ROTHAMSTED RESEARCH

Yields of the Field Experiments 1984

Full Table of Content

Crop Sequences

Rothamsted Research

Rothamsted Research (1985) *Crop Sequences ;* Yields Of The Field Experiments 1984, pp 103 - 195 **- DOI: https://doi.org/10.23637/ERADOC-1-32**

84/R/CS/10 and 84/W/CS/10

LONG TERM LIMING

Object: To study the effects of different amounts of lime and phosphate on the yields and compositions of a sequence of crops. Rothamsted (R) Sawyers I and Woburn (W) Stackyard C.

Sponsors: T.M. Addiscott, S.P. McGrath.

The 23rd year, fallow.

For previous years see 'Details' 1967, 1973 and 74-83/R&W/CS/10.

Design: 2 randomised blocks of 16 plots.

Whole plot dimensions: 6.40 x 18.3.

Cultivations, etc.:-
Sawyers I (R): Heavy spring-tine cultivated: 11 Nov, 1983 twice, 27 Apr, 1984, 9 May. Rotary cultivated: 27 Apr, 15 June, 12 July. Spring-tine cultivated: 13 July.
Stackyard C (W): Deep-tine cultivated: 16 Jan, 1984. Heavy spring-tine cultivated: 15 May. Cultivated with thistle bar: 10 July, 10 Aug. Rotary cultivated: 25 July.

https://doi.org/10.23637/ERADOC-1-32

84/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 20th year, old grass.

For previous years see 'Details' 1973 and 74-83/R/CS/13.

Design: 4 randomised blocks of 10 plots.

Whole plot dimensions: 1.83 x 10.1.

Treatments

TOTAL N	Fertilizer nitrogen (kg N-total per annum applied in three equal dressings as (25:0:16)):
0(S)	0 (sprayed with 2, 4-D ester to control legumes, duplicated)
0	0 (duplicated)
56	
112	
168	
225	
281	
338	

NOTES: (1) 2, 4-D ester was applied at 1.0 kg in 220 l on 25 Apr, 1984.
(2) Rates of fertilizer nitrogen per cut were unchanged but as in 1983 only three cuts were taken instead of the usual four; accordingly total rates of nitrogen were three quarters of standard.

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

Cultivations, etc.:- Basal P and Mg applied: 22 Nov, 1983. Test NK applied: 16 Mar, 1984, 7 June, 27 July. Cut: 6 June, 26 July, 15 Nov.

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/13

1ST CUT (6/6/84) DRY MATTER TONNES/HECTARE

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

TOTAL N	0(S)	0	56	112	168	225	281	338	MEAN
	0.31	1.94	1.88	2.19	3.51	4.82	5.05	5.72	2.77

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

TABLE	TOTAL N	
SED	0.246	MIN REP
	0.213	MAX-MIN
	0.174	MAX REP

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

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

STRATUM	DF	SE	CV%
BLOCK.WP	29	0.348	12.6

1ST CUT MEAN DM% 22.9

2ND CUT (26/7/84) DRY MATTER TONNES/HECTARE

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

TOTAL N	0(S)	0	56	112	168	225	281	338	MEAN
	0.46	2.31	1.92	2.16	2.57	2.48	2.97	2.95	2.06

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

TABLE	TOTAL N	
SED	0.255	MIN REP
	0.221	MAX-MIN
	0.180	MAX REP

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

STRATUM	DF	SE	CV%
BLOCK.WP	29	0.361	17.5

2ND CUT MEAN DM% 27.2

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/13

3RD CUT (15/11/84) DRY MATTER TONNES/HECTARE

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

TOTAL N	0(S)	0	56	112	168	225	281	338	MEAN
	0.23	0.64	0.82	1.07	1.30	1.78	1.90	2.08	1.07

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

TABLE	TOTAL N	
SED	0.132	MIN REP
	0.115	MAX-MIN
	0.094	MAX REP

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

STRATUM	DF	SE	CV%
BLOCK.WP	29	0.187	17.5

3RD CUT MEAN DM% 15.8

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

TOTAL N	0(S)	0	56	112	168	225	281	338	MEAN
	0.99	4.89	4.62	5.43	7.39	9.08	9.92	10.75	5.89

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

TABLE	TOTAL N	
SED	0.528	MIN REP
	0.457	MAX-MIN
	0.373	MAX REP

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

STRATUM	DF	SE	CV%
BLOCK.WP	29	0.746	12.7

TOTAL OF 3 CUTS MEAN DM% 22.0

PLOT AREA HARVESTED 0.00086

https://doi.org/10.23637/ERADOC-1-32

84/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 16th year, potatoes, w. wheat, s. barley.

For previous years see 71/W/CS/34(t), 72/W/CS/34(t) and 73-83/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	80	81	82	83	84
Series I	P	P	P*	SB	B	P	P*	W	B	P	P*	B	B	P	P*	W
Series II	P	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P	P*
Series III	P	B	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P
Series IV	P	B	P	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B

P = potatoes, SB = sugar beet, B = s. barley, W = w. wheat

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

Treatments to w. wheat (Series I): All combinations of:-

1. NEMACIDE(83) Residues of nematicides applied 1983:

   FMC65201
   FMC67825
   OXAMYL

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

    2.8
    5.6
   11.2

plus one untreated plot per block

RATE

0.0

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/34

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

1. NEMACIDE(84) Nematicides applied 1984:

   ALDICARB
   DS 38697
   DS 46995

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

   SINGLE Single (2.8 kg of aldicarb, 1.4 kg of DS materials)
   DOUBLE Double (5.6 kg of aldicarb, 2.8 kg of DS materials)
   QUAD Quadruple (11.2 kg of aldicarb, 5.6 kg of DS materials)

plus one untreated plot per block

   RATE

   NONE

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

1. NEMACIDE(81) Residues of nematicides applied 1981:

   ALDICARB
   HOE00668
   RH 9358

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

   2.8
   5.6
   11.2

plus one untreated plot per block

RATE

0.0

Treatments to s. barley (Series IV): All combinations of:-

1. NEMACIDE(82) Residues of nematicides applied 1982:

   DS 46995
   DS 47187
   OXAMYL

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

   SINGLE Single (1.5 kg of DS materials, 2.8 kg of oxamyl)
   DOUBLE Double (3.0 kg of DS materials, 5.6 kg of oxamyl)
   QUAD Quadruple (6.0 kg of DS materials, 11.2 kg of oxamyl)

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/34

plus one untreated plot per block

RATE

NONE

Standard applications:
W. wheat (Series I): Manures: Magnesian limestone at 5.0 t. (5:14:30) at 340 kg. N at 180 kg as 'Nitro-Chalk'. Weedkiller: Chlortoluron at 3.5 kg in 250 l.
Potatoes (Series II and III): Manures: (10:10:15+4.5 Mg) at 1990 kg. Weedkillers: Linuron at 0.75 l with paraquat at 0.20 kg ion in 250 l. Fungicides: Fentin acetate with maneb (as 'Brestan 60' at 0.5 kg) in 250 l with the insecticide. Fentin hydroxide at 0.28 kg in 250 l on six occasions, with the insecticide on the second and third occasions. Insecticide: Pirimicarb at 0.14 kg on three occasions.
S. barley (Series IV): Manures: (20:10:10) at 630 kg. Weedkillers: 3, 6-dichloropicolinic acid at 0.07 kg with the bromoxynil at 0.34 kg and mecoprop at 2.1 kg in 250 l. Fungicide: Tridemorph at 0.52 kg in 250 l.

Seed: W. wheat: Avalon, sown at 200 kg.
Potatoes: Pentland Crown.
S. barley: Triumph, dressed with triadimenol plus fuberidazole, sown at 160 kg.

Cultivations, etc.:-
W. wheat (Series I): Heavy spring-tine cultivated, NPK applied: 24 Oct, 1983. Magnesian limestone applied, spring-tine cultivated with crumbler attached, seed sown: 25 Oct. Weedkiller applied: 28 Oct. N applied: 11 Apr, 1984. Combine harvested: 20 Aug.
Potatoes (Series II and III): Heavy spring-tine cultivated (Series II): 24 Oct, 1983. Ploughed (Series III): 16 Nov. Deep-tine cultivated: 16 Jan, 1984. NPK with Mg applied: 2 Apr. Heavy spring-tine cultivated: 5 Apr. Rotary cultivated, potatoes planted (Series III): 13 Apr. Treatments applied, rotary cultivated, potatoes planted (Series II): 16 Apr. Weedkillers applied: 4 May. Fentin acetate with maneb and insecticide applied: 19 June. Fentin hydroxide applied: 3 July, 1 Aug, 28 Aug, 12 Sept. Fentin hydroxide with insecticide applied: 18 July, 20 July. Haulm mechanically destroyed: 28 Sept. Lifted (Series II): 9 Oct. (Series III): 10 Oct.
S. barley (Series IV): Ploughed: 16 Nov, 1983. NPK applied: 13 Mar, 1984. Spring-tine cultivated with crumbler attached, seed sown: 15 Mar. Weedkiller applied, fungicide applied: 30 May. Combine harvested: 14 Aug.

NOTES: 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-1-32

84/W/CS/34

POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

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

RATE NEMACIDE(84)	SINGLE	DOUBLE	QUAD	MEAN
ALDICARB	30.9	31.2	37.5	33.2
DS 38697	24.8	31.0	32.1	29.3
DS 46995	27.2	29.9	34.8	30.6
MEAN	27.6	30.7	34.8	31.0

RATE NONE 11.6

GRAND MEAN 29.1

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

TABLE	NEMACIDE(84)	RATE NEMACIDE(84)	RATE & RATE NONE
SED	1.51	1.51	2.62

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	3.21	11.0

PERCENTAGE WARE 3.81CM (1.5 INCH RIDDLE)

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

RATE NEMACIDE(84)	SINGLE	DOUBLE	QUAD	MEAN
ALDICARB	90.0	91.3	92.5	91.3
DS 38697	85.8	90.2	91.4	89.1
DS 46995	87.3	88.3	88.7	88.1
MEAN	87.7	89.9	90.8	89.5

RATE NONE 83.6

GRAND MEAN 88.9

PLOT AREA HARVESTED 0.00130

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/34

POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

RATE NEMACIDE(81)	2.8	5.6	11.2	MEAN
ALDICARB	16.2	16.5	26.4	19.7
HOE00668	16.3	15.4	21.5	17.7
RH 9358	15.8	21.4	24.9	20.7
MEAN	16.1	17.8	24.3	19.4

RATE 0.0 12.5

GRAND MEAN 18.7

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

TABLE	NEMACIDE(81)	RATE	NEMACIDE(81) RATE
SED	1.52	1.52	2.64

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	3.23	17.3

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

RATE NEMACIDE(81)	2.8	5.6	11.2	MEAN
ALDICARB	83.9	79.6	86.8	83.4
HOE00668	82.6	80.8	85.2	82.9
RH 9358	80.9	84.4	88.5	84.6
MEAN	82.5	81.6	86.8	83.6

RATE 0.0 76.6

GRAND MEAN 82.9

GRAIN MEAN DM% 86.6

PLOT AREA HARVESTED 0.00130

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/34

WINTER WHEAT SERIES I

GRAIN TONNES/HECTARE

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

RATE NEMACIDE(83)	2.8	5.6	11.2	MEAN
FMC65201	4.07	4.28	4.19	4.18
FMC67825	5.24	5.25	5.58	5.36
OXAMYL	5.25	5.44	4.26	4.99
MEAN	4.86	4.99	4.68	4.84

RATE 0.0 5.41

GRAND MEAN 4.90

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

TABLE	NEMACIDE(83)	RATE NEMACIDE(83)	RATE & RATE 0.0
SED	0.342	0.342	0.593

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.726	14.8

GRAIN MEAN DM% 88.4

PLOT AREA HARVESTED 0.00251

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/34

SPRING BARLEY SERIES IV

GRAIN TONNES/HECTARE

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

RATE NEMACIDE(82)	SINGLE	DOUBLE	QUAD	MEAN
DS 46995	6.50	5.33	6.21	6.01
DS 47187	5.53	6.58	5.75	5.95
OXAMYL	6.19	6.50	7.26	6.65
MEAN	6.07	6.13	6.40	6.20

RATE NONE 7.16

GRAND MEAN 6.30

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

TABLE	NEMACIDE(82)	RATE NEMACIDE(82)	RATE & RATE NONE
SED	0.432	0.432	0.749

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.917	14.6

GRAIN MEAN DM% 87.5

PLOT AREA HARVESTED 0.00130

https://doi.org/10.23637/ERADOC-1-32

84/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 17th year, potatoes, w. wheat.

For previous years see 72/W/CS/35(t) and 73-83/W/CS/35.

Design: 2 series each of 4 randomised blocks of 18 plots with S NEM YR on blocks

Whole plot dimensions: 4.27 x 6.10.

Treatments:-

The experiment has two series with the following cropping:-

	1968-72	73	74	75	76	77	78	79	80	81	82	83	84
Series II	P	P*	SB	B	P*	P	P	P*	W	B	B	P*	W
Series III	P	P	P*	SB	B	P*	P	P	P*	W	B	B	P*

Series I was damaged by soil erosion and has been excluded from the experiment since 1980.
P = Potatoes, SB = Sugar beet, B = S. barley, W = W. wheat

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

Treatments:

Series II, w. wheat 1984, tests the residual effects of treatments applied for potatoes in 1979 and 1983. All combinations of:-

Blocks

1. S NEM YR — Years of applying spring nematicides:

1979	1979 only
1979+83	1979 repeated cumulatively in 1983

Whole plots

2. A NEM(79) — Residual effects of nematicide applied autumn 1978:

NONE	None
TELONE	'Telone' at 224 kg

3. S NEM — Nematicides applied in spring 1979 and 1983:

ALDICARB
OXAMYL

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84/W/CS/35

4. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

0.0

Series III, potatoes 1984, tests the residual and fresh effects of sets of treatments applied for potatoes in 1980 and 1984, ignoring those applied in earlier years. All combinations (duplicated) of:-

Blocks

1. S NEM YR Years of applying spring nematicides:

1980 1980 only
1980+84 1980 repeated cumulatively in 1984

Whole plots

2. S NEM Spring nematicides:

ALDICARB
OXAMYL

3. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

0.0

Standard applications:
W. wheat (Series II): Manures: (5:14:30) at 340 kg. N at 170 kg as 'Nitro-Chalk'. Weedkiller: Chlortoluron at 3.5 kg in 250 l.
Potatoes (Series III): Manures: Magnesian limestone at 5.0 t. (10:10:15+4.5 Mg) at 2510 kg. Weedkillers: Linuron at 1.2 l with paraquat at 0.20 kg ion in 250 l. Fungicides: Fentin acetate with maneb (as 'Brestan 60' at 0.5 kg) in 250 l on one occasion with the insecticide. Fentin hydroxide at 0.28 kg in 250 l on five occasions, with the insecticide on the second occasion. Insecticide: Pirimicarb at 0.14 kg on two occasions. Haulm desiccant: Diquat at 0.8 kg ion in 250 l.

Seed: W. wheat: Avalon, sown at 200 kg.
Potatoes: Pentland Crown.

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/35

Cultivations, etc.:-

W. wheat (Series II): Heavy spring-tine cultivated, NPK applied: 24 Oct, 1983. Spring-tine cultivated with crumbler attached, seed sown: 25 Oct. Weedkiller applied: 28 Oct. N applied: 3 Apr, 1984. Combine harvested: 21 Aug.

