

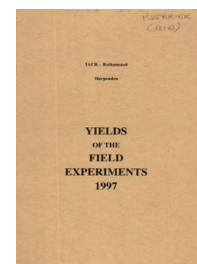
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Winter Oilseed Rape

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97/R/RAW/1

WINTER OILSEED RAPE

GROWTH OF WEEDS AND RAPE

Object: To investigate factors influencing the vigour of w. rape grown in competition with chickweed and volunteer barley - Bones Close

Sponsors: P.J.W. Lutman.

Design: 2 randomised blocks of 30 plots.

Whole plot dimensions: 3.0 x 15.0.

Treatments:

1. BARL DEN Barley (Gleam dressed Raxil S) density, mean plants per m²:

B0	0
B1	66
B2	160
B3	280
B4	448
B5	461
B6	567

2. CHCK DEN Chickweed (*Stellaria media*) density, mean plants per m²:

C0	0
C1	119
C2	327
C3	598
C4	734
C5	1536
C6	2118

NOTE: Target weed populations and combinations were as follows:

Target weed populations: Plants per m².

		Barley						
		0	50	100	200	300	400	500
	0 (x2)	x	x	x	x	x	x	x
	100	x	x	x	x	x		
	200	x	x	x	x	x		
<u>Chickweed</u>	400	x	x	x	x	x		
	600	x	x	x	x	x		
	500	x						
	1200	x						

97/R/RAW/1

Experimental diary:

09-Sep-96 : B : Chalk at 2.5 t.
09-Sep-96 : B : Ploughed and furrow pressed.
10-Sep-96 : B : Harrowed.
11-Sep-96 : T : Chickweed and barley broadcast by hand. Rotary harrowed, Apex, dressed Vitavax RS, drilled at 120 seeds per m².
12-Sep-96 : B : Rolled.
17-Oct-96 : B : Irrigated 25 mm.
14-Nov-96 : B : Tigress at 1.75 l in 200 l.
21-Nov-96 : T : **BARL DEN 0**, **CHCK DEN 0**: Katamaran at 2.5 l in 220 l.
05-Dec-96 : T : **CHCK DEN 0**: Galtak 50 SC at 1.5 l in 200 l.
28-Feb-97 : B : 34.5% N at 175 kg.
11-Mar-97 : T : **CHCK DEN 0**: Galtak 50 SC at 1.5 l in 220 l.
26-Mar-97 : B : 34.5% N at 350 kg.
09-Apr-97 : B : Barclay Eyetak at 1.1 l with Fastac at 200 ml in 300 l.
21-Jul-97 : B : Reglone at 3.0 l with Vassgro Non-ionic at 392 ml in 400 l.
28-Jul-97 : B : Combine harvested.

Previous crops: W. wheat 1995, s. wheat 1996.

- NOTE:**
- (1) The crop failed on 12 plots and one plot (treatment **BARL DEN B6**, **CHCK DEN C0**) yield was lost because of a combine error. The blocks were removed as a covariate to avoid estimating missing values. For treatment combinations lost see note after SED table in the analysis.
 - (2) Assessments of weed emergence were made in autumn. Crop and weed biomass was measured in December, May and June. Visual assessments of ground cover were made in December and plant heights were measured in March.

97/R/RAW/1

CLEANED GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

CHCK DEN BARL DEN	C0	C1	C2	C3	C4	C5	C6
B0	3.97	3.80	3.76	3.40	3.10	2.84	2.86
B1	2.91	2.68	2.81	2.60	2.38		
B2	2.15	3.40	2.71	2.28	2.42		
B3	2.06	1.62	1.63	1.37	1.99		
B4	1.41	2.17	1.83	1.46	1.00		
B5	1.55						
B6	0.74						

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

BARL DEN

CHCK DEN

0.397 min.rep

0.362 max-min

BARL DEN

CHCK DEN

min.rep Any of the remainder

max-min B0.C0 v any of the remainder

NOTE: SED applies only to the following treatment combinations:-
B0.C0, B0.C2, B0.C5, B0.C6, B1.C1, B1.C2, B1.C3, B1.C4, B2.C2,
B2.C3, B2.C4, B3.C0, B3.C3, B3.C4, B4.C0, B4.C1 and B4.C3.

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	17	0.397	16.5
GRAIN MEAN DM%	88.0		

97/W/RAW/1

WINTER OILSEED RAPE
DIAGNOSIS OF S DEFICIENCY

Object: To study the effects of rates of sulphur on the yield and sulphur content of winter oilseed rape - Woburn, Far Field II.

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

Design: 4 randomised blocks of 6 plots.

Whole plot dimensions: 3.0 x 12.0.

