ROTHAMSTED RESEARCH

Yields of the Field Experiments 1997

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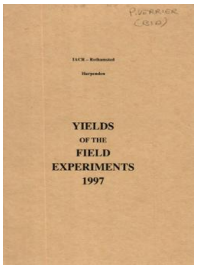

Crop Sequences

Rothamsted Research

Rothamsted Research (1998) *Crop Sequences ;* Yields Of The Field Experiments 1997, pp 55 - 101 **- DOI: https://doi.org/10.23637/ERADOC-1-53**

97/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 yield of continuous s. barley - Long Hoos V 3.

Sponsors: R.H. Bromilow, A.A. Evans, P.H. Nicholls.

The 24th year, s. barley.

For previous years see 74-96/R/CS/140.

Design: Single replicate of 32 plots.

Whole plot dimensions: 4.06 x 4.57.

Treatments: Applied cumulatively every year until 1993, none since.

All combinations of:-

1. **WEEDKLLR** — Weedkiller in autumn:

   (NONE) — None
   (GLYPHOS) — Glyphosate to barley stubble

2. **FUNGCIDE[1]** — Fungicide in autumn:

   (NONE) — None
   (TRIADIM) — Triadimefon in autumn

3. **FUNGCIDE[2]** — Fungicide in spring:

   (NONE) — None
   (BENOMYL) — Benomyl to the seedbed

4. **INSCTCDE** — Insecticide:

   (NONE) — None
   (CHLORFEN) — Chlorfenvinphos to the seedbed

5. **NEMACIDE** — Nematicide:

   (NONE) — None
   (ALDICARB) — Aldicarb to the seedbed

Experimental diary:

02-Dec-96 : B : PK as (0:20:32) at 1563 kg.
20-Jan-97 : B : Ploughed.
11-Mar-97 : B : Spring-tine cultivated.
12-Mar-97 : B : Rotary harrowed, Alexis undressed, drilled at 350 seeds per m^2.
14-May-97 : B : 34.5% N at 435 kg.
26-May-97 : B : Campbell's CMPP at 2.1 l with Vindex at 1.0 l in 300 l.
09-Jul-97 : B : Hand pulled wild oats.

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/140

Experimental diary:
21-Jul-97 : B : Hand pulled wild oats.
21-Aug-97 : B : Combine harvested.

GRAIN TONNES/HECTARE

***** Tables of means *****

FUNGCIDE[1]	(NONE)	(TRIADIM)	Mean
WEEDKLLR			
(NONE)	4.72	5.02	4.87
(GLYPHOS)	5.47	5.21	5.34
Mean	5.10	5.11	5.10

FUNGCIDE[2]	(NONE)	(BENOMYL)	Mean
WEEDKLLR			
(NONE)	4.82	4.93	4.87
(GLYPHOS)	5.26	5.41	5.34
Mean	5.04	5.17	5.10

FUNGCIDE[2]	(NONE)	(BENOMYL)	Mean
FUNGCIDE[1]			
(NONE)	5.09	5.10	5.10
(TRIADIM)	4.99	5.24	5.11
Mean	5.04	5.17	5.10

INSCTCDE	(NONE)	(CHLORFEN)	Mean
WEEDKLLR			
(NONE)	5.01	4.74	4.87
(GLYPHOS)	5.34	5.34	5.34
Mean	5.17	5.04	5.10

INSCTCDE	(NONE)	(CHLORFEN)	Mean
FUNGCIDE[1]			
(NONE)	5.05	5.15	5.10
(TRIADIM)	5.29	4.93	5.11
Mean	5.17	5.04	5.10

INSCTCDE	(NONE)	(CHLORFEN)	Mean
FUNGCIDE[2]			
(NONE)	5.07	5.01	5.04
(BENOMYL)	5.27	5.07	5.17
Mean	5.17	5.04	5.10

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GRAIN TONNES/HECTARE

***** Tables of means *****

NEMACIDE / WEEDKLLR	(NONE)	(ALDICARB)	Mean
(NONE)	4.85	4.89	4.87
(GLYPHOS)	5.43	5.24	5.34
Mean	5.14	5.07	5.10

NEMACIDE / FUNGCIDE[1]	(NONE)	(ALDICARB)	Mean
(NONE)	5.16	5.04	5.10
(TRIADIM)	5.13	5.10	5.11
Mean	5.14	5.07	5.10

NEMACIDE / FUNGCIDE[2]	(NONE)	(ALDICARB)	Mean
(NONE)	4.91	5.17	5.04
(BENOMYL)	5.37	4.97	5.17
Mean	5.14	5.07	5.10

NEMACIDE / INSCTCDE	(NONE)	(ALDICARB)	Mean
(NONE)	5.24	5.10	5.17
(CHLORFEN)	5.04	5.03	5.04
Mean	5.14	5.07	5.10

	FUNGCIDE[1]	(NONE)		(TRIADIM)	
WEEDKLLR	FUNGCIDE[2]	(NONE)	(BENOMYL)	(NONE)	(BENOMYL)
(NONE)		4.59	4.86	5.04	4.99
(GLYPHOS)		5.59	5.35	4.93	5.48

	FUNGCIDE[1]	(NONE)		(TRIADIM)	
WEEDKLLR	INSCTCDE	(NONE)	(CHLORFEN)	(NONE)	(CHLORFEN)
(NONE)		4.78	4.66	5.23	4.81
(GLYPHOS)		5.31	5.63	5.36	5.05

	FUNGCIDE[2]	(NONE)		(BENOMYL)	
WEEDKLLR	INSCTCDE	(NONE)	(CHLORFEN)	(NONE)	(CHLORFEN)
(NONE)		4.79	4.84	5.22	4.63
(GLYPHOS)		5.36	5.17	5.31	5.51

	FUNGCIDE[2]	(NONE)		(BENOMYL)	
FUNGCIDE[1]	INSCTCDE	(NONE)	(CHLORFEN)	(NONE)	(CHLORFEN)
(NONE)		5.09	5.09	5.00	5.21
(TRIADIM)		5.05	4.92	5.54	4.94

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/140

GRAIN TONNES/HECTARE

***** Tables of means *****

FUNGCIDE[1]	(NONE)		(TRIADIM)	
WEEDKLLR NEMACIDE	(NONE)	(ALDICARB)	(NONE)	(ALDICARB)
(NONE)	4.72	4.72	4.97	5.07
(GLYPHOS)	5.59	5.35	5.28	5.13

FUNGCIDE[2]	(NONE)		(BENOMYL)	
WEEDKLLR NEMACIDE	(NONE)	(ALDICARB)	(NONE)	(ALDICARB)
(NONE)	4.63	5.00	5.07	4.79
(GLYPHOS)	5.19	5.34	5.68	5.15

FUNGCIDE[2]	(NONE)		(BENOMYL)	
FUNGCIDE[1] NEMACIDE	(NONE)	(ALDICARB)	(NONE)	(ALDICARB)
(NONE)	5.01	5.17	5.30	4.91
(TRIADIM)	4.80	5.17	5.45	5.02

INSCTCDE	(NONE)		(CHLORFEN)	
WEEDKLLR NEMACIDE	(NONE)	(ALDICARB)	(NONE)	(ALDICARB)
(NONE)	5.08	4.93	4.62	4.85
(GLYPHOS)	5.41	5.26	5.46	5.22

INSCTCDE	(NONE)		(CHLORFEN)	
FUNGCIDE[1] NEMACIDE	(NONE)	(ALDICARB)	(NONE)	(ALDICARB)
(NONE)	5.18	4.91	5.13	5.16
(TRIADIM)	5.30	5.29	4.95	4.91

INSCTCDE	(NONE)		(CHLORFEN)	
FUNGCIDE[2] NEMACIDE	(NONE)	(ALDICARB)	(NONE)	(ALDICARB)
(NONE)	5.09	5.06	4.73	5.28
(BENOMYL)	5.40	5.14	5.35	4.79

*** Standard errors of differences of means ***

Margins of two factor tables	0.254
Two factor tables	0.359
Three factor tables	0.507

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
WP	6	0.718	14.1

GRAIN MEAN DM% 88.0

PLOT AREA HARVESTED 0.00110

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/302

EYESPOT RESISTANCE TO MBC

Object: To study the development of resistance to MBC fungicides in eyespot and the ability of resistant strains to survive, spread and infect - Meadow.

Sponsor: G.L. Bateman.

The 13th year, w. wheat.

For previous years see 85-93,95-96/R/CS/302

Design: 2 randomised blocks of 4 plots split into 6 sub-plots.

