(2) | APHICIDE(3) | SOW DATE FUNGCIDE(1) | SOW DATE FUNGCIDE(2) |
|---|---|---|---|---|
| SED | 0.151 | 0.151 | 0.214 | 0.214 |

| TABLE | FUNGCIDE(1) FUNGCIDE(2) | SOW DATE APHICIDE(1) | FUNGCIDE(1) APHICIDE(1) | FUNGCIDE(2) APHICIDE(1) |
|---|---|---|---|---|
| SED | 0.214 | 0.214 | 0.214 | 0.214 |

| TABLE | SOW DATE APHICIDE(2) | FUNGCIDE(1) APHICIDE(2) | FUNGCIDE(2) APHICIDE(2) | APHICIDE(1) APHICIDE(2) |
|---|---|---|---|---|
| SED | 0.214 | 0.214 | 0.214 | 0.214 |

| TABLE | SOW DATE APHICIDE(3) | FUNGCIDE(1) APHICIDE(3) | FUNGCIDE(2) APHICIDE(3) | APHICIDE(1) APHICIDE(3) |
|---|---|---|---|---|
| SED | 0.214 | 0.214 | 0.214 | 0.214 |

| TABLE | APHICIDE(2) APHICIDE(3) |
|---|---|
| SED | 0.214 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 10 | 0.428 | 8.4 |

GRAIN MEAN DM% 83.2

PLOT AREA HARVESTED 0.00260



*https://doi.org/10.23637/ERADOC-1-45* *pp 309*

79/R/B/10

SPRING BARLEY

MILDEW CONTROL IN A SERIALLY BALANCED DESIGN

Object: To study the effects of two fungicides and the effects of interference between plots on the incidence of mildew and on yield - Claycroft.

Sponsors: J.F. Jenkyn, G.V. Dyke.

Design: 9 'blocks' of 4 plots (+ 2 flanking plots).

Whole plot dimensions: 3.91 x 9.14.

Treatments:

| FUNGCIDE | Fungicides: |
|---|---|
| NONE | None |
| TRIADIME | Triadimefon |
| TRIDEMOR | Tridemorph (duplicated) |

NOTES: (1) Treatments were applied to 38 plots in one line on the field. The design was derived from a serially-balanced one for four treatments, in which each of the 36 possible sets of 3 adjacent treatments occur exactly once (but omitting sets with the same treatment on 2 successive plots), by equating 2 of the treatments. This results in 2 sets of 3 adjacent plots treated alike, 2 sets of 2. The effects of treatments to neighbouring plots (lefthand neighbour - LHN, righthand neighbour - RHN) are estimated in the analysis. In this experiment 'left' was west, 'right' was east. The analysis presented assumes a Fourier curve with 4 terms, 2 sine and 2 cosine to represent positional variation.

(2) Fungicides were applied on 18 June, 1979, tridemorph at 0.53 kg in 340 l, triadimefon at 0.13 kg in 340 l. The surrounding crop was sprayed with tridemorph at 0.53 kg in 220 l on the same date.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 2.5 kg in 220 l).

Seed: Julia, sown at 160 kg.

Cultivations, etc.:- Subsoiled, tines 100 cm apart and 45 cm deep: 31 Oct, 1978. Ploughed: 2 Nov. Spring-tine cultivated: 16 Apr, 1979. Sown: 17 Apr. Weedkillers applied: 18 May. Harvested: 26 Aug. Previous crops: Beans and potatoes 1977, wheat 1978.

NOTE: Leaf diseases were assessed on two occasions. 1000 grain weights were measured.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/10

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

GRAND MEAN 6.54

| FUNGCIDE | NONE | TRIADIME | TRIDEMOR |
|---|---|---|---|
| | 6.48 | 6.62 | 6.52 |

| LHN / FUNGCIDE | NONE | TRIADIME | TRIDEMOR |
|---|---|---|---|
| NONE | | 6.49 | 6.47 |
| TRIADIME | 6.38 | | 6.74 |
| TRIDEMOR | 6.50 | 6.49 | 6.57 |

| RHN / FUNGCIDE | NONE | TRIADIME | TRIDEMOR |
|---|---|---|---|
| NONE | | 6.57 | 6.43 |
| TRIADIME | 6.46 | | 6.70 |
| TRIDEMOR | 6.46 | 6.45 | 6.65 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE | FUNGCIDE LHN | FUNGCIDE RHN | |
|---|---|---|---|---|
| SED | 0.111 | 0.205 | 0.204 | MIN REP |
| | 0.096 | 0.178 | 0.176 | MAX-MIN |
| | | 0.145 | 0.144 | MAX REP |

MAX REP FOR COMPARISONS WHERE BOTH MEANS HAVE A LEVEL TRIDEMOR FOR ANY FACTOR
MIN REP FOR COMPARISONS WHERE BOTH MEANS DO NOT HAVE A LEVEL TRIDEMOR FOR ANY FACTOR
MAX-MIN FOR ANY COMPARISONS NOT COVERED ABOVE

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 21 | 0.234 | 3.6 |

GRAIN MEAN DM% 80.9

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/11

SPRING BARLEY

CONTROLLED DROP APPLICATION OF TRIDEMORPH

Object: To compare controlled drop application with conventional spraying on the deposition of spray material, control of mildew and on the yield of spring barley - Claycroft.

Sponsors: F.T. Phillips, A.J. Arnold, P. Etheridge.

Design: 3 randomised blocks of 11 plots.

Whole plot dimensions: 4.27 x 24.4.

Treatments: All combinations of:-

| | |
|---|---|
| 1. SPRAYER | Sprayer and drop density: |
| CDA 1 | Controlled drop application sprayer, standard drop density |
| CDA 2 | Controlled drop application sprayer, twice standard drop density |
| HYDRAUL | Hydraulic sprayer |
| 2. TRI RATE | Rates of applying tridemorph (on 12 June, 1979): |
| 1 | Standard, 525 g |
| 1/2 | Half standard, 263 g |
| 1/4 | Quarter standard, 132 g |
| EXTRA | plus two extra plots |
| NONE | Unsprayed |
| CDA R 1 | Controlled drop application sprayer, reduced drop density, applying standard rate tridemorph |

NOTES: (1) CDA sprayer applied tridemorph in 19 l.
(2) Hydraulic sprayer applied tridemorph in 340 l.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Bromoxynil with ioxynil (as 'Oxytril CM' at 2.1 kg) and mecoprop at 1.6 kg in 220 l.

Seed: Wing, sown at 160 kg.

Cultivations, etc.:- Subsoiled, tines 100 cm apart and 45 cm deep: 31 Oct, 1978. Ploughed: 2 Nov. Spring-tine cultivated: 16 Apr, 1979. Seed sown: 17 Apr. Weedkillers applied: 1 June. Combine harvested: 26 Aug. Previous crops: Beans 1977, wheat 1978.

NOTE: Observations were made on patterns of spray deposition using very small quantities of permethrin as a chemical marker.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/11

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TRI RATE / SPRAYER | 1 | 1/2 | 1/4 | MEAN |
|---|---|---|---|---|
| CDA 1 | 6.14 | 6.11 | 5.69 | 5.98 |
| CDA 2 | 5.75 | 6.21 | 5.89 | 5.95 |
| HYDRAUL | 6.01 | 5.94 | 6.05 | 6.00 |
| MEAN | 5.96 | 6.09 | 5.88 | 5.98 |

| EXTRA | NONE | CDA R 1 | MEAN |
|---|---|---|---|
| | 5.63 | 6.16 | 5.89 |

GRAND MEAN 5.96

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SPRAYER | TRI RATE | SPRAYER TRI RATE & EXTRA |
|---|---|---|---|
| SED | 0.144 | 0.144 | 0.249 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 20 | 0.305 | 5.1 |

GRAIN MEAN DM% 81.5

PLOT AREA HARVESTED 0.00520



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/B/12

SPRING BARLEY

N AND MILDEW

Object: To study the effects of mildew on response to a range of nitrogen rates - Geescroft.

Sponsors: J.F. Jenkyn, M.E. Finney.

Design: 3 randomised blocks of 6 plots split into 2.

Whole plot dimensions: 4.27 x 19.2.

Treatments: All combinations of:-

Whole plots

1. N Amounts of nitrogen fertiliser (kg N):

25
50
70
90
110
135

Sub plots

2. MILDEW F Mildew fungicide:

| | |
|---|---|
| NONE | None |
| TRIDEMOR | Tridemorph on 18 June |

NOTES: (1) Tridemorph was applied at 0.53 kg in 340 l.
(2) Sides of plots were separated by a strip of Magnum barley 2.13 m wide sown at 160 kg. Seed was dressed with ethirimol and combine drilled with (20:14:14) at 440 kg.
(3) 25 kg N was applied to all treatments as the basal (20:14:14) at drilling. The remaining N was broadcast by drill as 'Nitro-Chalk' on 17 May.

Basal applications: Manures: (20:14:14) at 125 kg, combine drilled. Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 4.9 kg in 220 l).

Seed: Zephyr, sown at 160 kg.

Cultivations, etc.:- Subsoiled, tines 100 cm apart and 45 cm deep: 7 Nov, 1978. Ploughed: 13 Nov. Spring-tine cultivated: 18 Apr, 1979. Seed sown: 19 Apr. Weedkillers applied: 1 June. Combine harvested: 28 Aug. Previous crops: Beans 1977, wheat 1978.

NOTE: Crop samples were taken periodically and nitrogen contents measured. Leaf diseases were assessed on three occasions. Counts were made of numbers of plants, ears, grains per ear. 1000 grain weights were measured.



*https://doi.org/10.23637/ERADOC-1-45* *pp 314*

79/R/B/12

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| MILDEW F N | NONE | TRIDEMOR | MEAN |
|---|---|---|---|
| 25 | 3.81 | 4.21 | 4.01 |
| 50 | 4.67 | 4.97 | 4.82 |
| 70 | 4.64 | 5.80 | 5.22 |
| 90 | 5.52 | 6.10 | 5.81 |
| 110 | 5.55 | 6.09 | 5.82 |
| 135 | 5.42 | 6.12 | 5.77 |
| MEAN | 4.94 | 5.55 | 5.24 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N | MILDEW F | N MILDEW F |
|---|---|---|---|
| SED | 0.131 | 0.105 | 0.224 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| N | | | 0.257 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 10 | 0.161 | 3.1 |
| BLOCK.WP.SP | 12 | 0.314 | 6.0 |

GRAIN MEAN DM% 81.9

SUB PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* *pp 315*

79/R/B/13

SPRING BARLEY

MIXED VARIETIES AND MILDEW

Object: To study the effects of variety mixtures and of fungicides on mildew development and yield - Gt. Field I.

Sponsor: J.F. Jenkyn.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: 6.40 x 9.14.

Treatments:

| VAR FUNG | Varieties & fungicides: |
|---|---|
| H 0 | Hassan, no fungicide |
| M 0 | Midas, no fungicide |
| W 0 | Wing, no fungicide |
| H S | Hassan, seed treated fungicide |
| M S | Midas, seed treated fungicide |
| W S | Wing, seed treated fungicide |
| H0 M0 W0 | Mixture of the three varieties, no fungicide |
| HS M0 W0 | Mixture of the three varieties. Fungicide seed treatment to Hassan only |
| H0 MS W0 | Mixture of the three varieties. Fungicide seed treatment to Midas only |
| H0 M0 WS | Mixture of the three varieties. Fungicide seed treatment to Wing only |
| HS MS WS | Mixture of the three varieties. Fungicide seed treatment to all |
| HF MF WF | Mixture of the three varieties. Tridemorph foliar spray to all (Tridemorph at 0.53 kg in 340 l on 18 June) |

NOTES: (1) All plots were separated at their sides by 8.5 m of variety Proctor and at their ends by 9.1 m of variety Proctor. All the Proctor seed was dressed with ethirimol and the crop was sprayed with tridemorph at 0.53 kg in 220 l on 18 June, 1979. Yields were taken from the Proctor adjacent to the sides of plots and treatment yields were adjusted by covariance analysis.

(2) The fungicide seed treatment applied was 0.375 g triadimenol plus 0.045 g fuberidazole per kg of seed.

(3) The seed mixtures were in equal proportions by weight.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 4.9 kg in 220 l).

Seed: All, including mixtures and Proctor, sown at 160 kg.

Cultivations, etc.:- Subsoiled, tines 100 cm apart and 45 cm deep: 10 Nov, 1978. Ploughed: 30 Nov. Spring-tine cultivated: 17 Apr, 1979. Seed sown: 18 Apr. Weedkillers applied: 4 June. Combine harvested: 25 Aug. Previous crops: Beans 1977, wheat 1978.

NOTE: Mildew was assessed on two occasions.



*https://doi.org/10.23637/ERADOC-1-45* *pp 316*

79/R/B/13

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| VAR FUNG | |
|---|---|
| H O | 4.58 |
| M O | 5.84 |
| W O | 5.46 |
| H S | 5.85 |
| M S | 6.04 |
| W S | 5.82 |
| HO MO WO | 5.14 |
| HS MO WO | 5.77 |
| HO MS WO | 5.57 |
| HO MO WS | 5.82 |
| HS MS WS | 5.65 |
| HF MF WF | 5.87 |
| MEAN | 5.62 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VAR FUNG |
|---|---|
| SED | 0.335 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 32 | 0.466 | 8.3 |

GRAIN MEAN DM% 80.6

PLOT AREA HARVESTED 0.00195



*https://doi.org/10.23637/ERADOC-1-45* *pp 317*

79/R/B/21

SPRING BARLEY

DRILLS AND METHODS OF APPLYING FERTILISER

Object: To study the effects of different drills and rates and times of applying nitrogen fertiliser on the growth and yield of barley - Bylands.

Sponsor: R. Moffitt.

Design: 3 randomised blocks of 16 plots.

Whole plot dimensions:

| | |
|---|---|
| DRILLS MF | 5.33 x 10.1 |
| DRILLS NIAE | 4.27 x 10.1 |
| EXTRA | 3.05 x 10.1 |

Treatments: All combinations of:-

1. DRILLS — Drills:

| | |
|---|---|
| MF | 'Massey Ferguson 30' drill, sowing rows 18 cm (7 in) apart |
| NIAE | 'NIAE' drill, sowing rows 18 cm (7 in) apart |

2. TOTAL N — Total nitrogen fertiliser (kg N):

60
120

3. N METHOD — Method of applying nitrogen fertiliser:

| | |
|---|---|
| CDE | Combine drilled at sowing |
| BCL | Broadcast by machine 17 days after sowing |
| CDE/BCL | Half total combine drilled, half broadcast by machine 17 days after sowing |

plus four extra treatments

EXTRA

| | |
|---|---|
| F60 BCE | 'Fiona' drill, sowing rows 15 cm (6 in) apart, 60 kg N broadcast by machine at sowing |
| F120 BCE | As previously but using 120 kg N |
| F60 BCL | 'Fiona' drill, 60 kg N broadcast by machine 17 days after sowing |
| F120 BCL | As previously but using 120 kg N |

Basal applications: Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) with mecoprop at 1.7 kg in 220 l. Fungicide: Tridemorph at 0.53 kg in 220 l.

Seed: Porthos, sown at 160 kg.

Cultivations, etc.:- Subsoiled, tines 100 cm apart and 45 cm deep: 15 Nov, 1978. Ploughed: 21 Dec. Heavy spring-tine cultivated, rotary harrowed: 27 Apr, 1979. Seed sown: 30 Apr. Weedkillers applied: 4 June. Fungicide applied: 12 June. Combine harvested: 29 Aug. Previous crops: Wheat 1977, barley 1978.