Potatoes (Series III): Magnesian limestone applied: 30 Sept, 1983. Ploughed: 16 Nov. NPK with Mg applied: 3 Apr, 1984. Heavy spring-tine cultivated: 5 Apr. Treatments applied, rotary cultivated, potatoes planted: 11-12 Apr. Weedkillers applied: 4 May. Fentin acetate with maneb and insecticide applied: 19 June. Fentin hydroxide applied: 3 July, 1 Aug, 28 Aug, 12 Sept. Fentin hydroxide applied with insecticide: 18 July. Haulm desiccant applied: 27 Sept. Haulm mechanically destroyed: 28 Sept. Lifted: 8 Oct.

NOTE: Soil samples were taken before treatments were applied and after harvest for cyst and egg counts of Globodera rostochiensis.

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/35

POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

S NEM S NEM YR	ALDICARB	OXAMYL	MEAN
1980	33.3	31.6	32.5
1980+84	49.1	49.4	49.2
MEAN	41.2	40.5	40.9

SNEMRATE S NEM YR	2.5	5.0	7.5	10.0	MEAN
1980	29.9	30.7	36.6	32.6	32.5
1980+84	49.5	47.1	49.0	51.4	49.2
MEAN	39.7	38.9	42.8	42.0	40.9

SNEMRATE S NEM	2.5	5.0	7.5	10.0	MEAN
ALDICARB	39.4	39.2	45.3	41.0	41.2
OXAMYL	40.0	38.5	40.3	43.0	40.5
MEAN	39.7	38.9	42.8	42.0	40.9

	SNEMRATE	2.5	5.0	7.5	10.0
S NEM YR	S NEM				
1980	ALDICARB	29.6	30.8	38.9	34.0
	OXAMYL	30.2	30.6	34.3	31.3
1980+84	ALDICARB	49.1	47.6	51.7	48.0
	OXAMYL	49.9	46.5	46.4	54.8

RATE 0.0 28.6

GRAND MEAN 39.5

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

TABLE	S NEM	SNEMRATE	S NEM YR* S NEM	S NEM YR* SNEMRATE
SED	1.30	1.84	1.84	2.61

TABLE	S NEM SNEMRATE	S NEM YR* S NEM SNEMRATE & RATE 0.0
SED	2.61	3.69

* WITHIN THE SAME LEVEL OF S NEM YR ONLY

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/35

POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	52	5.21	13.2

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

S NEM S NEM YR	ALDICARB	OXAMYL	MEAN
1980	91.7	90.7	91.2
1980+84	95.8	95.1	95.5
MEAN	93.8	92.9	93.3

SNEMRATE S NEM YR	2.5	5.0	7.5	10.0	MEAN
1980	89.7	90.6	92.8	91.8	91.2
1980+84	95.0	95.5	95.6	95.8	95.5
MEAN	92.3	93.0	94.2	93.8	93.3

SNEMRATE S NEM	2.5	5.0	7.5	10.0	MEAN
ALDICARB	92.5	93.1	95.8	93.6	93.8
OXAMYL	92.1	93.0	92.5	94.0	92.9
MEAN	92.3	93.0	94.2	93.8	93.3

SNEMRATE S NEM YR S NEM	2.5	5.0	7.5	10.0
1980 ALDICARB	89.8	90.2	94.9	91.9
1980 OXAMYL	89.5	90.9	90.6	91.7
1980+84 ALDICARB	95.2	96.0	96.7	95.3
1980+84 OXAMYL	94.7	95.0	94.4	96.3

RATE 0.0 90.1

GRAND MEAN 93.0

PLOT AREA HARVESTED 0.00087

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/35

WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

A NEM(79) / S NEM YR	NONE	TELONE	MEAN
1979	7.42	7.49	7.46
1979+83	7.54	7.71	7.62
MEAN	7.48	7.60	7.54

S NEM / S NEM YR	ALDICARB	OXAMYL	MEAN
1979	7.49	7.42	7.46
1979+83	7.59	7.65	7.62
MEAN	7.54	7.54	7.54

S NEM / A NEM(79)	ALDICARB	OXAMYL	MEAN
NONE	7.38	7.57	7.48
TELONE	7.71	7.50	7.60
MEAN	7.54	7.54	7.54

SNEMRATE / S NEM YR	2.5	5.0	7.5	10.0	MEAN
1979	7.12	7.81	7.54	7.36	7.46
1979+83	7.84	8.01	7.14	7.51	7.62
MEAN	7.48	7.91	7.34	7.44	7.54

SNEMRATE / A NEM(79)	2.5	5.0	7.5	10.0	MEAN
NONE	7.55	7.61	7.35	7.40	7.48
TELONE	7.41	8.21	7.33	7.47	7.60
MEAN	7.48	7.91	7.34	7.44	7.54

SNEMRATE / S NEM	2.5	5.0	7.5	10.0	MEAN
ALDICARB	7.58	8.03	7.09	7.47	7.54
OXAMYL	7.38	7.78	7.58	7.40	7.54
MEAN	7.48	7.91	7.34	7.44	7.54

A NEM(79)	NONE		TELONE	
S NEM	ALDICARB	OXAMYL	ALDICARB	OXAMYL
S NEM YR				
1979	7.18	7.66	7.81	7.18
1979+83	7.58	7.49	7.60	7.82

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84/W/CS/35

WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

S NEM YRA	NEM(79)	SNEMRATE 2.5	5.0	7.5	10.0
1979	NONE	7.04	7.65	7.65	7.33
	TELONE	7.20	7.96	7.43	7.39
1979+83	NONE	8.05	7.56	7.05	7.48
	TELONE	7.62	8.46	7.23	7.54

S NEM YR	S NEM	SNEMRATE 2.5	5.0	7.5	10.0
1979	ALDICARB	7.62	7.86	7.17	7.33
	OXAMYL	6.61	7.76	7.90	7.39
1979+83	ALDICARB	7.54	8.21	7.02	7.61
	OXAMYL	8.14	7.81	7.26	7.41

A NEM(79)	SNEMRATE S NEM	2.5	5.0	7.5	10.0
NONE	ALDICARB	7.14	7.91	6.99	7.48
	OXAMYL	7.95	7.30	7.70	7.33
TELONE	ALDICARB	8.02	8.16	7.19	7.46
	OXAMYL	6.80	8.26	7.46	7.47

S NEM YRA	NEM(79)	SNEMRATE S NEM	2.5	5.0	7.5	10.0
1979	NONE	ALDICARB	7.00	7.82	6.99	6.91
		OXAMYL	7.08	7.48	8.31	7.76
	TELONE	ALDICARB	8.25	7.89	7.35	7.75
		OXAMYL	6.15	8.03	7.50	7.03
1979+83	NONE	ALDICARB	7.29	7.99	7.00	8.05
		OXAMYL	8.82	7.13	7.10	6.90
	TELONE	ALDICARB	7.78	8.43	7.03	7.17
		OXAMYL	7.46	8.49	7.43	7.91

RATE 0.0 6.40

GRAND MEAN 7.41

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

TABLE	A NEM(79)	S NEM	SNEMRATE
SED	0.217	0.217	0.306

TABLE	S NEM YR* A NEM(79)	S NEM YR* S NEM	A NEM(79) S NEM	S NEM YR* SNEMRATE
SED	0.306	0.306	0.306	0.433

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/35

WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

TABLE	A NEM(79) SNEMRATE	S NEM SNEMRATE	S NEM YR* A NEM(79) S NEM	S NEM YR* A NEM(79) SNEMRATE
SED	0.433	0.433	0.433	0.613

TABLE	S NEM YR* S NEM SNEMRATE	A NEM(79) S NEM SNEMRATE	S NEM YR* A NEM(79) S NEM SNEMRATE
SED	0.613	0.613	0.866

* WITHIN THE SAME LEVEL OF S NEM YR ONLY
SED FOR COMPARING RATE 0.0 WITH ANY ITEM
IN S NEM YR.A NEM(79).S NEM.SNEMRATE TABLE IS 0.685

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

STRATUM	DF	SE	CV%
BLOCK.WP	36	0.866	11.7

GRAIN MEAN DM% 89.3

PLOT AREA HARVESTED 0.00168

https://doi.org/10.23637/ERADOC-1-32

84/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 14th year, forage maize.

For previous years see 71/W/CS/66(t), 72/W/CS/66(t) and 73-83/W/CS/66.

Design: 2 blocks of 4 plots split into 4.

Whole plot dimensions: 2.13 x 16.5.

Treatments: All combinations of:-

Whole plots

1. DAZOMET(79) Dazomet (kg per annum) cumulative 1971-79, none since:

   0
   450

2. DAZOMET(84) Dazomet (kg) in 1982, 1983 and 1984:

   0
   450

Sub plots

3. N+FNGRES Nitrogen fertilizer as 'Nitro-Chalk' cumulative to 1982 and 1983 and fungicide residues from 1983:

NONE	None
N78+N120	78 kg N on 5 Apr, 1984, 120 kg N to seedbed on 21 May
N120	120 kg N to seedbed on 21 May
N120(CY)	120 kg N to seedbed + residues of 50 kg cyprofuram to seedbed in 1983

NOTE: Sub plot treatments were superimposed on previous cumulative N treatments 1971-81.

Basal applications: Manures: (0:18:36) at 490 kg. Weedkiller: Atrazine at 1.1 kg in 280 l.

Seed: Beaupre, sown at 103,000 seeds per hectare.

Cultivations, etc.:- Ploughed: 15 Nov, 1983. PK applied: 28 Mar, 1984. Spring-tine cultivated with crumbler attached: 4 Apr. Dazomet and early N treatments applied, rotary cultivated: 5 Apr. Weedkiller applied, spring-tine cultivated, with crumbler attached, twice. Seed sown: 16 May. Seedbed N applied: 21 May. Hand harvested: 17 Oct.

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/66

NOTE: Soil samples were taken after harvest for counts of ectoparasitic nematodes.

FORAGE DRY MATTER TONNES/HECTARE

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

DAZOMET(84)	0	450	MEAN
DAZOMET(79)			
0	13.61	14.19	13.90
450	12.74	15.40	14.07
MEAN	13.18	14.80	13.99

N+FNGRES	NONE	N78+N120	N120	N120(CY)	MEAN
DAZOMET(79)					
0	7.94	16.94	15.09	15.63	13.90
450	8.71	16.41	14.81	16.35	14.07
MEAN	8.33	16.68	14.95	15.99	13.99

N+FNGRES	NONE	N78+N120	N120	N120(CY)	MEAN
DAZOMET(84)					
0	7.09	16.13	14.74	14.75	13.18
450	9.56	17.23	15.17	17.23	14.80
MEAN	8.33	16.68	14.95	15.99	13.99

N+FNGRES		NONE	N78+N120	N120	N120(CY)
DAZOMET(79)	DAZOMET(84)				
0	0	7.60	16.92	14.48	15.45
	450	8.29	16.97	15.70	15.80
450	0	6.59	15.34	14.99	14.04
	450	10.83	17.49	14.63	18.66

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

TABLE	N+FNGRES	DAZOMET(79)* N+FNGRES	DAZOMET(84)* N+FNGRES	DAZOMET(79)* DAZOMET(84) N+FNGRES
SED	0.724	1.023	1.023	1.447

* WITHIN SAME LEVEL OF DAZOMET(79) OR DAZOMET(84) OR BOTH

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	12	1.447	10.3

FORAGE MEAN DM% 33.7

SUB PLOT AREA HARVESTED 0.00039

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/99

EFFECTS OF BREAKS ON TAKE-ALL

Object: To study factors affecting the incidence of take-all (Gaeumannomyces graminis) and their effects on yields of s. cereals - Woburn, Butt Furlong.

Sponsor: D. Hornby.

The 13th year, s. barley, s. wheat.

For previous years see 72/W/CS/99(t) and 73-83/W/CS/99.

Design: 2 randomised blocks of 9 plots, 6 of which are split into 2.

Whole plot dimensions: 5.34 x 15.2.

Treatments: All combinations of:-

Whole plots

1. TREATMNT(1) Crop sequences; soil sterilant and inoculum in 1979:

	72	73	74	75	76	77	78	79	80	81-84
B 11(S)A	F	BE	B	B	B	B	B	B(S)	B	B
B 9 A	B	B	F	BE	B	B	B	B	B	B
B 8(SI)A	B	B	B	F	BE	B	B	B(SI)	B	B
B 7(I)A	B	B	B	B	F	BE	B	B(I)	B	B
W 10	B	F	BE	B	B	B	B	B	B	W

All sequences were in s. barley 1968-71

Sub plots

2. INOC RES Residues of take-all inoculum:

0	None
I	Inoculated (in 1980 and 1983 to s. barley, in 1981 and 1982 to s. wheat)

plus an extra combination of:

Whole plots

1. TREATMNT(2) Crop sequence:

B 17	S. barley 1968-84

Sub plots

2. AUT CROP Crop in autumn 1983 before sowing in spring 1984:

NONE	None
BARLEY	Barley sown 12 Oct, destroyed 15 Mar, resown 16 Mar.

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84/W/CS/99

plus three extra treatments testing crop sequences alone (all s. barley 1968-71):

EXTRA

	72	73	74	75	76	77	78	79	80	81	82-84
B 3	F	B	B	B	B	B	B	F	BE	0	B
B 5	B	B	B	B	B	F	BE	0	B	B	B
B 4	B	B	B	B	B	B	F	BE	0	B	B

B = S. barley, W = S. wheat, BE = S. beans, 0 = S. oats, F = Fallow
(S) = Soil sterilant (1979), formalin.
(I) & I = Inoculum of take-all applied on colonised autoclaved oats, in the ratio of three oats to one s. barley or s. wheat seed, broadcast at 310 kg on the surface and rotary harrowed in 1980, 1981 and 1983, combine drilled in 1979.
A = Barley sown in autumn, destroyed and resown in spring.

Standard applications:
S. Wheat and s. barley: Manures: Magnesian limestone at 7.5 t. (20:10:10) at 420 kg, none to autumn-sown barley. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 250 l.

Seeds: S. barley: Triumph, dressed with ethirimol, sown at 170 kg in autumn and 160 kg in spring.
S. Wheat: Sicco, sown at 190 kg.

Cultivations, etc.:-
S. barley: Glyphosate applied: 7 Sept, 1983. Magnesian limestone applied: 30 Sept. Ploughed: 10 Oct. Autumn-sown plots spring-tine cultivated with crumbler attached, seed sown: 12 Oct. NPK applied: 14 Mar, 1984. Spike rotary cultivated: 15 Mar. Spring-tine cultivated with crumbler attached, seed sown: 16 Mar. 'Brittox' applied: 15 May. Combine harvested: 14 Aug.

S. wheat: Glyphosate applied: 7 Sept, 1983. Magnesian limestone applied: 30 Sept. Ploughed: 10 Oct. NPK applied, spike rotary cultivated: 14 Mar, 1984. Spring-tine cultivated with crumbler attached, seed sown: 16 Mar. 'Brittox' applied: 15 May. Combine harvested: 28 Aug.

NOTE: Plant samples were taken in July for incidence of take-all.

GRAIN TONNES/HECTARE

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

TREATMNT(1) INOC RES	B 11(S)A	B 9 A	B 8(SI)A	B 7(I)A	W 10	MEAN
0	5.26	5.43	4.81	5.19	3.75	4.89
I	5.16	5.77	5.33	5.61	4.09	5.19
MEAN	5.21	5.60	5.07	5.40	3.92	5.04

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84/W/CS/99

GRAIN TONNES/HECTARE

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

AUT CROP TREATMNT(2)	NONE	BARLEY	MEAN
B 17	5.20	6.21	5.70

EXTRA	B 3	B 5	B 4	MEAN
	5.95	6.38	6.30	6.21

GRAND MEAN 5.50

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

TABLE	AUT CROP	EXTRA	INOC RES	TREATMNT(1)	INOC RES TREATMNT(1)
SED	0.497	0.560	0.222	0.560	0.661

EXCEPT WHEN COMPARING MEANS WITHIN THE SAME LEVEL(S) OF:
TREATMNT(1) 0.497

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

STRATUM	DF	SE	CV%
BLOCK.WP	8	0.560	10.2
BLOCK.WP.SP	12	0.497	9.0

MEAN DM% 86.7

PLOT AREA HARVESTED 0.00193

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84/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.