Whole plot dimensions: 12.0 X 24.0.
Sub-plot dimensions: 4.5 x 6.0.

Treatments: All combinations of:-

Whole plots

1. **FUNGCIDE**		Fungicide applied cumulatively 1985-93 and 1995-97:
	NONE	None
	CARB	Carbendazim at 0.25 kg
	PRO	Prochloraz at 0.40 kg (0.50 kg in 1993, 1995-1997)
	CARB+PRO	Carbendazim and prochloraz as above

Sub-plots

2. **EYE INOC**		Eyespot inoculum, applied in first year only:
	NATURAL	Natural background population (duplicated)
	W 19R 1S	Inoculated with wheat strains in proportion 19 resistant to one sensitive
	W 1R 19S	As above but one resistant to 19 sensitive
	R 19R 1S	Inoculated with rye strains, 19 resistant to one sensitive
	R 1R 19S	As above but one resistant to 19 sensitive

NOTE: The inoculum was colonized on oat seed and broadcast in October, 1984.

Experimental diary:

19-Sep-96 : B : Ploughed and furrow pressed.
03-Oct-96 : B : Rotary harrowed, Hereward, dressed Beret Gold, drilled at 380 seeds per m^2.
05-Dec-96 : B : Isoproturon 500 at 2.6 l with Stomp 400 SC at 3.1 l in 200 l.
11-Mar-97 : B : 34.5% N at 118 kg.
20-Mar-97 : **T** : **FUNGCIDE** CARB+PRO: Barclay Eyetak at 1.1 l with Tripart Defensor FL at 0.5 l in 200 l.
: **T** : **FUNGCIDE** PRO: Barclay Eyetak at 1.1 l in 200 l.

https://doi.org/10.23637/ERADOC-1-53

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Experimental diary:

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   20-Mar-97 : T : FUNGCIDE CARB: Tripart Defensor FL at 0.5 l in 200 l.
   04-Apr-97 : T : 34.5% N at 463 kg.
   16-Apr-97 : T : FUNGCIDE CARB+PRO: Barclay Eyetak at 1.1 l with Tripart
                   Defensor FL at 0.5 l in 200 l.
             : T : FUNGCIDE PRO: Barclay Eyetak at 1.1 l in 200 l.
             : T : FUNGCIDE CARB: Tripart Defensor FL at 0.5 l in 200 l.
   18-Apr-97 : B : Starane 2 at 0.75 l with Barclay Holdup at 2.3 l in 300 l.
   18-Aug-97 : B : Combine harvested.
```

NOTE: Plant samples were taken in July from **EYE INOC** NATURAL plots for assessment of stem base diseases.

GRAIN TONNES/HECTARE

***** Tables of means *****

EYE INOC / **FUNGCIDE**	NATURAL	W 19R 1S	W 1R 19S	R 19R 1S	R 1R 19S	Mean
NONE	4.94	5.77	3.64	4.56	5.75	4.93
CARB	4.78	5.13	5.01	5.34	5.16	5.04
PRO	5.20	4.27	5.41	5.46	5.46	5.17
CARB+PRO	5.62	5.28	4.98	4.95	6.13	5.43
Mean	5.13	5.11	4.76	5.08	5.63	5.14

*** Standard errors of differences of means ***

EYE INOC	**FUNGCIDE*** **EYE INOC**	
0.299	0.598	min.rep
0.259	0.518	max-min

	EYE INOC
max-min	NATURAL v any of the remainder
min.rep	Any of the remainder

* Within the same level of **FUNGCIDE** only

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP.SP	24	0.598	11.6

GRAIN MEAN DM% 88.1

SUB-PLOT AREA HARVESTED 0.00144

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/309 and 97/W/CS/309

LONG-TERM STRAW INCORPORATION

Object: To study the effects of rotational ploughing and time of sowing after the incorporation or burning of straw on soil conditions and pests, diseases, weeds and yield of w. wheat - Rothamsted (R) Great Knott III and Woburn (W) Far Field I.

Sponsors: J.F. Jenkyn, E.T.G. Bacon, R.J. Gutteridge, W. Powell, A.D. Todd.

The 13th year, w. wheat.

For previous years see 85-96/R & W/CS/309.

Design: 4 randomised blocks of 12 plots split into 2 sub-plots (R).
2 randomised blocks of 12 plots split into 2 sub-plots (W).

Whole plot dimensions: 9.0 x 28.0 (R).
9.0 x 30.0 (W).

Treatments: All combinations of:-

Whole plots

1. **STRAWCUL** Treatment of straw of previous crop and type of cultivation up to 1994 (before the space) and subsequently (after the space):

   BT1 BTTTT
   BT1T2 CTTTT
   BP2 BPPPP
   BT1P2 CPPPP
   CT1 CTTTT
   CT1 CPTTP
   CT1T2 CTPTT
   CT1T2 CTTPT
   CP2 CPPPP
   CP2 CPTTP
   CT1P2 CTPTT
   CT1P2 CTTPT

Sub-plots

2. **SOW DATE** Date of sowing:

   E Early
   L Late

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/309 and 97/W/CS/309

NOTES: (1) The following codes are used:
B Straw burnt
C Straw chopped and spread
T1 Cultivated to 10 cm depth
T1P2 Cultivated to 10 cm depth, ploughed to 20 cm
T1T2 Cultivated to 10 cm depth and again to 20 cm
P2 Ploughed to 20 cm depth
(2) From 1994 T plots were cultivated to 10 cm and P plots were ploughed to 20 cm depth.
(3) In the experimental diary only the code after the space is used. i.e. BTTTT, CTTTT, BPPPP, CPPPP, etc.

Experimental diary:

Great Knott III (R):

08-Aug-96 : B : Straw chopped.
20-Aug-96 : T : **STRAWCUL** BTTTT, BPPPP: Straw burnt, ash incorporated with discs.
23-Sep-96 : B : Sting CT at 2.0 l in 200 l.
30-Sep-96 : T : **STRAWCUL** BTTTT, CTTTT, CTPTT, CTTPT: Heavy spring-tine cultivated.
: T : **STRAWCUL** BPPPP, CPPPP, CPTTP: Ploughed.
01-Oct-96 : B : Heavy spring-tine cultivated.
02-Oct-96 : T : **STRAWCUL** BTTTT, CTTTT, CTPTT, CTTPT: Rotary harrowed.
02-Oct-96 : T : **SOW DATE** E: Rotary harrowed, Hereward, dressed Beret Gold, drilled at 380 seeds per m^2.
03-Oct-96 : T : **SOW DATE** E: Rolled.
09-Oct-96 : B : Draza at 5.5 kg.
23-Oct-96 : T : **SOW DATE** L: Rotary harrowed, Hereward, dressed Beret Gold, drilled at 380 seeds per m^2.
14-Nov-96 : B : Avadex BW Granular at 22.1 kg.
16-Dec-96 : B : Isoproturon 500 at 4.2 l with Stomp 400 SC at 3.1 l in 200 l.
10-Mar-97 : B : 34.5% N at 118 kg.
07-Apr-97 : B : 34.5% N at 463 kg.
18-Apr-97 : B : Starane 2 at 0.75 l with Barclay Holdup at 2.3 l in 300 l.
04-Jun-97 : B : Folicur at 0.3 l with Pointer at 0.5 l in 300 l.
19-Aug-97 : B : Combine harvested.

Far Field I (W):

15-Aug-96 : T : **STRAWCUL** BTTTT, BPPPP: Straw burnt, ash incorporated with spring-tines.
30-Aug-96 : T : **STRAWCUL** BTTTT, CTTTT, CTPTT, CTTPT: Heavy spring-tine cultivated.
18-Sep-96 : T : **STRAWCUL** BTTTT, CTTTT, CTPTT, CTTPT: Heavy spring-tine cultivated.
20-Sep-96 : T : **STRAWCUL** BPPPP, CPPPP, CPTTP: Ploughed and rolled.
02-Oct-96 : B : Scythe LC at 3.0 l in 200 l.
03-Oct-96 : B : Rotary harrowed.
: T : **SOW DATE** E: Hereward, dressed Sibutol, drilled at 325 seeds per m^2.
24-Oct-96 : T : **SOW DATE** L: Hereward, dressed Sibutol, drilled at 350 seeds per m^2.
22-Nov-96 : B : Avadex Excel 15G at 15 kg.

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97/R/CS/309 and 97/W/CS/309

Experimental diary:
Far Field I (W):
12-Dec-96 : B : Stomp 400 SC at 2.5 l with Isoproturon 500 at 1.0 l in 200 l.
07-Mar-97 : B : 34.5% N at 116 kg.
15-Apr-97 : B : 34.5% N at 464 kg.
16-May-97 : B : Halo at 2.0 l in 300 l.
08-Aug-97 : B : Barclay Gallup at 2.0 l in 300 l.
15-Aug-97 : B : Combine harvested.

NOTE: Plant samples were taken in July to assess root and stem base diseases.

97/R/CS/309 GREAT KNOTT III (R)

GRAIN TONNES/HECTARE

***** Tables of means *****

SOW DATE / **STRAWCUL**	E	L	Mean
BT1 BTTTT	7.69	8.21	7.95
BT1T2 CTTTT	5.02	4.43	4.73
BP2 BPPPP	7.62	7.86	7.74
BT1P2 CPPPP	6.89	7.70	7.30
CT1 CTTTT	5.50	4.86	5.18
CT1 CPTTP	5.96	7.57	6.76
CT1T2 CTPTT	6.42	5.29	5.85
CT1T2 CTTPT	7.63	6.92	7.28
CP2 CPPPP	7.00	7.75	7.38
CP2 CPTTP	6.10	7.51	6.80
CT1P2 CTPTT	6.11	6.25	6.18
CT1P2 CTTPT	6.49	6.46	6.48
Mean	6.54	6.73	6.63

*** Standard errors of differences of means ***

STRAWCUL	**SOW DATE**	**STRAWCUL SOW DATE**
0.321	0.140	0.470

Except when comparing means with the same level(s) of **STRAWCUL** 0.485

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	33	0.454	6.8
BLOCK.WP.SP	36	0.686	10.3

GRAIN MEAN DM% 89.1 SUB-PLOT AREA HARVESTED 0.00672

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/309 FAR FIELD I (W)

GRAIN TONNES/HECTARE

***** Tables of means *****

SOW DATE	E	L	Mean
STRAWCUL			
BT1 BTTTT	6.98	5.76	6.37
BT1T2 CTTTT	6.25	5.88	6.06
BP2 BPPPP	7.32	6.46	6.89
BT1P2 CPPPP	5.14	5.15	5.15
CT1 CTTTT	6.75	5.19	5.97
CT1 CPTTP	5.78	6.83	6.31
CT1T2 CTPTT	6.26	6.13	6.19
CT1T2 CTTPT	7.50	4.85	6.17
CP2 CPPPP	6.17	6.07	6.12
CP2 CPTTP	6.89	7.06	6.98
CT1P2 CTPTT	5.15	4.61	4.88
CT1P2 CTTPT	6.72	5.92	6.32
Mean	6.41	5.82	6.12

*** Standard errors of differences of means ***

STRAWCUL	SOW DATE	STRAWCUL SOW DATE
0.578	0.179	0.725

Except when comparing means with the same level(s) of STRAWCUL 0.619

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	11	0.578	9.4
BLOCK.WP.SP	12	0.619	10.1

GRAIN MEAN DM% 90.3

SUB-PLOT AREA HARVESTED 0.00660

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/311

EFFECTS OF SHALLOW STRAW INCORPORATION

Object: To study the effects of straw incorporation by rotational ploughing, with shallow cultivation in the intervening years, on diseases and yield of winter wheat - West Barnfield I.

Sponsors: J.F. Jenkyn, R.J. Gutteridge, A.D. Todd.

The 13th year, w. wheat.

For previous years see 85-96/R/CS/311.

Design: 6 x 4 criss-cross split into 2 sub-plots. Originally a single replicate of 3 x 2 x 2 x 2 x 2.