NOTES: (1) Observations of growth stages, evenness of growth and wheeling effects were made several times during the season.
(2) Severe grazing by rabbits, and infestations of perennial grasses may have affected yield.



*https://doi.org/10.23637/ERADOC-1-45* *pp 318*

79/R/B/21

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| TOTAL N / DRILLS | 60 | 120 | MEAN |
|---|---|---|---|
| MF | 2.85 | 3.36 | 3.10 |
| NIAE | 2.89 | 2.76 | 2.82 |
| MEAN | 2.87 | 3.06 | 2.96 |

| N METHOD / DRILLS | CDE | BCL | CDE/BCL | MEAN |
|---|---|---|---|---|
| MF | 3.46 | 2.91 | 2.94 | 3.10 |
| NIAE | 2.68 | 2.70 | 3.08 | 2.82 |
| MEAN | 3.07 | 2.81 | 3.01 | 2.96 |

| N METHOD / TOTAL N | CDE | BCL | CDE/BCL | MEAN |
|---|---|---|---|---|
| 60 | 3.03 | 2.63 | 2.95 | 2.87 |
| 120 | 3.12 | 2.98 | 3.07 | 3.06 |
| MEAN | 3.07 | 2.81 | 3.01 | 2.96 |

| DRILLS | N METHOD / TOTAL N | CDE | BCL | CDE/BCL |
|---|---|---|---|---|
| MF | 60 | 3.32 | 2.72 | 2.52 |
| | 120 | 3.61 | 3.11 | 3.35 |
| NIAE | 60 | 2.74 | 2.55 | 3.38 |
| | 120 | 2.63 | 2.86 | 2.79 |

| EXTRA | F60 BCE | F120 BCE | F60 BCL | F120 BCL | MEAN |
|---|---|---|---|---|---|
| | 2.66 | 3.14 | 2.48 | 3.21 | 2.87 |

GRAND MEAN 2.94

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | DRILLS | TOTAL N | N METHOD |
|---|---|---|---|---|
| SED | 0.296 | 0.121 | 0.121 | 0.148 |

| TABLE | DRILLS TOTAL N | DRILLS N METHOD | TOTAL N N METHOD | DRILLS TOTAL N N METHOD & EXTRA |
|---|---|---|---|---|
| SED | 0.171 | 0.209 | 0.209 | 0.296 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 30 | 0.363 | 12.3 |

GRAIN MEAN DM% 85.4

PLOT AREA HARVESTED 0.00215



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/1

WINTER BEANS

CONTROL OF CHOCOLATE SPOT

Object: To study the effects of irrigation and benomyl on Chocolate Spot (Botrytis spp.) and yield of winter beans - Fosters West.

Sponsors: A. Bainbridge, M.E. Finney.

Design: 3 blocks of 2 whole plots split into 4.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. IRRIGATN | Irrigation: | |
| | NONE | None |
| | APPLIED | Applied (50 mm) |

Sub plots

| | | |
|---|---|---|
| 2. BENOMYL | Frequency of applying benomyl (at 1.1 kg in 340 l on each occasion):- | |
| | 0+0 | Never |
| | 1+0 | Once, on 25 May, 1979 |
| | 1+1 | Twice, on 25 May and 29 June (duplicated) |

NOTES: (1) IRRIGATN APPLIED plots were given 12.5 mm of irrigation on each of the following dates: 2 July, 11 July, 16 July, 22 July.
(2) On one of the duplicates of 1+1 the first treatment was not applied until 30 May because the sprayer broke down.

Basal applications: Weedkiller: Simazine at 1.1 kg in 220 l. Aphicide: Pirimicarb at 0.14 kg in 220 l. Desiccant: Diquat at 0.59 kg ion with 'Agral' (a wetting agent) at 0.21 kg in 220 l.

Seed: Throws MS, sown at 250 kg.

Cultivations, etc.:- Ploughed: 24 Aug, 1978. Spring-tine cultivated: 2 Oct. Rotary harrowed, seed sown, weedkiller applied: 9 Oct. Tractor hoed: 11 June. Aphicide applied: 25 June. Desiccant applied: 4 Sept. Combine harvested: 7 Sept. Previous cropping: Wheat 1977, barley 1978.

NOTE: Counts were made of seedling emergence, percentage leaf area affected by Botrytis spp., stems per row, pods per stem and 1000 grain weights.



*https://doi.org/10.23637/ERADOC-1-45* *pp 320*

79/R/BE/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| BENOMYL<br>IRRIGATN | 0+0 | 1+0 | 1+1 | MEAN |
|---|---|---|---|---|
| NONE | 3.03 | 3.34 | 3.40 | 3.29 |
| APPLIED | 4.26 | 4.05 | 4.37 | 4.26 |
| MEAN | 3.65 | 3.69 | 3.88 | 3.78 |

****** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | BENOMYL | IRRIGATN*<br>BENOMYL | |
|---|---|---|---|
| SED | 0.244 | 0.345 | MIN REP |
| | 0.211 | 0.299 | MAX-MIN |

| | BENOMYL |
|---|---|
| MAX-MIN | 1+1 V ANY OF REMAINDER |
| MIN REP | ANY OF REMAINDER |

* WITHIN THE SAME LEVEL OF IRRIGATN ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 14 | 0.423 | 11.2 |

GRAIN MEAN DM% 79.8

SUB PLOT AREA HARVESTED 0.00293



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/2

WINTER BEANS

CONTROL OF SITONA

Object: To study the effects of three chemicals on the control of Sitona larvae and on the yield of winter beans - Fosters West.

Sponsors: R. Bardner, K.E. Fletcher, D.C. Griffiths.

Design: 4 randomised blocks of 6 plots.

Whole plot dimensions: 5.33 x 13.7.

Treatments:

| CHEMICAL | Chemicals and times of application: |
|---|---|
| NONE | None (duplicated) |
| ALDICARB | Aldicarb at 5 kg applied to the seedbed on 5 Oct, 1978 |
| FONOFOS | Fonofos at 5 kg applied to the seedbed |
| PERMETH | Permethrin applied as foliar spray in 340 l on 2 May, 1979 and 30 May |
| ALD+PER | Aldicarb to seedbed plus permethrin as foliar spray at above rates and times |

NOTE: Permethrin was applied on the first occasion at 0.2 kg in 200 l and on the second occasion at 0.15 kg in 340 l.

Basal applications: Weedkillers: Simazine at 1.1 kg in 220 l. Aphicide: Pirimicarb at 0.14 kg in 220 l. Desiccant: Diquat at 0.59 kg ion with 'Agral' (a wetting agent) at 0.21 kg in 220 l.

Seed: Throws MS, sown at 250 kg.

Cultivations, etc.:- Ploughed: 24 Aug, 1978. Spring-tine cultivated twice: 2 Oct and 6 Oct. Rotary harrowed, seed sown, weedkiller applied: 9 Oct. Tractor-hoed: 11 June, 1979. Aphicide applied: 25 June. Desiccant applied: 4 Sept. Combine harvested: 7 Sept. Previous cropping: Wheat 1977, barley 1978.

NOTE: Incidence of ground beetles was assessed in April. Numbers of plants and stems per plant were counted. Leaf notching by adult Sitona lineatus was assessed several times during the season, and soil cores were examined for larval populations in June.



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/2

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| CHEMICAL | NONE | ALDICARB | FONOFOS | PERMETH | ALD+PER | MEAN |
|---|---|---|---|---|---|---|
| | 3.47 | 3.20 | 3.70 | 4.00 | 3.77 | 3.60 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CHEMICAL | |
|---|---|---|
| SED | 0.226 | MIN REP |
| | 0.196 | MAX-MIN |

CHEMICAL
MAX-MIN NONE V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 16 | 0.320 | 8.9 |

GRAIN MEAN DM% 83.6

PLOT AREA HARVESTED 0.00293



*https://doi.org/10.23637/ERADOC-1-45* *pp 323*

79/R/BE/5

SPRING BEANS

FACTORS AFFECTING YIELD

Object: To study the effects of a range of factors on pests, diseases, nitrogen fixation and yield of field beans - Little Hoos.

Sponsors: R. Bardner, G.G. Briggs, A.J. Cockbain, J.M. Day, K.E. Fletcher, B.J. Legg, J. McEwen, R.J. Roughley, G.A. Salt, H.R. Simpson, R.M. Webb, D.P. Yeoman, J.F. Witty.

Design: Single replicate of $2^6$ in 2 blocks of 2 plots split into 4 sub plots, split into 4 sub sub plots.

Whole plot dimensions: 22.6 x 10.5.

Treatments: All combinations of:-

Whole plots

1. IRRIGATN — Irrigation:

   NONE — None
   FULL — Full (total 100 mm)

Sub plots

2. VARIETY — Varieties:

   BLAZE
   MINDEN

3. AL TRIS — Aluminium tris-ethyl phosphonate (kg) foliar spray on 14 June:

   0.0
   2.0

Sub sub plots

4. ALDICARB — Aldicarb to seedbed (kg) on 1 May:

   0
   10

5. PERMETH — Permethrin foliar spray (kg) on 18 June:

   0.00
   0.15

6. BENOMYL — Benomyl foliar spray (kg) on 15 Aug:

   0.0
   0.6



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/5

NOTES: (1) A planned test of benomyl + thiram seed dressing failed because of seed-flow problems with the dressed seed, this treatment was replaced by AL TRIS.

(2) A planned test of conventional sowing versus precision sowing was abandoned because of extremely poor establishment with conventional sowing. All treatments presented were precision sown.

(3) A planned test of pirimicarb applied early was abandoned because of late sowing and the need to apply basal pirimicarb twice to control Aphis fabae.

(4) Irrigation was applied to reduce a deficit of 50 mm to 25 mm before pod set, and one of 80 mm to 55 mm after pod set (mm water):

| | |
|---|---|
| 2 July | 25 |
| 6 July | 25 |
| 10 July | 25 |
| 23 July | 25 |
| Total | 100 |

Basal applications: Weedkillers: Trietazine and simazine (as 'Remtal SC' at 2.8 kg) in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l applied twice.

Seed: Sown at 500,000 seeds per hectare in rows 20 cm apart. For Blaze 230 kg seed, for Minden 260 kg.

Cultivations, etc.:- Ploughed: 13 Dec, 1978. Heavy spring-tine cultivated: 21 Apr, 1979. Rotary harrowed: 1 May. Seed sown: 9 May. Weedkillers applied: 14 May. Insecticide applied: 22 June and 13 July. Combine harvested: 16 Oct. Previous cropping: Wheat 1977 and 1978.

NOTE: Plant counts were made after establishment and components of yield measured before harvest. Nitrogenase activity was measured during the season. Ectoparasitic nematodes, root and foliar fungi, aphids, weevils and viruses were counted at intervals during the season. Nitrogen percentages of grain were measured.



*https://doi.org/10.23637/ERADOC-1-45* *pp 325*

79/R/BE/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY | BLAZE | MINDEN | MEAN |
|---|---|---|---|
| IRRIGATN | | | |
| NONE | 3.98 | 3.92 | 3.95 |
| FULL | 5.00 | 5.21 | 5.11 |
| MEAN | 4.49 | 4.56 | 4.53 |

| AL TRIS | 0.0 | 2.0 | MEAN |
|---|---|---|---|
| IRRIGATN | | | |
| NONE | 3.84 | 4.05 | 3.95 |
| FULL | 5.08 | 5.13 | 5.11 |
| MEAN | 4.46 | 4.59 | 4.53 |

| AL TRIS | 0.0 | 2.0 | MEAN |
|---|---|---|---|
| VARIETY | | | |
| BLAZE | 4.42 | 4.56 | 4.49 |
| MINDEN | 4.50 | 4.62 | 4.56 |
| MEAN | 4.46 | 4.59 | 4.53 |

| ALDICARB | 0 | 10 | MEAN |
|---|---|---|---|
| IRRIGATN | | | |
| NONE | 3.88 | 4.02 | 3.95 |
| FULL | 5.11 | 5.10 | 5.11 |
| MEAN | 4.50 | 4.56 | 4.53 |

| ALDICARB | 0 | 10 | MEAN |
|---|---|---|---|
| VARIETY | | | |
| BLAZE | 4.42 | 4.56 | 4.49 |
| MINDEN | 4.57 | 4.56 | 4.56 |
| MEAN | 4.50 | 4.56 | 4.53 |

| ALDICARB | 0 | 10 | MEAN |
|---|---|---|---|
| AL TRIS | | | |
| 0.0 | 4.44 | 4.49 | 4.46 |
| 2.0 | 4.55 | 4.63 | 4.59 |
| MEAN | 4.50 | 4.56 | 4.53 |

| PERMETH | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| IRRIGATN | | | |
| NONE | 4.05 | 3.85 | 3.95 |
| FULL | 5.08 | 5.14 | 5.11 |
| MEAN | 4.56 | 4.49 | 4.53 |

| PERMETH | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| VARIETY | | | |
| BLAZE | 4.51 | 4.47 | 4.49 |
| MINDEN | 4.61 | 4.52 | 4.56 |
| MEAN | 4.56 | 4.49 | 4.53 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 326*