The 11th year, forage maize.

For previous years see 74-83/R/CS/133.

Design: 3 randomised blocks of 9 plots.

Whole plot dimensions: 2.13 x 18.3.

Treatments:-

CHEMICAL	Chemicals applied annually except as 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 and 1981)
PERMETH	Permethrin, as foliar spray (0.15 kg in 1979, 0.05 kg in 1984)
PHORATE	Phorate, 1.68 kg as granules to seedbed
PIRIMICA	Pirimicarb, 0.14 kg as foliar spray (1979 & 1984 only)
BE+DA+PH	Benomyl + dazomet (not applied 1975, 1979 & 1981) + phorate, at above rates and times

NOTE: Permethrin and pirimicarb were applied in 340 l in 1979, 220 l in 1984.

Basal applications: Manures: 'Nitro-Chalk' at 660 kg.
Weedkiller: Atrazine at 1.7 l in 220 l.

Seed: Fronica, sown at 100,000 seeds per hectare.

Cultivations, etc.:- Ploughed: 3 Nov, 1983. Spring-tine cultivated dazomet plots only: 21 Mar, 1984. Dazomet applied and these plots only rotary cultivated: 22 Mar. Spring-tine cultivated: 10 May. Remaining seedbed treatments applied, power harrowed, seed sown: 11 May. Weedkiller applied: 14 May. N applied: 18 May. Foliar treatments applied: 17 July. Harvested by hand: 30 Oct.

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/133

FORAGE MAIZE DRY MATTER TONNES/HECTARE

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

CHEMICAL	
NONE	11.62
ALDICARB	11.53
BENOMYL	11.26
DAZOMET	12.81
PERMETH	11.71
PHORATE	11.71
PIRIMICA	11.66
BE+DA+PH	15.33
MEAN	12.14

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

TABLE	CHEMICAL	
SED	0.959	MIN REP
	0.831	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	17	1.175	9.7

FORAGE MEAN DM% 33.6

PLOT AREA HARVESTED 0.00059

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/140

CHEMICAL REFERENCE PLOTS

Object: To study the persistence in soil of agricultural chemicals applied annually, singly and in combination and their effects on soil microflora and on yield of continuous s. barley - Long Hoos V 3.

Sponsors: G.G. Briggs, R. MacDonald.

The 11th year, s. barley.

For previous years see 74-83/R/CS/140.

Design: Single replicate of 32 plots.

Whole plot dimensions: 4.06 x 4.57.

Treatments, applied cumulatively except as stated:

All combinations of:-

1.	WEEDKLLR	Weedkiller in autumn:
	NONE	None
	GLYPHOS	Glyphosate at 1.5 kg to barley stubble each autumn since 1979.
2.	FUNGCIDE(1)	Fungicide in autumn:
	NONE	None
	TRIADIM	Triadimefon at 0.25 kg in autumn 1981 and 1982, 0.28 kg in autumn 1983.
3.	FUNGCIDE(2)	Fungicide in spring:
	NONE	None
	BENOMYL	Benomyl at 4 kg to the seedbed
4.	INSCTCDE	Insecticide:
	NONE	None
	CHLORFEN	Chlorfenvinphos at 2 kg to the seedbed
5.	NEMACIDE	Nematicide:
	NONE	None
	ALDICARB	Aldicarb at 6 kg to the seedbed as granules

NOTE: Glyphosate and triadimefon were applied in 340 l on 1 Nov, 1983. Other treatments were applied on 2 Apr, 1984.

Basal applications: Manures: 'Nitro-Chalk' at 560 kg. Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 4.9 l) in 220 l.

Seed: Triumph, seed not dressed, sown at 160 kg.

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84/R/CS/140

Cultivations, etc.:- Ploughed: 9 Dec, 1983. N applied: 22 Mar, 1984. Spring-tine cultivated, power harrowed, seed sown: 2 Apr. Weedkillers applied: 31 May. Combine harvested: 14 Aug.

NOTE: Mildew and aphids were assessed twice during the season.

GRAIN TONNES/HECTARE

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

FUNGCIDE(1)	NONE	TRIADIM	MEAN
WEEDKLLR			
NONE	5.16	5.20	5.18
GLYPHOS	5.09	5.11	5.10
MEAN	5.12	5.16	5.14

FUNGCIDE(2)	NONE	BENOMYL	MEAN
WEEDKLLR			
NONE	5.17	5.19	5.18
GLYPHOS	5.02	5.17	5.10
MEAN	5.09	5.18	5.14

FUNGCIDE(2)	NONE	BENOMYL	MEAN
FUNGCIDE(1)			
NONE	5.10	5.14	5.12
TRIADIM	5.09	5.23	5.16
MEAN	5.09	5.18	5.14

INSCTCDE	NONE	CHLORFEN	MEAN
WEEDKLLR			
NONE	5.26	5.10	5.18
GLYPHOS	5.00	5.19	5.10
MEAN	5.13	5.15	5.14

INSCTCDE	NONE	CHLORFEN	MEAN
FUNGCIDE(1)			
NONE	5.13	5.11	5.12
TRIADIM	5.13	5.18	5.16
MEAN	5.13	5.15	5.14

INSCTCDE	NONE	CHLORFEN	MEAN
FUNGCIDE(2)			
NONE	5.07	5.12	5.09
BENOMYL	5.20	5.17	5.18
MEAN	5.13	5.15	5.14

NEMACIDE	NONE	ALDICARB	MEAN
WEEDKLLR			
NONE	5.02	5.33	5.18
GLYPHOS	4.85	5.34	5.10
MEAN	4.94	5.34	5.14

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GRAIN TONNES/HECTARE

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

NEMACIDE	NONE	ALDICARB	MEAN
FUNGCIDE(1)			
NONE	4.92	5.32	5.12
TRIADIM	4.95	5.36	5.16
MEAN	4.94	5.34	5.14

NEMACIDE	NONE	ALDICARB	MEAN
FUNGCIDE(2)			
NONE	4.93	5.26	5.09
BENOMYL	4.95	5.42	5.18
MEAN	4.94	5.34	5.14

NEMACIDE	NONE	ALDICARB	MEAN
INSCTCDE			
NONE	4.95	5.31	5.13
CHLORFEN	4.93	5.37	5.15
MEAN	4.94	5.34	5.14

FUNGCIDE(1)	NONE		TRIADIM	
FUNGCIDE(2)	NONE	BENOMYL	NONE	BENOMYL
WEEDKLLR				
NONE	5.16	5.15	5.17	5.23
GLYPHOS	5.05	5.13	5.00	5.22

FUNGCIDE(1)	NONE		TRIADIM	
INSCTCDE	NONE	CHLORFEN	NONE	CHLORFEN
WEEDKLLR				
NONE	5.30	5.01	5.22	5.19
GLYPHOS	4.96	5.21	5.05	5.17

FUNGCIDE(2)	NONE		BENOMYL	
INSCTCDE	NONE	CHLORFEN	NONE	CHLORFEN
WEEDKLLR				
NONE	5.19	5.14	5.33	5.05
GLYPHOS	4.94	5.10	5.06	5.28

FUNGCIDE(2)	NONE		BENOMYL	
INSCTCDE	NONE	CHLORFEN	NONE	CHLORFEN
FUNGCIDE(1)				
NONE	5.15	5.06	5.11	5.16
TRIADIM	4.98	5.19	5.28	5.17

FUNGCIDE(1)	NONE		TRIADIM	
NEMACIDE	NONE	ALDICARB	NONE	ALDICARB
WEEDKLLR				
NONE	4.97	5.34	5.08	5.33
GLYPHOS	4.88	5.30	4.83	5.39

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/140

GRAIN TONNES/HECTARE

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

FUNGCIDE(2)	NONE		BENOMYL	
NEMACIDE	NONE	ALDICARB	NONE	ALDICARB
WEEDKLLR				
NONE	5.11	5.22	4.94	5.44
GLYPHOS	4.75	5.30	4.96	5.39

FUNGCIDE(2)	NONE		BENOMYL	
NEMACIDE	NONE	ALDICARB	NONE	ALDICARB
FUNGCIDE(1)				
NONE	4.95	5.26	4.90	5.38
TRIADIM	4.91	5.26	5.00	5.45

INSCTCDE	NONE		CHLORFEN	
NEMACIDE	NONE	ALDICARB	NONE	ALDICARB
WEEDKLLR				
NONE	5.11	5.41	4.94	5.25
GLYPHOS	4.80	5.21	4.91	5.48

INSCTCDE	NONE		CHLORFEN	
NEMACIDE	NONE	ALDICARB	NONE	ALDICARB
FUNGCIDE(1)				
NONE	4.97	5.30	4.88	5.34
TRIADIM	4.94	5.32	4.97	5.39

INSCTCDE	NONE		CHLORFEN	
NEMACIDE	NONE	ALDICARB	NONE	ALDICARB
FUNGCIDE(2)				
NONE	4.89	5.24	4.97	5.28
BENOMYL	5.01	5.38	4.88	5.45

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

MARGINS OF TWO FACTOR TABLES	0.077
TWO FACTOR TABLES	0.109
THREE FACTOR TABLES	0.155

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

STRATUM	DF	SE	CV%
WP	6	0.219	4.3

GRAIN MEAN DM% 86.8

PLOT AREA HARVESTED 0.00075

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/212

SEASONAL EFFECTS OF TAKE-ALL

Object: To study the incidence of take-all (Gaeumannomyces graminis) in continuous w. wheat and in first and second w. wheats after a break - Great Harpenden I.

Sponsor: D. Hornby.

The seventh year, s. beans, w. wheat.

For previous years see 78-83/R/CS/212.

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 5.33 x 31.4.

Treatments:

PREVCROP Previous crops before w. wheat 1984:

	1978	1979	1980	1981	1982	1983
CONT W	W	W	W	W	W	W
FIRST W	BE	W	W	W	BE	W
BEANS	W	BE	W	W	W	BE

BE = s. beans, W = w. wheat

NOTE: An additional crop sequence was in s. beans 1984, yields not taken.

Standard applications:
Both crops: Weedkiller: Chlortoluron at 3.5 kg in 250 l.
W. wheat: Manures: (0:24:24) at 310 kg, combine drilled. 'Nitro-Chalk' at 350 kg. Weedkillers: Cyanazine at 0.3 l with mecoprop at 2.0 l in 250 l.

Seed: W. wheat: Avalon, sown at 190 kg.
S. beans: Minden, sown at 200 kg.

Cultivations, etc.:-
Both crops: Ploughed: 16 Sept, 1983. Chlortoluron applied: 27 Sept.
W. wheat: Spring-tine cultivated twice, seed sown: 23 Sept, 1983. N applied, cyanazine with mecoprop applied: 12 Apr, 1984. Combine harvested: 21 Aug.
S. beans: Deep spring-tine cultivated: 20 Mar, 1984. Rotary harrowed, seed sown: 21 Mar. Combine harvested: 31 Aug.

NOTE: Take-all was assessed in soil and in w. wheat plants.

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84/R/CS/212

GRAIN TONNES/HECTARE

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

PREVCROP	
CONT W	5.79
FIRST W	5.59
BEANS	6.16
MEAN	5.85

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

TABLE	PREVCROP
SED	0.161

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

STRATUM	DF	SE	CV%
BLOCK.WP	4	0.198	3.4

GRAIN MEAN DM% 86.8

PLOT AREA HARVESTED 0.00434

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/216 and 84/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), I.B. Warboys, J.M. Wilkes (Wye College).

The seventh year, s. barley.

For previous years see 78-83/R&W/CS/216.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 4.27 x 13.7.

Treatments:

TREATMNT	Machines and incorporation of extra P and K into the subsoil:
000 00	Not subsoiled, no P or K
F00 F0	Farm standard, unwinged, subsoiler, no P or K, autumn 1977 & autumn 1979
N00 N0	N.C.A.E. winged subsoiler, no P or K, autumn 1977 & autumn 1979
NPK N0	N.C.A.E. winged subsoiler, P and K applied autumn 1977, subsoiled only autumn 1979
W00 00	Wye double digger, no P or K, autumn 1977 only
WPK 00	Wye double digger, P and K applied, autumn 1977 only

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) In autumn 1977 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). In autumn 1979 it was set to work at a depth of 56 cm at intervals of 76 cm Delharding (R) and 142 cm Road Piece (W).

(3) In autumn 1977 the N.C.A.E. winged subsoiler had a single tine 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; fertilizer was applied behind the subsoiling points. In autumn 1979 the winged subsoiler had three tines, the centre tine preceding the others, all set to work at a depth of 40 cm spaced 40 cm apart.

(4) The Wye double digger turned a furrow with a conventional plough to a depth of 23 cm and at the same time rotary cultivated the bottom of the furrow to a further depth of 15 cm. When applying P & K this was distributed ahead of the rotary cultivator.

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84/R/CS/216 and 84/W/CS/216

Basal applications:-
Delharding (R): Manures: (20:10:10) at 560 kg. Weedkillers: Paraquat at 0.50 kg ion in 250 l. 3, 6-dichloropicolinic acid 0.07 kg with bromoxynil octanoate at 0.34 kg and mecoprop at 2.5 kg in 250 l applied with the fungicide. Fungicide: Tridemorph at 0.52 kg.
Road Piece (W): Manures: (20:10:10) at 760 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 250 l applied with the fungicide. Fungicide: Ethirimol at 0.35 kg.

Seed: Both sites: Triumph, dressed with triadimenol plus fuberidazole, sown at 160 kg.

Cultivations, etc.:-
Delharding(R): Paraquat applied: 26 Aug, 1983. Ploughed: 10 Oct. NPK applied: 16 Mar, 1984. Spring-tine cultivated twice, seed sown: 19 Mar. 3, 6-dichloropicolinic acid, bromoxynil octanoate, mecoprop and fungicide applied: 23 May. Combine harvested: 17 Aug.
Road Piece (W): Glyphosate applied: 29 Sept, 1983. Ploughed: 15 Nov. NPK applied, spring-tine cultivated, spring-tine cultivated with crumbler attached, seed sown: 9 Mar, 1984. 'Brittox' and fungicide applied: 15 May. Combine harvested: 15 Aug.

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/216

GRAIN TONNES/HECTARE

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

TREATMNT	000 00	F00 F0	N00 N0	NPK N0	W00 00	WPK 00	MEAN
	5.75	6.36	6.39	6.65	6.21	7.02	6.40

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

TABLE	TREATMNT
SED	0.723

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.885	13.8

GRAIN MEAN DM% 83.8

PLOT AREA HARVESTED 0.00260

84/W/CS/216

GRAIN TONNES/HECTARE

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

TREATMNT	000 00	F00 F0	N00 N0	NPK N0	W00 00	WPK 00	MEAN
	6.95	7.48	7.39	7.61	6.86	7.27	7.26

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

TABLE	TREATMNT
SED	0.403

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.493	6.8

GRAIN MEAN DM% 86.3

PLOT AREA HARVESTED 0.00251

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245

MINIMUM CULTIVATION AND DEEP PK

Object: To study the effects of thorough subsoil disturbance and the incorporation of P and K into the subsoil on w. wheat and w. barley either sown conventionally or direct drilled - Woburn Warren Field I and II.

Sponsors: A.E. Johnston, J. McEwen, R.D. Prew, R.J. Gutteridge, P.H. Nicholls, C.J. Rawlinson.

The fifth year, w. wheat and w. barley.

For previous years see 80-83/W/CS/245.

Column plot dimensions: 4.27 x 57.6.

