

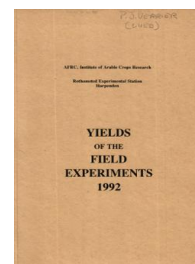
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Winter and Spring Oilseed Rape

Rothamsted Research

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92/R/RAW/1

WINTER OILSEED RAPE

FUNGAL PATHOGENS and GLUCOSINOLATES

Object: To monitor the accumulation of glucosinolates in pods and seeds following inoculation with a fungal pathogen - New Zealand.

Sponsors: K.J. Doughty, J. Fieldsend, G.F.J. Milford, R. Wallsgrove.

Design: 6 randomised blocks of 3 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments:

FUNGINOC	Fungicides and inoculation with fungal pathogen:
NOPRINA	No prochloraz, inoculation in autumn
PROCINS	Prochloraz applied in autumn and spring, inoculation in summer
PROCIPRO	Prochloraz applied in autumn and spring, iprodione in summer

- NOTES:** (1) **FUNGINOC** NOPRINA: Plots were inoculated with rape straw infected with *Alternaria* Sp., *Pyrenopeziza brassicae* and *Leptosphaeria maculans*.
- (2) **FUNGINOC** PROCINS: Plots were inoculated with a mycelial suspension of *Alternaria brassicae*.

Experimental diary:

06-Sep-91 : B : Straw chopped.
06-Sep-91 : B : Dolomite at 5.0 t.
07-Sep-91 : B : Ploughed and furrow pressed.
09-Sep-91 : B : Rotary harrowed twice, Bienvenu drilled at 5.6 kg, rolled.
22-Oct-91 : B : Butisan S at 1.5 l and Pilot at 0.075 l with Actipron at 2.0 l in 200 l.
10-Nov-91 : T : **FUNGINOC** NOPRINA: Inoculated.
02-Dec-91 : T : **FUNGINOC** PROCINS and PROCIPRO: Autumn prochloraz at 0.50 kg in 200 l.
20-Feb-92 : B : 34.5% N at 220 kg.
25-Mar-92 : B : 34.5% N at 290 kg.
01-Apr-92 : T : **FUNGINOC** PROCINS and PROCIPRO: Spring prochloraz at 0.50 kg in 200 l.
15-Jun-92 : T : **FUNGINOC** PROCINS: Inoculated.
22-Jun-92 : T : **FUNGINOC** PROCIPRO: Iprodione at 0.50 kg in 200 l.
22-Jul-92 : B : Reglone at 3.0 l with Farmon Blue at 0.52 l in 260 l.
28-Jul-92 : B : Combine harvested.
Previous crops: W. wheat 1990 and 1991.

NOTE: Samples were taken for disease assessment in December, May, June and July. Pods and seeds were sampled in June and July to measure glucosinolates and the activity of glucosinolate biosynthetic enzymes.

92/R/RAW/1

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

FUNGINOC	
NOPRINA	2.79
PROCINS	2.32
PROCIPRO	3.08
Mean	2.73

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

FUNGINOC	
	0.141

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	10	0.245	9.0

GRAIN MEAN DM% 86.8

PLOT AREA HARVESTED 0.00230

92/R/RAW/2

WINTER OILSEED RAPE

VARIETIES AND FUNGICIDES

Object: To investigate the effects of fungicides on a range of low glucosinolate varieties - Great Harpenden II.

Sponsors: V.J. Church, B.D.L. Fitt.

Design: 4 randomised blocks of 14 plots.

Whole plot dimensions: 3.0 x 21.0.

Treatments: All combinations of:-

1. **VARIETY** Varieties:

CAPRCORN	Capricorn
ENVOL	Envol
EUROL	Eurol
FALCON	Falcon
LIBRAVO	Libravo
SAMOURAI	Samourai
TAPIDOR	Tapidor

2. **FUNGICIDE** Fungicides:

NONE	None
PR+IP	Prochloraz in autumn and spring, iprodione in summer.

NOTE: CAPRCORN plots were systematically arranged at one end of each block.

