ROTHAMSTED RESEARCH

Yields of the Field Experiments 1997

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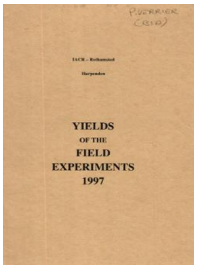

Lupins

Rothamsted Research

Rothamsted Research (1998) *Lupins ;* Yields Of The Field Experiments 1997, pp 141 - 152 **- DOI: https://doi.org/10.23637/ERADOC-1-53**

97/R/LP/3

LUPINS

POD DEVELOPMENT AND YIELD

Object: To monitor the role of nitrogen in pod abortion, development and yield. To determine the relationship between leaves and pods in supplying carbohydrate to the seed - Stackyard.

Sponsors: J.E. Leach, G.F.J. Milford, I. Shield.

Design: 4 randomised blocks of 5 plots.

Whole plot dimensions: 6.0 x 9.0.

Treatments:

T	Nitrogen or leaf removal:
-	None
SN	Spring nitrogen
FN	Foliar nitrogen
HL	Half leaves removed
AL	All leaves removed

Experimental diary:

25-Jun-96 : B : Ploughed and furrow pressed.
26-Jul-96 : B : Rolled.
12-Sep-96 : B : Spring-tine cultivated.
13-Sep-96 : B : Rotary harrowed.
16-Sep-96 : B : Rotary harrowed, DETN 20, undressed, drilled at 40 seeds per m^2.
23-Sep-96 : B : Stomp 400 SC at 5.0 l in 294 l. Spannit at 1.5 l in 294 l.
04-Oct-96 : B : Irrigated 25 mm.
08-Nov-96 : B : Carbetamex at 3.0 kg with MSS Simazine 50 FL at 2.3 l in 200 l. Decis at 300 ml in 200 l.
12-Dec-96 : B : Rovral Flo at 1.0 l in 200 l. Standon Tebuconazole at 0.5 l in 200 l.
20-Mar-97 : **T** : **T** SN: 46% N at 217 kg.
27-Mar-97 : **T** : **T** SN: 46% N at 217 kg.
01-May-97 : B : Compass at 3.0 l in 200 l.
19-May-97 : **T** : **T** SN: 46% N at 217 kg.
18-Jun-97 : B : Mistral at 1.0 l in 300 l.
24-Jun-97 : **T** : **T** FN: 46% N at 32.6 kg.
01-Jul-97 : **T** : **T** FN: 46% N at 32.6 kg.
03-Jul-97 : **T** : **T** HL, AL: Leaf removal started.
07-Jul-97 : **T** : **T** FN: 46% N at 32.6 kg.
08-Jul-97 : B : Danadim Dimethoate 40 at 850 ml in 300 l.
14-Jul-97 : **T** : **T** FN: 46% N at 32.6 kg.
16-Jul-97 : **T** : **T** HL, AL: Leaf removal finished.
05-Sep-97 : B : Harvest at 3.0 l in 400 l.
23-Sep-97 : B : Combine harvested.

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

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97/R/LP/3

NOTES: (1) Dry matter was assessed regularly and light interception measured April to August. Leaf pod photosynthesis was measured frequently. Components of yield were measured at harvest and plant nitrogen content.
(2) 46% N was applied to one half plot of **T** -, in error, this has been omitted from the analysis.
(3) Because of poor emergence the yields of one block was lost and omitted from the analysis.

GRAIN TONNES/HECTARE

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

T	
-	1.75
SN	1.90
FN	1.56
HL	1.41
AL	0.91
Mean	1.51

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

T
0.208

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	8	0.294	19.5

GRAIN MEAN DM% 86.5

PLOT AREA HARVESTED 0.00216

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97/R/LP/4

LUPINS

FUSARIUM AND SOWING DATES

Object: To assess the effects of seed treatment fungicides and autumn fungicide spray on *Fusarium* and plant survival - Sawyers II.

Sponsors: G.L. Bateman, J. Etheridge.

Design: 3 different half replicates of 4 x 2 x 2 x 2.