Design: 3 series each of 20 x 4 criss cross.

Treatments: All combinations of:-

Series:

1. SER CROP — Series, crops and previous cropping:

SER1 WB2	Series I, w. barley in rotation after w. oilseed rape, w. wheat
SER2 WW7	Series II, w. wheat, seventh cereal after a break crop
SER3 WB7	Series III, w. barley, seventh cereal after a break crop

Column plots: All combinations (duplicated) of:

2. PK SUB — Extra PK and subsoil treatments:

---	None, mouldboard ploughed
--S	None, subsoiled
PKS	PK to subsoil

3. YEAR — Years of applying PK SUB:

1980	In autumn 1979
1983	In autumn 1979 and in autumn 1982

4. DRILL — Drills and associated cultivations:

CNVNTIAL	Mouldboard ploughed, conventionally drilled
DIRECT	Direct drilled (duplicated) (conventionally drilled in years when factor 2 involves autumn ploughing)

Row plots:

5. N. PATH — Nitrogen fertilizer in spring, and pathogen control:

75 ENHD	75 kg N	enhanced pathogen control
150 ENHD	150 kg N	enhanced pathogen control
225 ENHD	225 kg N	enhanced pathogen control
150 STND	150 kg N	standard pathogen control

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84/W/CS/245

plus two extra column plot treatments, in all combinations with row plots above:-

EXTRA

TPK 80 D — PK applied to topsoil and mouldboard ploughed in autumn 1979, direct drilled since

TPK 80 C — PK as above, mouldboard ploughed, conventionally drilled each year

NOTES: (1) Rates of extra P and K were 500 kg P_2O_5, as superphosphate, 250 kg K_2O as muriate of potash.

(2) Subsoiling was done with the Wye double-digger which turns a furrow with a conventional plough share, to a depth of 23 cm, and at the same time rotary cultivates the bottom of the adjacent furrow to a further depth of 15 cm. When applying P and K this was distributed ahead of the rotary cultivator.

(3) The topsoil PK dressing was equally divided before and after ploughing.

(4) Standard pathogen control was conventional seed dressings. Enhanced pathogen control had in addition prochloraz at 0.4 l in 250 l on 17 April, 1984 and propiconazole at 0.12 kg in 250 l on 14 May.

Standard applications:

Series II, w. wheat, series I and III, w. barley: Manures: (5:14:30) at 340 kg combine drilled. Weedkillers: Paraquat at 0.50 kg ion in 250 l. Chlortoluron at 3.5 kg in 250 l. Dicamba with mecoprop and MCPA (as 'Herrisol' at 5.0 l) in 250 l.

Series II, w. wheat: Growth regulator: Chlormequat chloride at 1.1 kg in 250 l. Insecticide: Pirimicarb at 0.14 kg in 250 l.

Series I and III, w. barley: Growth regulator: Mepiquat chloride with ethephon (as 'Terpal' at 2.0 l with 'Citowett', a wetting agent, at 0.09 l) in 250 l.

Seed: W. wheat: Avalon, sown at 200 kg.
W. barley: Igri, sown at 170 kg.

Cultivations, etc.:-

Series I and III: W. barley: Straw burnt: 18 Aug, 1983. Spring-tine cultivated: 19 Aug. Ploughed CNVNTIAL plots: 12 Sept. Rotary cultivated CNVNTIAL plots: 19 Sept. Paraquat applied to DIRECT plots, N applied: 20 Sept. Seed sown: 26 Sept. Chlortoluron applied: 29 Sept. Paraquat applied to all plots Series I only: 3 Oct. N treatments applied: 5 Apr, 1984. 'Herrisol' applied: 19 Apr. Growth regulator and wetting agent applied: 2 May. Combine harvested: 27 July.

Series II: W. wheat: Straw burnt: 18 Aug, 1983. Spring-tine cultivated: 19 Aug. Ploughed CNVNTIAL plots: 13 Sept. Rotary cultivated CNVNTIAL plots: 19 Sept. Paraquat applied to DIRECT plots, N applied: 20 Sept. Seed sown: 27 Sept. Chlortoluron applied: 29 Sept. N treatments applied: 5 Apr, 1984. Growth regulator applied, 'Herrisol' applied: 17 Apr. Insecticide applied: 29 June. Combine harvested: 20 Aug.

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

PK SUB N PATH	---	--S	PKS	MEAN
75 ENHD	6.91	6.87	7.12	6.97
150 ENHD	8.02	7.68	8.15	7.95
225 ENHD	7.56	8.34	8.14	8.01
150 STND	8.03	7.83	8.12	7.99
MEAN	7.63	7.68	7.88	7.73

YEAR N PATH	1980	1983	MEAN
75 ENHD	7.04	6.90	6.97
150 ENHD	8.22	7.68	7.95
225 ENHD	8.33	7.70	8.01
150 STND	8.52	7.47	7.99
MEAN	8.03	7.44	7.73

YEAR PK SUB	1980	1983	MEAN
---	7.87	7.39	7.63
--S	7.94	7.42	7.68
PKS	8.27	7.50	7.88
MEAN	8.03	7.44	7.73

DRILL N PATH	CNVNTIAL	DIRECT	MEAN
75 ENHD	6.41	7.25	6.97
150 ENHD	7.52	8.16	7.95
225 ENHD	7.20	8.42	8.01
150 STND	7.69	8.15	7.99
MEAN	7.21	7.99	7.73

DRILL PK SUB	CNVNTIAL	DIRECT	MEAN
---	7.12	7.88	7.63
--S	6.81	8.12	7.68
PKS	7.69	7.98	7.88
MEAN	7.21	7.99	7.73

DRILL YEAR	CNVNTIAL	DIRECT	MEAN
1980	7.22	8.43	8.03
1983	7.19	7.56	7.44
MEAN	7.21	7.99	7.73

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

N PATH EXTRA	75 ENHD	150 ENHD	225 ENHD	150 STND	MEAN
TPK 80 D	7.46	8.56	8.54	7.71	8.07
TPK 80 C	7.08	7.68	7.63	7.44	7.46
MEAN	7.27	8.12	8.08	7.58	7.76

PK SUB	---		--S		PKS	
YEAR	1980	1983	1980	1983	1980	1983
N PATH						
75 ENHD	6.99	6.83	6.89	6.86	7.23	7.01
150 ENHD	8.23	7.81	7.82	7.54	8.61	7.69
225 ENHD	7.73	7.38	8.75	7.93	8.50	7.78
150 STND	8.54	7.53	8.30	7.36	8.73	7.52

PK SUB	---		--S		PKS	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH						
75 ENHD	6.44	7.15	6.04	7.29	6.75	7.30
150 ENHD	7.76	8.15	6.98	8.03	7.82	8.31
225 ENHD	6.79	7.94	6.79	9.12	8.01	8.21
150 STND	7.50	8.30	7.40	8.05	8.17	8.10

YEAR	1980		1983	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH				
75 ENHD	6.35	7.38	6.48	7.11
150 ENHD	7.44	8.61	7.61	7.71
225 ENHD	7.14	8.92	7.26	7.92
150 STND	7.97	8.80	7.41	7.50

YEAR	1980		1983	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
PK SUB				
---	7.29	8.17	6.96	7.60
--S	6.46	8.68	7.15	7.56
PKS	7.92	8.44	7.45	7.52

YEAR		1980		1983	
DRILL		CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH	PK SUB				
75 ENHD	---	6.54	7.22	6.35	7.07
	--S	5.77	7.45	6.31	7.13
	PKS	6.73	7.49	6.78	7.12
150 ENHD	---	7.85	8.42	7.68	7.88
	--S	6.49	8.49	7.48	7.57
	PKS	7.97	8.93	7.67	7.69
225 ENHD	---	6.87	8.17	6.72	7.72
	--S	6.24	10.01	7.34	8.23
	PKS	8.30	8.60	7.71	7.82
150 STND	---	7.89	8.86	7.10	7.74
	--S	7.33	8.79	7.47	7.30
	PKS	8.69	8.75	7.65	7.45

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84/W/CS/245 WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

TABLE	EXTRA	PK SUB	YEAR	DRILL	
SED	1.071	0.437	0.357	0.379	

TABLE	N PATH* PK SUB	N PATH* YEAR	PK SUB YEAR	N PATH* DRILL	
SED	0.526	0.430	0.618	0.456	MAX-MIN

TABLE	PK SUB DRILL	YEAR DRILL	N PATH* EXTRA	N PATH* PK SUB YEAR	
SED	0.757	0.618			MIN REP
	0.656	0.536	1.289	0.744	MAX-MIN
	0.536	0.437			MAX REP

TABLE	N PATH* PK SUB DRILL	N PATH* YEAR DRILL	PK SUB YEAR DRILL	N PATH* PK SUB YEAR DRILL	
SED	0.911	0.744	1.071	1.289	MIN REP
	0.789	0.644	0.928	1.116	MAX-MIN
	0.644	0.526	0.757	0.911	MAX REP

* WITHIN THE SAME LEVEL OF N PATH ONLY

	DRILL
MIN-REP	CNVNTIAL
MAX-REP	DIRECT
MAX-MIN	DIRECT V CNVNTIAL

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

STRATUM	DF	SE	CV%
WP1	6	0.757	9.8
WP1.WP2	18	0.585	7.6

GRAIN MEAN DM% 87.7

SUB PLOT AREA HARVESTED 0.00341

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER BARLEY SERIES I

GRAIN TONNES/HECTARE

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

PK SUB N PATH	---	--S	PKS	MEAN
75 ENHD	8.11	7.83	7.69	7.88
150 ENHD	8.86	8.66	8.90	8.81
225 ENHD	9.23	9.10	9.08	9.14
150 STND	8.66	8.44	8.37	8.49
MEAN	8.72	8.51	8.51	8.58

YEAR N PATH	1980	1983	MEAN
75 ENHD	7.80	7.96	7.88
150 ENHD	8.91	8.70	8.81
225 ENHD	9.48	8.79	9.14
150 STND	8.60	8.39	8.49
MEAN	8.70	8.46	8.58

YEAR PK SUB	1980	1983	MEAN
---	8.55	8.89	8.72
--S	8.80	8.21	8.51
PKS	8.74	8.28	8.51
MEAN	8.70	8.46	8.58

DRILL N PATH	CNVNTIAL	DIRECT	MEAN
75 ENHD	7.17	8.23	7.88
150 ENHD	7.84	9.29	8.81
225 ENHD	8.04	9.69	9.14
150 STND	7.81	8.84	8.49
MEAN	7.71	9.01	8.58

DRILL PK SUB	CNVNTIAL	DIRECT	MEAN
---	7.74	9.20	8.72
--S	7.63	8.95	8.51
PKS	7.77	8.88	8.51
MEAN	7.71	9.01	8.58

DRILL YEAR	CNVNTIAL	DIRECT	MEAN
1980	7.81	9.14	8.70
1983	7.62	8.88	8.46
MEAN	7.71	9.01	8.58

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER BARLEY SERIES I

GRAIN TONNES/HECTARE

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

N PATH EXTRA	75 ENHD	150 ENHD	225 ENHD	150 STND	MEAN
TPK 80 D	7.48	7.93	8.91	8.93	8.31
TPK 80 C	6.52	7.94	8.41	7.39	7.57
MEAN	7.00	7.94	8.66	8.16	7.94

PK SUB	---		--S		PKS	
YEAR	1980	1983	1980	1983	1980	1983
N PATH						
75 ENHD	7.89	8.33	7.74	7.92	7.75	7.63
150 ENHD	8.55	9.17	9.07	8.25	9.11	8.68
225 ENHD	9.24	9.23	9.68	8.51	9.54	8.62
150 STND	8.51	8.82	8.73	8.15	8.56	8.19

PK SUB	---		--S		PKS	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH						
75 ENHD	7.29	8.52	7.26	8.11	6.98	8.05
150 ENHD	7.82	9.38	7.49	9.24	8.22	9.24
225 ENHD	7.92	9.89	7.90	9.69	8.29	9.47
150 STND	7.95	9.02	7.87	8.73	7.60	8.76

YEAR	1980		1983	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH				
75 ENHD	6.91	8.24	7.43	8.22
150 ENHD	8.05	9.34	7.64	9.23
225 ENHD	8.28	10.08	7.79	9.29
150 STND	7.99	8.90	7.62	8.77

YEAR	1980		1983	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
PK SUB				
---	7.71	8.97	7.78	9.44
--S	8.32	9.05	6.94	8.84
PKS	7.40	9.41	8.14	8.35

	YEAR	1980		1983	
	DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH	PK SUB				
75 ENHD	---	6.87	8.41	7.70	8.64
	--S	7.22	8.00	7.30	8.23
	PKS	6.66	8.30	7.30	7.80
150 ENHD	---	7.71	8.97	7.93	9.79
	--S	8.62	9.29	6.35	9.20
	PKS	7.81	9.77	8.63	8.70
225 ENHD	---	8.04	9.83	7.80	9.94
	--S	8.76	10.14	7.03	9.25
	PKS	8.05	10.28	8.53	8.67
150 STND	---	8.22	8.66	7.68	9.39
	--S	8.67	8.76	7.06	8.70
	PKS	7.09	9.30	8.12	8.22

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER BARLEY SERIES I

GRAIN TONNES/HECTARE

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

TABLE	EXTRA	PK SUB	YEAR	DRILL	
SED	0.349	0.142	0.116	0.123	
TABLE	N PATH* PK SUB	N PATH* YEAR	PK SUB YEAR	N PATH* DRILL	
SED	0.193	0.157	0.201	0.167	MAX-MIN
TABLE	PK SUB DRILL	YEAR DRILL	N PATH* EXTRA	N PATH* PK SUB YEAR	
SED	0.246	0.201			MIN REP
	0.213	0.174	0.472	0.272	MAX-MIN
	0.174	0.142			MAX REP
TABLE	N PATH* PK SUB DRILL	N PATH* YEAR DRILL	PK SUB YEAR DRILL	N PATH* PK SUB YEAR DRILL	
SED	0.333	0.272	0.349	0.472	MIN REP
	0.289	0.236	0.302	0.408	MAX-MIN
	0.236	0.193	0.246	0.333	MAX REP

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

STRATUM	DF	SE	CV%
WP1	6	0.246	2.9
WP1.WP2	18	0.259	3.0

GRAIN MEAN DM% 87.1

SUB PLOT AREA HARVESTED 0.00341

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER BARLEY SERIES III

GRAIN TONNES/HECTARE

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

PK SUB N PATH	---	--S	PKS	MEAN
75 ENHD	6.49	6.12	6.42	6.34
150 ENHD	7.10	7.45	7.28	7.27
225 ENHD	7.34	8.01	7.79	7.71
150 STND	7.40	7.59	7.31	7.43
MEAN	7.08	7.29	7.20	7.19

YEAR N PATH	1980	1983	MEAN
75 ENHD	6.68	6.01	6.34
150 ENHD	7.64	6.91	7.27
225 ENHD	8.09	7.34	7.71
150 STND	7.66	7.20	7.43
MEAN	7.52	6.87	7.19

YEAR PK SUB	1980	1983	MEAN
---	7.50	6.67	7.08
--S	7.51	7.07	7.29
PKS	7.54	6.86	7.20
MEAN	7.52	6.87	7.19

DRILL N PATH	CNVNTIAL	DIRECT	MEAN
75 ENHD	5.84	6.60	6.34
150 ENHD	6.50	7.66	7.27
225 ENHD	6.82	8.16	7.71
150 STND	6.58	7.86	7.43
MEAN	6.43	7.57	7.19