Experimental diary:

11-Aug-91 : B : Straw chopped.
21-Aug-91 : B : Deep tine cultivated with vibrating tines, 60 cm apart and 45 cm deep.
22-Aug-91 : B : Dolomite at 5.0 t, ploughed.
26-Aug-91 : B : Rolled.
10-Sep-91 : B : Cultivated twice by rotary grubber.
11-Sep-91 : B : Rolled.
11-Sep-91 : **T** : **VARIETY** ENVOL, EUROL, FALCON, LIBRAVO, SAMOURAI, TAPIDOR, CAPRCORN: Rotary harrowed. All varieties, dressed, drilled at 120 seeds per square metre.
22-Oct-91 : B : Butisan S at 1.5 l and Pilot at 75 ml with Actipron at 2.0 l in 200 l.
02-Dec-91 : **T** : **FUNGICIDE** PR+IP: Sportak 45 at 1.1 l in 200 l.
20-Feb-92 : B : 34.5% N at 220 kg.
20-Mar-92 : B : 34.5% N at 290 kg.
01-Apr-92 : **T** : **FUNGICIDE** PR+IP: Sportak 45 at 1.1 l in 200 l.
04-Jun-92 : **T** : **FUNGICIDE** PR+IP: Rovral Flo at 2.0 l in 200 l.
15-Jul-92 : B : Reglone at 3.0 l with Farmon Blue at 0.26 l in 260 l.
22-Jul-92 : B : Combine harvested.

Previous crops: W. wheat 1990, w. barley 1991.

92/R/RAW/2

NOTE: Crop samples were taken in autumn, spring and summer to assess disease incidence. Glucosinolate levels and oil content of the grain were measured.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

FUNGCIDE	NONE	PR+IP	Mean
VARIETY			
CAPRCORN	3.90	4.33	4.12
ENVOL	3.69	3.73	3.71
EUROL	3.70	4.05	3.88
FALCON	3.70	3.49	3.60
LIBRAVO	3.10	3.31	3.21
SAMOURAI	3.67	4.03	3.85
TAPIDOR	3.82	4.26	4.04
Mean	3.65	3.89	3.77

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

VARIETY	FUNGCIDE	VARIETY FUNGCIDE
0.141	0.075	0.199

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	39	0.282	7.5

GRAIN MEAN DM% 85.6

PLOT AREA HARVESTED 0.00483

92/R/RAW/4

WINTER OILSEED RAPE

N, S AND GLUCOSINOLATES

Object: To study the separate and combined effects of rates of nitrogen and sulphur on the quality and yield of three varieties of w. oilseed rape - Hoosfield Old 4-Course.

Sponsors: J.Fieldsand, M. Powell.

Design: 4 randomised blocks of 3 x 3 x 3 plots.

Whole plot dimensions: 3.0 x 19.0.

Treatments: All combinations of:-

1. **VARIETY** Varieties:
ARIANA Ariana
FALCON Falcon
TAPIDOR Tapidor
2. **N** Rates of nitrogen (kg N) in spring:
0
150
250
3. **S** Rates of sulphur (kg S) in spring:
0
50
100

NOTE: Sulphur was applied as gypsum (17.5% S).

Experimental diary:

- 20-Aug-91 : B : Straw chopped.
- 25-Aug-91 : B : Ploughed.
- 26-Aug-91 : B : Rolled.
- 02-Sep-91 : B : Rotary harrowed twice, rolled.
- 03-Sep-91 : T : **VARIETY** ARIANA: Rotary harrowed, Ariana, dressed, drilled at 6.7 kg.
- 03-Sep-91 : T : **VARIETY** FALCON: Rotary harrowed, Falcon, dressed, drilled at 7.4 kg.
- 03-Sep-91 : T : **VARIETY** TAPIDOR: Rotary harrowed, Tapidor, dressed, drilled at 6.3 kg.
- 03-Sep-91 : B : Rolled.
- 05-Sep-91 : B : Butisan S at 1.5 l in 200 l.
- 24-Oct-91 : B : Pilot at 75 ml with Actipron at 2.0 l in 200 l.
- 19-Feb-92 : T : **N** 150: 34.5% N at 145 kg.
- : T : **N** 250: 34.5% N at 145 kg.
- 05-Mar-92 : T : **S** 50: Gypsum at 284 kg.
- : T : **S** 100: Gypsum at 568 kg.

92/R/RAW/4

Experimental diary:

09-Apr-92 : T : N 150: 34.5% N at 290 kg.
 : T : N 250: 34.5% N at 580 kg.
 28-Jul-92 : B : Combine harvested.

Previous crops: Linseed, s. beans 1990, w. wheat 1991.

