ROTHAMSTED RESEARCH

Yields of the Field Experiments 1993

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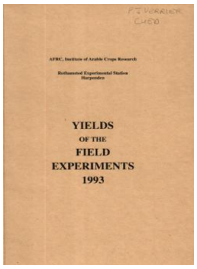

Winter Oilseed Rape

Rothamsted Research

Rothamsted Research (1994) *Winter Oilseed Rape ;* Yields Of The Field Experiments 1993, pp 122 - 141 **- DOI: https://doi.org/10.23637/ERADOC-1-48**

93/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 - Little Knott I

Sponsors: K.J. Doughty, J.K. Fieldsend, R. Wallsgrove, G. Kiddle, R.N. Bennett.

Design: 2 randomised blocks of 4 plots (treatments duplicated).

Whole plot dimensions: 3.0 x 10.0.

Treatments:

FUNGCIDE	Fungicide applied in November and April, inoculation or fungicide in June:
N+A+INOC	Prochloraz November and April, inoculated June
N+A+IPRO	Prochloraz November and April, iprodione June

NOTE: **FUNGCIDE** N+A+INOC: During pod development, areas within plots were inoculated with a mycelial suspension of *Alternaria brassicae* and covered with plastic tents for two days to ensure infection.

Experimental diary:

10-Aug-92 : B : Shallow cultivated with Bomford Dynadrive.
02-Sep-92 : B : Ploughed, furrow pressed.
03-Sep-92 : B : Rotary harrowed, Bienvenu, undressed, drilled at 120 seeds per square metre.
14-Oct-92 : B : Decis at 250 ml in 200 l.
24-Nov-92 : **T** : **FUNGCIDE** N+A+INOC, N+A+IPRO: Sportak 45 at 1.1 l in 220 l.
29-Jan-93 : B : Dow Shield at 0.50 l and Rapier at 1.6 l in 200 l.
18-Feb-93 : B : 34.5% N at 170 kg.
15-Mar-93 : B : PK as (0:18:36) at 1250 kg.
23-Mar-93 : B : 34.5% N at 370 kg.
15-Apr-93 : **T** : **FUNGCIDE** N+A+INOC, N+A+IPRO: Sportak 45 at 1.1 l in 200 l.
13-Jun-93 : **T** : **FUNGCIDE** N+A+INOC: Inoculated.
28-Jun-93 : **T** : **FUNGCIDE** N+A+IPRO: Rovral Flo at 2.0 l in 200 l.
09-Aug-93 : B : Combine harvested.

Previous crops: W. wheat 1991 and 1992.

NOTE: Samples of pods were taken from the time of inoculation until harvest to measure the effect of inoculation on the content of glucosinolates and the activity of biosynthetic enzymes in pods and seeds.

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/1

GRAIN (AT 90% DM) TONNES/HECTARE

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

FUNGCIDE	
N+A+INOC	2.96
N+A+IPRO	3.78
Mean	3.37

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

FUNGCIDE
0.195

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	5	0.275	8.2

GRAIN MEAN DM% 84.0

PLOT AREA HARVESTED 0.00230

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/2

WINTER OILSEED RAPE

VARIETIES AND FUNGICIDES

Object: To investigate the effects of fungicides on a range of low glucosinolate varieties - Bones Close.

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

Design: 4 randomised blocks of 2 x 6 plots.

Whole plot dimensions: 3.0 x 21.0.

Treatments: All combinations of:-

1. **VARIETY** Varieties:

CAPRCORN	Capricorn
ENVOL	Envol
FALCON	Falcon
LIBRAVO	Libravo
SAMOURAI	Samourai
ROCKET	Rocket

2. **FUNGCIDE** Fungicides:

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

Experimental diary:

27-Jul-92 : B : Shallow cultivated with Bomford Dynadrive.
28-Jul-92 : B : Rolled.
18-Aug-92 : B : Sting CT at 2.0 l in 200 l.
20-Aug-92 : B : Ploughed, furrow pressed.
26-Aug-92 : **T** : **VARIETY** CAPRCORN, ENVOL, FALCON, LIBRAVO, SAMOURAI, ROCKET: Rotary harrowed. All varieties dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
22-Oct-92 : B : Benazalox at 0.75 l and Butisan S at 1.5 l in 200 l.
08-Dec-92 : **T** : **FUNGCIDE** PR+CA+IP: Sportak 45 at 1.1 l and Tripart Defensor FL at 0.50 l in 200 l.
18-Feb-93 : B : 34.5% N at 170 kg.
08-Mar-93 : **T** : **FUNGCIDE** PR+CA+IP: Sportak 45 at 1.1 l and Tripart Defensor FL at 0.50 l in 200 l.
23-Mar-93 : B : 34.5% N at 370 kg.
18-May-93 : **T** : **FUNGCIDE** PR+CA+IP: Rovral Flo at 2.0 l in 200 l.
19-Jul-93 : B : Stefes Diquat at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
26-Jul-93 : B : Combine harvested.

Previous crops: W. barley 1991 and 1992.

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/2

NOTE: Samples were taken throughout the year for disease assessments on leaves, stems and pods. Oil content of seed was measured after harvest.

GRAIN (AT 90% DM) TONNES/HECTARE

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

FUNGCIDE / **VARIETY**	NONE	PR+CA+IP	Mean
CAPRCORN	4.17	4.68	4.42
ENVOL	4.59	5.08	4.84
FALCON	4.08	4.27	4.18
LIBRAVO	4.16	4.68	4.42
SAMOURAI	4.33	4.73	4.53
ROCKET	3.87	3.99	3.93
Mean	4.20	4.57	4.39

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

VARIETY	**FUNGCIDE**	**VARIETY FUNGCIDE**
0.090	0.052	0.127

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	33	0.180	4.1

GRAIN MEAN DM% 83.2

PLOT AREA HARVESTED 0.00483

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/3

WINTER OILSEED RAPE

EFFECTS OF BEHAVIOUR MODIFYING CHEMICALS

Object: To study the effects of behaviour modifying chemicals in the field on the pests of w. oilseed rape - Bones Close.

Sponsors: L.E. Smart, M.M. Blight.

Design: 5 x 5 quasi-complete latin square.

Whole plot dimensions: 9.0 x 9.0.

Treatments:

CHEMICAL	Behaviour modifying chemicals:
BMC 0	None
BMC A	A
BMC B	B
BMC C	C
BMC D	D

NOTE: The behaviour modifying chemicals were mixtures of host plant volatiles in various combinations. They were released from point sources above the crop from October 1992 until mid-June 1993.

Experimental diary:

27-Jul-92 : B : Shallow cultivated with Bomford Dynadrive.
28-Jul-92 : B : Rolled.
18-Aug-92 : B : Sting CT at 2.0 l in 200 l.
20-Aug-92 : B : Ploughed, furrow pressed.
26-Aug-92 : B : Rotary harrowed, Libravo, undressed, drilled at 120 seeds per square.
22-Oct-92 : B : Benazalox at 0.75 l and Butisan S at 1.5 l in 200 l.
18-Feb-93 : B : 34.5% N at 170 kg.
23-Mar-93 : B : 34.5% N at 370 kg.
19-Jul-93 : B : Stefes Diquat at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
23-Jul-93 : B : Combine harvested.

Previous crops: W. barley 1991 and 1992.

NOTE: Plant samples were taken for cabbage stem flea beetle population assessments in December and February. Assessments of pollen beetle and seed weevil populations were made from April to June.

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/3

GRAIN (AT 90% DM) TONNES/HECTARE

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

CHEMICAL

BMC O	4.08
BMC A	3.51
BMC B	3.72
BMC C	3.69
BMC D	4.09
Mean	3.82

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

CHEMICAL

0.255

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

Stratum	d.f.	s.e.	cv%
ROW.COL	12	0.403	10.5

GRAIN MEAN DM% 79.9

PLOT AREA HARVESTED 0.00207

https://doi.org/10.23637/ERADOC-1-48

93/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 - Bones Close.

Sponsors: J.Fieldsend, H. Hutchings.

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

Whole plot dimensions: 3.0 x 21.0.