79/R/BE/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PERMETH AL TRIS | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| 0.0 | 4.52 | 4.41 | 4.46 |
| 2.0 | 4.60 | 4.58 | 4.59 |
| MEAN | 4.56 | 4.49 | 4.53 |

| PERMETH ALDICARB | 0.00 | 0.15 | MEAN |
|---|---|---|---|
| 0 | 4.56 | 4.43 | 4.50 |
| 10 | 4.56 | 4.56 | 4.56 |
| MEAN | 4.56 | 4.49 | 4.53 |

| BENOMYL IRRIGATN | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| NONE | 3.85 | 4.05 | 3.95 |
| FULL | 5.00 | 5.21 | 5.11 |
| MEAN | 4.43 | 4.63 | 4.53 |

| BENOMYL VARIETY | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| BLAZE | 4.33 | 4.65 | 4.49 |
| MINDEN | 4.52 | 4.60 | 4.56 |
| MEAN | 4.43 | 4.63 | 4.53 |

| BENOMYL AL TRIS | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| 0.0 | 4.34 | 4.59 | 4.46 |
| 2.0 | 4.51 | 4.67 | 4.59 |
| MEAN | 4.43 | 4.63 | 4.53 |

| BENOMYL ALDICARB | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| 0 | 4.45 | 4.54 | 4.50 |
| 10 | 4.40 | 4.72 | 4.56 |
| MEAN | 4.43 | 4.63 | 4.53 |

| BENOMYL PERMETH | 0.0 | 0.6 | MEAN |
|---|---|---|---|
| 0.00 | 4.43 | 4.69 | 4.56 |
| 0.15 | 4.42 | 4.56 | 4.49 |
| MEAN | 4.43 | 4.63 | 4.53 |

| VARIETY | BLAZE | | MINDEN | |
|---|---|---|---|---|
| ALDICARB | 0 | 10 | 0 | 10 |
| IRRIGATN | | | | |
| NONE | 3.86 | 4.10 | 3.90 | 3.94 |
| FULL | 4.99 | 5.02 | 5.24 | 5.18 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| AL TRIS | 0.0 | | 2.0 | |
|---|---|---|---|---|
| ALDICARB | 0 | 10 | 0 | 10 |
| IRRIGATN | | | | |
| NONE | 3.71 | 3.98 | 4.05 | 4.06 |
| FULL | 5.17 | 5.00 | 5.06 | 5.20 |

| AL TRIS | 0.0 | | 2.0 | |
|---|---|---|---|---|
| ALDICARB | 0 | 10 | 0 | 10 |
| VARIETY | | | | |
| BLAZE | 4.41 | 4.43 | 4.44 | 4.68 |
| MINDEN | 4.46 | 4.55 | 4.67 | 4.57 |

| VARIETY | BLAZE | | MINDEN | |
|---|---|---|---|---|
| PERMETH | 0.00 | 0.15 | 0.00 | 0.15 |
| IRRIGATN | | | | |
| NONE | 4.05 | 3.90 | 4.04 | 3.80 |
| FULL | 4.97 | 5.04 | 5.19 | 5.24 |

| AL TRIS | 0.0 | | 2.0 | |
|---|---|---|---|---|
| PERMETH | 0.00 | 0.15 | 0.00 | 0.15 |
| IRRIGATN | | | | |
| NONE | 4.01 | 3.67 | 4.08 | 4.02 |
| FULL | 5.03 | 5.14 | 5.12 | 5.13 |

| AL TRIS | 0.0 | | 2.0 | |
|---|---|---|---|---|
| PERMETH | 0.00 | 0.15 | 0.00 | 0.15 |
| VARIETY | | | | |
| BLAZE | 4.40 | 4.44 | 4.62 | 4.50 |
| MINDEN | 4.64 | 4.37 | 4.59 | 4.66 |

| ALDICARB | 0 | | 10 | |
|---|---|---|---|---|
| PERMETH | 0.00 | 0.15 | 0.00 | 0.15 |
| IRRIGATN | | | | |
| NONE | 3.99 | 3.77 | 4.11 | 3.93 |
| FULL | 5.14 | 5.09 | 5.01 | 5.18 |

| ALDICARB | 0 | | 10 | |
|---|---|---|---|---|
| PERMETH | 0.00 | 0.15 | 0.00 | 0.15 |
| VARIETY | | | | |
| BLAZE | 4.50 | 4.35 | 4.52 | 4.59 |
| MINDEN | 4.63 | 4.51 | 4.60 | 4.52 |

| ALDICARB | 0 | | 10 | |
|---|---|---|---|---|
| PERMETH | 0.00 | 0.15 | 0.00 | 0.15 |
| AL TRIS | | | | |
| 0.0 | 4.55 | 4.33 | 4.49 | 4.48 |
| 2.0 | 4.58 | 4.53 | 4.63 | 4.63 |

| VARIETY | BLAZE | | MINDEN | |
|---|---|---|---|---|
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| IRRIGATN | | | | |
| NONE | 3.84 | 4.12 | 3.86 | 3.98 |
| FULL | 4.82 | 5.19 | 5.19 | 5.23 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| | | | | |
|---|---|---|---|---|
| AL TRIS | 0.0 | | 2.0 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| IRRIGATN | | | | |
| NONE | 3.70 | 3.99 | 4.00 | 4.11 |
| FULL | 4.98 | 5.19 | 5.03 | 5.23 |
| | | | | |
| AL TRIS | 0.0 | | 2.0 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| VARIETY | | | | |
| BLAZE | 4.24 | 4.60 | 4.41 | 4.70 |
| MINDEN | 4.44 | 4.57 | 4.61 | 4.64 |
| | | | | |
| ALDICARB | 0 | | 10 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| IRRIGATN | | | | |
| NONE | 3.80 | 3.95 | 3.89 | 4.15 |
| FULL | 5.10 | 5.13 | 4.91 | 5.29 |
| | | | | |
| ALDICARB | 0 | | 10 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| VARIETY | | | | |
| BLAZE | 4.35 | 4.50 | 4.30 | 4.81 |
| MINDEN | 4.55 | 4.58 | 4.50 | 4.62 |
| | | | | |
| ALDICARB | 0 | | 10 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| AL TRIS | | | | |
| 0.0 | 4.39 | 4.49 | 4.29 | 4.68 |
| 2.0 | 4.52 | 4.59 | 4.51 | 4.75 |
| | | | | |
| PERMETH | 0.00 | | 0.15 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| IRRIGATN | | | | |
| NONE | 3.93 | 4.17 | 3.77 | 3.93 |
| FULL | 4.93 | 5.22 | 5.08 | 5.19 |
| | | | | |
| PERMETH | 0.00 | | 0.15 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| VARIETY | | | | |
| BLAZE | 4.29 | 4.73 | 4.37 | 4.57 |
| MINDEN | 4.57 | 4.66 | 4.48 | 4.55 |
| | | | | |
| PERMETH | 0.00 | | 0.15 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| AL TRIS | | | | |
| 0.0 | 4.32 | 4.72 | 4.36 | 4.45 |
| 2.0 | 4.54 | 4.67 | 4.48 | 4.67 |
| | | | | |
| PERMETH | 0.00 | | 0.15 | |
| BENOMYL | 0.0 | 0.6 | 0.0 | 0.6 |
| ALDICARB | | | | |
| 0 | 4.51 | 4.62 | 4.39 | 4.46 |
| 10 | 4.35 | 4.77 | 4.45 | 4.66 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/5

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY | BLAZE | | MINDEN | |
|---|---|---|---|---|
| AL TRIS | 0.0 | 2.0 | 0.0 | 2.0 |
| IRRIGATN | | | | |
| NONE | 3.80 | 4.16 | 3.88 | 3.95 |
| FULL | 5.04 | 4.96 | 5.12 | 5.30 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | ALDICARB | PERMETH | BENOMYL | IRRIGATN* ALDICARB |
|---|---|---|---|---|
| SED | 0.046 | 0.046 | 0.046 | 0.065 |

| TABLE | VARIETY* ALDICARB | AL TRIS* ALDICARB | IRRIGATN* PERMETH | VARIETY* PERMETH |
|---|---|---|---|---|
| SED | 0.065 | 0.065 | 0.065 | 0.065 |

| TABLE | AL TRIS* PERMETH | ALDICARB PERMETH | IRRIGATN* BENOMYL | VARIETY* BENOMYL |
|---|---|---|---|---|
| SED | 0.065 | 0.065 | 0.065 | 0.065 |

| TABLE | AL TRIS* BENOMYL | ALDICARB BENOMYL | PERMETH+ BENOMYL | IRRIGATN* AL TRIS* ALDICARB |
|---|---|---|---|---|
| SED | 0.065 | 0.065 | 0.065 | 0.092 |

| TABLE | VARIETY* AL TRIS* ALDICARB | IRRIGATN* VARIETY* PERMETH | IRRIGATN* AL TRIS* PERMETH | VARIETY* AL TRIS* PERMETH |
|---|---|---|---|---|
| SED | 0.092 | 0.092 | 0.092 | 0.092 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 330*

79/R/BE/5

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | IRRIGATN* ALDICARB PERMETH | VARIETY* ALDICARB PERMETH | AL TRIS* ALDICARB PERMETH | IRRIGATN* VARIETY* BENOMYL |
|---|---|---|---|---|
| SED | 0.092 | 0.092 | 0.092 | 0.092 |

| TABLE | IRRIGATN* AL TRIS* BENOMYL | VARIETY* AL TRIS* BENOMYL | IRRIGATN* ALDICARB BENOMYL | VARIETY* ALDICARB BENOMYL |
|---|---|---|---|---|
| SED | 0.092 | 0.092 | 0.092 | 0.092 |

| TABLE | AL TRIS* ALDICARB BENOMYL | IRRIGATN* PERMETH BENOMYL | VARIETY* PERMETH BENOMYL | ALDICARB* PERMETH BENOMYL |
|---|---|---|---|---|
| SED | 0.092 | 0.092 | 0.092 | 0.092 |

| TABLE | IRRIGATN* VARIETY* ALDICARB |
|---|---|
| SED | 0.092 |

* SED ONLY VALID FOR COMPARING MEANS WITH THE SAME LEVELS
(COMBINATIONS) OF THE FACTORS MARKED WITH *
\+ SED NOT VALID FOR COMPARING MEANS WITH THE SAME LEVELS
OF PERMETH OR BENOMYL

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP.SSP | 18 | 0.185 | 4.1 |

GRAIN MEAN DM% 73.4

SUB PLOT AREA HARVESTED 0.00248



*https://doi.org/10.23637/ERADOC-1-45* *pp 331*

79/R/BE/6

SPRING BEANS

N AND PATHOGEN CONTROL

Object: To study the effect of enhanced pathogen control on the proportion of nitrogen in the crop derived from the soil, from fertiliser and from nitrogen-fixation. The study was aided by using 15 N-labelled fertilisers and spring barley as a crop which did not fix nitrogen - Little Hoos.

Sponsors: J.M. Day, R.J. Roughley, J.F. Witty.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: Beans: 3.25 x 4.57, barley 2.13 x 4.57.

Treatments: All combinations of:-

1. PATHCONT — Pathogen control:

   STANDARD — Standard, pirimicarb foliar spray only
   ENHANCED — Aldicarb at 10 kg to seedbed plus pirimicarb foliar spray

2. BEANS N — Nitrogen fertiliser (kg N) to beans:

   0
   50
   100
   150

plus four extra treatments sown to spring barley and given rates of nitrogen fertiliser (kg N):

BARLEY N

0
50
100
150

Standard applications: Barley: Manures: (0:20:20) at 310 kg, combine drilled.
Beans: Insecticide: Pirimicarb at 0.14 kg in 340 l.

Seed: Barley: Porthos, sown at 160 kg.
Beans: Minden, sown at 260 kg.

Cultivations, etc.:- Ploughed: 13 Dec, 1978. Heavy spring-tine cultivated: 21 Apr, 1979. Aldicarb applied, rotary harrowed: 1 May. Barley sown: 3 May. Beans sown: 9 May. Insecticide applied: 12 July. Barley hand harvested: 7 Sept. Beans hand harvested: 24 Sept. Previous cropping: Wheat 1977 and 1978.

NOTES: (1) Content of 15N was assessed in whole plants shortly before harvest.
(2) Nitrogen percentages of grain were measured.



*https://doi.org/10.23637/ERADOC-1-45* *pp 332*

79/R/BE/6

BEANS

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| BEANS N / PATHCONT | 0 | 50 | 100 | 150 | MEAN |
|---|---|---|---|---|---|
| STANDARD | 4.05 | 4.10 | 4.25 | 4.13 | 4.13 |
| ENHANCED | 5.33 | 5.38 | 5.86 | 5.75 | 5.58 |
| MEAN | 4.69 | 4.74 | 5.05 | 4.94 | 4.86 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PATHCONT | BEANS N | PATHCONT BEANS N |
|---|---|---|---|
| SED | 0.131 | 0.185 | 0.261 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 21 | 0.369 | 7.6 |

GRAIN MEAN DM% 83.2

PLOT AREA HARVESTED 0.00074

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| BARLEY N | 0 | 50 | 100 | 150 | MEAN |
|---|---|---|---|---|---|
| | 3.48 | 4.00 | 4.93 | 4.72 | 4.28 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | BARLEY N |
|---|---|
| SED | 0.297 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.420 | 9.8 |

GRAIN MEAN DM% 94.0

PLOT AREA HARVESTED 0.00049



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/8

SPRING BEANS

FOLIAR NUTRITION

Object: To study the effects of a range of foliar-applied nutrients on the yield and nitrogen uptake of spring beans - Summerdells II.

Sponsors: J.M. Day, R.J. Roughley, J.F. Witty.

Design: 4 randomised blocks of 15 plots.

Whole plot dimensions: 2.66 x 3.66.

Treatments: All combinations of:-

1. NUT FORM — Form of nutrients:

| | |
|---|---|
| AP U K | Ammonium polyphosphate + urea + potassium sulphate |
| AHP U K | Ammonium hydrogen phosphate + urea + potassium sulphate |
| AHP - K | Ammonium hydrogen phosphate + potassium sulphate (but see NOTE) |
| PP U K | Potassium polyphosphate + urea + potassium sulphate |
| PP - K | Potassium polyphosphate + potassium sulphate |
| U | Urea |

2. NUT FREQ — Frequency of applying nutrients:

| | |
|---|---|
| 2 | Twice 13 July, 1979 and 20 July |
| 4 | Four times 13 July, 1979, 20 July, 27 July and 3 Aug |

plus two extra treatments:

| EXTRA | |
|---|---|
| - | None (duplicated) |
| K 4 | Potassium sulphate applied four times |

NOTE: It was intended that each treatment containing nitrogen should supply about 20 kg N per occasion. The first spray of AHP - K scorched the leaves. The problem with this treatment was overcome by including urea in later sprays to maintain the rate of nitrogen but lessen the amount of ammonium hydrogen phosphate.

Rates of nutrients (kg element) applied on each spray occasion:

| | N | | P | K | | S |
|---|---|---|---|---|---|---|
| | in urea | in phosphates | | in sulphate | in phosphate | |
| AP U K | 20 | 1.6 | 4.3 | 7.5 | - | 3.0 |
| AHP U K | 20 | 3.6 | 5.5 | 7.5 | - | 3.0 |
| AHP - K (1) | - | 20 | 30.4 | 7.5 | - | 3.0 |
| AHP - K (2,3 & 4) | 15 | 5 | 5.5 | 7.5 | - | 3.0 |
| PP U K | 20 | - | 20 | 1.1 | 9.9 | 0.5 |
| PP - K | - | - | 20 | 1.1 | 9.9 | 0.5 |
| U | 20 | - | - | - | - | - |
| - | - | - | - | - | - | - |
| K 4 | - | - | - | 7.5 | - | 3.0 |

Treatments were applied in 536 l.



*https://doi.org/10.23637/ERADOC-1-45* *pp 334*

79/R/BE/8

Basal applications: Manures: Chalk at 7.5 t. FYM at 35 t. Weedkiller: Simazine at 0.82 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.:- Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Insecticide applied: 22 June. Harvested by hand: 17 Sept. Previous crops: Spring wheat, 1977, barley 1978.

NOTES: (1) Content of 15N (added to certain of the treatments) was assessed in whole plants shortly before harvest.
(2) Nitrogen percentages of grain were measured.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| NUT FREQ / NUT FORM | 2 | 4 | MEAN |
|---|---|---|---|
| AP U K | 4.11 | 4.20 | 4.15 |
| AHP U K | 4.06 | 3.90 | 3.98 |
| AHP - K | 3.65 | 4.00 | 3.82 |
| PP U K | 3.92 | 4.27 | 4.09 |
| PP -K | 4.19 | 4.47 | 4.33 |
| U | 4.34 | 4.17 | 4.26 |
| MEAN | 4.04 | 4.17 | 4.11 |

| EXTRA | - | K4 | MEAN |
|---|---|---|---|
| | 4.49 | 4.55 | 4.51 |

GRAND MEAN 4.19

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EXTRA | NUT FORM | NUT FREQ | NUT FORM NUT FREQ & EXTRA |
|---|---|---|---|---|
| SED | 0.214 | 0.175 | 0.101 | 0.247<br>0.214* |

* USE ONLY FOR COMPARISONS BETWEEN NUT FORM.NUT FREQ AND LEVEL - OF EXTRA

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 43 | 0.350 | 8.4 |

GRAIN MEAN DM% NOT AVAILABLE

PLOT AREA HARVESTED 0.00112



*https://doi.org/10.23637/ERADOC-1-45* *pp 335*

79/R/BE/9

SPRING BEANS

CONTROL OF SITONA

Object: To study the effects of a range of insecticidal treatments on the incidence of Sitona larvae and on the yield of beans - Summerdells II.