Plot dimensions: 5.4 x 9.0.

Treatments: All combinations of:-

1.	**FUNGCIDE**	Fungicide:
	-	None
	IC	Iprodione and carbendazim seed dressing
	BG	Fludioximil seed dressing
	P	Prochloraz foliar spray
2.	**SOW DATE**	Sowing date:
	S1	04-Sep-96
	S2	01-Oct-96
3.	**INOC**	*Fusarium avenaceum* inoculum:
	F-	None
	FI	Inoculated
4.	**SUM FUNG**	Summer fungicide:
	-	None
	SP	Tebuconazole spray in May and June

NOTE: *Fusarium* inoculum was on sterile oat grain applied to the seedbed.

Experimental diary:

29-Jul-96 : B : Subsoiled.
31-Jul-96 : B : Ploughed and furrow pressed.
03-Sep-96 : B : Rotary harrowed.
: **T** : **SOW DATE** S1: Inoculum applied.
04-Sep-96 : **T** : **SOW DATE** S1: Rotary harrowed twice, CH304/70, dressed as treatment, drilled at 40 seeds per m^2.
06-Sep-96 : **T** : **SOW DATE** S1: Stomp 400 SC at 5.0 l in 220 l.
01-Oct-96 : **T** : **SOW DATE** S2: *Fusarium* inoculum applied, rotary harrowed twice, CH304/70, dressed as treatment, drilled at 40 seeds per m^2.
02-Oct-96 : **T** : **SOW DATE** S2: Stomp 400 SC at 5.0 l in 220 l.
08-Nov-96 : B : Carbetamex at 3.0 kg with MSS Simazine 50 FL at 2.3 l in 200 l. Decis at 300 ml in 200 l.
14-Nov-96 : **T** : **FUNGCIDE** P: Sportak 45 at 1.0 l in 220 l.

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Experimental diary:

17-Mar-97 : B : *Pleiochaeta setosa* inoculum applied at 72 kg.
13-May-97 : **T** : **SUM FUNG** SP: Folicur at 1.0 l in 220 l.
09-Jun-97 : **T** : **SUM FUNG** SP: Folicur at 1.0 l in 220 l.
02-Sep-97 : B : Harvest at 3.0 l in 400 l.
22-Sep-97 : B : Combine harvested.

Previous crops: S. oats 1995, set-aside 1996.

NOTES: (1) *Pleiochaeta* inoculum was also on sterile oat grain.
(2) Plant populations were assessed monthly October to July. Plant samples were assessed for disease on four occasions in winter. Foliar diseases were assessed in summer.
(3) Only 2 way tables are presented except **FUNGCIDE INOC**.

GRAIN TONNES/HECTARE

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

SOW DATE	S1	S2	Mean
FUNGCIDE			
-	0.22	0.03	0.12
IC	1.30	0.25	0.77
BG	1.21	0.15	0.68
P	1.72	0.09	0.90
Mean	1.11	0.13	0.62

INOC	F-	FI	Mean
FUNGCIDE			
-	0.16	0.08	0.12
IC	0.78	0.76	0.77
BG	0.71	0.64	0.68
P	0.88	0.93	0.90
Mean	0.63	0.60	0.62

INOC	F-	FI	Mean
SOW DATE			
S1	1.11	1.10	1.11
S2	0.15	0.10	0.13
Mean	0.63	0.60	0.62

SUM FUNG	-	SP	Mean
SOW DATE			
S1	0.28	1.94	1.11
S2	0.02	0.23	0.13
Mean	0.15	1.09	0.62

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GRAIN TONNES/HECTARE

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

SUM FUNG INOC	-	SP	Mean
F-	0.12	1.15	0.63
FI	0.18	1.03	0.60
Mean	0.15	1.09	0.62

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

FUNGCIDE	SOW DATE	INOC	FOLICUR
0.156	0.110	0.110	0.135

FUNGCIDE SOW DATE	FUNGCIDE INOC	SOW DATE INOC	SOW DATE FOLICUR
0.220	0.220	0.156	0.174

Except when comparing means with the same level(s) of
SOW DATE 0.191

INOC FOLICUR
0.174

Except when comparing means with the same level(s) of
INOC 0.191

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.382	61.7

GRAIN MEAN DM% 85.6

PLOT AREA HARVESTED 0.00216

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97/R/LP/10

LUPINS

GENOTYPE, ROW SPACING AND SEED RATE

Object: To test seed rate and row spacing on the structure and performance of existing determinate and new dwarf-determinate genotypes - Stackyard.