- NOTES:** (1) To allow for differing thousand seed weights of varieties sown, seed rates varied in order to achieve similar numbers of seeds sown per square metre.
 (2) Soil and crop samples were taken throughout the growing season to measure levels of nitrogen and sulphur. Crop samples were analysed for glucosinolate content. Thousand seed weight was measured throughout seed development period.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

	N	0	150	250	Mean
VARIETY					
ARIANA		1.29	3.09	3.39	2.59
FALCON		1.33	3.10	3.57	2.67
TAPIDOR		1.24	3.02	3.46	2.57
Mean		1.29	3.07	3.48	2.61
	S	0	50	100	Mean
VARIETY					
ARIANA		2.58	2.62	2.57	2.59
FALCON		2.62	2.71	2.67	2.67
TAPIDOR		2.60	2.49	2.63	2.57
Mean		2.60	2.61	2.62	2.61
	S	0	50	100	Mean
N					
0		1.21	1.30	1.34	1.29
150		3.20	3.06	2.95	3.07
250		3.39	3.45	3.58	3.48
Mean		2.60	2.61	2.62	2.61
	S	0	50	100	
VARIETY	N				
ARIANA	0	1.21	1.41	1.25	
	150	3.27	3.06	2.94	
	250	3.27	3.38	3.52	
FALCON	0	1.25	1.37	1.37	
	150	3.12	3.15	3.04	
	250	3.50	3.62	3.61	
TAPIDOR	0	1.18	1.13	1.41	
	150	3.22	2.97	2.86	
	250	3.41	3.36	3.62	

92/R/RAW/4

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

VARIETY	N	S	VARIETY
			N
0.058	0.058	0.058	0.100
VARIETY	N	VARIETY	
S	S	N	
		S	
0.100	0.100	0.174	

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	78	0.245	9.4
GRAIN MEAN DM%	86.6		
SUB PLOT AREA HARVESTED	0.00299		

92/R/RAW/5

WINTER OILSEED RAPE

DISEASE FORECASTING AND YIELD LOSS

Object: To investigate the relationship between the timing and intensity of various diseases, crop development and yield loss - Pastures.

Sponsors: H.A. McCartney, B.D.L. Fitt, M.E. Lacey, G. Muuray.

Design: 2 randomised blocks of 27 plots plus 2 randomised blocks of 13 plots.

Whole plot dimensions: 3.0 x 25.0.

Treatments:

FUNGFREQ Prochloraz, iprodione and thiophanate-methyl on the following dates:

TREATMENT NUMBER	07 OCT	04 NOV	02 DEC	06 JAN	10 FEB	09 MAR	13 APR	11 MAY	08 JUN	06 JUL
1	-	-	-	-	-	-	-	-	-	-
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
4	✓	✓	✓	✓	✓	✓	✓	✓	-	-
5	✓	✓	✓	✓	✓	✓	✓	-	-	-
6	✓	✓	✓	✓	✓	✓	-	-	-	-
7	✓	✓	✓	✓	✓	-	-	-	-	-
8	✓	✓	✓	✓	-	-	-	-	-	-
9	✓	✓	✓	-	-	-	-	-	-	-
10	✓	✓	-	-	-	-	-	-	-	-
11	✓	-	-	-	-	-	-	-	-	-
12	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
13	-	-	✓	✓	✓	✓	✓	✓	✓	✓
14	-	-	-	✓	✓	✓	✓	✓	✓	✓
15	-	-	-	-	✓	✓	✓	✓	✓	✓
16	-	-	-	-	-	✓	✓	✓	✓	✓
17	-	-	-	-	-	-	✓	✓	✓	✓
18	-	-	-	-	-	-	-	✓	✓	✓
19	-	-	-	-	-	-	-	-	✓	✓
20	-	-	-	-	-	-	-	-	-	✓
21	✓	✓	✓	✓	-	-	-	✓	✓	✓
22	Autumn inoculation			No spray						
23	"	"		and treatment 18						
24	"	"		"	"	15				
25	Spring inoculation			"	"	21				
26	"	"		"	"	8				
27	Summer		"	"	"	5				

92/R/RAW/5

Experimental diary:

07-Aug-91 : B : Straw chopped.
21-Aug-91 : B : Gramoxone 100 at 2.0 l with Agral at 0.10 l in 200 l.
27-Aug-91 : B : Heavy spring-tine cultivated twice, disced.
28-Aug-91 : B : Rotary harrowed, Envol, dressed Lindex-Plus FS, drilled at 5.6 kg.
29-Aug-91 : B : Rolled.
30-Aug-91 : B : Butisan S at 1.5 l in 200 l.
14-Sep-91 : B : Irrigation: 12 mm applied.
12-Oct-91 : T : FUNGFREQ 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 21, 25, 26, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
06-Nov-91 : T : FUNGFREQ 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 21, 25, 26, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
02-Dec-91 : T : FUNGFREQ 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 21, 25, 26, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
14-Jan-92 : T : FUNGFREQ 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 21, 25, 26, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
11-Feb-92 : T : FUNGFREQ 2, 3, 4, 5, 6, 7, 12, 13, 14, 15, 24, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
19-Feb-92 : B : 34.5% N at 220 kg.
21-Feb-92 : B : PK as (0:18:36) at 940 kg.
16-Mar-92 : T : FUNGFREQ 2, 3, 4, 5, 6, 12, 13, 14, 15, 16, 24, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
20-Mar-92 : B : 34.5% N at 220 kg.
21-Apr-92 : T : FUNGFREQ 2, 3, 4, 5, 12, 13, 14, 15, 16, 24, 27: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
14-May-92 : T : FUNGFREQ 2, 3, 4, 12, 13, 14, 15, 16, 17, 18, 21, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
09-Jun-92 : T : FUNGFREQ 2, 3, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
09-Jul-92 : B : Reglone at 3.0 l with Farmon Blue at 0.26 l in 260 l.
16-Jul-92 : B : Combine harvested.

Previous crops: W. barley 1990, w. oilseed rape 1991.

- NOTES:**
- (1) Only the yields from the main trial of 54 plots are reported.
 - (2) Inoculation was achieved by the application of rape straw from the 1991 harvest.
 - (3) Treatments planned for 6 July were not applied as crop was about to be disiccated. Summer inoculation of Treatment number 27 was not applied.
 - (4) Field assessments were made or crop samples taken to estimate disease before each spray treatment was applied. Crop growth and development were estimated at intervals during the growing season.

92/R/RAW/5

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

FUNGFREQ	
1	2.68
2	3.38
3	3.66
4	3.37
5	3.29
6	3.21
7	3.15
8	3.13
9	3.10
10	3.16
11	3.06
12	3.52
13	3.32
14	3.52
15	3.08
16	3.42
17	3.58
18	3.06
19	3.00
20	3.17
21	3.42
22	2.85
23	3.13
24	3.72
25	3.42
26	3.52
27	3.28
Mean	3.27

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

FUNGFREQ
0.298

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	26	0.298	9.1
GRAIN MEAN DM%	79.5		
PLOT AREA HARVESTED	0.00575		

92/R/RAW/6

WINTER OILSEED RAPE

LIGHT LEAF SPOT STUDY

Object: To study methods for the prediction and detection of early infection of light leaf spot (*Pyrenopeziza brassicae*) and subsequent effects on crop phenology and yield - Great Knott III.

Sponsors: L. Figueroa, B.D.L. Fitt.

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

Whole plot dimensions: 9.0 x 21.0.

Treatments:

Whole plots

1. **FUNGCIDE** Time of fungicide application:

NONE	None
PROCAUT	Prochloraz in autumn
PROCWINT	Prochloraz in winter
PROCSPR	Prochloraz in spring
IPROSUM	Iprodione in summer
PA+PS+IS	Prochloraz in autumn and spring, iprodione in summer

Sub plots

2. **VARIETY** Varieties:

CAPRCORN	Capricorn
FALCON	Falcon

Experimental diary:

28-Aug-91 : B : Straw chopped.
05-Sep-91 : B : Ploughed, rolled.
06-Sep-91 : T : **VARIETY** CAPRCORN: Rotary harrowed. Capricorn, dressed
Lindex-Plus FS, drilled at 9.7 kg.
06-Sep-91 : T : **VARIETY** FALCON: Rotary harrowed. Falcon, dressed
Lindex-Plus FS, drilled at 8.0 kg.
06-Sep-91 : B : Rolled.
13-Oct-91 : B : Pilot at 0.15 l with Cropspray 11 E at 2.5 l in 200 l.
11-Nov-91 : B : Benazalox at 0.75 kg and Butisan S at 1.5 l in 200 l.
02-Dec-91 : T : **FUNGCIDE** PROCAUT, PA+PS+IS: Sportak 45 at 0.55 l in
200 l.
17-Feb-92 : T : **FUNGCIDE** PROCWINT: Sportak 45 at 0.55 l in 200 l.
19-Feb-92 : B : 34.5% N at 220 kg.
21-Feb-92 : B : Benazalox at 1.5 kg in 200 l.
25-Mar-92 : B : 34.5% N at 290 kg.
09-Apr-92 : T : **FUNGCIDE** PROCSPR, PA+PS+IS: Sportak 45 at 1.1 l in
200 l.
04-Jun-92 : T : **FUNGCIDE** IPROSUM, PA+PS+IS: Rovral Flo at 2.0 l in
200 l.