Sponsors: R. Bardner, D.C. Griffiths, K.E. Fletcher.

Design: 4 blocks of 6 plots.

Whole plot dimensions: 5.33 x 9.14.

Treatments:

| INSCTCDE | Insecticides and methods of application: |
|---|---|
| NONE | None |
| ALD SOIL | Aldicarb at 10 kg worked into soil before sowing |
| CAR FURR | Carbofuran at 2.24 kg applied in the seed furrow at sowing by combine drill |
| PHO SEED | Phorate applied as a seed dressing at 3 g $kg^{-1}$ seed |
| PHO FURR | Phorate at 2.24 kg applied in the seed furrow at sowing by combine drill |
| PER LEAF | Permethrin foliar spray applied at 0.15 kg in 340 l on 18 May, 1979 |

Basal applications: Manures: Chalk at 7.5 t. FYM at 35 t. Weedkiller: Simazine at 0.84 kg in 220 l. Aphicide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.:- Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Aphicide applied: 22 June. Combine harvested: 21 Sept. Previous cropping: Barley 1977 & 1978.

NOTE: Leaf notching by adult Sitona lineatus was assessed in June, July and August; soil cores were examined for larval populations in July. Incidence of Aphis fabae was assessed in June.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INSCTCDE | NONE | ALD SOIL | CAR FURR | PHO SEED | PHO FURR | PER LEAF | MEAN |
|---|---|---|---|---|---|---|---|
| | 4.16 | 4.89 | 4.61 | 4.16 | 4.40 | 4.44 | 4.44 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | INSCTCDE |
|---|---|
| SED | 0.165 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 15 | 0.233 | 5.2 |

GRAIN MEAN DM% 80.3 PLOT AREA HARVESTED 0.00293



*https://doi.org/10.23637/ERADOC-1-45* *pp 336*

79/R/BE/10

SPRING BEANS

TIMES OF APPLYING PERMETHRIN

Object: To study the effects of applying foliar sprays of permethrin at a range of dates on the incidence of Sitona and on the yield of spring beans - Summerdells II.

Sponsors: R. Bardner, D.C. Griffiths, K.E. Fletcher.

Design: 4 randomised blocks of 5 plots.

Whole plot dimensions: 5.33 x 9.14.

Treatments:

| PER DATE | Dates of applying permethrin (at 150 g on each occasion): |
|---|---|
| - | Not applied |
| 18 MAY | Single spray on 18 May |
| 18 JUNE | Single spray on 18 June |
| 2 JULY | Single spray on 2 July |
| MA JN JL | Sprayed on all three above dates |

NOTE: Permethrin was applied in 340 l.

Basal applications: Manures: Chalk at 7.5 t. FYM at 35 t. Weedkiller: Simazine at 0.84 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.:- Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Basal insecticide applied: 22 June. Combine harvested: 21 Sept. Previous cropping: Spring wheat 1977, barley 1978.

NOTES: (1) On 2 July part of one of the 18 JUNE plots was sprayed with permethrin in error. An estimated value was used in the analysis.
(2) After each treatment plots were assessed for leaf notches. In June ground beetles were trapped and leaf samples were taken for permethrin decomposition measurements. In July the incidence of Sitona larvae was estimated from soil cores and in August adult populations were estimated by trapping.



*https://doi.org/10.23637/ERADOC-1-45* *pp 337*

79/R/BE/10

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PER DATE | - | 18 MAY | 18 JUNE | 2 JULY | MA JN JL | MEAN |
|---|---|---|---|---|---|---|
| | 4.14 | 3.81 | 4.05 | 3.95 | 4.25 | 4.04 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PER DATE |
|---|---|
| SED | 0.259 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 11 | 0.366 | 9.1 |

GRAIN MEAN DM% 80.0

PLOT AREA HARVESTED 0.00293



*https://doi.org/10.23637/ERADOC-1-45* *pp 338*

79/R/BE/11

SPRING BEANS

PYRETHROIDS AND SITONA

Object: To study the effects of four pyrethroid insecticides, applied as foliar sprays, on the incidence of Sitona and on the yield of spring beans - Summerdells II.

Sponsors: D.C. Griffiths, R. Bardner, K.E. Fletcher.

Design: 4 randomised blocks of 5 plots.

Whole plot dimensions: 5.33 x 9.14.

Treatments:

| | |
|---|---|
| PYRETH | Pyrethroids, applied in 340 l: |
| NONE | None |
| CYPERMET | Cypermethrin at 0.06 kg on 28 May, 1979 |
| DECAMETH | Decamethrin at 0.03 kg on 28 May |
| FENVALER | Fenvalerate at 0.06 kg on 28 May |
| PERMETH | Permethrin at 0.15 kg on 18 May |

Basal applications: Manures: Chalk at 7.5 t. FYM at 35 t. Weedkiller: Simazine at 0.84 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.:- Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Basal insecticide applied: 22 June. Combine harvested: 21 Sept. Previous cropping: Spring wheat 1977, barley 1978.

NOTE: Leaf notching by adult Sitona lineatus was assessed in June and adults counted in August. Soil cores were examined for larval populations in July.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PYRETH | NONE | CYPERMET | DECAMETH | FENVALER | PERMETH | MEAN |
|---|---|---|---|---|---|---|
| | 4.08 | 4.41 | 4.06 | 4.04 | 4.01 | 4.12 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PYRETH |
|---|---|
| SED | 0.320 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 12 | 0.453 | 11.0 |

GRAIN MEAN DM% 80.5 PLOT AREA HARVESTED 0.00293



*https://doi.org/10.23637/ERADOC-1-45* *pp 339*

79/R/BE/12

SPRING BEANS

COMPARISON OF SPRAYERS

Object: To study the performance of an electrostatic spraying system on distribution of spray material and on yield of beans - Summerdells II.

Sponsors: A.J. Arnold, F.T. Phillips, P. Etheridge.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 2.67 x 9.14.

Treatments:

| | |
|---|---|
| SPRAYER | Sprayer used to apply permethrin: |
| NONE | None |
| E D T 2 | Electrostatic sprayer, spraying direct-charged particles, using tap water and 2 atomisers |
| E D D 2 | Electrostatic sprayer, spraying direct-charged particles, using distilled water and 2 atomisers |
| E D T 1 | Electrostatic sprayer, spraying direct-charged particles, using tap water and 1 atomiser |
| E O T 2 | Electrostatic sprayer, spraying uncharged particles, using tap water and 2 atomisers |
| F U T | Standard farm sprayer, spraying uncharged particles, using tap water |

NOTES: (1) Electrostatic sprayer applied permethrin at 0.016 kg in 15.5 l.
(2) Farm sprayer applied permethrin at 0.016 kg in 340 l.
(3) Permethrin was applied as a water-based spray.
(4) Sprays were applied on 18 June, 1979.
(5) Because of machine failure one replicate of treatment 'E O T 1' was not applied. An Estimated value was used in the analysis.
(6) Because of field errors two of the replicates of E O T 2 were in one block and two of the replicates of NONE in another, since there were marked differences between rows of plots, adjustments have been made by covariance, and the original blocking has been ignored.

Basal applications: Manures: Chalk at 7.5 t, FYM at 35 t. Weedkiller: Simazine at 0.84 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l. Desiccant: Diquat at 0.59 kg ion with 'Agral' (a wetting agent) at 0.28 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.:- Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Basal insecticide applied: 27 July. Desiccant applied: 24 Sept. Combine harvested: 4 Oct. Previous cropping: Barley 1977 & 1978.

NOTE: Observations were made of charged and uncharged drops on both the upper and lower leaf surfaces, and gross deposition of chemical was assessed. Sitona notch counts were made after treatment sprays.



*https://doi.org/10.23637/ERADOC-1-45* *pp 340*

79/R/BE/12

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| SPRAYER | NONE | E D T 2 | E D D 2 | E D T 1 | E O T 2 | F U T | MEAN |
|---|---|---|---|---|---|---|---|
| | 0.81 | 1.25 | 1.15 | 0.70 | 0.58 | 2.11 | 1.10 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SPRAYER |
|---|---|
| SED | 0.227 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 9 | 0.247 | 22.4 |

GRAIN MEAN DM% 63.8

PLOT AREA HARVESTED 0.00244



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/BE/13

SPRING BEANS

COMPARISON OF FUNGICIDES

Object: To study the effects of a range of fungicides and methods of application on the incidence of diseases and on the yield of spring beans - Long Hoos V 4.

Sponsors: G.A. Salt, J. McEwen, D.P. Yeoman.

Design: Single replicate of 38 plots.

Whole plot dimensions: 2.03 x 2.13.

Treatments: All combinations of:-

1. FUNGCIDE — Fungicides:

| | |
|---|---|
| AL TRI | Aluminium tris (ethylphosphonate) 'Aliette' |
| BENOMYL | Benomyl |
| DL METH | DL-methyl N- (2, 6 dimethylphenyl)-N (2 methoxy-acetyl) alaninate. 'Ridomil' |
| THIABEND | Thiabendazole |

2. APP TIME — Application times:

| | Seedbed (as seed dressing) | 5 June (as foliar spray) | 3 July (as foliar spray) |
|---|---|---|---|
| S | Applied | None | None |
| EF | None | Applied | None |
| LF | None | None | Applied |
| S+EF | Applied | Applied | None |
| S+LF | Applied | None | Applied |
| EF+LF | None | Applied | Applied |
| S+EF+LF | Applied | Applied | Applied |

plus four extra treatments:

EXTRA

| | |
|---|---|
| NONE | None (four plots) |
| STICKER | Methyl cellulose sticker only to seed (two plots) |
| BE TH S | Benomyl + thiram seed dressing + sticker (two plots) |
| THI HI S | Thiabendazole high rate seed dressing + sticker (two plots) |

NOTES: (1) Rates of application were as follows (a methyl cellulose sticker was used for seed dressings; foliar sprays were in 500 l for the early and 1000 l for the late application)

| Treatment | Seed dressings g a.i. per kg seed | Foliar sprays kg a.i. per ha |
|---|---|---|
| 'Aliette' | 4.0 | 3.4 |
| Benomyl | 8.8 | 1.0 |
| 'CGA48998' ('Ridomil') | 0.4 | 0.3 |
| Thiabendazole | 1.8 | 1.0 |
| Thiabendazole high rate | 6.0 | - |
| Benomyl | 3.0 | - |
| Thiram | 3.0 | - |



*https://doi.org/10.23637/ERADOC-1-45* *pp 342*

(2) Seed was sown by hand in rows 51 cm apart, seed spaced 5 cm apart in the row.

Basal applications: Chalk at 2.9 t. Weedkillers: Trietazine and simazine (as 'Remtal SC' at 2.9 kg) in 340 l. Insecticides: Permethrin at 0.15 kg in 340 l, pirimicarb at 0.14 kg in 340 l.

Seed: Minden.

Cultivations, etc.:- Chalk applied: 31 Oct, 1978. Ploughed: 22 Jan, 1979. Spring-tine cultivated and rolled: 18 Apr. Seed sown: 19 Apr. Weedkillers applied: 1 May. Permethrin applied twice: 26 June, 4 July. Pirimicarb applied twice: 9 and 26 July. Harvested by hand: 13 Sept. Previous cropping: Potatoes 1977, barley 1978.

NOTE: Plant counts were made in May and June, and root disease was assessed in July and August.



*https://doi.org/10.23637/ERADOC-1-45* *pp 343*

79/R/BE/13

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| METHOD / FUNGCIDE | S | EF | LF | S+EF | S+LF | EF+LF | S+EF+LF | MEAN |
|---|---|---|---|---|---|---|---|---|
| AL TRI | 4.41 | 4.83 | 4.34 | 4.16 | 4.27 | 4.10 | 4.26 | 4.34 |
| BENOMYL | 4.22 | 4.15 | 4.23 | 4.34 | 4.31 | 4.35 | 4.04 | 4.23 |
| DL METH | 3.64 | 4.00 | 3.70 | 4.39 | 4.13 | 3.89 | 3.79 | 3.94 |
| THIABEND | 4.15 | 3.83 | 3.82 | 3.96 | 3.75 | 4.22 | 3.46 | 3.88 |
| MEAN | 4.10 | 4.20 | 4.02 | 4.21 | 4.11 | 4.14 | 3.89 | 4.10 |

| EXTRA | NONE | STICKER | BE TH S | THI HI S | MEAN |
|---|---|---|---|---|---|
| | 4.08 | 3.84 | 4.54 | 3.74 | 4.06 |

GRAND MEAN 4.09

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | FUNGCIDE | METHOD | FUNGCIDE METHOD |
|---|---|---|---|
| SED | 0.225 | 0.297 | 0.595 |

SEDS INVOLVING EXTRA PLOTS

NONE V THE REMAINDER 0.365
BETWEEN THE REMAINDER 0.421
NONE V FUNGCIDE.METHOD 0.471
ANY OF REMAINDER V FUNGCIDE.METHOD 0.516

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| WP | 6 | 0.421 | 10.3 |

GRAIN MEAN DM% 85.4

PLOT AREA HARVESTED 0.00015



*https://doi.org/10.23637/ERADOC-1-45* *pp 344*

79/R/BE/14

SPRING BEANS

RED TICK LINES

Object: To compare agronomic characters and yields of two selections of red-seeded field beans, open-pollinated for one or two years following self-pollination for five years, with four white-seeded varieties - Long Hoos V 4.

Sponsor: J. McEwen.

Design: 3 randomised blocks of 8 plots.

Whole plot dimensions: 2.03 x 2.13.

Treatments:

| VARIETY | Varieties:- |
|---|---|
| RT1 OP1 | Red tick 1, open-pollinated in 1978 only |
| RT1 OP2 | Red tick 1, open-pollinated in 1977 and 1978 |
| RT3 OP1 | Red tick 3, open-pollinated in 1978 only |
| RT3 OP2 | Red tick 3, open-pollinated in 1977 and 1978 |
| BL | Maris Blaze (white-seeded) |
| HE | Herra (white-seeded) |
| MI | Minden (white-seeded) |
| TO | Topless determinant (white seeded ex P.B.I. Cambridge) |

NOTE: Seed was sown by hand in rows 51 cm apart, seed spaced 5 cm apart in the row.

Basal applications: Manures: Chalk at 2.9 t. Weedkillers: Trietazine and simazine (as 'Remtal SC' at 3.0 kg) in 340 l. Insecticides: Permethrin at 0.15 kg in 340 l, pirimicarb at 0.14 kg in 340 l.

Cultivations, etc.:- Chalk applied: 31 Oct, 1978. Ploughed: 22 Jan, 1979. Spring-tine cultivated and rolled: 18 Apr. Seed sown: 19 Apr. Weedkillers applied: 1 May. Permethrin applied twice: 26 June, 4 July. Pirimicarb applied twice: 9 and 26 July. Harvested by hand: 13 Sept. Previous cropping: Potatoes 1977, barley 1978.

NOTE: Plant counts were made after establishment and again before harvest. Components of yield were measured at harvest. N in grain was measured.