Sponsors: I. Shield, G.F.J. Milford, J.E. Leach.

Design: 3 randomised blocks of 4 x 2 x 2 plots.

Whole plot dimensions: 9.0 x 9.0.

Treatments: All combinations of :-

1. **GENOTYPE**

70	CH304/70
73	CH304/73
12	DTN 12
20	DTN 20

2. **ROW SPAC** Row spacing, cm:

R1	11
R2	36

3. **SEED RAT** Seed rate, seeds per m^2:

S1	40
S2	80

Experimental diary:

25-Jun-96 : B : Ploughed and furrow pressed.
26-Jul-96 : B : Rolled.
12-Sep-96 : B : Spring-tine cultivated.
13-Sep-96 : B : Rotary harrowed.
: **T** : Genotypes undressed drilled at 40 and 80 seeds per m^2 respectively.
23-Sep-96 : B : Stomp 400 SC at 5.0 l in 294 l. Spannit at 1.5 l in 294 l.
04-Oct-96 : B : Irrigated 25 mm.
08-Nov-96 : B : Carbetamex at 3.0 kg with MSS Simazine 50 FL at 2.3 l. Decis at 300 ml in 200 l.
12-Dec-96 : B : Rovral Flo at 1.0 l in 200 l, Standon Tebuconazole at 0.5 l in 200 l.
01-May-97 : B : Compass at 3.0 l in 200 l.
18-Jun-97 : B : Mistral at 1.0 l in 300 l.
08-Jul-97 : B : Danadim Dimethoate 40 at 850 ml in 300 l.
05-Sep-97 : B : Harvest at 3.0 l in 400 l.
23-Sep-97 : B : Combine harvested.

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

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NOTES: (1) Plant populations were assessed in autumn, January, April and at harvest. Leaf and branch numbers were assessed in June, time of flowering was noted, light interception was measured frequently during the growing season. Dry matter and nitrogen accumulation was assessed at intervals on certain plots. After harvest oil and nitrogen content and grain density was measured.

(2) Most plots of **GENOTYPE** 73 failed and it has been omitted from the analysis.

GRAIN TONNES/HECTARE

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

ROW SPAC	R1	R2	Mean
GENOTYPE			
70	2.21	2.04	2.12
12	2.35	1.74	2.05
20	2.22	1.74	1.98
Mean	2.26	1.84	2.05

SEED RAT	S1	S2	Mean
GENOTYPE			
70	1.52	2.73	2.12
12	1.44	2.66	2.05
20	2.03	1.93	1.98
Mean	1.66	2.44	2.05

SEED RAT	S1	S2	Mean
ROW SPAC			
R1	1.88	2.64	2.26
R2	1.45	2.24	1.84
Mean	1.66	2.44	2.05

	SEED RAT	S1	S2
GENOTYPE	**ROW SPAC**		
70	R1	1.56	2.86
	R2	1.48	2.59
12	R1	1.58	3.12
	R2	1.30	2.19
20	R1	2.50	1.94
	R2	1.56	1.93

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GRAIN TONNES/HECTARE

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

GENOTYPE	ROW SPAC	SEED RAT	GENOTYPE ROW SPAC
0.218	0.178	0.178	0.309

GENOTYPE SEED RAT	ROW SPAC SEED RAT	GENOTYPE ROW SPAC SEED RAT
0.309	0.252	0.437

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	22	0.535	26.1

GRAIN MEAN DM% 85.9

PLOT AREA HARVESTED 0.00216

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97/R/LP/12

WINTER LUPINS

SPRING-SOWN GENOTYPES

Object: To evaluate some new spring-sown genotypes of lupins - Pastures.