Whole plot dimensions: 4.5 x 12.0.

Treatments: Combinations of:-

Whole plots

1. **STRAW**		Treatments to straw of previous wheat:
	BURNT	Burnt (duplicated)
	BALED	Baled and removed (duplicated)
	CHOPPED	Chopped and incorporated (duplicated)

Criss-cross with

2. **CULTIVTN**		Autumn cultivations since 1993, previously all shallow cultivated:
	S P94	Shallow tine cultivated to 10 cm, (ploughed to 20 cm in autumn 1993)
	S P95	Shallow tine cultivated to 10 cm, (ploughed to 20 cm in autumn 1994)
	S P96	Shallow tine cultivated to 10 cm, (ploughed to 20 cm in autumn 1995)
	P97	Ploughed to 20 cm, (shallow tine cultivated previously)

NOTE: Only the first letter (the treatment in 1997) is used in the experimental diary.

Experimental diary:

08-Aug-96 : **T** : **STRAW** BALED: Straw baled and removed.
08-Aug-96 : **T** : **STRAW** CHOPPED: Straw chopped with trailer chopper.
20-Aug-96 : **T** : **STRAW** BURNT: Straw burnt and ash incorporated with discs.
30-Sep-96 : B : Gramoxone 100 at 3.0 l in 200 l.
09-Oct-96 : **T** : **CULTIVTN** P: Ploughed.
: **T** : **CULTIVTN** S: Heavy spring-tine cultivated.
10-Oct-96 : B : Rotary harrowed twice, Soissons, dressed Sibutol and Gammasan 30, drilled at 380 seeds per m^2.
15-Nov-96 : B : Avadex Excel 15G at 15.0 kg.
27-Nov-96 : B : Stefes IPU at 1.0 l with Stomp 400 SC at 2.5 l in 200 l.

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/311

Experimental diary:
03-Mar-97 : B : 34.5% N at 116 kg.
04-Apr-97 : B : 34.5% N at 580 kg.
08-Aug-97 : B : Combine harvested.

NOTE: Plant samples were taken in July to assess root and stem base diseases.

GRAIN TONNES/HECTARE

***** Tables of means *****

CULTIVTN STRAW	S P94	S P95	S P96	P97	Mean
BURNT	7.17	6.80	6.94	7.05	6.99
BALED	5.00	6.18	6.15	6.09	5.85
CHOPPED	5.24	6.06	6.42	6.68	6.10
Mean	5.80	6.35	6.50	6.61	6.32

GRAIN MEAN DM% 86.4

SUB-PLOT AREA HARVESTED 0.00288

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/326 and 97/W/CS/326

AMOUNTS OF STRAW

Object: To study the effects of different amounts of straw, incorporated into the soil, on w.wheat - Rothamsted (R) Great Knott III, Woburn (W) Far Field I.

Sponsors: M.J. Glendining, N.J. Bradbury, J.F. Jenkyn.

The eleventh year, w. wheat.

For previous years see 87-96/R & W/CS/326.

Design: 4 randomised blocks of 4 plots (R).
3 randomised blocks of 4 plots (W).

Whole plot dimensions: 3.0 x 13.5 (R).
3.0 x 14.5 (W).

Treatments:

STRAW Amounts of straw incorporated into the seedbed (t per ha 85% DM), cumulative to previous annual dressings:

		R	W
NONE	None	-	-
NORMAL	Normal	4.5	4.6
2 NORMAL	Twice normal	9.0	9.2
4 NORMAL	Four times normal	18.0	18.4

Experimental diary:

Great Knott III (R):

20-Aug-96 : **T** : **STRAW** NORMAL, 2 NORMAL, 4 NORMAL: Straw applied and chopped.
: **T** : **STRAW** NONE: Straw removed.
23-Sep-96 : B : Sting CT at 2.0 l in 200 l.
01-Oct-96 : B : Ploughed.
02-Oct-96 : B : Spring-tine cultivated, rotary harrowed, Hereward, dressed Beret Gold, drilled at 380 seeds per m^2.
03-Oct-96 : B : Rolled.
09-Oct-96 : B : Draza at 5.5 kg.
14-Nov-96 : B : Avadex BW Granular at 22.1 kg.
16-Dec-96 : B : Isoproturon 500 at 4.2 l with Stomp 400 SC at 3.1 l in 200 l.
18-Apr-97 : B : Starane 2 at 0.75 l in 300 l.
04-Jun-97 : B : Folicur at 0.3 l with Pointer at 0.5 l in 300 l.
19-Aug-97 : B : Combine harvested.

Far Field I (W):

21-Aug-96 : **T** : **STRAW** NORMAL, 2 NORMAL, 4 NORMAL: Straw applied.
: **T** : **STRAW** NONE: Straw removed.
22-Aug-96 : B : Straw chopped.
02-Oct-96 : B : Scythe LC at 3.0 l in 200 l.
03-Oct-96 : B : Rotary harrowed, Hereward, dressed Sibutol, drilled at 325 seeds per m^2.
22-Nov-96 : B : Avadex Excel 15G at 15 kg.

https://doi.org/10.23637/ERADOC-1-53 *pp 14*

97/R/CS/326 and 97/W/CS/326

Experimental diary:

Far Field I (W):

12-Dec-96 : B : Stomp 400 SC at 2.5 l with Isoproturon 500 at 1.0 l in 200 l.
16-May-97 : B : Halo at 2.0 l in 300 l.
08-Aug-97 : B : Barclay Gallup at 2.0 l in 300 l.
15-Aug-97 : B : Combine harvested.

NOTES: (1) No nitrogen fertilizer was applied in 1997.
(2) Crop and soil samples were taken in March and August for nitrogen and carbon content.

97/R/CS/326 GREAT KNOTT III (R)

GRAIN TONNES/HECTARE

***** Tables of means *****

STRAW	
NONE	2.26
NORMAL	2.65
2 NORMAL	2.58
4 NORMAL	2.78
Mean	2.57

*** Standard errors of differences of means ***

STRAW
0.158

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	9	0.223	8.7

GRAIN MEAN DM% 89.4

STRAW TONNES/HECTARE

***** Tables of means *****

STRAW	
NONE	1.10
NORMAL	0.93
2 NORMAL	0.64
4 NORMAL	1.08
Mean	0.94

STRAW MEAN DM% 92.4 PLOT AREA HARVESTED 0.00324

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/326 FAR FIELD I (W)

GRAIN TONNES/HECTARE

***** Tables of means *****

	STRAW
NONE	2.60
NORMAL	2.21
2 NORMAL	2.02
4 NORMAL	2.02
Mean	2.21

*** Standard errors of differences of means ***

STRAW
0.347

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	6	0.425	19.2

GRAIN MEAN DM% 89.0

STRAW TONNES/HECTARE

***** Tables of means *****

	STRAW
NONE	1.45
NORMAL	0.97
2 NORMAL	1.32
4 NORMAL	1.21
Mean	1.24

STRAW MEAN DM% 61.3

PLOT AREA HARVESTED 0.00319

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/355

RATES OF N AND MINERALIZATION

Object: To study the cumulative effects of rates of nitrogen fertilizer on soil mineralization capacity and yields of continuous winter wheat - Claycroft.

Sponsor: P.R. Poulton.

The seventh year, w. wheat.

For previous years see 91-96/R/CS/355.

Design: 3 randomised blocks of 7 plots.

Whole plot dimensions: 21.0 x 23.0.

Treatments:

N	Nitrogen fertilizer (kg N) as 34.5% N cumulative to previous dressings:
0	
50	
100	
150	
200	
250	
300	

Experimental diary:

15-Sep-96 : B : Roundup at 1.5 l with Vassgro Non-ionic at 300 ml in 200 l.
25-Sep-96 : B : Ploughed and furrow pressed.
30-Sep-96 : B : Harrowed.
17-Oct-96 : B : Rotary harrowed, Mercia dressed Sibutol, drilled at 380 seeds per m^2.
23-Oct-96 : B : Draza at 5.5 kg.
15-Nov-96 : B : Avadex BW Granular at 22.1 kg.
03-Mar-97 : B : Autumn Kite at 6.0 l in 200 l.
17-Mar-97 : B : Topik at 1.25 l with Sprayprover at 1.0 l in 200 l.
11-Apr-97 : **T** : **N** 50, 100, 150, 200, 250, 300: 34.5% N at 145, 290, 435, 580, 725 and 870 kg respectively.
04-Jun-97 : **T** : Folicur at 0.5 l with Mallard 750 EC at 0.3 l and Pointer at 0.5 l in 300 l.
14-Aug-97 : B : Combine harvested.

NOTE: Crop samples were taken for chemical analysis.

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97/R/CS/355

GRAIN TONNES/HECTARE

***** Tables of means *****

N	
0	3.03
50	5.04
100	5.90
150	6.09
200	6.59
250	6.89
300	6.74
Mean	5.76

*** Standard errors of differences of means ***

N
0.238

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	12	0.292	5.1

GRAIN MEAN DM% 86.5

PLOT AREA HARVESTED 0.00504

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/408

MISCANTHUS SINENSIS GIGANTEUS STUDY

Object: To quantify the biomass yield potential of *Miscanthus sinensis* Giganteus - Road Piece West.

Sponsor: D.G. Christian.

The fifth year, grass.

For previous years see 94-96/R/CS/408.

Design: 3 randomised blocks of 3 plots.

Whole plot dimensions: 10.0 x 10.0.

Treatments:

N	Nitrogen fertilizer cumulative to previous dressings, kg N:
-	None
N1	60
N2	120

Experimental diary:
10-Mar-97 : B : Barclay Gallup at 4.0 l in 200 l.