DRILL PK SUB	CNVNTIAL	DIRECT	MEAN
---	6.06	7.59	7.08
--S	6.67	7.60	7.29
PKS	6.56	7.52	7.20
MEAN	6.43	7.57	7.19

DRILL YEAR	CNVNTIAL	DIRECT	MEAN
1980	6.61	7.97	7.52
1983	6.25	7.17	6.87
MEAN	6.43	7.57	7.19

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER BARLEY SERIES III

GRAIN TONNES/HECTARE

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

N PATH EXTRA	75 ENHD	150 ENHD	225 ENHD	150 STND	MEAN
TPK 80 D	7.60	8.33	9.21	7.82	8.24
TPK 80 C	6.16	6.79	7.23	7.22	6.85
MEAN	6.88	7.56	8.22	7.52	7.54

PK SUB	---		--S		PKS	
YEAR	1980	1983	1980	1983	1980	1983
N PATH						
75 ENHD	6.69	6.30	6.61	5.62	6.72	6.11
150 ENHD	7.72	6.47	7.54	7.36	7.66	6.90
225 ENHD	7.70	6.99	8.21	7.81	8.35	7.22
150 STND	7.88	6.92	7.68	7.50	7.42	7.20

PK SUB	---		--S		PKS	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH						
75 ENHD	5.77	6.86	5.52	6.42	6.23	6.51
150 ENHD	6.14	7.57	6.75	7.80	6.60	7.62
225 ENHD	6.01	8.01	7.38	8.32	7.06	8.15
150 STND	6.33	7.93	7.05	7.86	6.36	7.79

YEAR	1980		1983	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH				
75 ENHD	5.78	7.12	5.89	6.07
150 ENHD	6.80	8.06	6.19	7.27
225 ENHD	7.06	8.60	6.58	7.72
150 STND	6.80	8.09	6.35	7.63

YEAR	1980		1983	
DRILL	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
PK SUB				
---	6.23	8.13	5.90	7.06
--S	6.82	7.86	6.53	7.34
PKS	6.78	7.92	6.34	7.12

YEAR		1980		1983	
DRILL		CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N PATH	PK SUB				
75 ENHD	---	5.66	7.21	5.87	6.51
	--S	5.81	7.01	5.22	5.83
	PKS	5.88	7.14	6.58	5.88
150 ENHD	---	6.67	8.24	5.62	6.90
	--S	6.63	7.99	6.88	7.60
	PKS	7.11	7.93	6.08	7.31
225 ENHD	---	5.83	8.63	6.19	7.39
	--S	7.70	8.46	7.06	8.19
	PKS	7.64	8.71	6.47	7.59
150 STND	---	6.77	8.44	5.90	7.42
	--S	7.14	7.95	6.96	7.76
	PKS	6.51	7.88	6.20	7.70

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/245 WINTER BARLEY SERIES III

GRAIN TONNES/HECTARE

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

TABLE	EXTRA	PK SUB	YEAR	DRILL	
SED	0.521	0.213	0.174	0.184	
TABLE	N PATH* PK SUB	N PATH* YEAR	PK SUB YEAR	N PATH* DRILL	
SED	0.325	0.226	0.301	0.282	MAX-MIN
TABLE	PK SUB DRILL	YEAR DRILL	N PATH* EXTRA	N PATH* PK SUB YEAR	
SED	0.369	0.301			MIN REP
	0.319	0.261	0.797	0.460	MAX-MIN
	0.261	0.213			MAX REP
TABLE	N PATH* PK SUB DRILL	N PATH* YEAR DRILL	PK SUB YEAR DRILL	N PATH* PK SUB YEAR DRILL	
SED	0.563	0.460	0.521	0.797	MIN REP
	0.488	0.398	0.452	0.690	MAX-MIN
	0.398	0.325	0.369	0.563	MAX REP

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

STRATUM	DF	SE	CV%
WP1	6	0.369	5.1
WP1.WP2	18	0.492	6.8

GRAIN MEAN DM% 86.9

SUB PLOT AREA HARVESTED 0.00341

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/246

EFFECTS OF SUBSOILING AND DEEP PK

Object: To study the effects of thorough subsoil disturbance and the incorporation of P and K into the subsoil on soil and crop parameters and on yield of s. barley - Gt. Field I.

Sponsors: J. McEwen, A.E. Johnston, D.P. Yeoman.

The fifth year, s. barley.

For previous years see 80-83/R/CS/246.

Whole plot dimensions: 4.27 x 17.7.

Design: 2 replicates of 28 plots, fully randomised.

Treatments: All combinations of:-

1. PK SUB — Extra PK and subsoil treatment (applied autumn/winter 1979/80 only):

- - -	None, mouldboard ploughed (duplicated)
- - S	Subsoiled
P - S	P to subsoil
- K S	K to subsoil
P K S	PK to subsoil
P K T	PK to topsoil, mouldboard ploughed

2. N — Nitrogen fertilizer (kg N) (cumulative to previous years):

0
40
80
120

NOTES: (1) Rates of P and K were 1000 kg P_2O_5, as superphosphate, 500 kg K_2O, as muriate of potash.
(2) Subsoiling was done with the Wye double-digger which turns a furrow with a conventional plough share, to a depth of 23 cm, and at the same time rotary cultivates the bottom of the adjacent furrow to a further depth of 15 cm. When applying P and K this was distributed ahead of the rotary cultivator.
(3) The topsoil PK dressing was equally divided before and after ploughing.
(4) All treatments were mouldboard ploughed for 1981, 1982, 1983 and 1984.

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop at 1.4 kg with ioxynil at 0.18 kg and bromoxynil at 0.18 kg in 250 l. Fungicide: Tridemorph at 0.52 kg in 250 l.

Seed: Triumph, seed dressed with triadimenol and fuberidazole, sown at 160 kg.

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Cultivations, etc.:- Glyphosate applied: 26 Sept, 1983. Ploughed: 13 Dec. N treatments applied: 15 Mar, 1984. Spring-tine cultivated, seed sown: 19 Mar. Mecoprop with ioxynil and bromoxynil applied: 15 May. Fungicide applied: 6 June. Combine harvested: 17 Aug.

NOTE: Because of water logging four plots were lost, those with treatment combinations

PK SUB	- K S	P K T	- - -	P - S
N	0	80	80	40

Estimated values were used in the analysis.

GRAIN TONNES/HECTARE

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

N	0	40	80	120	MEAN
PK SUB					
- - -	3.83	5.18	6.90	7.77	5.92
- - S	4.13	6.57	7.34	7.70	6.43
P - S	5.23	5.25	7.59	7.26	6.33
- K S	5.14	5.89	7.48	7.70	6.55
P K S	4.86	6.50	8.56	8.38	7.07
P K T	5.03	6.34	7.81	7.56	6.68
MEAN	4.58	5.84	7.51	7.73	6.42

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

TABLE	PK SUB	N	PK SUB N	
SED	0.488		0.976	MIN REP
	0.422	0.369	0.845	MAX-MIN
			0.690	MAX REP

	PK SUB
MAX REP	- - -
MAX-MIN	- - - V ANY OF REMAINDER
MIN REP	ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
WP	28	0.976	15.2

GRAIN MEAN DM% 84.2

https://doi.org/10.23637/ERADOC-1-32

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STRAW TONNES/HECTARE

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

N	0	40	80	120	MEAN
PK SUB					
- - -	1.33	2.02	3.13	4.09	2.64
- - S	1.37	2.36	3.89	4.37	2.99
P - S	1.93	2.20	3.32	4.24	2.92
- K S	1.73	2.51	3.48	4.35	3.02
P K S	1.73	2.61	3.81	4.99	3.28
P K T	1.88	2.70	4.51	4.63	3.43
MEAN	1.61	2.35	3.61	4.39	2.99

STRAW MEAN DM% 84.0

PLOT AREA HARVESTED 0.00217

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84/R/CS/247

ORGANIC MATTER AND EARTHWORM INOCULATION

Object: To study methods of inoculating earthworms into arable soil and the influence of organic materials on subsequent multiplication and spread - Hoosfield.

Sponsor: C.A. Edwards.

The fifth year, s. barley.

For previous years see 80-83/R/CS/247.

Design: 3 randomised blocks of 9 plots.

Whole plot dimensions: 7.85 x 7.62.

Treatments: All combinations of:-

1. WORMINOC(80) Earthworms and inoculation method for 1980 crop only:

NONE	None
	Earthworms (Lumbricus terrestris) applied at 16,700 per hectare in November 1979:
EVEN	Evenly spaced throughout
CONC	Concentrated in metre squares, 100 earthworms per square metre

2. ORG MATT Forms of organic matter:

NONE	None
STR	Straw at 6.50 t for 1980, 3.25 t for 1981 and 1982
STR+FYM	Straw at 6.50 t for 1980, 3.25 t for 1981 and 1982 plus farmyard manure at 40 t for each year including 1984

Basal applications: Manures: (20:10:10) at 630 kg. Weedkillers: Paraquat at 0.4 kg ion in 250 l. 3, 6-dichloropicolinic acid at 0.05 kg and bromoxynil at 0.24 kg with mecoprop (as 'CMPP' at 3.0 l) in 250 l with the fungicide. Fungicide: Tridemorph at 0.52 kg.

Seed: Triumph, seed dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:- Paraquat applied: 21 Oct, 1983. Deep spring-tine cultivated twice: 11 Nov. FYM treatment applied: 24 Nov. NPK applied: 8 Mar, 1984. Spring-tine cultivated twice, seed sown: 10 Mar. 3, 6-dichloropicolinic acid, bromoxynil, mecoprop and tridemorph applied: 16 May. Combine harvested: 17 Aug.

NOTE: Soil fauna were estimated from soil cores taken monthly from April to August and from pitfall trapping in the same period. Earthworm samples were taken in the autumn.

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/247

GRAIN TONNES/HECTARE

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

ORG MATT / WORMINOC(80)	NONE	STR	STR+FYM	MEAN
NONE	6.79	6.73	7.34	6.95
EVEN	6.77	6.39	6.55	6.57
CONC	6.52	6.83	6.65	6.67
MEAN	6.69	6.65	6.85	6.73

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

TABLE	WORMINOC(80)	ORG MATT	WORMINOC(80) ORG MATT
SED	0.269	0.269	0.466

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	0.571	8.5

GRAIN MEAN DM% 84.7

PLOT AREA HARVESTED 0.00244

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/273

INTENSIVE POTATOES

Object: To study the effects of a range of frequencies of cropping on the occurrence of pests and diseases and on the yield of potatoes - Woburn Lansome III.

Sponsors: A.G. Whitehead, T.M. Addiscott, P. Etheridge, D.A. Govier, I.F. Henderson, G.A. Hide, D.H. Lapwood, G.C. Scott.

The third year, s. barley, potatoes.

For previous years see 82-83/W/CS/273.

Design: In the third year: 2 randomised blocks of 5 plots split into 8

Whole plot dimensions: 9.00 x 24.7.

Treatments: All combinations of:-

Whole plots	Crop sequences and potato varieties:		
1. CROP SEQ	1982	1983	1984
PD B PP	Potatoes, Desiree	S. barley	Potatoes, Maris Piper
B B PD	S. barley	S. barley	Potatoes, Desiree (triplicated)
PD B PD	Potatoes, Desiree	S. barley	Potatoes, Desiree

Sub plots

2. SD TREAT	Seed treatment:
NONE	None
TOL+IMAZ	Tolclofos methyl at 250 g and imazalil at 10 g per tonne of tubers
3. NEMACIDE	Nematicide:
NONE	None
OXAMYL	Oxamyl at 5.0 kg worked in to seedbed
4. MOLLCIDE	Molluscicide:
NONE	None
METHIOCA	Methiocarb at 0.23 kg applied as pellets on 26 July, 1984, 8 Aug, 22 Aug, 5 Sept.

NOTES: (1) Additional plots were sown to s. barley for cropping sequences with differing frequencies of potatoes. Barley yields were not taken.

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(2) Irrigation was applied to the potatoes as follows (mm water):

10-11 May	12.5	11-12 July	25
18 May	12.5	13 July	12.5
15 June	12.5	23-24 July	25
18 June	12.5	30 July-2 Aug	25
4-5 July	25	3 Aug	12.5
		Total	175

Standard applications:
Potatoes: Manures: (0:18:36) at 410 kg, (10:10:15+4.5 Mg) at 3000 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Linuron at 1.3 l in 250 l. Fungicides: Maneb at 0.36 kg with zineb at 0.04 kg in 250 l with the insecticide. Fentin hydroxide at 0.28 kg in 250 l on six occasions, with the insecticide on the second and third occasions. Insecticide: Pirimicarb at 0.14 kg on three occasions.
S. barley: Manures: (20:10:10) at 640 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 2.5 l) in 250 l with the fungicide. Fungicide: Tridemorph at 0.3 kg.

Seed: S. barley: Triumph, dressed ethirimol, sown at 160 kg.

Cultivations, etc.:-
Potatoes: Glyphosate applied: 7 Sept, 1983. PK applied: 16 Nov. Ploughed: 13 Dec. NPK with Mg applied, spring-tine cultivated: 5 Apr, 1984. Oxamyl applied, rotary cultivated, potatoes planted: 13 Apr. Linuron applied: 3 May. Maneb, zineb with pirimicarb applied: 19 June. Fentin hydroxide with pirimicarb applied: 18 July, 20 July. Fentin hydroxide applied: 3 July, 1 Aug, 28 Aug, 12 Sept. Lifted: 1 Oct.
S. barley: Glyphosate applied to plots after barley: 7 Sept, 1983. Ploughed after barley: 13 Dec. Deep-tine cultivated after potatoes: 16 Jan, 1984. NPK applied: 15 Mar. Spring-tine cultivated: 16 Mar. Spring-tine cultivated with crumbler attached, seed sown: 19 Mar. 'Brittox' with fungicide applied: 15 May. Combine harvested: 18 Aug.

NOTES: (1) Plant samples were taken in August for tuber disease assessments.
(2) Potato cyst nematode numbers were assessed before planting and after harvest.
(3) Slug damage assessments were made on the lifted crop.