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:

27-Jul-92 : B : Shallow cultivated with Bomford Dynadrive.
28-Jul-92 : B : Rolled.
18-Aug-92 : B : Sting CT at 2.0 l in 200 l.
20-Aug-92 : B : Ploughed, furrow pressed.
29-Aug-92 : T : **VARIETY** ARIANA, FALCON, TAPIDOR: Rotary harrowed. All varieties, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
: B : Rolled.
22-Oct-92 : B : Benazalox at 0.75 l and Butisan S at 1.5 l in 200 l.
22-Feb-93 : T : **N** 150, 250: 34.5% N at 145 kg.
24-Feb-93 : T : **S** 50: Gypsum at 284 kg.
: T : **S** 100: Gypsum at 568 kg.
15-Mar-93 : T : **N** 150: 34.5% N at 290 kg.
: T : **N** 250: 34.5% N at 580 kg.
19-Jul-93 : B : Stefes Diquat at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
26-Jul-93 : B : Combine harvested.

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/4

Previous crops: W. barley 1991 and 1992.

NOTE: Seed samples were analysed for glucosinolate content.

GRAIN (AT 90% DM) TONNES/HECTARE

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

N	0	150	250	Mean
VARIETY				
ARIANA	3.10	3.23	3.09	3.14
FALCON	3.43	3.66	3.78	3.62
TAPIDOR	3.15	3.48	3.40	3.34
Mean	3.23	3.46	3.42	3.37

S	0	50	100	Mean
VARIETY				
ARIANA	3.13	3.08	3.22	3.14
FALCON	3.52	3.67	3.68	3.62
TAPIDOR	3.24	3.43	3.37	3.34
Mean	3.30	3.39	3.42	3.37

S	0	50	100	Mean
N				
0	3.21	3.23	3.24	3.23
150	3.36	3.52	3.49	3.46
250	3.31	3.43	3.53	3.42
Mean	3.30	3.39	3.42	3.37

	S	0	50	100
VARIETY	**N**			
ARIANA	0	3.19	2.89	3.23
	150	3.17	3.34	3.19
	250	3.02	3.00	3.24
FALCON	0	3.34	3.42	3.52
	150	3.52	3.80	3.67
	250	3.69	3.79	3.85
TAPIDOR	0	3.11	3.37	2.97
	150	3.39	3.43	3.62
	250	3.23	3.48	3.50

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/4

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

VARIETY	N	S	VARIETY N
0.065	0.065	0.065	0.113

VARIETY S	N S	VARIETY N S
0.113	0.113	0.196

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	78	0.277	8.2

GRAIN MEAN DM% 87.1

PLOT AREA HARVESTED 0.00483

https://doi.org/10.23637/ERADOC-1-48

93/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 - Fosters ex-Ley Arable.

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

Design: 3 randomised blocks of 25 plots.

Whole plot dimensions: 3.0 x 25.0.

Treatments:

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

TREATMENT NUMBER	14 OCT	04 NOV	07 DEC	08 JAN	29 JAN	23 FEB	24 MAR	19 APR	18 MAY	22 JUN	12 JUL
1	-	-	-	-	-	-	-	-	-	-	-
2	✓	-	-	-	-	-	-	-	-	-	-
3	✓	✓	-	-	-	-	-	-	-	-	-
4	✓	✓	✓	-	-	-	-	-	-	-	-
5	✓	✓	✓	✓	-	-	-	-	-	-	-
6	✓	✓	✓	✓	✓	-	-	-	-	-	-
7	✓	✓	✓	✓	✓	✓	-	-	-	-	-
8	✓	✓	✓	✓	✓	✓	✓	-	-	-	-
9	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
10	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-
11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
13	-	-	-	-	-	-	-	-	-	-	✓
14	-	-	-	-	-	-	-	-	-	✓	✓
15	-	-	-	-	-	-	-	-	✓	✓	✓
16	-	-	-	-	-	-	-	✓	✓	✓	✓
17	-	-	-	-	-	-	✓	✓	✓	✓	✓
18	-	-	-	-	-	✓	✓	✓	✓	✓	✓
19	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
20	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
21	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
22	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
23	✓	✓	✓	✓	✓	-	-	-	✓	✓	✓
24	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
25	✓	✓	✓	✓	✓	-	-	-	-	-	-

NOTES: (1) Plots were inoculated by the application of rape straw from the 1992 harvest.