11-Apr-97 : B : Muriate of potash at 281 kg.
22-May-97 : **T** : **N** N1, N2: 34.5% N applied at 174 and 348 kg respectively.
04-Feb-98 : B : Hand harvested.

NOTE: Stems per plant and heights were measured regularly. Biomass and nutrient content were measured regularly.

DRY MATTER TONNES/HECTARE

***** Tables of means *****

N	-	N1	N2	Mean
	14.34	14.09	14.76	14.40

*** Standard errors of differences of means ***

N
0.540

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.661	4.6

MEAN DM% 48.5 PLOT AREA HARVESTED 0.00423

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/411

PANICUM STUDY

Object: To quantify the biomass yield potential of varieties of *Panicum virgatum* species - Road Piece West.

Sponsor: D.G. Christian.

The fifth year, grass.

For previous year see 94-96/R/CS/411

Design: 3 blocks of 7 x 2 plots.

Whole plot dimensions: 5.0 x 2.0.

Treatments:

1. **VARIETY**

CAVIN R	Cave in Rock
KANLOW	Kanlow
PATHFIND	Pathfinder
SUNBURST	Sunburst
FORESTB	Forestburg
NEBR 28	NEBR 28
DACOTAH	Dacotah

2. **N** Nitrogen fertilizer, kg N cumulative to previous dressings:

-	None
N1	60

Experimental diary:

10-Mar-97 : B : Barclay Gallup at 4.0 l in 200 l.
16-Apr-97 : **T** : **N** N1: 34.5% N at 174 kg.
02-Jul-97 : B : Hand weeded sow thistles.
01-Dec-97 : **T** : All but **VARIETY** KANLOW: Hand harvested.
15-Jan-98 : **T** : **VARIETY** KANLOW: Hand harvested.

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/411

DRY MATTER TONNES/HECTARE

***** Tables of means *****

	N	-	N1	Mean
SPECIES				
CAVIN R		10.94	11.70	11.32
KANLOW		12.66	15.27	13.97
PATHFIND		13.38	10.60	11.99
SUNBURST		10.20	10.70	10.45
FORESTB		10.05	15.75	12.90
NEBR 28		15.12	11.91	13.51
DACOTAH		8.45	9.18	8.82
Mean		11.54	12.16	11.85

*** Standard errors of differences of means ***

SPECIES	N	SPECIES N
1.312	0.701	1.856

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK	2	0.517	4.4
BLOCK.WP	26	2.273	19.2

MEAN DM% 49.5

PLOT AREA HARVESTED 0.00011

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/429

WINTER RYE AS AN ENERGY CROP

Object: To measure the effects of different levels of nitrogen fertilizer on the biomass yield of w. rye - Road Piece West.

Sponsor: D.G. Christian.

The fourth year, w. rye.

For previous years see 94-96/R/CS/429.

Design: 3 randomised blocks of 5 plots.

Plot dimensions: 3.0 x 15.0.

Treatments:

N	Nitrogen fertilizer (kg N), cumulative to previous dressings:
-	None
N1	30
N2	60
N3	90
N4	120

Experimental diary:

09-Sep-96 : B : Straw baled.
16-Oct-96 : B : Ploughed.
21-Oct-96 : B : Spring-tine cultivated.
22-Oct-96 : B : Rotary harrowed, Amando undressed, drilled at 350 seeds per m^2.
10-Apr-97 : **T** : **N** N1, N2, N3, N4: 34.5% N at 87, 174, 261 and 347 kg respectively.
13-Aug-97 : B : Combine harvested.

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/429

GRAIN TONNES/HECTARE

***** Tables of means *****

N	
-	3.22
N1	3.67
N2	3.47
N3	3.53
N4	3.11
Mean	3.40

*** Standard errors of differences of means ***

N
0.460

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	8	0.563	16.6

GRAIN MEAN DM% 85.2

STRAW TONNES/HECTARE

***** Tables of means *****

N	
-	2.58
N1	3.46
N2	3.36
N3	3.32
N4	3.16
Mean	3.18

STRAW MEAN DM% 90.8

PLOT AREA HARVESTED 0.00240

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/435

RYEGRASS, WHEAT VOLUNTEERS AND DISEASE

Object: To study how different populations of cereal volunteers and ryegrass sown as a cover crop affect the survival of cereal diseases - Woburn, School Field.

Sponsors: J.F. Jenkyn, R.J. Gutteridge.

The third year, w. wheat.

For previous years see 95-96/W/CS/435

Design: 4 randomised blocks of 10 x 2 plots.

Whole plot dimensions: 6.0 x 10.0.

Treatments:

1. **COV CROP**		Crop, seed rate and soil inoculation in 1995:
	(R)	Ryegrass at 30 kg
	(RW)	Ryegrass at 30 kg + wheat at 50 seeds per m^2
	(RI)	Ryegrass at 30 kg + soil inoculated with *Phialophora graminicola*
	(RWI)	Ryegrass at 30 kg + wheat at 50 seeds per m^2 + soil inoculated with *P. graminicola*
	(M)	Mustard at 300 seeds per m^2
	(MW1)	Mustard at 100 seeds per m^2 + wheat at 4 seeds per m^2
	(MW2)	Mustard at 100 seeds per m^2 + wheat at 9 seeds per m^2
	(MW3)	Mustard at 100 seeds per m^2 + wheat at 50 seeds per m^2
	(MW4)	Mustard at 100 seeds per m^2 + wheat at 200 seeds per m^2
	(MW5)	Mustard at 30 seeds per m^2 + wheat at 400 seeds per m^2
2. **PLOUGH**		Time of ploughing in 1995:
	(PE)	Early (12 May)
	(PL)	Late (17 Aug)

Experimental diary:

25-Sep-96 : B : Disced.
08-Oct-96 : B : Rotary harrowed.
09-Oct-96 : B : Hereward, dressed Sibutol, drilled at 325 seeds per m^2.
12-Dec-96 : B : Javelin Gold at 5.0 l in 200 l.
07-Mar-97 : B : 34.5% N at 116 kg.
11-Mar-97 : B : Vytel Manganese at 3.0 l with Vassgro Non-ionic at 30 ml in 200 l.
12-Mar-97 : B : Stefes Tiger 90 at 15 kg.
15-Apr-97 : B : 34.5% N at 464 kg.
23-May-97 : B : Standon Fluroxypyr at 0.75 l with Halo at 2.0 l in 300 l.
15-Aug-97 : B : Combine harvested.

NOTES: (1) Stefes Tiger 90 is a sulphur fertilizer.
(2) Plant samples were taken in April and July to assess root and stem base diseases.

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97/W/CS/435

GRAIN TONNES/HECTARE

***** Tables of means *****

PLOUGH COV CROP	(PE)	(PL)	Mean
(R)	6.84	8.03	7.43
(RW)	7.06	8.17	7.61
(RI)	8.31	7.85	8.08
(RWI)	8.36	6.04	7.20
(M)	7.21	7.24	7.22
(MW1)	7.96	7.01	7.48
(MW2)	6.74	7.04	6.89
(MW3)	6.20	6.74	6.47
(MW4)	5.86	6.76	6.31
(MW5)	6.63	6.92	6.77
Mean	7.12	7.18	7.15

*** Standard errors of differences of means ***

COV CROP	PLOUGH	COV CROP PLOUGH
0.766	0.343	1.084

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	57	1.532	21.4

GRAIN MEAN DM% 89.7

PLOT AREA HARVESTED 0.00476

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/437

SET-ASIDE, CULTIVATION AND CROPS

Object: To measure the establishment, growth and yield of w. wheat and w. rape following a range of cultivations and herbicide applications after natural regeneration set-aside. To assess levels of soil nitrogen and weeds in the two crops and diseases in the wheat - Bylands.

Sponsors: J.F. Jenkyn and R.J. Gutteridge.

The third year, w. wheat.

For previous year see 96/R/CS/437

Design: 3 randomised blocks of 5 x 2 plots split into 2 sub-plots.

Whole plot dimensions: 12.0 x 26.0.
Sub-plot dimensions: 10.0 x 12.0.

Treatments: All combinations of:-

Whole plots

1. **SETDESTR** Method and time of destruction of set-aside in 1995:

(PG)	Ploughed in May, glyphosate pre-drilling
(PC)	Ploughed in May, cultivated in June and July
(MP)	Minimally cultivated in May, ploughed in August
(HP)	Herbicide in May, ploughed in August
(-P)	Ploughed in August

2. **CROP** Crop in 1996:

(R)	Winter rape
(W)	Winter wheat

Sub-plots

3. **NITROGEN** Fertilizer nitrogen in 1996 (kg N):

(-)	None
(N)	160

Experimental diary:

23-Aug-96 : B : Ploughed and furrow pressed.
10-Oct-96 : B : Roundup at 4.0 l in 200 l.
16-Oct-96 : B : Spring-tine cultivated. Rotary harrowed, Genesis dressed Sibutol, drilled at 380 seeds per m^2. Rolled.
27-Jan-97 : B : Panther at 2.0 l in 200 l.
10-Mar-97 : B : 34.5% N at 118 kg.
01-Apr-97 : B : 34.5% N at 320 kg.
26-May-97 : B : Folicur at 0.5 l with Pointer at 0.5 l in 300 l.
11-Aug-97 : B : Combine harvested.

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97/R/CS/437