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TOTAL TUBERS TONNES/HECTARE

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

SD TREAT	NONE	TOL+IMAZ	MEAN
CROP SEQ			
PD B PP	36.5	37.7	37.1
B B PD	51.3	48.5	49.9
PD B PD	31.0	26.5	28.8
MEAN	44.3	42.0	43.1

NEMACIDE	NONE	OXAMYL	MEAN
CROP SEQ			
PD B PP	23.9	50.3	37.1
B B PD	43.1	56.8	49.9
PD B PD	15.7	41.9	28.8
MEAN	33.8	52.5	43.1

NEMACIDE	NONE	OXAMYL	MEAN
SD TREAT			
NONE	34.3	54.3	44.3
TOL+IMAZ	33.2	50.7	42.0
MEAN	33.8	52.5	43.1

MOLLCIDE	NONE	METHIOCA	MEAN
CROP SEQ			
PD B PP	40.8	33.4	37.1
B B PD	51.6	48.3	49.9
PD B PD	31.4	26.1	28.8
MEAN	45.4	40.9	43.1

MOLLCIDE	NONE	METHIOCA	MEAN
SD TREAT			
NONE	45.9	42.7	44.3
TOL+IMAZ	44.9	39.0	42.0
MEAN	45.4	40.9	43.1

MOLLCIDE	NONE	METHIOCA	MEAN
NEMACIDE			
NONE	36.0	31.5	33.8
OXAMYL	54.7	50.2	52.5
MEAN	45.4	40.9	43.1

SD TREAT	NONE		TOL+IMAZ	
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
CROP SEQ				
PD B PP	22.8	50.2	25.1	50.4
B B PD	44.1	58.6	42.1	54.9
PD B PD	16.6	45.4	14.7	38.3

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TOTAL TUBERS TONNES/HECTARE

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

SD TREAT	NONE		TOL+IMAZ	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
CROP SEQ				
PD B PP	39.3	33.6	42.3	33.2
B B PD	52.6	50.1	50.6	46.5
PD B PD	32.2	29.8	30.7	22.3

NEMACIDE	NONE		OXAMYL	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
CROP SEQ				
PD B PP	27.9	20.0	53.7	46.8
B B PD	44.5	41.7	58.7	54.9
PD B PD	19.0	12.3	43.9	39.8

NEMACIDE	NONE		OXAMYL	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
SD TREAT				
NONE	36.7	32.0	55.0	53.5
TOL+IMAZ	35.4	31.1	54.5	47.0

NEMACIDE		NONE		OXAMYL	
MOLLCIDE		NONE	METHIOCA	NONE	METHIOCA
CROP SEQ	SD TREAT				
PD B PP	NONE	30.0	15.6	48.6	51.7
	TOL+IMAZ	25.7	24.5	58.8	41.9
B B PD	NONE	44.8	43.3	60.4	56.8
	TOL+IMAZ	44.2	40.1	57.0	52.9
PD B PD	NONE	19.1	14.2	45.3	45.5
	TOL+IMAZ	18.9	10.5	42.4	34.2

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

TABLE	CROP SEQ	SD TREAT	NEMACIDE	MOLLCIDE	
SED	6.92				MIN REP
	5.65	1.86	1.86	1.86	MAX-MIN

TABLE	CROP SEQ SD TREAT	CROP SEQ NEMACIDE	SD TREAT NEMACIDE	CROP SEQ MOLLCIDE	
SED	7.53	7.53		7.53	MIN REP
	6.14	6.14	2.64	6.14	MAX-MIN
	4.34	4.34		4.34	MAX REP
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:					
CROP SEQ	4.17	4.17		4.17	MIN REP
	3.40	3.40		3.40	MAX-MIN
	2.41	2.41		2.41	MAX REP

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TOTAL TUBERS TONNES/HECTARE

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

TABLE	SD TREAT MOLLCIDE	NEMACIDE MOLLCIDE	CROP SEQ SD TREAT NEMACIDE	CROP SEQ SD TREAT MOLLCIDE	
SED			8.60	8.60	MIN REP
	2.64	2.64	7.02	7.02	MAX-MIN
			4.97	4.97	MAX REP
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:					
CROP SEQ			5.89	5.89	MIN REP
			4.81	4.81	MAX-MIN
			3.40	3.40	MAX REP

TABLE	CROP SEQ NEMACIDE MOLLCIDE	SD TREAT NEMACIDE MOLLCIDE	CROP SEQ SD TREAT NEMACIDE MOLLCIDE	
SED	8.60		10.43	MIN REP
	7.02	3.73	8.51	MAX-MIN
	4.97		6.02	MAX REP
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
CROP SEQ	5.89		8.34	MIN REP
	4.81		6.81	MAX-MIN
	3.40		4.81	MAX REP

	CROP SEQ
MAX REP	B B PD ONLY
MAX-MIN	B B PD V ANY OF REMAINDER
MIN REP	ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	6.92	16.1
BLOCK.WP.SP	49	8.34	19.3

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/273

PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

SD TREAT	NONE	TOL+IMAZ	MEAN
CROP SEQ			
PD B PP	60.6	64.5	67.6
B B PD	70.1	73.1	71.6
PD B PD	53.8	61.7	57.7
MEAN	64.9	69.1	67.0

NEMACIDE	NONE	OXAMYL	MEAN
CROP SEQ			
PD B PP	60.6	64.5	62.6
B B PD	66.4	76.8	71.6
PD B PD	45.2	70.3	57.7
MEAN	61.0	73.0	67.0

NEMACIDE	NONE	OXAMYL	MEAN
SD TREAT			
NONE	59.2	70.7	64.9
TOL+IMAZ	62.9	75.3	69.1
MEAN	61.0	73.0	67.0

MOLLCIDE	NONE	METHIOCA	MEAN
CROP SEQ			
PD B PP	61.0	64.2	62.6
B B PD	73.1	70.1	71.6
PD B PD	59.2	56.2	57.7
MEAN	67.9	66.1	67.0

MOLLCIDE	NONE	METHIOCA	MEAN
SD TREAT			
NONE	65.0	64.8	64.9
TOL+IMAZ	70.8	67.5	69.1
MEAN	67.9	66.1	67.0

MOLLCIDE	NONE	METHIOCA	MEAN
NEMACIDE			
NONE	63.4	58.7	61.0
OXAMYL	72.4	73.6	73.0
MEAN	67.9	66.1	67.0

SD TREAT	NONE		TOL+IMAZ	
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
CROP SEQ				
PD B PP	58.5	62.7	62.8	66.3
B B PD	64.9	75.3	68.0	78.2
PD B PD	42.8	64.8	47.6	75.8

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/273

PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

SD TREAT	NONE		TOL+IMAZ	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
CROP SEQ				
PD B PP	57.1	64.0	64.8	64.3
B B PD	71.2	69.0	75.0	71.2
PD B PD	54.4	53.1	64.0	59.3

NEMACIDE	NONE		OXAMYL	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
CROP SEQ				
PD B PP	62.6	58.6	59.3	69.7
B B PD	68.4	64.5	77.8	75.7
PD B PD	49.1	41.2	69.3	71.3

NEMACIDE	NONE		OXAMYL	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
SD TREAT				
NONE	60.6	57.8	69.5	71.9
TOL+IMAZ	66.2	59.6	75.3	75.3

NEMACIDE		NONE		OXAMYL	
MOLLCIDE		NONE	METHIOCA	NONE	METHIOCA
CROP SEQ	SD TREAT				
PD B PP	NONE	60.9	56.0	53.4	72.0
	TOL+IMAZ	64.4	61.2	65.2	67.4
B B PD	NONE	65.4	64.4	77.0	73.7
	TOL+IMAZ	71.3	64.6	78.6	77.8
PD B PD	NONE	45.8	39.7	63.0	66.5
	TOL+IMAZ	52.4	42.7	75.6	76.0

SUB PLOT AREA HARVESTED 0.00075

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279

NEMATICIDES AND STEM NEMATODE

Object: To study, on sites initially free from or infested by stem nematode (Ditylenchus dipsaci), the effects of nematicides on lucerne - Long Hoos V 5 (healthy) and Long Hoos IV 2 (infested).

Sponsor: A.G. Whitehead.

The third year, lucerne.

For previous years see 82-83/R/CS/279.

Design: On each site: 3 randomised blocks of 14 plots.

Whole plot dimensions: 1.2 x 3.7.

Treatments (applied to HEALTHY and INFESTED sites):

TREATMNT	Varieties, rates and methods of applying nematicides:
V 0	Vertus, untreated
V A1	Vertus, aldicarb at 1.5 kg in seed furrows in 1982
E 0	Europe, untreated
E A1	Europe, aldicarb at 1.5 kg in seed furrows in 1982
E A2	Europe, aldicarb at 3.0 kg in seed furrows in 1982
E A1 A1	Europe, aldicarb at 1.5 kg in seed furrows in 1982, repeated after each cut in 1982 and in spring and after each cut thereafter
E A1 T1	Europe, aldicarb at 1.5 kg in seed furrows in 1982, thiabendazole at 1.5 kg over the rows in spring 1983 and 1984
E A2 T2	Europe, aldicarb at 3.0 kg in seed furrows in 1982, thiabendazole at 3.0 kg over the rows in spring 1983 and 1984
E C1	Europe, carbofuran at 1.5 kg in seed furrows in 1982
E C2	Europe, carbofuran at 3.0 kg in seed furrows in 1982
E C1 T1	Europe, carbofuran at 1.5 kg in seed furrows in 1982, thiabendazole at 1.5 kg over the rows in spring 1983 and 1984
E C2 T2	Europe, carbofuran at 3.0 kg in seed furrows in 1982, thiabendazole at 3.0 kg over the rows in spring 1983 and 1984
E T1 T1	Europe, thiabendazole at 1.5 kg over the rows at sowing in 1982 and in spring 1983 and 1984
E T2 T2	Europe, thiabendazole at 3.0 kg over the rows at sowing in 1982 and in spring 1983 and 1984

NOTE: Treatments in 1984 were applied in 7500 l by weeder bar.

Basal applications: Manures: (0:24:24) at 730 kg. Weedkiller: Propyzamide at 0.70 kg in 220 l.

Cultivations, etc.:-

Both sites: Weedkiller applied: 18 Jan, 1984. PK applied: 15 Mar.

Healthy site: Cut: 12 June. Aldicarb and thiabendazole treatments applied: 21 June. Cut: 17 July. Aldicarb applied: 23 July. Cut: 3 Sept.

Infested site: Cut: 14 June. Aldicarb applied: 21 June. Thiabendazole applied: 28 June. Cut: 6 Aug. Aldicarb applied: 10 Aug. Cut: 26 Sept.

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279

NOTE: Assessments of stems infected with stem nematode were made on both sites.

LONG HOOS V 5 (HEALTHY SITE)

1ST CUT (12/6/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	6.45
V A1	6.63
E 0	7.39
E A1	7.40
E A2	7.24
E A1 A1	7.31
E A1 T1	6.73
E A2 T2	6.63
E C1	6.73
E C2	7.30
E C1 T1	6.54
E C2 T2	7.24
E T1 T1	6.61
E T2 T2	6.86
MEAN	6.93

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

TABLE	TREATMNT
SED	0.575

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.705	10.2

1ST MEAN DM% 15.1

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS V 5 (HEALTHY SITE)

2ND CUT (17/7/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	4.27
V A1	4.23
E 0	5.17
E A1	5.05
E A2	5.35
E A1 A1	4.73
E A1 T1	4.95
E A2 T2	4.75
E C1	4.91
E C2	4.84
E C1 T1	5.32
E C2 T2	4.79
E T1 T1	5.05
E T2 T2	4.52
MEAN	4.85

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

TABLE	TREATMNT
SED	0.247

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.303	6.2

2ND MEAN DM% 17.9

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS V 5 (HEALTHY SITE)

3RD CUT (3/9/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	3.86
V A1	3.72
E 0	4.48
E A1	4.36
E A2	4.34
E A1 A1	4.25
E A1 T1	4.58
E A2 T2	4.36
E C1	4.63
E C2	4.38
E C1 T1	4.92
E C2 T2	4.33
E T1 T1	4.71
E T2 T2	4.35
MEAN	4.38

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

TABLE	TREATMNT
SED	0.264

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.324	7.4

3RD CUT MEAN DM% 22.8

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS V 5 (HEALTHY SITE)

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	14.58
V A1	14.58
E 0	17.04
E A1	16.81
E A2	16.93
E A1 A1	16.29
E A1 T1	16.25
E A2 T2	15.73
E C1	16.27
E C2	16.52
E C1 T1	16.78
E C2 T2	16.35
E T1 T1	16.37
E T2 T2	15.73
MEAN	16.16

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

TABLE	TREATMNT
SED	0.622

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.762	4.7

TOTAL OF 2 CUTS MEAN DM% 18.6

PLOT AREA HARVESTED 0.00045

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS IV 2 (INFESTED SITE)

1ST CUT (14/6/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	5.30
V A1	5.10
E 0	5.46
E A1	4.13
E A2	4.29
E A1 A1	5.02
E A1 T1	3.55
E A2 T2	4.04
E C1	4.91
E C2	5.51
E C1 T1	4.72
E C2 T2	4.40
E T1 T1	4.88
E T2 T2	4.74
MEAN	4.72

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

TABLE	TREATMNT
SED	0.473

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.580	12.3

1ST MEAN DM% 15.8

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS IV 2 (INFESTED SITE)

2ND CUT (6/8/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	7.39
V A1	5.59
E 0	6.41
E A1	4.64
E A2	5.95
E A1 A1	5.97
E A1 T1	5.50
E A2 T2	5.27
E C1	6.33
E C2	6.29
E C1 T1	5.16
E C2 T2	5.91
E T1 T1	5.64
E T2 T2	5.24
MEAN	5.81

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

TABLE	TREATMNT
SED	0.678

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.830	14.3

2ND MEAN DM% 24.7

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS IV 2 (INFESTED SITE)

3RD CUT (26/9/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	2.98
V A1	2.01
E 0	2.47
E A1	1.95
E A2	2.30
E A1 A1	2.08
E A1 T1	1.99
E A2 T2	2.00
E C1	2.46
E C2	2.34
E C1 T1	2.48
E C2 T2	1.91
E T1 T1	2.34
E T2 T2	2.03
MEAN	2.24

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

TABLE	TREATMNT
SED	0.326

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.399	17.8

3RD CUT MEAN DM% 22.2

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/279 LONG HOOS IV 2 (INFESTED SITE)

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

TREATMNT	
V 0	15.68
V A1	12.69
E 0	14.34
E A1	10.73
E A2	12.54
E A1 A1	13.06
E A1 T1	11.04
E A2 T2	11.31
E C1	13.70
E C2	14.14
E C1 T1	12.36
E C2 T2	12.22
E T1 T1	12.86
E T2 T2	12.01
MEAN	12.76

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

TABLE	TREATMNT
SED	1.294

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	1.585	12.4

TOTAL OF 2 CUTS MEAN DM% 20.9

PLOT AREA HARVESTED 0.00045

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/284

VARIETIES & PCN TOLERANCE

Object: To study the effects of a range of populations of potato cyst nematode (PCN) on varieties differing in susceptibility - Woburn Horsepool.

Sponsors: A.G. Whitehead, K. Evans.

The third year, potatoes.

For previous years see 82-83/W/CS/284.

Design: 2 randomised blocks of 32 plots.

Whole plot dimensions: 2.84 x 6.10.

Treatments: All combinations of:-

1. VARIETY(82) Potato varieties in 1982 (to establish different populations of PCN):

CARA	Cara
CROWN	Pentland Crown
CA CR	Cara plants alternating with Pentland Crown plants within the ridges
CA CA CR	Two Cara plants alternating with one Pentland Crown plant within the ridges

2. VARIETY(84) Potato varieties in 1984 (all fallow in 1983):

CROWN	Pentland Crown
DELL	Pentland Dell
DESIREE	Desiree
PIPER	Maris Piper

3. NEMACIDE(84) Nematicides applied to seedbed in 1984:

NONE	None
OXAMYL	Oxamyl at 5.6 kg

Basal applications: Manures: (10:10:15+4.5 Mg) at 2400 kg.
Weedkillers: Linuron at 1.2 l with paraquat at 0.2 kg ion in 250 l.
Fungicides: Fentin acetate with maneb (as 'Brestan 60' at 0.5 kg) in 250 l with the insecticide. Fentin hydroxide at 0.28 kg in 250 l on five occasions, with the insecticide on the second occasion.
Insecticide: Pirimicarb at 0.14 kg. Haulm desiccant: Diquat at 0.8 kg ion in 250 l.

Cultivations, etc.:-
Ploughed: 17 Nov, 1983. NPK with Mg applied: 2 Apr, 1984. Heavy spring-tine cultivated: 5 Apr. Nematicides applied, rotary cultivated, potatoes planted: 9-10 Apr. Weedkillers applied: 4 May. 'Brestan 60' with insecticide applied: 19 June. Fentin hydroxide applied: 3 July, 1 Aug, 28 Aug, 12 Sept. Fentin hydroxide with insecticide applied: 18 July. Haulm desiccant applied: 27 Sept. Haulm mechanically destroyed: 28 Sept. Lifted: 4-5 Oct.

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/284

NOTE: Soil samples were taken before planting and after harvest to assess numbers of cysts, eggs and larvae of Globodera rostochiensis.