*https://doi.org/10.23637/ERADOC-1-45* *pp 345*

79/R/BE/14

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| VARIETY | |
|---|---|
| RT1 OP1 | 3.94 |
| RT1 OP2 | 4.41 |
| RT3 OP1 | 4.16 |
| RT3 OP2 | 4.12 |
| BL | 4.37 |
| HE | 4.58 |
| MI | 4.90 |
| TO | 4.04 |
| MEAN | 4.32 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | VARIETY |
|---|---|
| SED | 0.227 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 14 | 0.278 | 6.4 |

GRAIN MEAN DM% 88.0

PLOT AREA HARVESTED 0.00015



*https://doi.org/10.23637/ERADOC-1-45* *pp 346*

79/R/BE/15

SPRING BEANS

EFFECTS OF VICIA CRYPTIC VIRUS

Object: To study the effects on growth and yield of field beans of the presence of virus-like particles (provisionally named vicia cryptic virus (VCV)) found in the sap of certain plants - Long Hoos VI/VII 2.

Sponsors: A.J. Cockbain, R.H. Kenten.

Design: 3 randomised blocks of 8 plots.

Whole plot dimensions: 1.52 x 2.43.

Treatments:

| LINE V | Line number and VCV infection: |
|---|---|
| 7 V | Line 7, VCV particles present |
| 14 V | " 14, " " " |
| 20 V | " 20, " " " |
| 39 V | " 39, " " " |
| 13 0 | " 13, " " absent |
| 15 0 | " 15, " " " |
| 17 0 | " 17, " " " |
| 38 0 | " 38, " " " |

NOTE: Seed was sown by hand in rows 51 cm apart seed spaced 30 cm apart in the row.

Basal applications: Manures: Chalk at 2.9 t. Weedkillers: Trietazine and simazine (as 'Remtal SC' at 3.0 kg) in 340 l. Aphicide: Permethrin at 0.15 kg in 340 l. Pirimicarb at 0.14 kg in 340 l.

Cultivations, etc.:- Chalk applied: 31 Oct, 1978. Ploughed: 10 Nov. Spring-tine cultivated: 19 Apr, 1979. Rotary cultivated, seed sown: 20 Apr. Weedkillers applied: 1 May. Permethrin applied twice: 26 June and 4 July. Pirimicarb applied twice: 9 and 26 July. Harvested by hand: 21 Sept. Previous cropping: Potatoes 1977, barley 1978.

NOTE: Plant counts were made at emergence. Pest and disease incidence and growth parameters were assessed throughout the season.



*https://doi.org/10.23637/ERADOC-1-45* *pp 347*

79/R/BE/15

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| LINE V | 7 V | 14 V | 20 V | 39 V | 13 O | 15 O | 17 O | 38 O | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| | 4.56 | 4.41 | 3.28 | 4.99 | 3.93 | 4.59 | 4.53 | 3.45 | 4.21 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | LINE V |
|---|---|
| SED | 0.339 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 14 | 0.415 | 9.9 |

GRAIN MEAN DM% 85.8

PLOT AREA HARVESTED 0.00037



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/PE/1 and 79/W/PE/1

PEAS

CONTROL OF PATHOGENS

Object: To study the effects of a range of pesticides on the incidence of pathogens and on the yield of leafless peas - Rothamsted (R) Long Hoos VI/VII 5 and Woburn (W) Far Field II.

Sponsors: A.J. Cockbain, K.E. Fletcher, E.D.M. Macaulay, J. McEwen, G.A. Salt, A.G. Whitehead.

Design: 2 randomised blocks of 16 plots.

Whole plot dimensions: 4.83 x 5.49.

Treatments: All combinations of:-

1. NEMACIDE — Nematicide:
   - NONE — None
   - ALDICARB — Aldicarb at 10 kg to the seedbed

2. INSCTCDE(1) — Early insecticide, to control Sitona:
   - NONE — None
   - PERMETH — Permethrin at 0.15 kg on 8 June (R), 6 June (W)

3. INSCTCDE(2) — Late insecticide, to control pea moth:
   - NONE — None
   - PERMETH — Permethrin at 0.15 kg on 10 July

4. FUNGCIDE — Fungicide:
   - NONE — None
   - FLUOTRIM — Fluotrimazole (as 'Persulon' at 1.5 kg) on 24 July

NOTE: All treatment sprays were applied in 340 l.

Basal applications:
Long Hoos VI/VII 5 (R): Weedkiller: Trietazine and simazine (as 'Remtal SC' at 3.0 kg. in 340 l). Desiccant: Diquat at 0.79 kg ion in 340 l.
Far Field II (W): Manures: Magnesian limestone at 7.5 t. (0:14:28) at 340 kg. Desiccant: Diquat at 0.79 kg in 340 l.

Seed: Filby dressed thiram, sown at 220 kg, on both sites.

Cultivations, etc.:-
Long Hoos VI/VII 5 (R): Ploughed: 17 Nov, 1978. Spring-tine cultivated twice: 23 Apr, 1979, 8 May. Aldicarb applied, rotary cultivated, seed sown: 8 May. Weedkiller applied: 9 May. Desiccant applied: 28 Aug. Harvested by hand and threshed by combine harvester: 4 Sept. Previous cropping; Maize 1977, barley 1978.
Far Field II (W): Magnesian limestone applied: 15 Sept, 1978. Heavy spring-tine cultivated twice: 3 Oct, 8 Nov. PK applied, spring-tine cultivated: 18 Apr, 1979. Aldicarb applied, rotary cultivated, seed sown: 15 May. Desiccant applied: 28 Aug. Harvested by hand and threshed by combine harvester: 4 Sept. Previous cropping: Potatoes 1977, barley 1978.

NOTE: Observations on pests and diseases were made during the season. Nitrogen percentages of grain were measured.



*https://doi.org/10.23637/ERADOC-1-45* *pp 349*

79/R/PE/1 LONG HOOS VI/VII(R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INSCTCDE(1) | NONE | PERMETH | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 4.19 | 4.13 | 4.16 |
| ALDICARB | 5.43 | 5.35 | 5.39 |
| MEAN | 4.81 | 4.74 | 4.77 |

| INSCTCDE(2) | NONE | PERMETH | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 4.08 | 4.24 | 4.16 |
| ALDICARB | 5.41 | 5.36 | 5.39 |
| MEAN | 4.75 | 4.80 | 4.77 |

| INSCTCDE(2) | NONE | PERMETH | MEAN |
|---|---|---|---|
| INSCTCDE(1) | | | |
| NONE | 4.74 | 4.88 | 4.81 |
| PERMETH | 4.75 | 4.72 | 4.74 |
| MEAN | 4.75 | 4.80 | 4.77 |

| FUNGCIDE | NONE | FLUOTRIM | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 4.16 | 4.16 | 4.16 |
| ALDICARB | 5.37 | 5.40 | 5.39 |
| MEAN | 4.77 | 4.78 | 4.77 |

| FUNGCIDE | NONE | FLUOTRIM | MEAN |
|---|---|---|---|
| INSCTCDE(1) | | | |
| NONE | 4.82 | 4.80 | 4.81 |
| PERMETH | 4.71 | 4.76 | 4.74 |
| MEAN | 4.77 | 4.78 | 4.77 |

| FUNGCIDE | NONE | FLUOTRIM | MEAN |
|---|---|---|---|
| INSCTCDE(2) | | | |
| NONE | 4.77 | 4.73 | 4.75 |
| PERMETH | 4.77 | 4.83 | 4.80 |
| MEAN | 4.77 | 4.78 | 4.77 |

| INSCTCDE(1) | NONE | | PERMETH | |
|---|---|---|---|---|
| INSCTCDE(2) | NONE | PERMETH | NONE | PERMETH |
| NEMACIDE | | | | |
| NONE | 4.05 | 4.34 | 4.12 | 4.14 |
| ALDICARB | 5.44 | 5.41 | 5.39 | 5.30 |

| INSCTCDE(1) | NONE | | PERMETH | |
|---|---|---|---|---|
| FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| NEMACIDE | | | | |
| NONE | 4.34 | 4.05 | 3.99 | 4.27 |
| ALDICARB | 5.31 | 5.54 | 5.44 | 5.26 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/PE/1 LONG HOOS VI/VII(R)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INSCTCDE(2) | NONE | | PERMETH | |
|---|---|---|---|---|
| FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| NEMACIDE | | | | |
| NONE | 4.22 | 3.94 | 4.10 | 4.38 |
| ALDICARB | 5.31 | 5.51 | 5.44 | 5.28 |

| INSCTCDE(2) | NONE | | PERMETH | |
|---|---|---|---|---|
| FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| INSCTCDE(1) | | | | |
| NONE | 4.65 | 4.83 | 5.00 | 4.76 |
| PERMETH | 4.88 | 4.62 | 4.54 | 4.90 |

| | INSCTCDE(2) | NONE | | PERMETH | |
|---|---|---|---|---|---|
| | FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| NEMACIDE | INSCTCDE(1) | | | | |
| NONE | NONE | 4.08 | 4.01 | 4.59 | 4.09 |
| | PERMETH | 4.37 | 3.87 | 3.61 | 4.67 |
| ALDICARB | NONE | 5.22 | 5.65 | 5.40 | 5.43 |
| | PERMETH | 5.40 | 5.38 | 5.47 | 5.14 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEMACIDE | INSCTCDE(1) | INSCTCDE(2) | FUNGCIDE |
|---|---|---|---|---|
| SED | 0.171 | 0.171 | 0.171 | 0.171 |

| TABLE | NEMACIDE INSCTCDE(1) | NEMACIDE INSCTCDE(2) | INSCTCDE(1) INSCTCDE(2) | NEMACIDE FUNGCIDE |
|---|---|---|---|---|
| SED | 0.242 | 0.242 | 0.242 | 0.242 |

| TABLE | INSCTCDE(1) FUNGCIDE | INSCTCDE(2) FUNGCIDE | NEMACIDE INSCTCDE(1) INSCTCDE(2) | NEMACIDE INSCTCDE(1) FUNGCIDE |
|---|---|---|---|---|
| SED | 0.242 | 0.242 | 0.342 | 0.342 |

| TABLE | NEMACIDE INSCTCDE(2) FUNGCIDE | INSCTCDE(1) INSCTCDE(2) FUNGCIDE | NEMACIDE INSCTCDE(1) INSCTCDE(2) FUNGCIDE |
|---|---|---|---|
| SED | 0.342 | 0.342 | 0.484 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 15 | 0.484 | 10.1 |

GRAIN MEAN DM% 84.0

PLOT AREA HARVESTED 0.00091



*https://doi.org/10.23637/ERADOC-1-45* *pp 351*

79/W/PE/1 FAR FIELD II (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INSCTCDE(1) | NONE | PERMETH | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 3.61 | 3.66 | 3.64 |
| ALDICARB | 4.23 | 4.16 | 4.19 |
| MEAN | 3.92 | 3.91 | 3.92 |

| INSCTCDE(2) | NONE | PERMETH | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 3.57 | 3.71 | 3.64 |
| ALDICARB | 4.14 | 4.25 | 4.19 |
| MEAN | 3.85 | 3.98 | 3.92 |

| INSCTCDE(2) | NONE | PERMETH | MEAN |
|---|---|---|---|
| INSCTCDE(1) | | | |
| NONE | 3.88 | 3.97 | 3.92 |
| PERMETH | 3.83 | 3.99 | 3.91 |
| MEAN | 3.85 | 3.98 | 3.92 |

| FUNGCIDE | NONE | FLUOTRIM | MEAN |
|---|---|---|---|
| NEMACIDE | | | |
| NONE | 3.64 | 3.63 | 3.64 |
| ALDICARB | 4.29 | 4.10 | 4.19 |
| MEAN | 3.97 | 3.86 | 3.92 |

| FUNGCIDE | NONE | FLUOTRIM | MEAN |
|---|---|---|---|
| INSCTCDE(1) | | | |
| NONE | 3.97 | 3.87 | 3.92 |
| PERMETH | 3.96 | 3.86 | 3.91 |
| MEAN | 3.97 | 3.86 | 3.92 |

| FUNGCIDE | NONE | FLUOTRIM | MEAN |
|---|---|---|---|
| INSCTCDE(2) | | | |
| NONE | 3.92 | 3.78 | 3.85 |
| PERMETH | 4.01 | 3.95 | 3.98 |
| MEAN | 3.97 | 3.86 | 3.92 |

| INSCTCDE(1) | NONE | | PERMETH | |
|---|---|---|---|---|
| INSCTCDE(2) | NONE | PERMETH | NONE | PERMETH |
| NEMACIDE | | | | |
| NONE | 3.60 | 3.63 | 3.54 | 3.78 |
| ALDICARB | 4.15 | 4.30 | 4.12 | 4.20 |

| INSCTCDE(1) | NONE | | PERMETH | |
|---|---|---|---|---|
| FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| NEMACIDE | | | | |
| NONE | 3.72 | 3.51 | 3.56 | 3.76 |
| ALDICARB | 4.22 | 4.23 | 4.36 | 3.96 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 352*

79/W/PE/1 FAR FIELD II (W)

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| INSCTCDE(2) | NONE | | PERMETH | |
|---|---|---|---|---|
| FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| NEMACIDE | | | | |
| NONE | 3.59 | 3.55 | 3.69 | 3.72 |
| ALDICARB | 4.25 | 4.02 | 4.33 | 4.17 |

| INSCTCDE(2) | NONE | | PERMETH | |
|---|---|---|---|---|
| FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| INSCTCDE(1) | | | | |
| NONE | 3.95 | 3.80 | 3.99 | 3.94 |
| PERMETH | 3.90 | 3.76 | 4.03 | 3.95 |

| | INSCTCDE(2) | NONE | | PERMETH | |
|---|---|---|---|---|---|
| | FUNGCIDE | NONE | FLUOTRIM | NONE | FLUOTRIM |
| NEMACIDE | INSCTCDE(1) | | | | |
| NONE | NONE | 3.64 | 3.55 | 3.79 | 3.47 |
| | PERMETH | 3.54 | 3.54 | 3.59 | 3.97 |
| ALDICARB | NONE | 4.25 | 4.06 | 4.19 | 4.41 |
| | PERMETH | 4.26 | 3.98 | 4.47 | 3.94 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NEMACIDE | INSCTCDE(1) | INSCTCDE(2) | FUNGCIDE |
|---|---|---|---|---|
| SED | 0.120 | 0.120 | 0.120 | 0.120 |

| TABLE | NEMACIDE INSCTCDE(1) | NEMACIDE INSCTCDE(2) | INSCTCDE(1) INSCTCDE(2) | NEMACIDE FUNGCIDE |
|---|---|---|---|---|
| SED | 0.170 | 0.170 | 0.170 | 0.170 |

| TABLE | INSCTCDE(1) FUNGCIDE | INSCTCDE(2) FUNGCIDE | NEMACIDE INSCTCDE(1) INSCTCDE(2) | NEMACIDE INSCTCDE(1) FUNGCIDE |
|---|---|---|---|---|
| SED | 0.170 | 0.170 | 0.240 | 0.240 |

| TABLE | NEMACIDE INSCTCDE(2) FUNGCIDE | INSCTCDE(1) INSCTCDE(2) FUNGCIDE | NEMACIDE INSCTCDE(1) INSCTCDE(2) FUNGCIDE |
|---|---|---|---|
| SED | 0.240 | 0.240 | 0.340 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 15 | 0.340 | 8.7 |

GRAIN MEAN DM% 83.6

PLOT AREA HARVESTED 0.00091



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/FE/1

FENUGREEK

N AND RHIZOBIUM

Object: To study the effects of inoculation with Rhizobium and times of applying nitrogen fertiliser on nodulation and yield of fenugreek (Trigonella foenum-graecum) - Long Hoos V O & E. S.