Treatments:

SULPHUR	Sulphur as gypsum (17.5% S) kg S:
S0	0
S1	5
S2	10
S3	20
S4	40
S5	80

Experimental diary:

- 02-Sep-96 : T : SULPHUR 5, 10, 20, 40, 80: Gypsum applied at 28.6, 57.1, 114, 229, 457 kg respectively.
- 02-Sep-96 : B : Drilled Apex, dressed Lindex-Plus FS at 6.6 kg per ha.
- 24-Jul-97 : B : Reglone at 3.0 l with Vassgro Non-ionic at 400 ml in 400 l.
- 05-Aug-97 : B : Combine harvested.

Previous crops: Potatoes 1995, w. wheat 1996.

NOTE: Plant samples were taken on four occasions between March and May to measure total sulphur content, sulphate-S and glutathione.

97/W/RAW/1

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

SULPHUR

S0	4.51
S1	4.17
S2	4.39
S3	4.44
S4	4.27
S5	4.33

Mean 4.35

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

SULPHUR

0.151

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

Stratum	d.f.	s.e.	cv%
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BLOCK.WP	15	0.213	4.9
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GRAIN MEAN DM% 90.6

PLOT AREA HARVESTED 0.00288

97/R/RAW/3

WINTER OILSEED RAPE

VARIETIES, FUNGICIDE AND DISEASE

Object: To study the development of light leaf spot (*Pyrenopeziza brassicae*) and stem canker (*Leptosphaeria maculans*) and to measure yield loss under various fungicide regimes - Little Hoos.

Sponsors: B.D.L. Fitt.

Design: 3 blocks of 2 plots split into 10.

Whole plot dimensions: 3.0 x 20.0.

Treatments:

1. **CULTIVAR** Variety:
 - B Bristol
 - C Capitol

2. **FUNGICIDE** Fungicide rate (kg) and timing:
 - None
 - R Tebuconazole at 0.125 kg monthly October to April
 - O Tebuconazole at 0.25 kg in October
 - N Tebuconazole at 0.25 kg in November
 - D Tebuconazole at 0.25 kg in December
 - OS Tebuconazole at 0.125 kg in October and spring
 - NS Tebuconazole at 0.125 kg in November and spring
 - DS Tebuconazole at 0.125 kg in December and spring
 - SF Tebuconazole at 0.25 kg in spring
 - FF Tebuconazole at 0.25 kg during flowering

Experimental diary:

- 23-Jul-96 : B : Chalk at 2.5 t.
- 26-Jul-96 : B : Ploughed and furrow pressed. Rolled.
- 30-Aug-96 : B : Spring-tine cultivated.
 - : T : **CULTIVAR** B: Rotary harrowed, Bristol, dressed Lindex-Plus FS, drilled at 120 seeds per m².
 - : T : **CULTIVAR** C: Rotary harrowed, Capitol, dressed Lindex-Plus FS, drilled at 120 seeds per m².
 - : B : Rolled.
- 25-Sep-96 : B : Irrigated 25 mm.
- 07-Oct-96 : B : Decis at 250 ml in 200 l.
- 09-Oct-96 : B : Draza at 5.5 kg.
- 23-Oct-96 : B : Draza at 5.5 kg.
- 30-Oct-96 : B : Butisan S at 1.5 l in 200 l.
 - : T : **FUNGICIDE** R, OS: Folicur at 0.5 l in 220 l.
 - : T : **FUNGICIDE** O: Folicur at 1.0 l in 220 l.
- 21-Nov-96 : T : **FUNGICIDE** R, NS: Folicur at 0.5 l in 220 l.
 - : T : **FUNGICIDE** N: Folicur at 1.0 l in 220 l.
- 16-Dec-96 : T : **FUNGICIDE** R, DS: Folicur at 0.5 l in 220 l.
 - : T : **FUNGICIDE** D: Folicur at 1.0 l in 220 l.

97/R/RAW/3

Experimental diary:

24-Jan-97 : T : FUNGCIDE R: Folicur at 0.5 l in 220 l.
 27-Feb-97 : T : FUNGCIDE R: Folicur at 0.5 l in 220 l.
 28-Feb-97 : B : 34.5% N at 175 kg.
 18-Mar-97 : B : 34.5% N at 350 kg.
 24-Mar-97 : T : FUNGCIDE R, OS, NS, DS: Folicur at 0.5 l in 220 l.
 : T : FUNGCIDE S: Folicur at 1.0 l in 220 l.
 09-Apr-97 : B : Fastac at 200 ml in 300 l.
 22-Apr-97 : T : FUNGCIDE F: Folicur at 1.0 l in 200 l.
 : T : FUNGCIDE R: Folicur at 0.5 l in 200 l.
 16-Jul-97 : B : Reglone at 3.0 l with Vassgro Non-ionic at 392 ml in
 400 l.
 23-Jul-97 : B : Combine harvested.