92/R/RAW/6

Experimental diary:

15-Jul-92 : B : Reglone at 3.0 l with Farmon Blue at 0.26 l in 260 l.
 20-Jul-92 : B : Combine harvested.

Previous crops: W. wheat 1990 and 1991.

NOTE: Disease incidence on the crop was assessed at intervals during the growing season. Air-borne inoculation was monitored from autumn to spring using bait plants and a Burkard spore sampler. At harvest oil and glucosinolate levels in the seed were determined.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

FUNGCIDE VARIETY	NONE	PROCAUT	PROCWINT	PROCSRP	IPROSUM	PA+PS+IS	Mean
CAPRCORN	4.60	4.55	4.38	4.67	4.45	4.53	4.53
FALCON	3.75	3.91	3.68	3.96	3.68	4.06	3.84
Mean	4.18	4.23	4.03	4.31	4.07	4.29	4.18

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

	FUNGCIDE	VARIETY	FUNGCIDE VARIETY
	0.220	0.077	0.257
Except when comparing means with the same level(s) of FUNGCIDE			0.188

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	0.311	7.4
BLOCK.WP.SP	18	0.266	6.4

GRAIN MEAN DM% 79.3

SUB PLOT AREA HARVESTED 0.00483

92/R/RAW/9

WINTER OILSEED RAPE

WINTER OILSEED RAPE AND WEED COMPETITION

Object: To investigate the effects of four weed species on the growth and yield of w. oilseed rape - Delharding.

Sponsor: P.J.W. Lutman.

Design: 4 randomised blocks of 24 plots. Treatments balanced for blocks in two directions.

Whole plot dimensions: 3.0 x 14.0.

Treatments: All combinations of:

1. **SPECIES** Weed species:

CHICKWD	Chickweed (<i>Stellaria media</i>)
SPEEDWEL	Speedwell (<i>Veronica persica</i>)
CLEAVERS	Cleavers (<i>Galium aparine</i>)
MAYWEED	Mayweed (<i>Matricaria perforata</i>)

2. **DENSITY** Weed density (plants per square metre):

	CHICKWEED	SPEEDWELL	CLEAVERS	MAYWEED
D0	0	0	0	0
D1	148	149	4	24
D2	267	271	9	32
D3	665	623	19	97
D4	1279	1110	37	120
D5	1988	2173	78	187

NOTE: Target weed densities were 0, 1x, 2x, 4x, 8x and 10x plants per square metre, where 'x' approximated to 100 for chickweed and speedwell, 10 for cleavers and 50 for mayweed.

Experimental diary:

12-Aug-91 : B : Straw chopped.
14-Aug-91 : B : PK as (0:16:36) at 1040 kg.
20-Aug-91 : B : Deep tine cultivated with vibrating tines 60 cm apart, 45 cm deep.
21-Aug-91 : B : Ploughed, rolled.
09-Sep-91 : B : Cultivated twice by rotary grubber. Spring-tine cultivated, rolled.
10-Sep-91 : T : **SPECIES** CHICKWD, SPEEDWEL, CLEAVERS: Chickweed, speedwell and cleavers broadcast by hand.
11-Sep-91 : B : Libravo, dressed Hydraguard and Rovral WP, drilled at 6.1 kg, rolled.
14-Sep-91 : T : **SPECIES** MAYWEED: Mayweed broadcast by hand.
15-Oct-91 : B : Pilot at 75 ml with Actipron at 2.0 l in 200 l.
14-Jan-92 : T : **DENSITY** D0: Benazalox at 1.25 kg and Kerb 50 W at 1.0 kg in 220 l.
19-Feb-92 : B : 34.5% N at 220 kg.

92/R/RAW/9

Experimental diary:

25-Mar-92 : B : 34.5% N at 290 kg.
 20-Jul-92 : B : Reglone at 3.0 l with Farmon Blue at 0.52 l in 260 l.
 27-Jul-92 : T : Combine harvested.

Previous crops: W. wheat 1990, w. barley 1991.

