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Linseed

Rothamsted Research

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93/R/LN/1

LINSEED

VARIETIES AND DISEASE

Object: To investigate the effects of pathogens on varieties of linseed -
Sawyers II.

Sponsors: B.D.L. Fitt, J. Harold.

Design: 4 randomised blocks of 2 X 5 plots.

Whole plot dimensions: 3.0 x 15.0.

Treatments: All combinations of:-

1. **VARIETY** Varieties:

ANTARES
BARBARA
MCGREGOR
NORLIN
CD 1747

2. **FUNGICIDE** Fungicidal sprays:

NONE None
APPLIED Iprodione during flowering, prochloraz and carbendazim
plus maneb post-flowering

NOTE: Basal fungicidal seed dressing (prochloraz) was applied.

Experimental diary:

22-Jan-93 : B : Ploughed.
19-Apr-93 : B : Heavy spring-tine cultivated.
20-Apr-93 : T : **VARIETY** ANTARES, BARBARA, MCGREGOR, NORLIN, CD 1747:
Rotary harrowed, varieties, dressed Prelude 20LF,
drilled at 700 seeds per square metre.
12-May-93 : B : 34.5% N at 220 kg.
13-May-93 : B : Decis at 0.30 l in 200 l.
01-Jun-93 : B : Ally at 30 g in 200 l.
28-Jun-93 : T : **FUNGICIDE** APPLIED: Rovral Flo at 2.0 l in 200 l.
22-Jul-93 : T : **FUNGICIDE** APPLIED: Sportak 45 at 0.90 l in 200 l.
: T : **FUNGICIDE** APPLIED: Tripart Defensor FL at 1.0 l in 200 l.
04-Aug-93 : T : **FUNGICIDE** APPLIED: Multi-W FL at 5.0 l in 200 l.
06-Sep-93 : B : Stefes Diquat at 3.0 l with Vassgro Spreader at 0.30 l
in 260 l.
23-Oct-93 : T : Combine harvested.

Previous crops: W. wheat 1991, s. wheat 1992.

93/R/LN/1

NOTE: Emergence counts were made. Samples taken fortnightly between June and October for visual assessment of disease and assessment of pathogenic fungi by isolation on agar. Plant populations prior to harvest and oil content of seed were measured.

GRAIN (AT 90% DM) TONNES/HECTARE

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

FUNGCIDE VARIETY	NONE	APPLIED	Mean
ANTARES	2.03	2.16	2.10
BARBARA	2.41	2.86	2.63
MCGREGOR	2.71	2.80	2.76
NORLIN	2.30	2.34	2.32
CD 1747	2.38	2.75	2.56
Mean	2.37	2.58	2.47

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

FUNGCIDE	VARIETY	FUNGCIDE VARIETY
0.070	0.111	0.157

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	27	0.222	9.0

GRAIN MEAN DM% 87.1

PLOT AREA HARVESTED 0.00276

93/R/LN/2

LINSEED

WEED COMPETITION IN LINSEED

Object: To investigate the effects of two weed species on each other and on the growth and yield of linseed - Delafield.

Sponsor: R.C. Van Acker, P.J.W. Lutman.

Design: 2 blocks of 5 x 5 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **BRLY DEN** Barley density (established plants per square metre):

B0	0
B1	12
B2	22
B3	39
B4	61

2. **CHCK DEN** Chickweed density (established plants per square metre):

C0	0
C1	50
C2	112
C3	192
C4	381

NOTES: (1) Target plant populations (established plants per square metre):

BRLY DEN 0, 25, 50, 100, 200

CHCK DEN 0, 100, 200, 400, 800

(2) Barley and chickweed seeds were sown on restricted areas of each plot as follows:

BRLY DEN central 2m, **CHCK DEN** central 2.5m.

Experimental diary:

13-Nov-92 : B : FYM at 25 tonnes.

20-Jan-93 : B : Ploughed.

29-Apr-93 : B : Rotary harrowed.

30-Apr-93 : **T** : **CHCK DEN** C1, C2, C3, C4: Broadcast by hand.

: **T** : **BRLY DEN** B1, B2, B3, B4: Alexis, dressed Cerevax Extra, drilled.

: B : Rotary harrowed, Antares, dressed Prelude 20 LF, drilled at 700 seeds per square metre.

05-May-93 : B : Rolled.

12-May-93 : B : 34.5% N at 220 kg.

93/R/LN/2

Experimental diary:

13-May-93 : B : Decis at 0.30 l in 200 l.
 06-Sep-93 : B : Stefes Diquat at 3.0 l with Vassgro Spreader at 0.30 l
 in 260 l.
 17-Sep-93 : B : Harvested by hand.

Previous crops: W. wheat 1992, s. beans 1992.

NOTE: Leaf area was measured and ground cover assessed for each species on two occasions. Dry weights of all species were determined on four occasions. On the fourth occasion components of yield of barley and number of chickweed capsules per square metre were measured. Components of yield of linseed were measured at harvest.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

CHCK DEN BRLY DEN	C0	C1	C2	C3	C4	Mean
B0	2.07	2.03	1.93	2.14	2.19	2.07
B1	2.01	1.91	2.13	1.56	1.51	1.82
B2	2.14	1.73	1.65	1.81	1.63	1.79
B3	1.73	1.49	1.47	1.37	1.47	1.51
B4	1.57	1.34	1.31	1.22	1.16	1.32
Mean	1.91	1.70	1.70	1.62	1.59	1.70

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

BRLY DEN	CHCK DEN	BRLY DEN CHCK DEN
0.068	0.068	0.152

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	24	0.152	8.9

GRAIN MEAN DM% *

PLOT AREA HARVESTED 0.00010

93/R/LN/3

LINSEED

BOTRYTIS AND SEED INFECTION

Object: To determine the effect of *Botrytis cinerea* on the growth and yield of linseed, and to determine the route of infection to the seed - Sawyers II.