(2) All plots were inoculated in autumn on 16 October 1992. In addition, plots of treatments 23 and 25 were inoculated in spring on 9 March 1993 and plots of treatment 24 were inoculated in summer on 28 June.

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93/R/RAW/5

Experimental diary:

10-Aug-92 : B : Shallow cultivated with Bomford Dynadrive.
17-Aug-92 : B : Dolomite at 5.0 t.
21-Aug-92 : B : Ploughed, furrow pressed.
28-Aug-92 : B : Rotary harrowed, Envol, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
29-Aug-92 : B : Rolled.
07-Oct-92 : B : Draza at 5.5 kg.
14-Oct-92 : **T** : **FUNGFREQ** 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
19-Oct-92 : B : Pilot at 75 ml with Cropspray 11E at 2.0 l in 200 l.
04-Nov-92 : **T** : **FUNGFREQ** 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 22, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
07-Dec-92 : **T** : **FUNGFREQ** 4, 5, 6, 7, 8, 9, 10, 11, 12, 21, 22, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
08-Jan-93 : **T** : **FUNGFREQ** 5, 6, 7, 8, 9, 10, 11, 12, 20, 21, 22, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
19-Jan-93 : B : Matrikerb at 1.6 kg in 400 l.
29-Jan-93 : **T** : **FUNGFREQ** 6, 7, 8, 9, 10, 11, 12, 19, 20, 21, 22, 23, 24, 25: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
17-Feb-93 : B : 34.5% N at 170 kg.
23-Feb-93 : **T** : **FUNGFREQ** 7, 8, 9, 10, 11, 12, 18, 19, 20, 21, 22, 24: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
23-Mar-93 : B : 34.5% N at 370 kg.
24-Mar-93 : **T** : **FUNGFREQ** 8, 9, 10, 11, 12, 17, 18, 19, 20, 21, 22, 24: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
19-Apr-93 : **T** : **FUNGFREQ** 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 24: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
18-May-93 : **T** : **FUNGFREQ** 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
22-Jun-93 : **T** : **FUNGFREQ** 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
12-Jul-93 : **T** : **FUNGFREQ** 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23: Compass at 1.5 l and Sportak 45 at 0.55 l in 200 l.
17-Jul-93 : B : Reglone at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
28-Jul-93 : B : Combine harvested.

Previous crops: W. wheat 1991 and 1992.

NOTE: Plants were sampled monthly, prior to spray treatment application, to monitor disease progress. Numbers of air-borne spores were counted and growth stage measurements made throughout the season. Seed and plant dry weights, seed oil analysis and stubble counts were made at harvest.

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/5

GRAIN (AT 90% DM) TONNES/HECTARE

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

FUNGFREQ	
1	3.35
2	4.17
3	4.33
4	4.38
5	4.69
6	4.56
7	4.74
8	4.70
9	4.56
10	4.55
11	4.62
12	4.76
13	3.74
14	3.97
15	3.58
16	4.07
17	4.08
18	4.41
19	4.46
20	4.42
21	4.75
22	4.77
23	5.10
24	4.71
25	4.71
Mean	4.41

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

FUNGFREQ
0.207

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	48	0.254	5.8

GRAIN MEAN DM% 83.8

PLOT AREA HARVESTED 0.00575

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/7

WINTER OILSEED RAPE

WEED COMPETITION - RAPE AND CHICKWEED

Object: To study the competitive effect of chickweed (*Stellaria media*) on the growth and yield of w. rape sown on three different dates - Summerdells II.

Sponsors: P.J.W. Lutman.

Design: 3 blocks of 3 plots split into 6 sub plots.

Whole plot dimensions: 14.0 x 21.0.