NOTE: Plant samples were taken in July to assess root and stem base diseases.

GRAIN TONNES/HECTARE

***** Tables of means *****

CROP	(R)	(W)	Mean
SETDESTR			
(PG)	7.32	7.06	7.19
(PC)	7.48	6.76	7.12
(MP)	7.28	6.55	6.91
(HP)	7.72	6.72	7.22
(-P)	7.09	6.66	6.87
Mean	7.38	6.75	7.06

NITROGEN	(-)	(N)	Mean
SETDESTR			
(PG)	7.16	7.21	7.19
(PC)	7.07	7.17	7.12
(MP)	6.64	7.18	6.91
(HP)	7.12	7.32	7.22
(-P)	6.74	7.01	6.87
Mean	6.95	7.18	7.06

NITROGEN	(-)	(N)	Mean
CROP			
(R)	7.15	7.60	7.38
(W)	6.74	6.75	6.75
Mean	6.95	7.18	7.06

NITROGEN		(-)	(N)
SETDESTR	CROP		
(PG)	(R)	7.27	7.37
	(W)	7.05	7.06
(PC)	(R)	7.43	7.54
	(W)	6.71	6.80
(MP)	(R)	6.87	7.69
	(W)	6.41	6.68
(HP)	(R)	7.42	8.02
	(W)	6.82	6.62
(-P)	(R)	6.76	7.42
	(W)	6.71	6.60

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/437

GRAIN TONNES/HECTARE

*** Standard errors of differences of means ***

SETDESTR	CROP	NITROGEN	SETDESTR CROP
0.177	0.112	0.093	0.251

SETDESTR NITROGEN	CROP NITROGEN	SETDESTR CROP NITROGEN
0.230	0.146	0.326

Except when comparing means with the same level(s) of

SETDESTR	0.208
CROP	0.132
SETDESTR.CROP	0.294

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.307	4.4
BLOCK.WP.SP	20	0.360	5.1

GRAIN MEAN DM% 90.0

SUB-PLOT AREA HARVESTED 0.00240

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/442

PHALARIS LINES

Object: To assess the growth and yield of *Phalaris* lines for biofuel - Road Piece West.

Sponsor: D.G. Christian.

The third year.

For previous years see 96/R/CS/442.

Design: 6 randomised blocks of 15 plots.

Whole plot dimensions: 1.5 x 2.5.

Treatments:

LINES	*Phalaris* lines:
1	A
2	B
3	C
4	D
5	E
6	F
7	G
8	H
9	I
10	J
11	K
12	L
13	M
14	N
15	O

Experimental diary:

10-Apr-97 : B : Muriate of potash at 180 kg, triple superphosphate at 140 kg and 34.5% N at 348 kg.
13-May-97 : B : Atlas Dimethoate 40 at 1.7 l in 220 l.
04-Dec-97 : **T** : Hand harvested three replicates.
29-Jan-98 : **T** : Hand harvested remaining three blocks.

NOTES: (1) During the growing period observations were made on crop height, ground cover, flower emergence, lodging and duration of green leaf.
(2) Yields presented come from the hand harvest on 29-Jan-98.
(3) **LINES** 3, 4 failed to grow and have been omitted from the analysis.

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97/R/CS/442

DRY MATTER TONNES/HECTARE

***** Tables of means *****

LINES	
1	7.00
2	6.90
5	6.44
6	5.06
7	6.46
8	9.29
9	7.15
10	8.91
11	7.99
12	6.19
13	7.19
14	7.46
15	8.15
Mean	7.25

*** Standard errors of differences of means ***

LINES
1.028

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	24	1.259	17.4

MEAN DM% 72.2

PLOT AREA HARVESTED 0.00023

The wrong plot area was used in the 1996 analysis. The corrected yields follow.

https://doi.org/10.23637/ERADOC-1-53

96/R/CS/442

DRY MATTER TONNES/HECTARE

***** Tables of means *****

LINES	
1	9.65
2	8.69
3	0.96
4	1.15
5	8.54
6	5.75
7	9.71
8	9.13
9	7.46
10	8.74
11	8.91
12	7.66
13	8.29
14	9.07
15	5.92
Mean	7.31

*** Standard errors of differences of means ***

LINES
1.128

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	1.382	18.9

MEAN DM% 78.6

PLOT AREA HARVESTED 0.00023

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/446

RYEGRASS, WHEAT VOLUNTEERS AND DISEASES

Object: To study how different populations of cereal volunteers and ryegrass sown as a cover crop affect the survival of cereal diseases - Woburn, White Horse.

Sponsors: J.F. Jenkyn, R.J. Gutteridge.

For previous year see 96/W/CS/446.

The second year, w. wheat.

Design: 4 randomised blocks of 10 x 2 plots.

Whole plot dimensions: 6.0 x 10.0.

Treatments:

Whole plots

1.	**COV CROP**	Crop, seed rate and soil inoculation in 1996:
	(R)	Ryegrass at 30 kg
	(RW)	Ryegrass at 30 kg + wheat at 50 seeds per m^2
	(RI)	Ryegrass at 30 kg + soil inoculated with *Phialophora graminicola*
	(RWI)	Ryegrass at 30 kg + wheat at 50 seeds per m^2 + soil inoculated with *P. graminicola*
	(M)	Mustard at 300 seeds per m^2
	(MW1)	Mustard at 100 seeds per m^2 + wheat at 4 seeds per m^2
	(MW2)	Mustard at 100 seeds per m^2 + wheat at 9 seeds per m^2
	(MW3)	Mustard at 100 seeds per m^2 + wheat at 50 seeds per m^2
	(MW4)	Mustard at 100 seeds per m^2 + wheat at 200 seeds per m^2
	(MW5)	Mustard at 30 seeds per m^2 + wheat at 400 seeds per m^2
2.	**PLOUGH**	Time of ploughing in 1996:
	(PE)	Early (17 May)
	(PL)	Late (14 Aug)

Experimental diary:

24-Sep-96 : B : Disced.
25-Sep-96 : B : Rotary harrowed, Hereward, dressed Sibutol, drilled at 375 seeds per m^2.
12-Dec-96 : B : Javelin Gold at 5.0 l in 200 l.
07-Mar-97 : B : 34.5% N at 116 kg.
11-Mar-97 : B : Vytel Manganese at 3.0 l with Vassgro Non-ionic at 30 ml in 200 l.
12-Mar-97 : B : Stefes Tiger 90 at 15 kg.
15-Apr-97 : B : 34.5% N at 348 kg.
23-May-97 : B : Standon Fluroxypyr at 0.75 l with Halo at 2.0 l in 300 l.
16-Aug-97 : B : Combine harvested.

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97/W/CS/446

NOTES: (1) Stefes Tiger 90 is a sulphur fertilizer.
(2) Plant samples were taken in April and July to assess root and stem base diseases.

GRAIN TONNES/HECTARE

***** Tables of means *****

PLOUGH / COV CROP	(PE)	(PL)	Mean
(R)	6.25	4.92	5.59
(RW)	5.39	6.38	5.89
(RI)	6.93	5.93	6.43
(RWI)	7.40	7.72	7.56
(M)	7.87	6.03	6.95
(MW1)	7.42	7.31	7.37
(MW2)	7.74	6.41	7.08
(MW3)	7.36	6.17	6.76
(MW4)	5.43	4.06	4.74
(MW5)	5.22	4.51	4.86
Mean	6.70	5.94	6.32

*** Standard errors of differences of means ***

COV CROP	PLOUGH	COV CROP PLOUGH
0.621	0.278	0.878

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	57	1.241	19.6

GRAIN MEAN DM% 89.3

PLOT AREA HARVESTED 0.00478

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/457

SET-ASIDE, CULTIVATIONS AND CROPS

Object: To measure the establishment, growth and yield of w. wheat and w. rape following a range of cultivations and herbicide applications after natural regeneration set-aside. To assess soil nitrogen and weeds in the two crops and diseases in the wheat - Scout.

Sponsors: J.F. Jenkyn and R.G. Gutteridge.

The second year, w. wheat and w. rape.

Design: 3 randomised blocks of 5 x 2 split into 2 sub-plots.

Whole plot dimensions: 12.0 x 26.0.
Sub-plot dimensions: 10.0 x 12.0.

Treatments: All combinations of:-

1. **SETDESTR** Method and time of destruction of set-aside in 1996:

(PG)	Ploughed in May, glyphosate pre-drilling
(PC)	Ploughed in May, cultivated in June and July
(MP)	Minimally cultivated in May, ploughed in August
(HP)	Herbicide in May, ploughed in August
(-P)	Ploughed in August

2. **CROP** Crop in 1997

R	Winter rape
W	Winter wheat

Sub-plots

3. **NITROGEN** Fertilizer nitrogen in 1997 (kg N):

-	None
N	160

Experimental diary:

14-May-96 : **T** : **SETDESTR** (PG), (PC), (MP), (P): Topped.
15-May-96 : **T** : **SETDESTR** (MP): Heavy spring-tine cultivated to 10 cm.
: **T** : **SETDESTR** (PG), (PC): Ploughed.
30-May-96 : **T** : **SETDESTR** (MP): Roundup at 1.5 l with Vassgro Non-ionic at 200 ml in 200 l.
27-Jun-96 : **T** : **SETDESTR** (PC): Heavy spring-tine cultivated.
01-Jul-96 : **T** : **SETDESTR** (MP), (P): Topped.
23-Jul-96 : B : Chalk at 5.0 t.
25-Jul-96 : B : PK as (0:20:32) at 1384 kg.
30-Jul-96 : **T** : **SETDESTR** (PC): Heavy spring-tine cultivated.
: **T** : **SETDESTR** (MP), (HP), (-P): Topped, ploughed.
15-Aug-96 : **T** : **SETDESTR** (PG): Roundup at 3.0 l in with Vassgro Non-ionic at 150 ml in 392 l.