Previous crops: W. wheat 1995, set-aside 1996.

NOTE: Samples were taken monthly to assess levels of disease. Oil content of grain was measured after harvest.

GRAIN TONNES/HECTARE

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

CULTIVAR FUNGCIDE	B	C	Mean
-	3.96	5.00	4.48
R	5.35	5.26	5.30
O	4.69	5.27	4.98
N	4.43	5.44	4.93
D	4.46	5.25	4.85
OS	4.76	5.48	5.12
NS	4.64	5.71	5.17
DS	4.79	5.47	5.13
SF	4.61	5.37	4.99
FF	4.43	5.54	4.99
Mean	4.61	5.38	4.99

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

FUNGCIDE	CULTIVAR* FUNGCIDE
0.122	0.172

* Within the same level of **CULTIVAR** only

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP.SP	36	0.211	4.2
GRAIN MEAN DM%	92.2	SUB-PLOT AREA HARVESTED 0.00408	

97/W/RAS/1

SPRING OILSEED RAPE

SULPHUR FOR SPRING OILSEED RAPE

Object: To study the effects of rates of sulphur fertilizer on the yield and sulphur content of spring oilseed rape - Woburn, Stackyard I.

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

Design: 5 randomised blocks of 5 plots.

Whole plot dimensions: 3.0 x 15.0.

Treatments:

SULPHUR	Sulphur as potassium sulphate (kg S):
S0	0 (duplicated)
S1	10
S2	20
S4	40

NOTE: Potassium chloride was applied to balance the potassium to supply 111 kg K₂O.

Experimental diary:

- 13-Nov-97 : B : Ploughed.
- 26-Mar-97 : B : Heavy spring-tine cultivated.
- 02-Apr-97 : B : 34.5% N at 290 kg.
- 18-Apr-97 : T : **SULPHUR** S1, S2, S4: Potassium sulphate at 56, 111, 222 kg respectively.
- : T : **SULPHUR** S0, S1, S2: Muriate of potash at 185, 138, 93 kg respectively.
- : B : Rotary harrowed, Starlight, dressed Lindex-Plus FS, drilled at 250 seeds per m².
- 02-Sep-97 : B : Combine harvested.

Previous crops: W. wheat 1995, w. rye 1996.

NOTE: Samples were taken on three occasions between green-bud and mid-flowering for analysis of sulphur, sulphate-S and glutathione.

97/W/RAS/1

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

SULPHUR

S0	1.97
S1	2.07
S2	2.01
S4	2.03

Mean	2.01
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*** Standard errors of differences of means ***

SULPHUR

0.077	min.rep
0.066	max-min

SULPHUR

min.rep	Any of the remainder
max-min	S0 v any of the remainder

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	17	0.121	6.0
GRAIN MEAN DM%	88.7		
PLOT AREA HARVESTED	0.00286		

97/R/RAS/3

SPRING OILSEED RAPE

NEEM STUDY

Object: To test two formulations of neem on cereal aphids in spring wheat - Delafield.

Sponsors: L.E. Smart, B.J. Pye.

Design: 4 randomised blocks of 6 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments:

NEEMFORM	Formulation and timing:
-	None
I	Deltamethrin at aphid migration
O1	Neem oil at 2.5 kg in 10.4 l by electrostatic sprayer
O2	Neem oil at 2.5 kg in 200 l by hydraulic sprayer
E1	Neem extract at 7.5 g a.i. in 10.4 l by electrostatic sprayer
E2	Neem extract at 7.5 g a.i. in 200 l by hydraulic sprayer

Experimental diary:

31-Oct-96 : B : Ploughed.
21-Mar-97 : B : Rolled. Spring-tine cultivated.
06-Apr-97 : B : MTM Trifluralin at 2.3 l in 390 l. Spring-tine cultivated twice.
07-Apr-97 : B : Rotary harrowed, Starlight, recleaned, drilled at 120 seeds per m². Rolled.
09-Apr-97 : B : Irrigated 13 mm.
18-Apr-97 : B : Irrigated 13 mm.
01-May-97 : B : Cyperkill 10 at 300 ml with Vassgro Non-ionic at 50 ml in 300 l.
15-May-97 : B : Cyperkill 10 at 300 ml with Vassgro Non-ionic at 50 ml in 300 l.
30-May-97 : B : 34.5% N at 290 kg.
10-Jun-97 : T : **NEEMFORM** I: Decis at 0.5 l in 200 l.
 : T : **NEEMFORM** O1, O2, E1 and E2: Neem treatments applied.
17-Jun-97 : T : **NEEMFORM** O1, O2, E1 and E2: Neem treatments applied.
24-Jun-97 : T : **NEEMFORM** O1, O2, E1 and E2: Neem treatments applied.
04-Sep-97 : B : Combine harvested.