TOTAL TUBERS TONNES/HECTARE

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

VARIETY(84) / VARIETY(82)	CROWN	DELL	DESIREE	PIPER	MEAN
CARA	43.3	25.6	28.3	35.7	33.2
CROWN	33.7	19.4	20.1	31.9	26.3
CA CR	36.9	17.7	21.4	33.2	27.3
CA CA CR	37.1	18.9	25.9	35.0	29.3
MEAN	37.7	20.4	23.9	34.0	29.0

NEMACIDE(84) / VARIETY(82)	NONE	OXAMYL	MEAN
CARA	26.0	40.5	33.2
CROWN	16.3	36.3	26.3
CA CR	17.4	37.2	27.3
CA CA CR	22.0	36.5	29.3
MEAN	20.4	37.6	29.0

NEMACIDE(84) / VARIETY(84)	NONE	OXAMYL	MEAN
CROWN	24.6	50.9	37.7
DELL	10.3	30.5	20.4
DESIREE	15.2	32.6	23.9
PIPER	31.6	36.3	34.0
MEAN	20.4	37.6	29.0

VARIETY(82)	NEMACIDE(84) / VARIETY(84)	NONE	OXAMYL
CARA	CROWN	31.5	55.0
	DELL	17.6	33.5
	DESIREE	21.4	35.2
	PIPER	33.3	38.1
CROWN	CROWN	17.7	49.6
	DELL	5.6	33.2
	DESIREE	11.1	29.1
	PIPER	30.7	33.1
CA CR	CROWN	20.7	53.1
	DELL	9.8	25.6
	DESIREE	11.5	31.4
	PIPER	27.8	38.6
CA CA CR	CROWN	28.4	45.8
	DELL	8.2	29.7
	DESIREE	16.9	34.9
	PIPER	34.7	35.4

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/284

TOTAL TUBERS TONNES/HECTARE

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

TABLE	VARIETY(82)	VARIETY(84)	NEMACIDE(84)	VARIETY(82) VARIETY(84)
SED	1.54	1.54	1.09	3.07

TABLE	VARIETY(82) NEMACIDE(84)	VARIETY(84) NEMACIDE(84)	VARIETY(82) VARIETY(84) NEMACIDE(84)
SED	2.17	2.17	4.35

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

STRATUM	DF	SE	CV%
BLOCK.WP	31	4.35	15.0

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

VARIETY(84) VARIETY(82)	CROWN	DELL	DESIREE	PIPER	MEAN
CARA	94.2	82.5	86.8	84.1	86.9
CROWN	95.5	75.7	86.1	92.4	87.4
CA CR	94.4	85.6	83.3	89.7	88.2
CA CA CR	95.1	73.2	88.8	87.9	86.2
MEAN	94.8	79.2	86.3	88.5	87.2

NEMACIDE(84) VARIETY(82)	NONE	OXAMYL	MEAN
CARA	83.8	90.0	86.9
CROWN	81.8	93.0	87.4
CA CR	85.1	91.4	88.2
CA CA CR	82.6	89.9	86.2
MEAN	83.3	91.1	87.2

NEMACIDE(84) VARIETY(84)	NONE	OXAMYL	MEAN
CROWN	93.4	96.2	94.8
DELL	67.1	91.4	79.2
DESIREE	81.3	91.3	86.3
PIPER	91.6	85.5	88.5
MEAN	83.3	91.1	87.2

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/284

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

VARIETY(82)	NEMACIDE(84) VARIETY(84)	NONE	OXAMYL
CARA	CROWN	92.3	96.1
	DELL	73.0	92.0
	DESIREE	83.0	90.6
	PIPER	87.1	81.1
CROWN	CROWN	94.5	96.5
	DELL	58.1	93.3
	DESIREE	81.5	90.7
	PIPER	93.3	91.5
CA CR	CROWN	92.1	96.7
	DELL	81.6	89.6
	DESIREE	72.5	94.2
	PIPER	94.1	85.3
CA CA CR	CROWN	94.8	95.4
	DELL	55.6	90.8
	DESIREE	87.9	89.6
	PIPER	91.9	83.9

PLOT AREA HARVESTED 0.00087

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/293

NITRIFICATION INHIBITORS

Object: To study the effects of nitrification inhibitors on the yield and nitrogen uptake of w. wheat - Woburn The Pightle.

Sponsors: G.A. Rodgers, A. Penny.

The third year, w. wheat.

For previous years see 82/W/WW/3 and 83/W/CS/293.

Design: 2 randomised blocks of 21 plots.

Whole plot dimensions: 4.0 x 12.0.

Treatments, applied cumulatively to 1982 and 1983: All combinations of:-

1. I FORM — Nitrification inhibitors applied just before final seedbed cultivations:

DICYANDI	Dicyandiamide
ETRIDIAZ	Etridiazole
NITRAPYR	Nitrapyrin

2. I RATE — Rates of inhibitors:

SINGLE	Single (1.0 kg for etridiazole and nitrapyrin; 10.0 kg for dicyandiamide)
DOUBLE	Double (2.0 kg for etridiazole and nitrapyrin; 20.0 kg for dicyandiamide)

3. N RATE — Rates of nitrogen fertilizer in spring (kg N) as 'Nitro-Chalk':

0
35
70

plus 3 extra treatments given nitrogen fertilizer in spring only (kg N) as 'Nitro-Chalk':

N RATE X
0
35
70

NOTE: Nitrification inhibitors were applied on 29 Sept, 1983.

Basal applications: Weedkillers: Paraquat at 0.5 kg ion in 250 l. Chlortoluron at 3.5 l in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 2.0 l) in 250 l with the growth regulator and the prochloraz with carbendazim. Fungicides: Prochloraz at 0.40 kg with carbendazim at 0.15 kg in 250 l. Carbendazim at 0.15 kg with tridemorph at 0.38 kg and maneb at 1.6 kg in 250 l. Growth regulator: Chlormequat (as 'Power 3c' at 4.2 l). Insecticide: Pirimicarb at 0.14 kg in 250 l.

Seed: Avalon, sown at 200 kg.

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/293

Cultivations, etc.:- Straw burnt: 30 Aug, 1983. Ploughed: 12 Sept.
Paraquat applied: 26 Sept. Spring-tine cultivated, seed sown: 29 Sept.
Chlortoluron applied: 4 Oct. N treatments applied: 16 Apr, 1984.
'Brittox', prochloraz with carbendazim and growth regulator applied:
17 Apr. Carbendazim with tridemorph and maneb applied: 21 June.
Insecticide applied: 28 June. Combine harvested: 21 Aug.

NOTES: (1) Soil samples were taken in October, then at intervals until April and again before harvest for ammonia and nitrate analyses.
(2) Plant samples were taken in spring, July and at harvest for estimates of total N and dry matter.

GRAIN TONNES/HECTARE

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

I FORM / N RATE	DICYANDI	ETRIDIAZ	NITRAPYR	MEAN
0	8.19	7.66	8.16	8.00
35	9.97	8.81	9.13	9.30
70	9.08	8.95	9.20	9.07
MEAN	9.08	8.47	8.83	8.79

I RATE / N RATE	SINGLE	DOUBLE	MEAN
0	8.20	7.81	8.00
35	9.64	8.97	9.30
70	9.27	8.88	9.07
MEAN	9.03	8.55	8.79

I RATE / I FORM	SINGLE	DOUBLE	MEAN
DICYANDI	9.08	9.07	9.08
ETRIDIAZ	8.87	8.08	8.47
NITRAPYR	9.15	8.51	8.83
MEAN	9.03	8.55	8.79

I FORM	DICYANDI		ETRIDIAZ		NITRAPYR	
I RATE / N RATE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE
0	8.43	7.94	8.00	7.33	8.16	8.16
35	10.15	9.79	9.23	8.38	9.52	8.74
70	8.67	9.49	9.37	8.53	9.76	8.63

N RATE X	0	35	70	MEAN
	8.09	8.86	8.29	8.41

GRAND MEAN 8.74

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/293

GRAIN TONNES/HECTARE

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

TABLE	N RATE X	N RATE	I FORM	I RATE
SED	0.764	0.312	0.312	0.255

TABLE	N RATE I FORM	N RATE I RATE	I FORM I RATE	N RATE I FORM I RATE & N RATE X
SED	0.540	0.441	0.441	0.764

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

STRATUM	DF	SE	CV%
BLOCK.WP	20	0.764	8.7

GRAIN MEAN DM% 87.4

STRAW TONNES/HECTARE

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

I FORM / N RATE	DICYANDI	ETRIDIAZ	NITRAPYR	MEAN
0	5.31	5.01	4.16	4.83
35	4.87	5.25	5.17	5.10
70	5.47	5.58	5.19	5.42
MEAN	5.22	5.28	4.84	5.11

I RATE / N RATE	SINGLE	DOUBLE	MEAN
0	5.06	4.59	4.83
35	5.14	5.05	5.10
70	5.54	5.29	5.42
MEAN	5.25	4.98	5.11

I RATE / I FORM	SINGLE	DOUBLE	MEAN
DICYANDI	5.08	5.35	5.22
ETRIDIAZ	5.68	4.88	5.28
NITRAPYR	4.98	4.70	4.84
MEAN	5.25	4.98	5.11

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84/W/CS/293

STRAW TONNES/HECTARE

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

I FORM	DICYANDI		ETRIDIAZ		NITRAPYR	
I RATE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE
N RATE						
0	5.79	4.82	4.82	5.20	4.58	3.74
35	4.28	5.45	6.04	4.47	5.10	5.23
70	5.17	5.78	6.19	4.97	5.27	5.12

N RATE X	0	35	70	MEAN
	5.25	5.00	5.02	5.09

GRAND MEAN 5.11

STRAW MEAN DM% 90.2

PLOT AREA HARVESTED 0.00244

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/298

NEMATICIDE SPRAYS AND STEM NEMATODE

Object: To study the effects of applying a range of chemicals to stubbles after each cut on the incidence of stem nematode (Ditylenchus dipsaci) in lucerne given carbofuran to the seed furrow - Long Hoos IV I.

Sponsor: A.G. Whitehead.

The second year, lucerne.

For previous year see 83/R/CS/298.

Design: 2 randomised blocks of 16 plots.

Whole plot dimensions: 1.2 x 3.7.

Treatments:

TREATMNT	Varieties and chemicals (all applied at 1.5 kg):
EV O	Euver, untreated
EV C	Euver, carbofuran to seed furrow
ER O	Europe, untreated (duplicated)
ER C	Europe, carbofuran to seed furrow
	To variety Europe, all given carbofuran to seed furrow
ER C AW	Aldicarb watered on
ER C CE	Carbendazim, applied by electrostatic sprayer
ER C CH	Carbendazim, applied by hydraulic sprayer
ER C DE	Dimethoate, applied by electrostatic sprayer
ER C DH	Dimethoate, applied by hydraulic sprayer
ER C PE	Pirimiphos methyl, applied by electrostatic sprayer
ER C PH	Pirimiphos methyl, applied by hydraulic sprayer
ER C TCE	Thiodicarb, applied by electrostatic sprayer
ER C TCH	Thiodicarb, applied by hydraulic sprayer
ER C TBE	Thiabendazole, applied by electrostatic sprayer
ER C TBH	Thiabendazole, applied by hydraulic sprayer

NOTE: Carbofuran was applied to seed furrow, in 1983 only. The other chemicals were applied after each cut in 1983 and after each cut except the last in 1984. Aldicarb was applied in 7500 l by weeder bar. Hydraulic sprays were applied in 310 l and electrostatic sprays in 5.7 l.

Basal applications: Manures: (0:24:24) at 730 kg. Weedkiller: Propyzamide at 0.70 kg in 220 l.

Cultivations, etc.:- Weedkiller applied: 18 Jan, 1984. PK applied: 15 Mar. Cut: 14 June. Aldicarb applied: 21 June. Other treatments applied: 28 June. Cut: 6 Aug. All treatments applied: 23 Aug. Cut: 26 Sept.

NOTE: The percentage of stems infected with stem nematode was assessed after the second cut.

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84/R/CS/298

1ST CUT (14/6/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
EV O	3.97
EV C	5.64
ER O	4.08
ER C	4.71
ER C AW	5.26
ER C CE	5.72
ER C CH	5.92
ER C DE	5.38
ER C DH	5.86
ER C PE	5.33
ER C PH	5.42
ER C TCE	6.80
ER C TCH	6.27
ER C TBE	6.40
ER C TBH	6.15
MEAN	5.44

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

TABLE	TREATMNT	
SED	0.647	MIN REP
	0.560	MAX-MIN

	TREATMNT
MAX-MIN	ER O V ANY OF THE REMAINDER
MIN REP	ANY OF THE REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	0.647	11.9

1ST CUT MEAN DM% 19.0

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/298

2ND CUT (6/8/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
EV 0	3.84
EV C	5.78
ER 0	2.34
ER C	3.43
ER C AW	5.06
ER C CE	4.70
ER C CH	5.22
ER C DE	4.84
ER C DH	6.86
ER C PE	3.60
ER C PH	4.68
ER C TCE	5.76
ER C TCH	5.20
ER C TBE	4.90
ER C TBH	5.65
MEAN	4.64

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

TABLE	TREATMNT	
SED	0.735	MIN REP
	0.637	MAX-MIN

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	0.735	15.8

2ND CUT MEAN DM% 26.4

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/298

3RD CUT (26/9/84) DRY MATTER TONNES/HECTARE

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

TREATMNT	
EV 0	1.33
EV C	1.90
ER 0	1.02
ER C	0.82
ER C AW	1.21
ER C CE	1.29
ER C CH	2.02
ER C DE	1.26
ER C DH	1.45
ER C PE	0.77
ER C PH	1.06
ER C TCE	1.28
ER C TCH	1.68
ER C TBE	1.26
ER C TBH	1.46
MEAN	1.30

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

TABLE	TREATMNT	
SED	0.371	MIN REP
	0.322	MAX-MIN

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	0.371	28.5

3RD CUT MEAN DM% 22.8

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/298

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

TREATMNT	
EV 0	9.14
EV C	13.33
ER 0	7.43
ER C	8.95
ER C AW	11.52
ER C CE	11.71
ER C CH	13.16
ER C DE	11.47
ER C DH	14.17
ER C PE	9.70
ER C PH	11.17
ER C TCE	13.84
ER C TCH	13.15
ER C TBE	12.55
ER C TBH	13.26
MEAN	11.37

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

TABLE	TREATMNT	
SED	1.306	MIN REP
	1.131	MAX-MIN

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	1.306	11.5

TOTAL OF 3 CUTS MEAN DM% 22.7

PLOT AREA HARVESTED 0.00045

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/299

CROPS AND RHIZOCTONIA

Object: To study the effects of cropping and inoculation with Rhizoctonia isolates on subsequent infection and on yield of winter cereals - Meadow.

Sponsors: G.A. Hide, P.J. Read.

The second year, w. wheat, w. barley.

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

Whole plot dimensions: 3.0 x 43.0.

Treatments: All combinations of:-

Whole plots

1. CROP(84) Crops in 1984:

   W WHEAT
   W BARLEY

Sub plots

2. CROP(83) Crops in 1983:

FALLOW B	Fallow, cultivations as for s. barley
FALLOW P	Fallow, cultivations as for potatoes
POTATOES	Potatoes
S BARLEY	S. barley

Sub sub plots

3. INOC(83) Inoculum in 1983, applied during seedbed cultivations:

NONE	None
RHIZ C W	Rhizoctonia cerealis from wheat
RHIZ S B	Rhizoctonia solani from barley
RHIZ S P	Rhizoctonia solani from potatoes

Basal applications:
Wheat and barley: Manures: (5:14:30) at 340 kg. 'Nitro-Chalk' at 750 kg. Weedkillers: Chlortoluron at 3.5 kg in 250 l. 3, 6-dichloropicolinic acid at 0.07 kg with bromoxynil at 0.34 kg and mecoprop (as 'CMPP' at 4.2 l) in 200 l. Fungicides: Prochloraz at 0.40 kg with carbendazim at 0.15 kg in 500 l.
Wheat only: Fungicide: Propiconazole at 0.25 kg in 500 l.
Insecticide: Pirimicarb at 0.14 kg in 250 l.