Sponsor: D.P. Yeoman.

Design: 2 randomised blocks of 6 plots.

Whole plot dimensions: 1.52 x 2.13.

Treatments: All combinations of:

| | | |
|---|---|---|
| 1. INOCULUM | | Inoculum applied to the seed: |
| | NONE | None |
| | RHIZOBUM | Rhizobium meliloti, strain 2012 |
| 2. N | | Nitrogen fertiliser (kg N) and times of application: |
| | 0 | None |
| | 150 S | 150 to the seedbed, on 8 May |
| | 150 F | 150 at flowering, on 2 July |

Basal applications: Insecticide: Permethrin at 0.15 kg in 340 l.

Seed: Margaret, hand sown, seed spaced 5 cm apart in rows 38 cm apart.

Cultivations, etc.:- Ploughed: 5 Mar, 1979. Spring-tine cultivated twice and rotary cultivated: 1 May. Spring-tine cultivated, seed furrows drawn out, and seed sown: 8 May. Insecticide applied twice: 30 May and 29 June. Harvested (by hand) on 3 and 15 Oct. Previous cropping: Fallow 1977 & 1978.

NOTE: Two harvest dates were necessary because ripening was uneven. INOCULUM NONE (except the combination with N 150 F) and one of the replicates of INOCULUM RHIZOBUM combinations with N 0 and N 150 S were harvested on 3 Oct. All remaining plots were harvested on 15 Oct.



*https://doi.org/10.23637/ERADOC-1-45* *pp 354*

79/R/FE/1

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| N | 0 | 150 S | 150 F | MEAN |
|---|---|---|---|---|
| INOCULUM | | | | |
| NONE | 0.70 | 2.64 | 1.10 | 1.48 |
| RHIZOBUM | 1.94 | 2.11 | 2.56 | 2.20 |
| MEAN | 1.32 | 2.37 | 1.83 | 1.84 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | INOCULUM | N | INOCULUM N |
|---|---|---|---|
| SED | 0.185 | 0.226 | 0.320 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 5 | 0.320 | 17.4 |

GRAIN MEAN DM% 87.3

PLOT AREA HARVESTED 0.00012



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/MA/1

FORAGE MAIZE

RATES & TIMES OF N

Object: To study the effects of a range of nitrogen fertiliser rates, applied before sowing or to the seedbed, on the yields and nitrogen uptakes of forage maize - Long Hoos VI/VII 4.

Sponsor: A.J. Barnard.

Design: 2 randomised blocks of 32 plots.

Whole plot dimensions: 2.13 x 3.66.

Treatments: All combinations of:

1. EARLY N — Rates of nitrogen fertiliser (kg N) applied on 6 April, 1979:

   0
   60
   120
   180

2. SDBED N — Rates of nitrogen fertiliser (kg N) applied on 13 June 1979:

   0
   30
   60
   90
   120
   150
   180
   210

Basal applications: Weedkiller: Atrazine (as 'Vectal SC' at 3.4 kg) in 340 l. Insecticides: Dimethoate at 0.67 kg in 340 l. Pirimicarb at 0.14 kg in 340 l.

Seed: Fronica, sown at 100,000 seeds per hectare.

Cultivations, etc.:- Ploughed twice: 16 Nov, 1978 and 6 Mar, 1979. Spring-tine cultivated: 5 Apr. Power harrowed, seed sown: 7 June. Weedkiller applied: 11 June. Dimethoate applied: 29 June. Pirimicarb applied: 26 July. Harvested by hand: 30 Oct. Previous cropping: Wheat 1977 and 1978.

NOTES: (1) Plant population counts were made in July.
(2) Nitrogen percentages in harvested produce were determined.
(3) Because of an inadequate stand on 2 plots of treatment combination

| | | |
|---|---|---|
| EARLY N | 0 | 180 |
| SDBED N | 0 | 210 |

yields were not recorded. Estimated values were used in the analysis.



*https://doi.org/10.23637/ERADOC-1-45* *pp 356*

79/R/MA/1

FORAGE MAIZE TONNES/HECTARE

***** TABLES OF MEANS *****

| SDBED N / EARLY N | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | MEAN |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 6.58 | 5.97 | 10.40 | 9.64 | 8.47 | 9.27 | 11.00 | 9.98 | 8.91 |
| 60 | 6.74 | 7.87 | 10.97 | 9.83 | 11.40 | 10.74 | 8.60 | 10.59 | 9.59 |
| 120 | 11.46 | 10.71 | 7.56 | 9.55 | 9.26 | 10.07 | 9.88 | 9.10 | 9.70 |
| 180 | 11.00 | 8.86 | 8.12 | 10.58 | 10.98 | 9.80 | 10.43 | 12.12 | 10.24 |
| MEAN | 8.95 | 8.35 | 9.26 | 9.90 | 10.03 | 9.97 | 9.98 | 10.45 | 9.61 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | EARLY N | SDBED N | EARLY N SDBED N |
|---|---|---|---|
| SED | 0.490 | 0.692 | 1.385 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 29 | 1.385 | 14.4 |

GRAIN MEAN DM% 21.2

PLOT AREA HARVESTED 0.00039



*https://doi.org/10.23637/ERADOC-1-45* *pp 357*

79/R/P/4 and 79/W/P/4

POTATOES

SEED STOCKS & TIMES OF APPLYING FUNGICIDES

Object: To study the effects of times of applying fungicides to seed tubers soon after lifting on the yield and infection of progeny tubers and on diseases in subsequent storage - Rothamsted (R) Delafield and Woburn (W) Horsepool.

Sponsors: G.A. Hide, G.R. Cayley.

Design: 3 experiments each 4 randomised blocks of 20 plots.

Whole plot dimensions: 1.42 x 9.53 at both sites.

Treatments: Three experiments: Rothamsted, variety King Edward (KE)
Rothamsted, variety Pentland Crown (PC)
Woburn, Pentland Crown (PC)
each tested all combinations of:-

| | | | | |
|---|---|---|---|---|
| 1. SD STOCK | | Seed stock source and health certificate: | | |
| R | R&W | R | | R&W |
| KE | PC | KE | | PC |
| PER FS1 | PER FS1 | Perthshire FS1 | | Perthshire FS1 |
| LIN OG | LIN OG | Lincolnshire Once grown | | Lincolnshire Once grown |
| ANG OG | ROTH OG | Angus Once grown | | Rothamsted Once grown |
| HER OG | ESS OG | Hertfordshire (B. Stortford Once grown) | | Essex Once grown |
| 2. FUNGCIDE | | Fungicides: | | |
| IMAZALIL | | Imazalil at 0.8 g in 2 l per t of tubers | | |
| THIABEND | | Thiabendazole at 40 g in 2 l per t of tubers | | |
| 3. FUNGTIME | | Times of applying fungicides: | | |
| LIFT | | At lifting (R) 24 Oct, (W) 17 Oct | | |
| LIFT+BOX | | At lifting and at boxing (R&W) 20 Nov | | |

plus four extra treatments:

| | | |
|---|---|---|
| NO FUNG | | Seed not treated, fungicide seed stocks as above: |
| R | R&W | |
| KE | PC | |
| PER FS1 | PER FS1 | |
| LIN OG | LIN OG | |
| ANG OG | ROTH OG | |
| HER OG | ESS OG | |



*https://doi.org/10.23637/ERADOC-1-45* *pp 358*

79/R/P/4 and 79/W/P/4

Basal applications:

Delafield (R): Manures: (13:13:20) at 1510 kg. Weedkillers: Linuron at 1.3 kg with paraquat at 0.42 kg ion in 220 l. Fungicide: Mancozeb at 1.3 kg in 220 l applied six times, with insecticide on the first two occasions. Insecticide: Pirimicarb at 0.14 kg applied on two occasions. Desiccant: Undiluted BOV at 170 l.

Horsepool (W): Manures: (13:13:20) at 1850 kg. Weedkillers: Linuron at 1.0 kg with paraquat at 0.28 kg ion in 250 l. Fungicide: Mancozeb at 1.3 kg in 250 l applied six times, with insecticide on the first two occasions. Insecticide: Pirimicarb at 0.14 kg applied on two occasions. Desiccant: Undiluted BOV at 170 l.

Cultivations, etc.:-

Delafield (R): Ploughed: 12 Dec, 1978. Heavy spring-tine cultivated: 21 Apr, 1979. NPK applied: 1 May. Spike rotary cultivated: 8 May. Ridged up, hand planted and split back: 9 May. Grubbed: 16 May. Rotary ridged: 18 May. Weedkillers applied: 30 May. Fungicide applied: 26 June, 5 July, 20 July, 3 Aug, 15 Aug, 4 Sept. Insecticide applied: 26 June, 5 July. Desiccant applied: 21 Sept. Lifted: 12 Oct. Previous crops: Barley 1977, kale 1978.

Horsepool (W): Heavy spring-tine cultivated: 6 Sept, 1978. Subsoiled, tines 58 cm deep, 140 cm apart: 12 Sept. Rotary cultivated: 9 Nov. Ploughed: 24 Nov. NPK applied: 5 May, 1979. Heavy spring-tine cultivated: 8 May. Ridged up, hand planted, split back: 10 May. Weedkillers applied: 25 May. Fungicide applied: 27 June, 10 July, 23 July, 10 Aug, 25 Aug, 6 Sept. Insecticide applied: 27 June, 10 July. Desiccant applied: 24 Sept. Lifted: 15 Oct. Previous crops: Wheat 1977, W. oats 1978.

NOTE: Plant emergence counts were made in June and plant samples were taken in August for estimates of stem and tuber infections.



*https://doi.org/10.23637/ERADOC-1-45* *pp 359*

79/R/P/4 DELAFIELD(R)

KING EDWARD

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE<br>SD STOCK | IMAZALIL | THIABEND | MEAN |
|---|---|---|---|
| PER FS1 | 37.5 | 36.6 | 37.1 |
| LIN OG | 29.8 | 30.6 | 30.2 |
| ANG OG | 33.1 | 35.2 | 34.1 |
| HER OG | 31.0 | 31.5 | 31.2 |
| MEAN | 32.9 | 33.5 | 33.2 |

| FUNGTIME<br>SD STOCK | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| PER FS1 | 38.2 | 35.9 | 37.1 |
| LIN OG | 30.6 | 29.8 | 30.2 |
| ANG OG | 35.0 | 33.3 | 34.1 |
| HER OG | 30.4 | 32.1 | 31.2 |
| MEAN | 33.6 | 32.8 | 33.2 |

| FUNGTIME<br>FUNGCIDE | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| IMAZALIL | 33.1 | 32.6 | 32.9 |
| THIABEND | 34.0 | 32.9 | 33.5 |
| MEAN | 33.6 | 32.8 | 33.2 |

| FUNGCIDE | IMAZALIL | | THIABEND | |
|---|---|---|---|---|
| FUNGTIME | LIFT | LIFT+BOX | LIFT | LIFT+BOX |
| SD STOCK | | | | |
| PER FS1 | 38.7 | 36.4 | 37.8 | 35.4 |
| LIN OG | 29.7 | 29.9 | 31.5 | 29.7 |
| ANG OG | 34.0 | 32.2 | 36.1 | 34.3 |
| HER OG | 30.1 | 31.9 | 30.6 | 32.3 |

| NO FUNG | PER FS1 | LIN OG | ANG OG | HER OG | MEAN |
|---|---|---|---|---|---|
| | 36.9 | 28.3 | 33.4 | 29.2 | 31.9 |

GRAND MEAN 32.9

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NO FUNG | SD STOCK | FUNGCIDE | FUNGTIME |
|---|---|---|---|---|
| SED | 1.13 | 0.56 | 0.40 | 0.40 |

| TABLE | SD STOCK<br>FUNGCIDE | SD STOCK<br>FUNGTIME | FUNGCIDE<br>FUNGTIME | SD STOCK<br>FUNGCIDE<br>FUNGTIME<br>& NO FUNG |
|---|---|---|---|---|
| SED | 0.80 | 0.80 | 0.56 | 1.13 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 57 | 1.60 | 4.9 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/P/4 DELAFIELD(R)

KING EDWARD

PERCENTAGE WARE 4.44CM (1.75INCH) RIDDLE

***** TABLES OF MEANS *****

| FUNGCIDE | IMAZALIL | THIABEND | MEAN |
|---|---|---|---|
| SD STOCK | | | |
| PER FS1 | 34.7 | 29.9 | 32.3 |
| LIN OG | 32.7 | 28.1 | 30.4 |
| ANG OG | 34.8 | 31.4 | 33.1 |
| HER OG | 38.2 | 35.4 | 36.8 |
| MEAN | 35.1 | 31.2 | 33.2 |

| FUNGTIME | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| SD STOCK | | | |
| PER FS1 | 34.0 | 30.6 | 32.3 |
| LIN OG | 31.9 | 28.9 | 30.4 |
| ANG OG | 34.5 | 31.6 | 33.1 |
| HER OG | 39.2 | 34.4 | 36.8 |
| MEAN | 34.9 | 31.4 | 33.2 |

| FUNGTIME | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| IMAZALIL | 36.2 | 34.0 | 35.1 |
| THIABEND | 33.6 | 28.8 | 31.2 |
| MEAN | 34.9 | 31.4 | 33.2 |

| FUNGCIDE | IMAZALIL | | THIABEND | |
|---|---|---|---|---|
| FUNGTIME | LIFT | LIFT+BOX | LIFT | LIFT+BOX |
| SD STOCK | | | | |
| PER FS1 | 37.2 | 32.3 | 30.9 | 29.0 |
| LIN OG | 33.7 | 31.7 | 30.0 | 26.2 |
| ANG OG | 33.1 | 36.4 | 36.0 | 26.9 |
| HER OG | 40.8 | 35.6 | 37.5 | 33.3 |

| NO FUNG | PER FS1 | LIN OG | ANG OG | HER OG | MEAN |
|---|---|---|---|---|---|
| | 30.4 | 40.4 | 38.3 | 32.0 | 35.3 |

GRAND MEAN 33.6

PLOT AREA HARVESTED 0.00114



*https://doi.org/10.23637/ERADOC-1-45* *pp 361*

79/R/P/4 DELAFIELD(R)

PENTLAND CROWN

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE | IMAZALIL | THIABEND | MEAN |
|---|---|---|---|
| SD STOCK | | | |
| PER FS1 | 31.7 | 31.7 | 31.7 |
| LIN OG | 31.2 | 30.3 | 30.7 |
| ROTH OG | 34.0 | 33.5 | 33.8 |
| ESS OG | 30.0 | 30.0 | 30.0 |
| MEAN | 31.7 | 31.4 | 31.6 |

| FUNGTIME | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| SD STOCK | | | |
| PER FS1 | 34.0 | 29.5 | 31.7 |
| LIN OG | 32.3 | 29.2 | 30.7 |
| ROTH OG | 34.5 | 33.0 | 33.8 |
| ESS OG | 29.4 | 30.6 | 30.0 |
| MEAN | 32.6 | 30.6 | 31.6 |

| FUNGTIME | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| IMAZALIL | 33.0 | 30.4 | 31.7 |
| THIABEND | 32.1 | 30.7 | 31.4 |
| MEAN | 32.6 | 30.6 | 31.6 |

| FUNGCIDE | IMAZALIL | | THIABEND | |
|---|---|---|---|---|
| FUNGTIME | LIFT | LIFT+BOX | LIFT | LIFT+BOX |
| SD STOCK | | | | |
| PER FS1 | 33.5 | 30.0 | 34.6 | 28.9 |
| LIN OG | 33.3 | 29.1 | 31.2 | 29.4 |
| ROTH OG | 34.9 | 33.1 | 34.0 | 33.0 |
| ESS OG | 30.5 | 29.6 | 28.4 | 31.6 |

| NO FUNG | PER FS1 | LIN OG | ROTH OG | ESS OG | MEAN |
|---|---|---|---|---|---|
| | 33.8 | 30.2 | 34.2 | 29.3 | 31.9 |