NOTE: Estimation of crop growth and observations and counts of weeds were made during the growing season.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

DENSITY SPECIES	D0	D1	D2	D3	D4	D5	Mean
CHICKWD	2.98	2.43	2.38	2.12	2.58	2.75	2.54
SPEEDWEL	3.34	3.04	2.87	3.40	3.23	2.78	3.11
CLEAVERS	3.11	2.93	3.33	2.91	2.46	2.74	2.91
MAYWEED	2.95	3.01	2.95	3.05	3.30	2.74	3.00
Mean	3.10	2.85	2.88	2.87	2.89	2.75	2.89

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

SPECIES	DENSITY	SPECIES	DENSITY
	0.150		0.184
			0.369

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	69	0.521	18.0

GRAIN MEAN DM% 89.1

PLOT AREA HARVESTED 0.00230

92/R/RAS/1

SPRING OILSEED RAPE

WEED COMPETITION AND SPRING RAPE

Object: To study the relative competitive effects of two weed species and oats at different fertilizer nitrogen levels on the growth and yield of s. oilseed rape - Sawyers I E.

Sponsor: P.J.W. Lutman.

Design: 3 randomised blocks of 20 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **SPECIES** Weed species:

CHICKWD	Chickweed (<i>Stellaria media</i>)
CHARLOCK	Charlock (<i>Sinapis arvensis</i>)

2. **DENSITY** Weed density (plants per square metre):

	CHICKWEED	CHARLOCK
D0	0	0
D1	128	8
D2	235	18
D3	672	24
D4	1220	62

plus all combinations of:

1. **DENSITYN** Density of chickweed (plants per square metre):

ND1	0
ND2	1194

2. **N** Nitrogen fertilizer (kg N):

50
100
150
200

plus 2 extra plots

OAT RATE Density of cultivated oats (*Avena sativa*) (plants per square metre):

OT1	79
OT2	240

92/R/RAS/1

- NOTES:** (1) Target weed densities (number of plants per square metre):
 SPECIES CHICKWD: 0, 150, 300, 600 and 1200.
 SPECIES CHARLOCK: 0, 30, 60, 120 and 240.
 DENSITYN: 0 and 600.
- (2) Target weed sowing densities (number of seeds sown per square metre):
 OAT RATE: 120 and 480.

Experimental diary:

- 06-Sep-91 : B : Straw chopped.
31-Oct-91 : B : Ploughed (start).
26-Nov-91 : B : Ploughed (finish).
21-Feb-92 : B : PK as (0:18:36) at 940 kg.
09-Apr-92 : T : N 50: 34.5% N at 145 kg.
 : T : N 100: 34.5% N at 290 kg.
 : T : N 150: 34.5% N at 435 kg.
 : T : N 200: 34.5% N at 580 kg.
09-Apr-92 : B : Spring-tine cultivated twice.
10-Apr-92 : B : Rotary harrowed, Puma, dressed Lindex-Plus FS, drilled
 at 6.2 kg.
10-Apr-92 : T : **OAT RATE** 120: Dula, broadcast at 120 seeds per square
 metre.
10-Apr-92 : T : **OAT RATE** 480: Dula, broadcast at 480 seeds per square
 metre.
26-Jun-92 : B : Ripcord at 0.30 l in 260 l.
25-Aug-92 : T : Hand harvested (start).
29-Aug-92 : T : Hand harvested (finish).

Previous crops: W. wheat 1990, s. beans 1991.

NOTE: Crop and weed counts were made and dry weight samples were taken at intervals during the growing season.

92/R/RAS/1

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

DENSITY SPECIES	D0	D1	D2	D3	D4	Mean
CHICKWD	3.02	3.04	3.15	2.99	3.21	3.08
CHARLOCK	3.26	3.04	2.77	2.52	2.10	2.74
Mean	3.14	3.04	2.96	2.75	2.65	2.91
N	50	100	150	200	Mean	
DENSITYN						
ND1	2.92	2.89	3.21	3.32	3.09	
ND2	2.75	3.12	3.01	3.13	3.00	
Mean	2.84	3.00	3.11	3.23	3.05	
OAT RATE						
OT1	1.31					
OT2	0.38					
Mean	0.84					

GRAND MEAN 2.76

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

SPECIES	DENSITY	DENSITN	N
0.080	0.127	0.090	0.127
OAT RATE	SPECIES	DENSITN	N
0.179	0.179	0.179	

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	38	0.219	8.0

GRAIN MEAN DM% *

PLOT AREA HARVESTED 0.00020