Previous crops: S. rape 1995, w. wheat 1996.

NOTES: (1) Neem products applied at 2.5 l product in 200 l for hydraulic sprayer and in 10.4 l for electrostatic sprayer.
(2) Pollen beetle populations were assessed weekly through the flowering period.

97/R/RAS/3

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

NEEMFORM

-	1.25
I	1.33
O1	1.39
O2	1.25
E1	1.39
E2	1.19
Mean	1.30

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

NEEMFORM

0.101

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	0.143	11.0

GRAIN MEAN DM% 83.6

PLOT AREA HARVESTED 0.00240

97/R/BES/3

SPRING BEANS

MUSTARD COMPETITION IN BEANS

Object: To study the effects of time of weed (mustard and oats) emergence on the growth and yield of spring beans - Long Hoos I/II.

Sponsor: P.J.W. Lutman.

Design: 3 randomised blocks of 6 x 2 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments:

TREATMNT Weed density and time of sowing weeds:

M0	None (duplicated)
SE M1	Sown with crop, mustard density 1
SE M2	Sown with crop, mustard density 2
SE M3	Sown with crop, mustard density 3
SE M4	Sown with crop, mustard density 4
SL M1	Sown 10 days after crop, mustard density 1
SL M2	Sown 10 days after crop, mustard density 2
SL M3	Sown 10 days after crop, mustard density 3
SL M4	Sown 10 days after crop, mustard density 4
SE 0	Oats sown with crop
SL 0	Oats sown 10 days after crop

Plant densities:-

Average mustard plants per m²:

SE M1	0
M2	0
M3	24
M4	20
SL M1	31
M2	36
M3	57
M4	152

Average oat plants per m²:

SE 0	90
SL 0	48

NOTE: Plants in treatment SE M1 and SE M2 failed.

Experimental diary:

11-Dec-96 : B : Ploughed.
24-Mar-97 : T : **TREATMNT** SE; M1, M2, M3, M4: Mustard broadcast.
 : T : **TREATMNT** SE 0: Oats broadcast.
 : B : Heavy spring-tine cultivated, rotary harrowed twice,
 Alfred, undressed, drilled at 50 seeds per m².
06-Apr-97 : B : Irrigated 25 mm.

97/R/BES/3

Experimental diary:

10-Apr-97 : T : TREATMNT SL; M1, M2, M3, M4: Mustard broadcast.
 : T : TREATMNT SL 0: Oats broadcast.
12-Apr-97 : B : Cyperkill 10 at 300 ml with Vassgro Non-ionic at 200 ml
 in 200 l.
16-Apr-97 : B : Irrigated 15 mm.
22-Apr-97 : B : Cyperkill 10 at 300 ml with Vassgro Non-ionic at 50 ml
 in 200 l.
23-Apr-97 : B : Irrigated 30 mm.
30-Apr-97 : B : Cyperkill 10 at 300 ml with Vassgro Non-ionic at 50 ml
 in 200 l.
19-May-97 : B : Cyperkill 10 at 300 ml with Vassgro Non-ionic at 50 ml
 in 300 l.
29-May-97 : B : Cyperkill 10 at 250 ml with Vassgro Non-ionic at 50 ml
 in 300 l.
08-Jul-97 : B : Clayton Turret at 2.0 l with Folio 575 SC at 2.0 l in
 300 l.
21-Aug-97 : B : Hand harvested.

Previous crops: W. wheat 1995, s. oats 1996.

- NOTES:** (1) Treatment SE M1 and SE M2 failed and are omitted from the analysis. Samples were taken in June and July of crops and weeds for biomass production.
- (2) Emerging plants were counted in early April and again in May. Stems per plant, heights of beans and mustard plants, oats shoot number and weights were measured in June and July.

97/R/BES/3

GRAIN TONNES/HECTARE

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

TREATMNT	
M0	4.16
SE M3	2.77
SE M4	2.85
SL M1	2.99
SL M2	2.71
SL M3	2.44
SL M4	1.83
SE O	2.45
SL O	3.57
Mean	2.99

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

TREATMNT	
0.444	min.rep
0.385	max-min

TREATMNT	
max-min	M0 v any of the remainder
min.rep	any of the remainder

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	19	0.544	18.2
GRAIN MEAN DM%	86.4		
PLOT AREA HARVESTED	0.00020		