GRAND MEAN 31.6

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NO FUNG | SD STOCK | FUNGCIDE | FUNGTIME |
|---|---|---|---|---|
| SED | 1.75 | 0.87 | 0.62 | 0.62 |

| TABLE | SD STOCK FUNGCIDE | SD STOCK FUNGTIME | FUNGCIDE FUNGTIME | SD STOCK FUNGCIDE FUNGTIME & NO FUNG |
|---|---|---|---|---|
| SED | 1.24 | 1.24 | 0.87 | 1.75 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 57 | 2.47 | 7.8 |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/P/4 DELAFIELD(R)

PENTLAND CROWN

PERCENTAGE WARE 4.44CM (1.75INCH) RIDDLE

***** TABLES OF MEANS *****

| FUNGCIDE | IMAZALIL | THIABEND | MEAN |
|---|---|---|---|
| SD STOCK | | | |
| PER FS1 | 71.5 | 68.5 | 70.0 |
| LIN OG | 69.8 | 67.1 | 68.5 |
| ROTH OG | 62.3 | 63.9 | 63.1 |
| ESS OG | 73.0 | 70.8 | 71.9 |
| MEAN | 69.1 | 67.6 | 68.4 |

| FUNGTIME | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| SD STOCK | | | |
| PER FS1 | 70.8 | 69.1 | 70.0 |
| LIN OG | 69.2 | 67.8 | 68.5 |
| ROTH OG | 62.4 | 63.8 | 63.1 |
| ESS OG | 71.5 | 72.3 | 71.9 |
| MEAN | 68.4 | 68.3 | 68.4 |

| FUNGTIME | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| FUNGCIDE | | | |
| IMAZALIL | 68.7 | 69.6 | 69.1 |
| THIABEND | 68.2 | 66.9 | 67.6 |
| MEAN | 68.4 | 68.3 | 68.4 |

| FUNGCIDE | IMAZALIL | | THIABEND | |
|---|---|---|---|---|
| FUNGTIME | LIFT | LIFT+BOX | LIFT | LIFT+BOX |
| SD STOCK | | | | |
| PER FS1 | 72.4 | 70.5 | 69.2 | 67.8 |
| LIN OG | 69.3 | 70.4 | 69.1 | 65.2 |
| ROTH OG | 62.4 | 62.2 | 62.4 | 65.4 |
| ESS OG | 70.7 | 75.2 | 72.2 | 69.4 |

| NO FUNG | PER FS1 | LIN OG | ROTH OG | ESS OG | MEAN |
|---|---|---|---|---|---|
| | 59.2 | 67.3 | 57.3 | 62.6 | 61.6 |

GRAND MEAN 67.0

PLOT AREA HARVESTED 0.00114



*https://doi.org/10.23637/ERADOC-1-45* *pp 363*

79/W/P/4 HORSEPOOL(W)

PENTLAND CROWN

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| FUNGCIDE<br>SD STOCK | IMAZALIL | THIABEND | MEAN |
|---|---|---|---|
| PER FS1 | 37.1 | 33.9 | 35.5 |
| LIN OG | 37.6 | 38.3 | 38.0 |
| ROTH OG | 42.9 | 39.3 | 41.1 |
| ESS OG | 33.1 | 35.5 | 34.3 |
| MEAN | 37.7 | 36.8 | 37.2 |

| FUNGTIME<br>SD STOCK | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| PER FS1 | 37.1 | 33.9 | 35.5 |
| LIN OG | 39.5 | 36.4 | 38.0 |
| ROTH OG | 39.6 | 42.6 | 41.1 |
| ESS OG | 37.3 | 31.3 | 34.3 |
| MEAN | 38.4 | 36.1 | 37.2 |

| FUNGTIME<br>FUNGCIDE | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| IMAZALIL | 39.3 | 36.1 | 37.7 |
| THIABEND | 37.5 | 36.0 | 36.8 |
| MEAN | 38.4 | 36.1 | 37.2 |

| FUNGCIDE | IMAZALIL | | THIABEND | |
|---|---|---|---|---|
| FUNGTIME | LIFT | LIFT+BOX | LIFT | LIFT+BOX |
| SD STOCK | | | | |
| PER FS1 | 40.4 | 33.8 | 33.8 | 34.1 |
| LIN OG | 39.5 | 35.7 | 39.5 | 37.2 |
| ROTH OG | 42.7 | 43.1 | 36.5 | 42.1 |
| ESS OG | 34.5 | 31.8 | 40.2 | 30.8 |

| NO FUNG | PER FS1 | LIN OG | ROTH OG | ESS OG | MEAN |
|---|---|---|---|---|---|
| | 35.8 | 41.0 | 41.9 | 33.4 | 38.0 |

GRAND MEAN 37.4

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | NO FUNG | SD STOCK | FUNGCIDE | FUNGTIME |
|---|---|---|---|---|
| SED | 3.62 | 1.81 | 1.28 | 1.28 |

| TABLE | SD STOCK<br>FUNGCIDE | SD STOCK<br>FUNGTIME | FUNGCIDE<br>FUNGTIME | SD STOCK<br>FUNGCIDE<br>FUNGTIME<br>& NO FUNG |
|---|---|---|---|---|
| SED | 2.56 | 2.56 | 1.81 | 3.62 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP | 57 | 5.12 | 13.7 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 364*

79/W/P/4 HORSEPOOL(W)

PENTLAND CROWN

PERCENTAGE WARE 4.44CM (1.75INCH) RIDDLE

***** TABLES OF MEANS *****

| FUNGCIDE SD STOCK | IMAZALIL | THIABEND | MEAN |
|---|---|---|---|
| PER FS1 | 76.3 | 69.4 | 72.9 |
| LIN OG | 76.7 | 77.0 | 76.9 |
| ROTH OG | 76.6 | 72.5 | 74.5 |
| ESS OG | 72.7 | 73.0 | 72.8 |
| MEAN | 75.6 | 73.0 | 74.3 |

| FUNGTIME SD STOCK | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| PER FS1 | 72.7 | 73.0 | 72.9 |
| LIN OG | 77.5 | 76.3 | 76.9 |
| ROTH OG | 74.0 | 75.0 | 74.5 |
| ESS OG | 74.8 | 70.9 | 72.8 |
| MEAN | 74.7 | 73.8 | 74.3 |

| FUNGTIME FUNGCIDE | LIFT | LIFT+BOX | MEAN |
|---|---|---|---|
| IMAZALIL | 76.4 | 74.8 | 75.6 |
| THIABEND | 73.1 | 72.8 | 73.0 |
| MEAN | 74.7 | 73.8 | 74.3 |

| FUNGCIDE | IMAZALIL | | THIABEND | |
|---|---|---|---|---|
| FUNGTIME | LIFT | LIFT+BOX | LIFT | LIFT+BOX |
| SD STOCK | | | | |
| PER FS1 | 78.1 | 74.6 | 67.3 | 71.5 |
| LIN OG | 76.8 | 76.7 | 78.1 | 75.9 |
| ROTH OG | 75.8 | 77.4 | 72.3 | 72.6 |
| ESS OG | 74.9 | 70.5 | 74.7 | 71.3 |

| NO FUNG | PER FS1 | LIN OG | ROTH OG | ESS OG | MEAN |
|---|---|---|---|---|---|
| | 74.7 | 77.4 | 77.7 | 74.5 | 76.1 |

GRAND MEAN 74.6

PLOT AREA HARVESTED 0.00114



*https://doi.org/10.23637/ERADOC-1-45* *pp 365*

79/R/P/6

POTATOES

EFFECTS OF SPACING AND LODGING

Object: To study the effects of spacing and artificial lodging on radiation interception, crop growth - rates and yield - White Horse II.

Sponsor: D.W. Wood.

Design: 2 blocks of 2 whole plots split into 6.

Whole plot dimensions: 4.27 x 12.8.

Treatments: All combinations of:-

Whole plots

| | | |
|---|---|---|
| 1. SEEDSIZE | Size range of seed tubers: | |
| | SMALL | 40 to 60 g |
| | LARGE | 80 to 100 g |

Sub plots

| | | |
|---|---|---|
| 2. SPACING | Spacing within ridges 71 cm apart: | |
| | 25 CM | |
| | 50 CM | |
| 3. LODGING | Artificial lodging: | |
| | NONE | None |
| | EARLY | Early 21 July |
| | LATE | Later 29 Aug |

Basal applications: Manures: (13:13:20) at 1500 kg. Weedkillers: Linuron at 1.1 kg with paraquat at 0.42 kg ion in 220 l. Fungicide: Mancozeb at 1.3 kg in 220 l applied six times, with insecticide on the first two occasions. Insecticide: Pirimicarb at 0.14 kg applied twice. Irrigation: 82 mm.

Seed: Pentland Crown.

Cultivations, etc.:- Subsoiled, tines 45 cm deep and 100 cm apart: 4 Nov, 1978. Ploughed: 7 Nov. Heavy spring-tine cultivated: 27 Apr, 1979. NPK applied: 8 May. Spike rotary cultivated twice, ridged, hand planted and split back: 9 May. Grubbed: 18 May. Weedkillers applied: 1 June. Grubbed: 19 June. Rotoridged: 21 June. Insecticide and fungicide applied twice: 26 June and 5 July. Irrigation at 25 mm applied twice: 14 July and 19 July. Fungicide applied four times: 20 July, 3 Aug, 15 Aug and 4 Sept. Irrigation applied at 32 mm: 27 July. Lifted: 18 Oct. Previous cropping: Barley 1977 and 1978.

NOTE: Seed sprout characteristics were assessed at planting. Emergence counts were made daily in early June. Full growth analyses were done at 21-day intervals between early July and mid October. Radiation interception was measured at 14-day intervals between mid July and early October.



*https://doi.org/10.23637/ERADOC-1-45* *pp 366*

79/R/P/6

TOTAL TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

| SPACING<br>SEEDSIZE | 25 CM | 50 CM | MEAN |
|---|---|---|---|
| SMALL | 48.0 | 46.2 | 47.1 |
| LARGE | 46.9 | 45.2 | 46.1 |
| MEAN | 47.5 | 45.7 | 46.6 |

| LODGING<br>SEEDSIZE | NONE | EARLY | LATE | MEAN |
|---|---|---|---|---|
| SMALL | 48.2 | 46.2 | 46.9 | 47.1 |
| LARGE | 47.2 | 44.7 | 46.3 | 46.1 |
| MEAN | 47.7 | 45.5 | 46.6 | 46.6 |

| LODGING<br>SPACING | NONE | EARLY | LATE | MEAN |
|---|---|---|---|---|
| 25 CM | 49.8 | 45.6 | 47.0 | 47.5 |
| 50 CM | 45.6 | 45.3 | 46.2 | 45.7 |
| MEAN | 47.7 | 45.5 | 46.6 | 46.6 |

| SPACING | 25 CM | | | 50 CM | | |
|---|---|---|---|---|---|---|
| LODGING<br>SEEDSIZE | NONE | EARLY | LATE | NONE | EARLY | LATE |
| SMALL | 49.9 | 45.9 | 48.1 | 46.5 | 46.5 | 45.7 |
| LARGE | 49.7 | 45.3 | 45.8 | 44.7 | 44.2 | 46.8 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | SPACING | LODGING | SEEDSIZE*<br>SPACING |
|---|---|---|---|
| SED | 1.02 | 1.25 | 1.45 |

| TABLE | SEEDSIZE*<br>LODGING | SPACING<br>LODGING | SEEDSIZE*<br>SPACING<br>LODGING |
|---|---|---|---|
| SED | 1.77 | 1.77 | 2.51 |

* USE ONLY WITHIN THE SAME LEVEL OF SEEDSIZE

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 10 | 2.51 | 5.4 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 367*

79/R/P/6

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

| SPACING<br>SEEDSIZE | 25 CM | 50 CM | MEAN |
|---|---|---|---|
| SMALL | 85.8 | 91.7 | 88.7 |
| LARGE | 76.6 | 89.2 | 82.9 |
| MEAN | 81.2 | 90.4 | 85.8 |

| LODGING<br>SEEDSIZE | NONE | EARLY | LATE | MEAN |
|---|---|---|---|---|
| SMALL | 90.0 | 85.3 | 90.8 | 88.7 |
| LARGE | 83.0 | 83.0 | 82.7 | 82.9 |
| MEAN | 86.5 | 84.2 | 86.8 | 85.8 |

| LODGING<br>SPACING | NONE | EARLY | LATE | MEAN |
|---|---|---|---|---|
| 25 CM | 82.1 | 77.5 | 84.0 | 81.2 |
| 50 CM | 90.9 | 90.8 | 89.6 | 90.4 |
| MEAN | 86.5 | 84.2 | 86.8 | 85.8 |

| SPACING | 25 CM | | | 50 CM | | |
|---|---|---|---|---|---|---|
| LODGING<br>SEEDSIZE | NONE | EARLY | LATE | NONE | EARLY | LATE |
| SMALL | 88.3 | 77.7 | 91.4 | 91.8 | 93.0 | 90.2 |
| LARGE | 75.9 | 77.4 | 76.6 | 90.0 | 88.6 | 88.9 |

SUB PLOT AREA HARVESTED 0.00130



*https://doi.org/10.23637/ERADOC-1-45* *pp 368*

79/R/G/1

GRASS

LIQUID FERTILISER AND NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to liquid fertilisers on the yield and nitrogen uptake of grass cut for silage - Great Harpenden I.

Sponsors: J. Ashworth, G.A. Rodgers, F.V. Widdowson, A. Penny.

Design: 3 blocks of 3 whole plots split into 4 sub plots plus 1 extra whole plot split into 4 and 4 extra sub plots.

Whole plot dimensions: 2.44 x 9.14.

Treatments: All combinations of:-

Whole plots

1. N TIME — Times of injecting aqueous urea and nitrification inhibitors:

| | |
|---|---|
| AU | Autumn, 22 Nov, 1978 |
| ES | Early spring, 4 Apr, 1979 |
| LS | Late spring, 25 Apr, 1979 |

Sub plots

2. N IHIB — Nitrification inhibitors, added to aqueous urea supplying 375 kg N:

| | |
|---|---|
| U3 0 | None |
| U3 NI | Nitrapyrin at 1.5 kg |
| U3 DX | Diethyl xanthate at 1.5 kg |
| U3 PX | Potassium ethyl xanthate at 10 kg |

Plus eight extra treatments

Extra sub plots

3. EXTRA(1) — 'Nitro-Chalk' (kg N) dressing divided equally between three dates of application: 4 Apr, 8 June, 27 July

| | |
|---|---|
| 0 | None |
| NC2 ES | 250 |
| NC3 ES | 375 |
| NC4 ES | 500 |

Extra whole plots

EXTRA(2) — Nitrification inhibitors, added to a mixture of aqueous urea and ammonium nitrate supplying 375 kg N, injected on 4 Apr:

| | |
|---|---|
| UA3ES 0 | None |
| UA3ES NI | Nitrapyrin at 1.5 kg |
| UA3ES DX | Diethyl xanthate at 1.5 kg |
| UA3ES PX | Potassium ethyl xanthate at 10 kg |



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/G/1

Basal applications: (0:14:28) at 500 kg.