28-Aug-96 : B : Heavy spring-tine cultivated.

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Experimental diary:

28-Aug-96 : **T** : **CROP** R: Rotary harrowed, Apex, dressed Vitavax RS, drilled at 120 seeds per m^2.
03-Oct-96 : **T** : **CROP** W: Rotary harrowed, Genesis, dressed Sibutol, drilled at 380 seeds per m^2.
10-Oct-96 : **T** : **CROP** R: Butisan S at 1.5 l in 200 l.
28-Jan-97 : **T** : **CROP** W: Panther at 2.0 l in 200 l.
28-Feb-97 : **T** : **CROP** R, **NITROGEN** N: 34.5% N at 175 kg.
10-Mar-97 : **T** : **CROP** W, **NITROGEN** N: 34.5% N at 118 kg.
18-Mar-97 : **T** : **CROP** R, **NITROGEN** N: 34.5% N at 289 kg.
04-Apr-97 : **T** : **CROP** W, **NITROGEN** N: 34.5% N at 347 kg.
04-Jun-97 : **T** : **CROP** W: Folicur at 0.5 l with Mallard 750 EC at 0.3 l and Pointer at 0.5 l in 300 l.
16-Jul-97 : **T** : **CROP** R: Reglone 360 at 3.0 l with Vassgro Non-ionic at 392 ml in 400 l.
23-Jul-97 : **T** : **CROP** R: Combine harvested and straw chopped.
11-Aug-97 : **T** : **CROP** W: Combine harvested and straw chopped.

Previous crops: Linseed 1994, w. wheat 1995.

NOTE: Wheat plants were sampled in April and July to assess root and stem bases diseases.

GRAIN TONNES/HECTARE

***** Tables of means *****

CROP	R	W	Mean
SETDESTR			
(PG)	3.49	5.88	4.68
(PC)	3.18	7.19	5.18
(MP)	2.76	5.84	4.30
(HP)	2.93	5.76	4.35
(-P)	2.35	5.03	3.69
Mean	2.94	5.94	4.44

NITROGEN	-	N	Mean
SETDESTR			
(PG)	3.47	5.90	4.68
(PC)	3.84	6.53	5.18
(MP)	2.77	5.83	4.30
(HP)	3.29	5.40	4.35
(-P)	2.13	5.25	3.69
Mean	3.10	5.78	4.44

NITROGEN	-	N	Mean
CROP			
R	2.05	3.83	2.94
W	4.14	7.74	5.94
Mean	3.10	5.78	4.44

https://doi.org/10.23637/ERADOC-1-53

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GRAIN TONNES/HECTARE

***** Tables of means *****

CROP	R		W	
SETDESTR NITROGEN	-	N	-	N
(PG)	2.79	4.19	4.14	7.61
(PC)	2.14	4.22	5.54	8.84
(MP)	1.72	3.80	3.82	7.87
(HP)	2.17	3.70	4.41	7.11
(-P)	1.46	3.24	2.81	7.25

*** Standard errors of differences of means ***

SETDESTR	CROP	NITROGEN	SETDESTR CROP
0.359	0.227	0.145	0.508

SETDESTR NITROGEN	CROP NITROGEN	SETDESTR CROP NITROGEN
0.426	0.269	0.602

Except when comparing means with the same level(s) of

SETDESTR	0.324		
CROP		0.205	
SETDESTR.CROP			0.458

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.622	14.0
BLOCK.WP.SP	20	0.561	12.6

GRAIN MEAN DM% 91.9

SUB-PLOT AREA HARVESTED 0.00240

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97/R/CS/472

CEREALS AND SEED TREATMENTS

Object: To test seed treatment fungicides on root and stem base diseases of winter wheat and barley - Highfield IV/Road Piece East.

Sponsors: W.A.J.M. Dawson, G.L. Bateman, J.F. Jenkyn.

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

Design: 4 randomised blocks of 8 x 2.

Plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **FUNGCIDE** Seed dressing:

-	None (duplicated)
E	CR21528
B	CR21529

2. **CROP**

WW	Winter wheat
BW	Winter barley

NOTE: Fungicides CR21528 and CR21529 are under commercial development, composition undisclosed.

Experimental diary:

27-Aug-96 : B : PK as (0:20:32) at 1400 kg.
24-Sep-96 : B : Stefes Glyphosate at 4.0 l in 200 l, weeds spot treated.
05-Oct-96 : B : Ploughed and furrow pressed.
14-Oct-96 : **T** : **CROP** BW: Rotary harrowed, Pipkin, dressed as treatment, drilled at 350 seeds per m^2.
: **T** : **CROP** WW: Rotary harrowed, Brigadier, dressed as treatment, drilled at 380 seeds per m^2.
28-Nov-96 : B : Auger at 2.6 l with Stomp 400 SC at 3.1 l in 200 l.
07-Mar-97 : B : 34.5% N at 118 kg.
03-Apr-97 : **T** : **CROP** BW: 34.5% N at 400 kg.
: **T** : **CROP** WW: 34.5% N at 463 kg.
09-Jun-97 : B : Mallard 750 EC at 1.0 l in 300 l.
22-Jul-97 : **T** : **CROP** BW: Combine harvested.
13-Aug-97 : **T** : **CROP** WW: Combine harvested.

Previous crops: W. and s. rape 1995, w. wheat 1996.

NOTE: Plant samples were taken in January, May and June to isolate and identify rhizosphere and stem base fungi, and in late June to assess take-all and stem base diseases.

https://doi.org/10.23637/ERADOC-1-53

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GRAIN TONNES/HECTARE

***** Tables of means *****

CROP / FUNGCIDE	WW	BW	Mean
-	7.66	7.08	7.37
E	8.79	7.05	7.92
B	8.78	6.95	7.86
Mean	8.22	7.04	7.63

*** Standard errors of differences of means ***

FUNGCIDE	CROP	FUNGCIDE CROP	
0.244		0.345	min.rep
0.211	0.172	0.299	max-min
		0.244	max.rep

FUNGCIDE
min.rep - only
max-min - v any of the remainder
max.rep Any of the remainder

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	55	0.689	9.0

GRAIN MEAN DM% 85.9

PLOT AREA HARVESTED 0.00239

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/474

EFFICIENCY OF S FERTILIZERS

Object: To measure the effect of different forms of sulphur on the yield of winter wheat and the following oilseed rape crop - Woburn, Lansome III.

Sponsors: F.J. Zhao, S.P. McGrath.

The first year, w. wheat.

Design: 4 randomised blocks of 4 x 2 + 1.

Plot dimensions: 8.0 x 12.0.

Treatments: All combinations of:-

1. **FORM** Form of sulphur to provide 30 kg S:

T+A	50% Stefes Tiger 90 and 50% ammonium sulphate
AS	Ammonium sulphate
T90	Stefes Tiger 90
NAS	Sodium thiosulphonate

2. **TIMING**

SB	To seedbed, pre-sowing
MAR	In March

EXTRA

-	None

NOTE: The nitrogen was balanced on all plots to match that supplied by the ammonium sulphate treatment, this was 26.25 kg N to the seedbed and a spring dressing to provide a total of 180 kg N.

Experimental diary:

23-Sep-96 : B : Ploughed.
24-Sep-96 : B : Rolled.
07-Oct-96 : **T** : All plots except **FORM** AS, **TIMING** SB: Balancing nitrogen applied as 27.5% N.
08-Oct-96 : **T** : **FORM** T+A, AS, T90, NAS, **TIMING** SB: Seedbed sulphur treatments applied.
: B : Rotary harrowed, Riband, dressed Sibutol, drilled at 325 seeds per m^2.
11-Dec-96 : B : Stomp 400 SC at 2.5 l with Isoproturon 500 at 1.0 l in 200 l.
12-Mar-97 : **T** : **FORM** T+A, AS, T90, NAS, **TIMING** MAR: Sulphur treatments applied.
14-Mar-97 : **T** : All plots: Balanced spring nitrogen applied as 27.5% N.
23-May-97 : B : Halo at 2.0 l in 300 l.
14-Aug-97 : B : Combine harvested.

Previous crops: W. Barley and potatoes 1995, s. rape 1996.

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/474

GRAIN TONNES/HECTARE

***** Tables of means *****

TIMING / FORM	SB	MAR	Mean
T+A	6.19	7.05	6.62
AS	6.62	7.19	6.90
T90	8.10	6.30	7.20
NAS	6.56	6.55	6.56
Mean	6.87	6.77	6.82

EXTRA	7.27
Grand mean	6.87

*** Standard errors of differences of means ***

FORM	TIMING	FORM TIMING & EXTRA
0.845	0.597	1.195

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	24	1.690	24.6

GRAIN MEAN DM% 87.6

PLOT AREA HARVESTED 0.00220

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/476

FUNGICIDE SEQUENCES AND TAKE-ALL

Object: To determine the effects of fungicidal seed treatments on take-all (*Gaeumannomyces graminis*) development in w.wheat - Long Hoos IV 4.

Sponsors: G.L. Bateman, J.F. Jenkyn.

The first year, w. wheat.

Design: 4 randomised blocks of 2 x 2 x 2.

Plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **FUNG97** Fungicidal seed dressing to the 1997 crop:

   F97 Seed dressed
   -97 None

2. **FUNG98** Fungicidal seed dressing to the 1998 crop:

   F98 Seed dressed
   -98 None

3. **FUNG99** Fungicidal seed dressing to the 1999 crop:

   F99 Seed dressed
   -99 None

NOTE: The seed dressing is under commercial development, composition undisclosed.

Experimental diary:

17-Oct-96 : B : Spring-tine cultivated, rotary harrowed, Brigadier, dressed as treatment, drilled at 380 seeds per m^2.
28-Jan-97 : B : Panther at 2.0 l in 200 l.
11-Mar-97 : B : 34.5% N at 118 kg.
14-Apr-97 : B : 34.5% N at 463 kg.
16-Apr-97 : B : Deloxil at 1.5 l with Dow Shield at 0.35 l in 200 l.
30-May-97 : B : Folicur at 0.5 l in 300 l.
19-Aug-97 : B : Combine harvested.

Previous crops: S. wheat 1995, linseed 1996.

NOTE: Plant samples were taken in April to assess take-all on the roots and in July to assess root and stem base diseases. Soil samples were taken after harvest and used in bioassays to measure take-all infectivity.

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/476

GRAIN TONNES/HECTARE

***** Tables of means *****

	FUNG97
F97	10.31
-97	10.02
Mean	10.17

*** Standard errors of differences of means ***

FUNG97
0.225

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	27	0.637	6.3

GRAIN MEAN DM% 90.0

PLOT AREA HARVESTED 0.00240

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/477

CONTINUOUS MAIZE

Object: To monitor the fate of organic carbon in the soil organic matter - Hoosfield.

Sponsors: P.R. Poulton, J. Gaunt.

The first year, maize and s. barley.

Design: 3 randomised blocks of 6 plots.

Plot dimensions: 12.0 x 25.0.

Treatments:-

CROP	Crop and straw treatments:
BM	Spring barley, straw removed then maize after three years
BTM	Continuous spring barley, straw removed plus 10 t maize tops incorporated, then s. barley after five years
B	Continuous spring barley, straw removed
M	Continuous maize, stubble incorporated
MB	Maize, stubble incorporated then s. barley after five years
MTB	Maize, stubble plus 10 t maize tops incorporated, then s. barley after five years

Experimental diary:

17-Dec-96 : B : Ploughed.
12-Mar-97 : B : Spring-tine cultivated.
13-Mar-97 : **T** : **CROP** BM, BTM, B: Rotary harrowed, Cooper, dressed Raxil S, drilled at 350 seeds per m^2.
22-Apr-97 : B : 34.5% N at 290 kg.
23-Apr-97 : **T** : **CROP** M, MB, MTB: Rotary harrowed, Hudson, dressed Mesurol, drilled at 11 seeds per m^2.
09-Jun-97 : **T** : **CROP** M, MB, MTB: Barclay Mutiny at 1.5 l in 300 l.
24-Jul-97 : B : Hand rogued wild oats.
21-Aug-97 : **T** : **CROP** BM, BTM, B: Combine harvested.
17-Sep-97 : **T** : **CROP** M, MB, MTB: Hand harvested.

Previous crops: Linseed 1995 and 1996.

NOTE: Samples of forage maize (whole crop) and barley grain were taken for chemical analysis.

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/477 MAIZE

WHOLE CROP YIELD TONNES/HECTARE

***** Tables of means *****

CROP	
M	9.25
MB	10.71
MTB	9.18
Mean	9.71

*** Standard errors of differences of means ***

CROP
0.802

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.983	10.1

CROP MEAN DM% 29.7

PLOT AREA HARVESTED 0.00108

BARLEY

GRAIN TONNES/HECTARE

***** Tables of means *****

CROP	
BM	6.56
BTM	6.46
B	6.34
Mean	6.45

*** Standard errors of differences of means ***

CROP
0.263

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.323	5.0

GRAIN MEAN DM% 87.5 PLOT AREA HARVESTED 0.00600

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/478

CONTINUOUS MAIZE

Object: To monitor the fate of organic carbon in the soil organic matter - Woburn, Stackyard A I.

Sponsors: P.R. Poulton, J. Gaunt.

The first year, maize and s. barley.

Design: 3 randomised blocks of 6 plots.

Plot dimensions: 9.0 x 25.0.

Treatments:

CROP	Crop and straw treatments:
BM	Spring barley, straw removed then maize after three years
BTM	Continuous spring barley plus 10 t maize tops incorporated, then s. barley after five years
B	Continuous spring barley, straw removed
M	Continuous maize, stubble incorporated
MB	Maize, stubble incorporated then s. barley after five years
MTB	Maize, stubble plus 10 t maize tops incorporated, then s. barley after five years

Experimental diary:

28-Jan-97 : B : Scythe LC at 3.0 l in 200 l.
14-Mar-97 : B : Ploughed.
17-Mar-97 : B : PK as (0:24:24) at 145 kg, muriate of potash at 91.6 kg and gypsum (17.5% S) at 171 kg.
18-Mar-97 : B : Rotary harrowed.
18-Mar-97 : **T** : **CROP** BM, BTM, B: Cooper, dressed Raxil S, drilled at 375 seeds per m^2.
08-Apr-97 : **T** : **CROP** BM, BTM, B: Scythe LC at 3.0 l in 300 l.
09-Apr-97 : **T** : **CROP** BM, BTM, B: Rotary harrowed, Cooper, dressed Raxil S, re-drilled at 420 seeds per m^2.
01-May-97 : **T** : **CROP** M, MB, MTB: Rotary harrowed, Hudson, dressed Mesurol, drilled at 11.5 seeds per m^2.
13-May-97 : B : 34.5% N at 278 kg.
29-May-97 : **T** : **CROP** BM, BTM, B: MSS Optica at 2.0 l with Vindex at 1.0 l in 200 l.
17-Jun-97 : **T** : **CROP** M, MB, MTB: Mutiny at 2.4 l in 300 l.
24-Jun-97 : **T** : **CROP** BM, BTM, B: Dorin at 1.0 l in 300 l.
20-Aug-97 : **T** : **CROP** BM, BTM, B: Combine harvested.
01-Sep-97 : **T** : **CROP** BM, BTM, B: Straw removed.
16-Sep-97 : **T** : **CROP** M, MB, MTB: Hand harvested.
29-Sep-97 : **T** : **CROP** MTB, BTM: Spread chopped maize at 10 t.

Previous crops: Lupins 1995, w. wheat 1996.

NOTE: Samples of whole crop maize and barley grain were taken for chemical analysis.

https://doi.org/10.23637/ERADOC-1-53

97/W/CS/478 MAIZE

WHOLE CROP YIELD TONNES/HECTARE

***** Tables of means *****

CROP	
M	9.16
MB	10.04
MTB	11.15
Mean	10.12

*** Standard errors of differences of means ***

CROP
0.457

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.560	5.5

CROP MEAN DM% 41.8

PLOT AREA HARVESTED 0.00108

BARLEY

GRAIN TONNES/HECTARE

***** Tables of means *****

CROP	
BM	4.32
BTM	4.75
B	4.38
Mean	4.49

*** Standard errors of differences of means ***

CROP
0.089

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.109	2.4

GRAIN MEAN DM% 89.9 PLOT AREA HARVESTED 0.00550

https://doi.org/10.23637/ERADOC-1-53

97/R/CS/483

SEVERE TAKE-ALL IN WHEAT

Object: To create severe take-all (*Gaeumannomyces graminis*) in winter wheat by applying inoculum artificially to a preceding spring wheat - Summerdells I.

Sponsors: G.L. Bateman, R.J. Gutteridge.

Design: 4 randomised blocks of 14 plots.

Plot dimensions: 3.0 x 10.0.

Treatments:-

INOCULTN	Inoculum:
-	None
TA	Take-all inoculum on sterile oat grain

NOTE: Each treatment appears seven times in each block.

Experimental diary:

08-Jul-96	B	Deep tine cultivated with vibrating tines 60 cm apart and 45 cm deep.
10-Jul-96	B	Rolled.
25-Oct-96	B	Ploughed.
11-Mar-97	B	Rotary harrowed, spring-tine cultivated twice.
	T	**INOCULTN** TA: Inoculated oat grain broadcast.
12-Mar-97	B	Rotary harrowed, Chablis, undressed, drilled at 400 seeds per m^2.
14-Mar-97	B	Rolled.
12-May-97	B	34.5% N at 370 kg.
22-May-97	B	Campbell's CMPP at 2.1 l with Vindex at 1.0 l in 300 l.
05-Sep-97	B	Combine harvested.

Previous crops: W. and S. rape 1995, set-aside 1996.

NOTE: Take-all patches were assessed in July.

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97/R/CS/483

GRAIN TONNES/HECTARE

***** Tables of means *****

INOCULTN	
-	7.29
TA	6.26
Mean	6.77

*** Standard errors of differences of means ***

INOCULTN
0.142

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	51	0.529	7.8

GRAIN MEAN DM% 84.5

PLOT AREA HARVESTED 0.00240

https://doi.org/10.23637/ERADOC-1-53