Seed: W. wheat: Avalon, seed sown at 170 kg.
W. barley: Igri, seed sown at 160 kg.

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Cultivations, etc.:- Ploughed: 16 Sept, 1983. Heavy spring-tine cultivated: 20 Sept. NPK applied: 26 Sept. Rotary harrowed, wheat and barley sown: 27 Sept. Chlortoluron applied: 29 Sept. N applied: 6 Apr, 1984. 3, 6-dichloropicolinic acid, bromoxynil and mecoprop applied: 13 Apr. Prochloraz and carbendazim applied: 26 Apr. Propiconazole applied to wheat: 14 June. Pirimicarb applied to wheat: 26 June. Combine harvested barley: 26 July. Combine harvested wheat: 20 Aug. Previous crops: W. wheat 1981 and 1982.

NOTE: Barley plant samples were taken in late January and late May and wheat samples in early February and early June for inspection of root infections. Plant heights were measured on the last sampling occasion.

WINTER WHEAT

GRAIN TONNES/HECTARE

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

INOC(83) / CROP(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P	MEAN
FALLOW B	11.75	11.53	11.78	11.42	11.62
FALLOW P	11.24	11.10	10.86	11.36	11.14
POTATOES	11.73	11.56	11.66	11.74	11.67
S BARLEY	9.59	9.74	9.14	10.33	9.70
MEAN	11.08	10.98	10.86	11.21	11.03

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

TABLE	INOC(83)	CROP(83)* INOC(83)
SED	0.182	0.364

* WITHIN THE SAME LEVEL OF CROP(83) ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	12	0.364	3.3

GRAIN MEAN DM% 88.9

SUB PLOT AREA HARVESTED 0.00234

https://doi.org/10.23637/ERADOC-1-32

84/R/CS/299

WINTER BARLEY

GRAIN TONNES/HECTARE

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

INOC(83)	NONE	RHIZ C W	RHIZ S B	RHIZ S P	MEAN
CROP(83)					
FALLOW B	9.81	9.96	9.56	9.72	9.76
FALLOW P	9.60	9.85	9.87	9.64	9.74
POTATOES	9.62	9.48	9.69	9.76	9.64
S BARLEY	9.12	9.13	8.13	8.87	8.82
MEAN	9.54	9.61	9.31	9.50	9.49

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

TABLE	INOC(83)	CROP(83)* INOC(83)
SED	0.160	0.321

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	12	0.321	3.4

GRAIN MEAN DM% 83.0

SUB PLOT AREA HARVESTED 0.00234

https://doi.org/10.23637/ERADOC-1-32 *pp 84*

84/W/CS/304

NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to liquid and solid urea on the yield and nitrogen uptake of a ley - Woburn Stackyard II.

Sponsors: G.A. Rodgers, F.V. Widdowson.

The first year, grass ley.

Design: 3 randomised blocks of 18 plots.

Whole plot dimensions: 12.2 x 2.4.

Treatments: All combinations of:-

1. INHIB I		Inhibitor to injected aqueous urea (applied at 375 kg N):
	0 AQU3	None
	NIT AQU3	Nitrapyrin at 1.5 kg
	C+P AQU3	Carbon disulphide at 10 kg plus potassium ethyl xanthate at 5 kg
2. APP TIME		Times of applying aqueous urea:
	WINTER	18 Jan, 1984
	SPRING	12 Mar

plus all combinations of:-

1. INHIB B		Inhibitor to broadcast prilled urea (applied at 375 kg N):
	0 PU3	None
	DIC PU3	Dicyandiamide at 56 kg
	PHEN PU3	Phenylphosphorodiamidate at 8 kg
2. APP DIV		Division of prilled urea:
	DIVIDED	Dressing equally divided between 13 Mar, 14 June, 17 Aug
	SINGLE	Single dressing on 13 Mar

plus six extra treatments:

EXTRA	'Nitro-Chalk' dressings (kg N):
0	None
	Dressings equally divided between 13 Mar, 14 June, 17 Aug:
NC1 D	125
NC2 D	250
NC3 D	375
NC4 D	500
	Single dressing on 13 Mar:
NC3 S	375

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84/W/CS/304

Basal applications: Manures: Magnesian limestone at 7.5 t. (0:18:36) at 470 kg. Weedkillers: MCPA with MCPB (as 'Trifolex-tra' at 7.0 l) in 250 l.

Cultivations, etc.:- Weedkillers applied: 22 Sept, 1983. Magnesian limestone applied: 30 Sept. PK applied: 15 Nov. Cut: 8 June, 1984, 9 Aug, 20 Nov.

NOTES: (1) Estimates of ammonia losses were made in the fortnight after applying treatments. Soil samples were taken at intervals for ammonium and nitrate analyses.
(2) Plant samples were taken at each cut for estimates of total N and dry matter.

1ST CUT (8/6/84) DRY MATTER TONNES/HECTARE

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

APP TIME INHIB I	WINTER	SPRING	MEAN
0 AQU3	5.86	6.61	6.23
NIT AQU3	6.93	6.03	6.48
C+P AQU3	6.54	5.50	6.02
MEAN	6.44	6.05	6.24

APP DIV INHIB B	DIVIDED	SINGLE	MEAN
0 PU3	5.53	6.44	5.98
DIC PU3	5.17	5.95	5.56
PHEN PU3	5.43	6.59	6.01
MEAN	5.38	6.32	5.85

EXTRA	0	NC1 D	NC2 D	NC3 D	NC4 D	NC3 S	MEAN
	2.39	4.62	5.28	6.38	6.39	6.48	5.26

GRAND MEAN 5.78

TABLE	EXTRA	APP TIME	APP DIV	INHIB I
SED	0.386	0.223	0.223	0.273

TABLE	INHIB B	APP TIME INHIB I	APP DIV INHIB B
SED	0.273	0.386	0.386

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.473	8.2

1ST CUT MEAN DM% 19.9

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/304

2ND CUT (9/8/84) DRY MATTER TONNES/HECTARE

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

APP TIME INHIB I	WINTER	SPRING	MEAN
0 AQU3	1.85	2.22	2.03
NIT AQU3	2.03	1.97	2.00
C+P AQU3	1.91	2.16	2.04
MEAN	1.93	2.12	2.02

APP DIV INHIB B	DIVIDED	SINGLE	MEAN
0 PU3	1.72	1.31	1.52
DIC PU3	1.86	1.16	1.51
PHEN PU3	2.21	1.99	2.10
MEAN	1.93	1.49	1.71

EXTRA	0	NC1 D	NC2 D	NC3 D	NC4 D	NC3 S	MEAN
	0.31	1.54	2.52	2.39	2.55	1.99	1.89

GRAND MEAN 1.87

TABLE	EXTRA	APP TIME	APP DIV	INHIB I
SED	0.254	0.147	0.147	0.180

TABLE	INHIB B	APP TIME INHIB I	APP DIV INHIB B
SED	0.180	0.254	0.254

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.311	16.6

2ND CUT MEAN DM% 33.6

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/304

3RD CUT (20/11/84) DRY MATTER TONNES/HECTARE

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

APP TIME INHIB I	WINTER	SPRING	MEAN
0 AQU3	0.55	0.52	0.53
NIT AQU3	0.42	0.66	0.54
C+P AQU3	0.49	0.62	0.55
MEAN	0.49	0.60	0.54

APP DIV INHIB B	DIVIDED	SINGLE	MEAN
0 PU3	1.25	0.20	0.73
DIC PU3	0.99	0.17	0.58
PHEN PU3	0.94	0.40	0.67
MEAN	1.06	0.26	0.66

EXTRA	0	NC1 D	NC2 D	NC3 D	NC4 D	NC3 S	MEAN
	0.09	0.54	0.94	1.45	1.41	0.59	0.84

GRAND MEAN 0.68

TABLE	EXTRA	APP TIME	APP DIV	INHIB I
SED	0.154	0.089	0.089	0.109

TABLE	INHIB B	APP TIME INHIB I	APP DIV INHIB B
SED	0.109	0.154	0.154

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.189	27.8

3RD CUT MEAN DM% 15.0

https://doi.org/10.23637/ERADOC-1-32

84/W/CS/304

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

APP TIME INHIB I	WINTER	SPRING	MEAN
0 AQU3	8.26	9.34	8.80
NIT AQU3	9.39	8.67	9.03
C+P AQU3	8.94	8.29	8.61
MEAN	8.86	8.76	8.81

APP DIV INHIB B	DIVIDED	SINGLE	MEAN
0 PU3	8.50	7.96	8.23
DIC PU3	8.03	7.27	7.65
PHEN PU3	8.58	8.97	8.77
MEAN	8.37	8.07	8.22

EXTRA	0	NC1 D	NC2 D	NC3 D	NC4 D	NC3 S	MEAN
	2.79	6.70	8.74	10.22	10.35	9.06	7.98

GRAND MEAN 8.34

TABLE	EXTRA	APP TIME	APP DIV	INHIB I
SED	0.533	0.308	0.308	0.377

TABLE	INHIB B	APP TIME INHIB I	APP DIV INHIB B
SED	0.377	0.533	0.533

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.653	7.8

TOTAL OF 3 CUTS MEAN DM% 22.8

PLOT AREA HARVESTED 0.00084

https://doi.org/10.23637/ERADOC-1-32 *pp 89*

84/S/CS/1

FACTORS AFFECTING YIELD

Object: To study the effects of a range of factors on the yield of w. wheat - Saxmundham.

Sponsors: F.V. Widdowson, A. Penny.

The 19th year, w. wheat.

For previous years see 66/C/30(t), 67/C/23(t), 68/C/39, 69-83/S/CS/1.

Design: The experiment was on two sites, one after beans and one after wheat. On each site the design was a single replicate of 8 whole plots split into 5 sub-plots.

Whole plot dimensions: Wheat after beans: 8.53 x 18.3.
Wheat after wheat: 6.30 x 30.0.

Treatments: On each site, combinations of:-

Whole plots

1. VARIETY — Varieties:

   GALAHAD
   MOULIN

2. WINTER N — Nitrogen fertilizer (kg N) as urea on 14 Feb, 1984 in addition to a basal application of 50 kg N as urea to the seedbed:

   0
   60

3. PATHCONT — Pest and pathogen control:

   NONE — None
   FULL — Prochloraz at 0.40 kg in 220 l on 10 Apr, 1984.
   Propiconazole at 0.13 kg with captafol at 1.1 kg in 220 l on 23 May.
   Carbendazim at 0.15 kg, maneb at 1.6 kg and tridemorph at 0.37 kg plus captafol at 1.1 kg and pirimicarb at 0.14 kg in 220 l on 27 June.

Sub plots

4 N RATE — Total nitrogen fertilizer applied in spring (kg N) as 'Nitro-Chalk':

After beans	After wheat
0	0
120	150
150	180
180	210
210	240

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84/S/CS/1

Basal applications: Manures: (0:20:20) at 630 kg (after wheat) and 310 kg (after beans). Weedkillers: Isoproturon at 2.5 kg with mecoprop, bromoxynil and ioxynil (as 'Brittox' at 3.5 l) applied with the insecticide in 220 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 2.1 l) in 220 l. Insecticide: Permethrin at 0.06 kg.

Seed: Varieties sown at 400 seeds per m^2.

Cultivations, etc.:- PK applied: 18 Aug, 1983 (after wheat), 30 Aug (after beans). Ploughed: 9 Sept. Power harrowed, seed sown: 27 Sept. Isoproturon, 'Brittox' and permethrin applied: 19 Oct. Spring N applied: 10 Apr, 1984. 'Brittox' applied: 17 Apr. Combine harvested: 21 Aug.

NOTE: Mineral N content of soil to 90 cm depth and the nitrate content of the crop were assessed in autumn and spring. N content of grain was measured.

WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

WINTER N	0	60	MEAN
VARIETY			
GALAHAD	11.77	12.30	12.03
MOULIN	10.90	11.08	10.99
MEAN	11.33	11.69	11.51

PATHCONT	NONE	FULL	MEAN
VARIETY			
GALAHAD	11.73	12.33	12.03
MOULIN	10.67	11.30	10.99
MEAN	11.20	11.82	11.51

PATHCONT	NONE	FULL	MEAN
WINTER N			
0	10.95	11.71	11.33
60	11.45	11.92	11.69
MEAN	11.20	11.82	11.51

N RATE	0	120	150	180	210	MEAN
VARIETY						
GALAHAD	9.29	12.50	12.76	12.82	12.80	12.03
MOULIN	8.32	11.72	12.00	11.48	11.41	10.99
MEAN	8.81	12.11	12.38	12.15	12.10	11.51

https://doi.org/10.23637/ERADOC-1-32 *pp 91*

84/S/CS/1 WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

N RATE	0	120	150	180	210	MEAN
WINTER N						
0	7.83	11.85	12.17	12.36	12.45	11.33
60	9.78	12.37	12.58	11.94	11.75	11.69
MEAN	8.81	12.11	12.38	12.15	12.10	11.51

N RATE	0	120	150	180	210	MEAN
PATHCONT						
NONE	8.51	11.68	11.96	11.90	11.95	11.20
FULL	9.11	12.54	12.79	12.40	12.25	11.82
MEAN	8.81	12.11	12.38	12.15	12.10	11.51

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

TABLE	N RATE	N RATE* VARIETY	N RATE* WINTER N	N RATE* PATHCONT
SED	0.285	0.404	0.404	0.404

* WITHIN THE SAME LEVEL OF VARIETY, WINTER N OR PATHCONT ONLY

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

STRATUM	DF	SE	CV%
WP.SP	16	0.571	5.0

GRAIN MEAN DM% 85.5

https://doi.org/10.23637/ERADOC-1-32 *pp 92*

84/S/CS/1 WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

WINTER N	0	60	MEAN
VARIETY			
GALAHAD	8.49	10.08	9.29
MOULIN	6.95	9.70	8.33
MEAN	7.72	9.89	8.81

PATHCONT	NONE	FULL	MEAN
VARIETY			
GALAHAD	8.85	9.72	9.29
MOULIN	7.44	9.21	8.33
MEAN	8.15	9.47	8.81

PATHCONT	NONE	FULL	MEAN
WINTER N			
0	7.01	8.43	7.72
60	9.28	10.50	9.89
MEAN	8.15	9.47	8.81

N RATE	0	150	180	210	240	MEAN
VARIETY						
GALAHAD	5.29	9.78	10.13	10.55	10.68	9.29
MOULIN	4.16	8.74	9.20	9.50	10.02	8.33
MEAN	4.72	9.26	9.67	10.02	10.35	8.81

N RATE	0	150	180	210	240	MEAN
WINTER N						
0	2.93	8.26	8.70	9.20	9.52	7.72
60	6.52	10.27	10.63	10.85	11.18	9.89
MEAN	4.72	9.26	9.67	10.02	10.35	8.81

N RATE	0	150	180	210	240	MEAN
PATHCONT						
NONE	4.50	8.48	8.92	9.27	9.56	8.15
FULL	4.95	10.05	10.42	10.78	11.14	9.47
MEAN	4.72	9.26	9.67	10.02	10.35	8.81

https://doi.org/10.23637/ERADOC-1-32

84/S/CS/1 WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

TABLE	N RATE	N RATE* VARIETY	N RATE* WINTER N	N RATE* PATHCONT
SED	0.201	0.284	0.284	0.284

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

STRATUM	DF	SE	CV%
WP.SP	16	0.401	4.6

GRAIN MEAN DM% 86.1

SUB PLOT AREA HARVESTED 0.00189

https://doi.org/10.23637/ERADOC-1-32