Treatments: All combinations of:-

Whole plots

1. **SOW DATE** Time of sowing w. rape:

EARLY	Early September
MID	Mid September
LATE	Late September

Sub plots

2. **WEED DEN** Density of chickweed (plants per square metre):

	SOW DATE		
	EARLY	MID	LATE
D0(US)	0	0	0
D1	44	54	84
D2	134	279	340
D3	475	1296	1169
D4	1299	2189	1983
D0(S)	0	0	0

NOTES: (1) Target **SOW DATE** EARLY: Late August, MID: Early September, LATE: Mid September.

(2) Target **WEED DEN** (plants per square metre) at each sowing date:

D0	D1	D2	D3	D4
0	50	200	600	1200

(3) Chickweed seeds were broadcast by hand in the central 2.5 m of the plot.

(4) Broad-leaved herbicides applied to **WEED DEN** D0(S) plots only.

Experimental diary:

28-Jul-92 : B : Shallow cultivated with Bomford Dynadrive.
18-Aug-92 : B : Sting CT at 1.5 l in 200 l.
26-Aug-92 : B : Ploughed and furrow pressed.
03-Sep-92 : **T** : **SOW DATE** EARLY: Rotary harrowed. Weed seeds broadcast. Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/7

Experimental diary:

15-Sep-92 : **T** : **SOW DATE** MID: Rotary harrowed. Weed seeds broadcast. Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
28-Sep-92 : **T** : **SOW DATE** LATE: Rotary harrowed.
29-Sep-92 : **T** : **SOW DATE** LATE: Rotary harrowed. Weed seeds broadcast. Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
23-Oct-92 : B : Club at 5.5 kg.
04-Nov-92 : **T** : **SOW DATE** EARLY, MID: Pilot at 75 ml with Cropspray 11E at 2.0 l in 200 l.
10-Dec-92 : **T** : **SOW DATE** EARLY, MID, LATE: D0(S) plots only: Benazalox at 0.75 kg and Kerb 50 W at 1.0 kg in 220 l.
18-Feb-93 : B : 34.5% N at 170 kg.
23-Mar-93 : B : 34.5% N at 370 kg.
17-Jul-93 : B : Reglone at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
28-Jul-93 : B : Combine harvested.

Previous crops: W. wheat 1991, w. barley 1992.

NOTE: Emergence counts were made and samples of weed and crop taken on four occasions throughout the season for observations, counts and growth estimations.

GRAIN TONNES/HECTARE

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

WEED DEN / **SOW DATE**	D0(US)	D1	D2	D3	D4	D0(S)	Mean
EARLY	3.54	2.45	1.65	1.38	1.61	3.79	2.41
MID	3.66	3.12	2.33	2.33	2.31	3.78	2.92
LATE	3.73	2.56	2.10	1.95	1.43	3.19	2.49
Mean	3.64	2.71	2.03	1.89	1.78	3.59	2.61

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

SOW DATE	**WEED DEN**	**SOW DATE WEED DEN**
0.286	0.130	0.352

Except when comparing means with the same level(s) of
SOW DATE 0.225

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.350	13.4
BLOCK.WP.SP	30	0.276	10.6

GRAIN MEAN DM% 80.1 SUB PLOT AREA HARVESTED 0.00260

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/8

WINTER OILSEED RAPE

WEED COMPETITION - RAPE AND CLEAVERS

Object: To study the competitive effect of cleavers (*Galium aparine*) on the growth and yield of w. rape sown on three different dates - Summerdells II.

Sponsors: P.J.W. Lutman.

Design: 3 blocks of 3 plots split into 6 sub plots.

Whole plot dimensions: 14.0 x 21.0.

Treatments: All combinations of:-

Whole plots

1. **SOW DATE** Time of sowing w. rape:

EARLY	Early September
MID	Mid September
LATE	Late September

Sub plots

2. **WEED DEN** Density of cleavers (plants per square metre):

	SOW DATE		
	EARLY	MID	LATE
D0(US)	0	0	0
D1	4	2	5
D2	18	7	14
D3	38	11	54
D4	77	26	112
D0(S)	0	0	0

NOTES: (1) Target **SOW DATE** EARLY: Late August, MID: Early September, LATE: Mid September.