Seed: S.24 perennial ryegrass sown May, 1977

Cultivations, etc.:- Topped: 14 Nov, 1978. PK applied: 16 Nov. Cut: 4 June, 1979, 24 July, 22 Oct.

NOTES: (1) Soil cores were taken to 1 m depth (in March from autumn injected plots only) and 20 cm depth (during the season from all plots) and tested for urea, ammonium and nitrate.
(2) 15N was used on two plots to assess the immobilisation of fertiliser N.
(3) Grass from the first two cuts was tested for nitrate, and from all cuts for organic N.

1ST CUT (4/6/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME / N INHIB | AU | ES | LS | MEAN |
|---|---|---|---|---|
| U3 0 | 7.29 | 5.54 | 3.00 | 5.28 |
| U3 NI | 6.81 | 5.26 | 2.87 | 4.98 |
| U3 DX | 6.95 | 5.34 | 3.10 | 5.13 |
| U3 PX | 6.72 | 5.04 | 3.28 | 5.01 |
| MEAN | 6.94 | 5.29 | 3.06 | 5.10 |

| EXTRA(1) | 0 | NC2 ES | NC3 ES | NC4 ES | MEAN |
|---|---|---|---|---|---|
| | 1.00 | 4.18 | 4.77 | 5.41 | 3.84 |

| EXTRA(2) | UA3ES 0 | UA3ES NI | UA3ES DX | UA3ES PX | MEAN |
|---|---|---|---|---|---|
| | 5.29 | 5.27 | 5.17 | 5.55 | 5.32 |

GRAND MEAN 4.89

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N TIME | N INHIB | EXTRA(1) | EXTRA(2) |
|---|---|---|---|---|
| SED | 0.222 | 0.158 | 0.445 | 0.273 |

| TABLE | N TIME / N INHIB |
|---|---|
| SED | 0.324 |

EXCEPT WHEN COMPARING MEANS WITH THE SAME LEVEL(S) OF:

| | |
|---|---|
| N TIME | 0.273 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 24 | 0.334 | 6.8 |

1ST CUT MEAN DM% 16.2



*https://doi.org/10.23637/ERADOC-1-45* *pp 370*

79/R/G/1

2ND CUT (24/7/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME / N INHIB | AU | ES | LS | MEAN |
|---|---|---|---|---|
| U3 0 | 1.31 | 3.47 | 4.67 | 3.15 |
| U3 NI | 2.18 | 3.39 | 4.57 | 3.38 |
| U3 DX | 1.55 | 3.62 | 4.44 | 3.20 |
| U3 PX | 1.41 | 3.30 | 4.28 | 3.00 |
| MEAN | 1.61 | 3.44 | 4.49 | 3.18 |

| EXTRA(1) | 0 | NC2 ES | NC3 ES | NC4 ES | MEAN |
|---|---|---|---|---|---|
| | 0.21 | 2.91 | 3.78 | 4.07 | 2.74 |

| EXTRA(2) | UA3ES 0 | UA3ES NI | UA3ES DX | UA3ES PX | MEAN |
|---|---|---|---|---|---|
| | 2.61 | 3.35 | 3.16 | 2.98 | 3.02 |

GRAND MEAN 3.06

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N TIME | N INHIB | EXTRA(1) | EXTRA(2) |
|---|---|---|---|---|
| SED | 0.188 | 0.099 | 0.375 | 0.172 |

| TABLE | N TIME / N INHIB |
|---|---|
| SED | 0.239 |

EXCEPT WHEN COMPARING MEANS WITH THE SAME LEVEL(S) OF:

| | |
|---|---|
| N TIME | 0.172 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 24 | 0.210 | 6.9 |

2ND CUT MEAN DM% 27.7



*https://doi.org/10.23637/ERADOC-1-45* 

79/R/G/1

3RD CUT (22/10/79) DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME / N INHIB | AU | ES | LS | MEAN |
|---|---|---|---|---|
| U3 0 | 0.28 | 0.51 | 0.89 | 0.56 |
| U3 NI | 0.42 | 0.55 | 0.96 | 0.64 |
| U3 DX | 0.37 | 0.60 | 0.73 | 0.57 |
| U3 PX | 0.32 | 0.51 | 0.80 | 0.55 |
| MEAN | 0.35 | 0.54 | 0.84 | 0.58 |

| EXTRA(1) | 0 | NC2 ES | NC3 ES | NC4 ES | MEAN |
|---|---|---|---|---|---|
| | 0.06 | 2.12 | 2.63 | 2.65 | 1.87 |

| EXTRA(2) | UA3ES 0 | UA3ES NI | UA3ES DX | UA3ES PX | MEAN |
|---|---|---|---|---|---|
| | 0.35 | 0.41 | 0.42 | 0.42 | 0.40 |

GRAND MEAN 0.80

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N TIME | N INHIB | EXTRA(1) | EXTRA(2) |
|---|---|---|---|---|
| SED | 0.070 | 0.053 | 0.140 | 0.092 |

| TABLE | N TIME / N INHIB |
|---|---|
| SED | 0.106 |

EXCEPT WHEN COMPARING MEANS WITH THE SAME LEVEL(S) OF:

| | |
|---|---|
| N TIME | 0.092 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 24 | 0.113 | 14.2 |

3RD CUT MEAN DM% 35.9



*https://doi.org/10.23637/ERADOC-1-45* *pp 372*

79/R/G/1

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

| N TIME / N INHIB | AU | ES | LS | MEAN |
|---|---|---|---|---|
| U3 0 | 8.88 | 9.51 | 8.55 | 8.98 |
| U3 NI | 9.42 | 9.20 | 8.39 | 9.00 |
| U3 DX | 8.86 | 9.56 | 8.27 | 8.90 |
| U3 PX | 8.45 | 8.85 | 8.36 | 8.56 |
| MEAN | 8.90 | 9.28 | 8.39 | 8.86 |

| EXTRA(1) | 0 | NC2 ES | NC3 ES | NC4 ES | MEAN |
|---|---|---|---|---|---|
| | 1.27 | 9.22 | 11.18 | 12.13 | 8.45 |

| EXTRA(2) | UA3ES 0 | UA3ES NI | UA3ES DX | UA3ES PX | MEAN |
|---|---|---|---|---|---|
| | 8.25 | 9.03 | 8.75 | 8.95 | 8.74 |

GRAND MEAN 8.75

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | N TIME | N INHIB | EXTRA(1) | EXTRA(2) |
|---|---|---|---|---|
| SED | 0.325 | 0.193 | 0.650 | 0.334 |

| TABLE | N TIME / N INHIB |
|---|---|
| SED | 0.435 |
| EXCEPT WHEN COMPARING MEANS WITH THE SAME LEVEL(S) OF: | |
| N TIME | 0.334 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---|---|---|---|
| BLOCK.WP.SP | 24 | 0.409 | 4.7 |

GRAND MEAN 8.75

TOTAL OF 3 CUTS MEAN DM% 26.6

PLOT AREA HARVESTED 0.00104



*https://doi.org/10.23637/ERADOC-1-45* *pp 373*

79/E/1

# METEOROLOGICAL RECORDS 1979 - ROTHAMSTED

(Departure from long-period means in brackets)

| MONTH | Total sunshine: hours | Mean temperature: C Air(1) | Dew point | In ground under grass 30cm | 100cm |
|---|---|---|---|---|---|
| JAN | 53 ( +1) | -1.3 (-4.3) | -2.7 | 3.0 | 5.9 |
| FEB | 54 (-13) | 0.7 (-2.7) | -1.0 | 2.1 | 4.1 |
| MAR | 90 (-25) | 4.3 (-0.8) | 2.0 | 4.0 | 4.5 |
| APR | 114 (-37) | 7.6 (+0.0) | 4.1 | 7.1 | 6.0 |
| MAY | 202 ( +8) | 10.3 (-0.7) | 6.0 | 10.5 | 8.5 |
| JUNE | 143 (-60) | 13.6 (-0.4) | 10.6 | 14.2 | 11.5 |
| JULY | 183 ( -9) | 15.9 (-0.3) | 11.4 | 15.7 | 13.5 |
| AUG | 162 (-18) | 15.0 (-0.6) | 11.0 | 15.6 | 14.3 |
| SEPT | 172 (+28) | 13.4 (+0.0) | 9.7 | 14.2 | 13.8 |
| OCT | 117 (+14) | 11.0 (+1.4) | 9.4 | 12.2 | 12.6 |
| NOV | 63 ( +1) | 5.9 (+0.1) | 4.5 | 8.3 | 10.1 |
| DEC | 52 ( +7) | 5.2 (+1.4) | 3.0 | 7.0 | 8.6 |
| YEAR* | 1405(-103) | 8.4 (-0.5) | 5.7 | 9.5 | 9.5 |

| MONTH | Ground(2) frosts | Total rainfall:mm 0.000405 ha (1/1000 acre) gauge | Rain(3) days | Drainage through 50.8cm (20 in) soil:mm | Wind(4) km per hour |
|---|---|---|---|---|---|
| JAN | 29 | 77 (+12) | 20 | 57 | 9.3 |
| FEB | 27 | 71 (+22) | 13 | 67 | 10.0 |
| MAR | 16 | 133 (+84) | 26 | 97 | 12.7 |
| APR | 12 | 95 (+46) | 15 | 55 | 9.7 |
| MAY | 7 | 112 (+58) | 19 | 61 | 9.1 |
| JUNE | 0 | 32 (-25) | 13 | 1 | 6.5 |
| JULY | 0 | 24 (-38) | 6 | TRACE | 6.2 |
| AUG | 2 | 69 ( +4) | 13 | 9 | 6.4 |
| SEPT | 7 | 19 (-42) | 7 | TRACE | 7.5 |
| OCT | 9 | 86 (+13) | 16 | 44 | 6.6 |
| NOV | 18 | 57 (-14) | 21 | 41 | 9.1 |
| DEC | 15 | 134 (+68) | 23 | 109 | 12.3 |
| YEAR* | 142 | 909(+188) | 192 | 541 | 8.8 |

(1)Mean of maximum and minimum
(2)Number of nights grass min. was below 0.0 C
(3)Number of days rainfall was 0.2 mm or more
(4)At 2 metres above ground level

*Mean or total



*https://doi.org/10.23637/ERADOC-1-45* *pp 374*

79/E/1

## METEOROLOGICAL RECORDS 1979 - WOBURN

(Departure from long-period means in brackets)

| MONTH | Total sunshine: hours | Mean temperature:C Air(1) | Dew point | In ground under grass 30 cm | 100 cm | Ground(2) frosts | Total rainfall:mm 12.7 cm (5in) gauge | Rain(3) days | Wind(4) km per hour |
|---|---|---|---|---|---|---|---|---|---|
| JAN | 52 ( +2) | -0.8 (-4.1) | -1.8 | 2.7 | 6.1 | 26 | 60 ( +6) | 18 | 8.0 |
| FEB | 46 (-18) | 0.7 (-2.7) | -0.8 | 2.0 | 4.5 | 25 | 51 (+10) | 13 | 7.7 |
| MAR | 90 (-25) | 4.5 (-0.8) | 2.4 | 4.2 | 4.8 | 19 | 127 (+84) | 23 | 13.1 |
| APR | 93 (-48) | 7.7 (-0.2) | 5.3 | 7.3 | 6.3 | 14 | 87 (+42) | 21 | 7.8 |
| MAY | 184 ( +1) | 10.6 (-0.4) | 7.5 | 10.6 | 8.6 | 7 | 103 (+50) | 20 | 9.6 |
| JUNE | 151 (-48) | 13.4 (-0.8) | 11.7 | 14.9 | 11.6 | 0 | 43 ( -7) | 9 | 6.7 |
| JULY | 169 (-11) | 16.0 (+0.0) | 14.6 | 16.5 | 13.8 | 0 | 14 (-40) | 6 | 7.4 |
| AUG | 157 (-15) | 15.3 (-0.5) | 14.2 | 16.1 | 14.6 | 1 | 70 ( +9) | 13 | 7.8 |
| SEPT | 159 (+25) | 13.5 (-0.1) | 12.7 | 14.5 | 14.2 | 8 | 15 (-37) | 5 | 8.5 |
| OCT | 109 ( +8) | 10.7 (+0.7) | 10.3 | 11.9 | 12.9 | 8 | 81 (+28) | 13 | 5.7 |
| NOV | 61 ( +0) | 6.5 (+0.2) | 5.7 | 7.8 | 10.4 | 11 | 46 (-17) | 19 | 10.1 |
| DEC | 44 ( +0) | 5.6 (+1.6) | 4.0 | 6.7 | 8.9 | 14 | 131 (+78) | 24 | 12.9 |
| YEAR* | 1315(-129) | 8.6 (-0.6) | 7.1 | 9.6 | 9.7 | 133 | 828 (+206) | 184 | 8.8 |

## METEOROLOGICAL RECORDS 1979 - SAXMUNDHAM

| MONTH | Mean temperature: C Air(1) | Dew point | In ground under bare soil 30 cm | Ground(2) frosts | Total rainfall :mm 12.7 cm (5 in) gauge | Rain(3) days | Wind(4) km per hour |
|---|---|---|---|---|---|---|---|
| JAN | 0.1 (-4.5) | 0.0 | 2.2 | 21 | 88 ( +30) | 14 | 12.4 |
| FEB | 2.1 (-1.8) | 0.0 | 1.9 | 17 | 89 ( +48) | 8 | 12.7 |
| MAR | 5.0 (-0.2) | 2.8 | 4.3 | 12 | 63 ( +21) | 16 | 15.8 |
| APR | 7.6 (+0.6) | 5.0 | 7.3 | 9 | 52 ( +16) | 12 | 11.3 |
| MAY | 11.0 (+0.4) | 7.8 | 11.1 | 9 | 68 ( +30) | 11 | 11.5 |
| JUNE | 14.3 (+0.5) | 11.7 | 16.3 | 0 | 33 ( -5) | 10 | 7.2 |
| JULY | 17.0 (+1.0) | 11.7 | 17.7 | 0 | 27 ( -26) | 7 | 7.3 |
| AUG | 15.8 (-0.5) | 11.7 | 16.3 | 1 | 61 ( +17) | 12 | 8.0 |
| SEPT | 14.6 (+0.6) | 10.5 | 15.3 | 4 | 26 ( -39) | 4 | 9.5 |
| OCT | 11.9 (+1.1) | 10.5 | 12.2 | 5 | 25 ( -13) | 8 | 10.0 |
| NOV | 6.5 (-0.0) | 5.0 | 6.8 | 14 | 48 ( -31) | 13 | 10.7 |
| DEC | 6.0 (+1.2) | 3.3 | 6.2 | 16 | 96 ( +46) | 15 | 15.0 |
| YEAR* | 9.3 (-0.1) | 6.7 | 9.8 | 108 | 676 ( +94) | 130 | 11.0 |

(1)Mean of maximum and minimum
(2)Number of nights grass min. was below 0.0 C
(3)Number of days rainfall was 0.2 mm or more
(4)At 2 metres above ground level

*Mean or total



*https://doi.org/10.23637/ERADOC-1-45* *pp 375*

# 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



*https://doi.org/10.23637/ERADOC-1-45* *pp 376*

# 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 |



*https://doi.org/10.23637/ERADOC-1-45* *pp 377*