Sponsors: J. Harold, B.D.L. Fitt.

Design: 3 blocks of 6 plots.

Whole plot dimensions: 3.0 x 20.0.

Treatments:

FUNGCIDE	Fungicidal sprays applied consecutively during flowering:
NONE	None
CA+PR+CA	Carbendazim, prochloraz and carbendazim
IP+PR+IP	Iprodione, prochloraz and iprodione

Experimental diary:

22-Jan-93 : B : Ploughed.
19-Apr-93 : B : Heavy spring-tine cultivated.
20-Apr-93 : B : Rotary harrowed, Antares, dressed Prelude 20 LF, drilled at 700 seeds per square metre.
28-Jun-93 : T : **FUNGCIDE** CA+PR+CA: Tripart Defensor FL at 1.0 l in 200 l.
 : T : **FUNGCIDE** IP+PR+IP: Rovral Flo at 2.0 l in 200 l.
22-Jul-93 : T : **FUNGCIDE** CA+PR+CA, IP+PR+IP: Sportak 45 at 0.90 l in 200 l.
04-Aug-93 : T : **FUNGCIDE** CA+PR+CA: Tripart Defensor FL at 1.0 l in 200 l.
 : T : **FUNGCIDE** IP+PR+IP: Rovral Flo at 2.0 l in 200 l.
23-Oct-93 : B : Combine harvested.

Previous crops: W. wheat 1991, s. wheat 1992.

NOTE: Emergence counts were made. Samples were taken fortnightly from mid-June until September for assessment of growth stages and disease symptoms. Incidence of pathogenic fungi on various plant components was assessed by isolation on agar.

93/R/LN/3

GRAIN (AT 90% DM) TONNES/HECTARE

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

FUNGCIDE	
NONE	1.82
CA+PR+CA	2.25
IR+PR+IP	2.10
Mean	2.06

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

FUNGCIDE
0.067

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	13	0.116	5.6

GRAIN MEAN DM% 87.5

PLOT AREA HARVESTED 0.00460

93/R/LN/6

LINSEED

WEED TYPES IN LINSEED

Object: To study the effects of three contrasting weed species on the growth and yield of linseed - Delafield.

Sponsors: P.J.W. Lutman.

Design: 3 blocks of (3 x 5) + 2 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **SPECIES** Weed species:

CULT OAT	Cultivated oats (<i>Avena sativa</i>)
FAT HEN	Fat hen (<i>Chenopodium album</i>)
KNOT GR	Knotgrass (<i>Polygonum aviculare</i>)

2. **SOW DEN** Density of established plants (plants per square metre):

	Cultivated oats	Fat hen	Knotgrass
D0	0	0	0
D1	6	2	2
D2	21	9	6
D3	36	18	11
D4	66	32	18

plus two extra plots

WILD OAT Density of established wild oats (plants per square metre):

W1	10
W2	38

NOTES: (1) Target seed densities (seeds sown per square metre):

SPECIES	D0	D1	D2	D3	D4
Cultivated oats	0	12.5	50	100	200
Fat hen	0	100	400	800	1600
Knotgrass	0	120	480	960	1920
WILD OAT	W1	W2			
	50	200			

(2) Weed species were sown in the central 2.5 m of each plot.

93/R/LN/6

Experimental diary:

13-Nov-92 : B : Farmyard manure at 25 tonnes.
 20-Jan-93 : B : Ploughed.
 29-Apr-93 : B : Rotary harrowed.
 : T : **SPECIES CULT OAT, FAT HEN, KNOT GRASS**: Seed broadcast by hand.
 : T : **WILD OAT W1, W2**: Seed broadcast by hand.
 : B : Rotary harrowed, Antares, dressed Prelude 20 LF, drilled at 700 seeds per square metre.
 05-May-93 : B : Rolled.
 12-May-93 : B : 34.5% N at 220 kg.
 13-May-93 : B : Decis at 0.30 l in 200 l.
 06-Sep-93 : B : Stefes Diquat at 1.0 l with Vassgro Spreader at 0.30 l in 260 l.
 12-Sep-93 : B : Harvested by hand.

Previous crops: W. wheat 1991, s. beans 1992.

NOTE: Emergence counts were made. Samples were taken for measurement of dry weight, height and boll numbers. Crop and weed plant numbers were counted throughout the season.

GRAIN TONNES/HECTARE

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

SOW DEN	D0	D1	D2	D3	D4	Mean
SPECIES						
CULT OAT	2.37	2.43	2.12	1.81	1.36	2.02
FAT HEN	2.41	2.09	2.13	1.93	1.77	2.07
KNOT GR	2.38	2.41	2.29	2.10	1.96	2.23
Mean	2.39	2.31	2.18	1.94	1.70	2.10
WILD OAT						
	W1	W2	Mean			
	2.32	2.06	2.19			
GRAND MEAN	2.11					

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

SPECIES	SOW DEN	SPECIES SOW DEN &WILD OAT
0.090	0.116	0.201

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	32	0.246	11.6
GRAIN MEAN DM%	81.0	PLOT AREA HARVESTED	0.00010