(2) Target **WEED DEN** (plants per square metre) at each sowing date:

D0	D1	D2	D3	D4
0	4	16	32	64

(3) Cleaver seeds were broadcast by hand in the central 2.5 m of the plot.

(4) Broad-leaved herbicides applied to **WEED DEN** D0(S) plots only.

Experimental diary:

28-Jul-92 : B : Shallow cultivated with Bomford Dynadrive.
18-Aug-92 : B : Sting CT at 1.5 l in 200 l.
26-Aug-92 : B : Ploughed and furrow pressed.
03-Sep-92 : **T** : **SOW DATE** EARLY: Rotary harrowed. Weed seeds broadcast. Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.

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Experimental diary:

15-Sep-92 : **T** : **SOW DATE** MID: Rotary harrowed. Weed seeds broadcast. Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
28-Sep-92 : **T** : **SOW DATE** LATE: Rotary harrowed.
29-Sep-92 : **T** : **SOW DATE** LATE: Rotary harrowed. Weed seeds broadcast. Rotary harrowed, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
23-Oct-92 : B : Club at 5.5 kg.
04-Nov-92 : **T** : **SOW DATE** EARLY, MID: Pilot at 75 ml with Cropspray 11E at 2.0 l in 200 l.
10-Dec-92 : **T** : **SOW DATE** EARLY, MID, LATE: D0(S) plots only: Benazalox at 0.75 kg and Kerb 50 W at 1.0 kg in 220 l.
18-Feb-93 : B : 34.5% N at 170 kg.
23-Mar-93 : B : 34.5% N at 370 kg.
17-Jul-93 : B : Reglone at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
28-Jul-93 : B : Combine harvested.

Previous crops: W. wheat 1991, w. barley 1992.

NOTE: Emergence counts were made and samples of Weed and crop taken on four occasions throughout the season for observations, counts and growth estimations.

GRAIN TONNES/HECTARE

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

WEED DEN	D0(US)	D1	D2	D3	D4	D0(S)	Mean
SOW DATE							
EARLY	3.51	3.07	2.13	1.87	1.23	3.81	2.60
MID	4.23	3.84	2.97	2.48	2.20	4.27	3.33
LATE	3.63	3.15	2.53	1.99	1.52	3.00	2.64
Mean	3.79	3.35	2.54	2.11	1.65	3.69	2.86

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

	SOW DATE	**WEED DEN**	**SOW DATE WEED DEN**
	0.155	0.138	0.268
Except when comparing means with the same level(s) of **SOW DATE**			0.240

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	4	0.190	6.7
BLOCK.WP.SP	30	0.293	10.3

GRAIN MEAN DM% 73.6 SUB PLOT AREA HARVESTED 0.00260

https://doi.org/10.23637/ERADOC-1-48

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WINTER OILSEED RAPE

WEED COMPETITION - RAPE AND MAYWEED

Object: To study the competitive effect of mayweed (*Matricaria perforata*) on the growth and yield of w. oilseed rape - Summerdells II.

Sponsors: P.J.W. Lutman.

Design: 4 blocks of 6 plots.

Whole plot dimensions: 3.0 x 14.0.

Treatments:

WEED DEN	Density of mayweed (plants per square metre):
D0	0
D1	20
D2	40
D3	86
D4	150
D5	400

NOTES: (1) Target **WEED DEN** (plants per square metre): D0 0, D1 12.5, D2 25, D3 50, D4 100, D5 200.
(2) Mayweed seeds were broadcast by hand in the central 2.5 m of the plot.

Experimental diary:

28-Jul-92 : B : Shallow cultivated with Bomford Dynadrive.
18-Aug-92 : B : Sting CT at 1.5 l in 200 l.
26-Aug-92 : B : Ploughed, furrow pressed.
15-Sep-92 : B : Rotary harrowed twice, Falcon, dressed Lindex-Plus FS, drilled at 120 seeds per square metre.
: T : **WEED DEN:** Weed seeds broadcast, raked in.
16-Sep-92 : B : Rolled.
22-Oct-92 : B : Draza at 5.5 kg.
18-Feb-93 : B : 34.5% N at 170 kg.
23-Mar-93 : B : 34.5% N at 370 kg.
17-Jul-93 : B : Reglone at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
28-Jul-93 : B : Combine harvested.

Previous crops: W. wheat 1991, w. barley 1992.

NOTE: Emergence counts were made and samples of weed and crop taken on four occasions throughout the season for observations, counts and growth estimations.

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GRAIN TONNES/HECTARE

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

WEED DEN

D0	3.33
D1	2.67
D2	1.89
D3	1.81
D4	1.65
D5	1.02
Mean	2.06

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

WEED DEN
0.194

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	0.274	13.3

GRAIN MEAN DM% 88.0

PLOT AREA HARVESTED 0.00253

https://doi.org/10.23637/ERADOC-1-48

93/R/RAW/10

WINTER OILSEED RAPE

DISEASE PRESSURE AND GLUCOSINOLATES

Object: To study the effects on crop growth, yield and glucosinolate levels of winter oilseed rape grown under different disease pressures - Highfield ex - Ley Arable.

Sponsors: K.J. Doughty, H.A. McCartney, M.E. Lacey.

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

Whole plot dimensions: 6.0 x 10.0.

Treatments: All combinations of:-

1. **VARIETY** Varieties:

CAPRCORN	Capricorn
FALCON	Falcon

2. **FUNGINOC** Fungicide spray application and level of inoculation using infected straw:

NOFUNG	No fungicide spray
FUNGCIDE	Fungicide spray applied autumn, spring and summer
INOC 1	Inoculation level 1
INOC 2	Inoculation level 2

NOTE: Infected straw from a previous experiment was used for the inoculation. **FUNGINOC** INOC 1 received inoculum at one-quarter of the rate applied to INOC 2.

Experimental diary:

11-Aug-92 : B : Shallow cultivated with Bomford Dynadrive.
18-Aug-92 : B : Dolomite at 5.0 t.
19-Aug-92 : B : Gramoxone 100 at 2.0 l with Farmon Blue at 0.1 l in 200 l.
29-Aug-92 : B : Ploughed, furrow pressed.
01-Sep-92 : **T** : **VARIETY** CAPRCORN, FALCON: Rotary harrowed, varieties, dressed Lindex-Plus FS, drilled at 120 seeds per square metre, rolled.
20-Oct-92 : **T** : **FUNGINOC** INOC 1, INOC 2: Infected straw treatments applied.
24-Nov-92 : **T** : **FUNGINOC** FUNGCDE: Sportak 45 at 1.1 l in 220 l.
18-Jan-93 : B : Kerb 50W at 1.4 kg in 200 l.
17-Feb-93 : B : 34.5% N at 170 kg.
23-Mar-93 : B : 34.5% N at 370 kg.
15-Apr-93 : **T** : **FUNGINOC** FUNGCDE: Sportak 45 at 1.1 l in 200 l.
22-Jun-93 : **T** : **FUNGINOC** FUNGCDE: Rovral Flo at 2.0 l in 200 l.
21-Jul-93 : B : Stefes Diquat at 3.0 l with Vassgro Spreader at 0.40 l in 400 l.
28-Jul-93 : B : Combine harvested.

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Previous crops: W. wheat 1991, w. barley 1992.

NOTE: Assessments were made of disease progress, crop growth and canopy structure throughout the season. Samples were taken during vegetative growth and at harvest for estimation of glucosinolate concentrations.

GRAIN (AT 90% DM) TONNES/HECTARE

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

VARIETY / **FUNGINOC**	CAPRCORN	FALCON	Mean
NOFUNG	2.43	2.71	2.57
FUNGCDE	3.11	3.02	3.06
INOC 1	1.43	1.54	1.48
INOC 2	0.91	1.64	1.27
Mean	1.97	2.23	2.10

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

	FUNGINOC	**VARIETY**	**FUNGINOC VARIETY**
	0.177	0.126	0.251
Except when comparing means with the same level(s) of **FUNGINOC**			0.251

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	9	0.250	11.9
BLOCK.WP.SP	12	0.356	17.0

GRAIN MEAN DM% 79.4

SUB PLOT AREA HARVESTED 0.00230

https://doi.org/10.23637/ERADOC-1-48