Sponsors: I. Shield, G.J.F. Milford, H.J. Stevenson, J.E. Leach, T. Scott.

Design: 3 randomised blocks of 6 plots, plus 2 extra plots.

Whole plot dimensions: 4.0 x 7.0.

Treatments:

1. **VARIETY** Variety and nitrogen:

73	Ludet
AG	Agena
AR	Arthur
MI	Minori
73N	Ludet with nitrogen fertilizer
MIN	Minori with nitrogen fertilizer

2. **EXTRA**

34	DTN 34
BA	Bardo

Experimental diary:

06-Mar-97 : B : Spring-tine cultivated.
10-Mar-97 : B : Rotary harrowed.
: **T** : **VARIETY**: Varieties drilled at 80 seeds per m^2.
11-Mar-97 : B : Stomp 400 SC at 5.0 l in 200 l.
06-Apr-97 : B : Irrigated 25 mm.
15-Apr-97 : B : Irrigated 14 mm.
30-Apr-97 : B : Decis at 300 ml in 200 l.
04-Jun-97 : B : Logran 20 WG at 18.75 g in 300 l.
16-Jun-97 : B : Laser at 1.0 l with Comulin at 1.6 l in 200 l.
17-Jun-97 : **T** : **VARIETY** MIN: 46% N at 163 kg.
09-Jul-97 : B : Mistral at 1.0 l with BASF Dimethoate 40 at 850 ml in 300 l.
31-Jul-97 : **T** : **VARIETY** 73N: 46% N at 163 kg.
22-Oct-97 : B : Combine harvested.

NOTE: **EXTRA** DTN 34 failed to mature.

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

NOTE: Plant numbers, date of flowering, canopy expansion, crop structure and components of yield were measured. Four pre-harvest and harvest samples were taken for dry matter and nitrogen content determinations.

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97/R/LP/12

GRAIN TONNES/HECTARE

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

VARIETY	
73	3.38
AG	2.49
AR	2.60
MI	1.19
73N	3.33
MIN	1.98
Mean	2.49

EXTRA	
BA	0.95

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

VARIETY
0.309

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	10	0.378	15.2

GRAIN MEAN DM% 77.2

PLOT AREA HARVESTED 0.00168

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97/R/LP/13

LUPINS

SPRING GENOTYPES AND SOWING DATES

Object: To measure the gas exchange, nitrogen economy and morphological characters of three spring lupin genotypes - Pastures

Sponsors: I. Shield, G.F.J. Milford, J.E. Leach, M. Dracup.

Design: 3 randomised blocks of 2 x 3 plots.

Whole plot dimensions: 4.0 x 9.0.

Treatments: All combinations of:-

1 **GENOTYPE**

ME	Merrit
X	88AA29

2 **SOW DATE** Dates of sowing:

SE	07-Mar-97
SM	01-Apr-97
SL	14-Apr-97

Experimental diary:

06-Mar-97 : B : Spring-tine cultivated.
17-Mar-97 : B : Rotary harrowed.
17-Mar-97 : **T** : **SOW DATE** SE: Genotypes undressed drilled at 60 seeds per m^2. MSS Simazine 50 FL at 2.0 l in 220 l.
24-Mar-97 : B : Stomp 400 SC at 5.0 l in 200 l.
01-Apr-97 : **T** : **SOW DATE** SM: Genotypes undressed drilled at 60 seeds per m^2.
04-Apr-97 : B : Irrigated 25 mm.
07-Apr-97 : **T** : **SOW DATE** SM: MSS Simazine 50 FL at 2.0 l in 220 l.
14-Apr-97 : **T** : **SOW DATE** SL: Rotary harrowed, Genotypes undressed drilled at 60 seeds per m^2.
15-Apr-97 : B : Irrigated 14 mm.
18-Apr-97 : **T** : **SOW DATE** SL: MSS Simazine 50 FL at 2.0 l in 220 l.
30-Apr-97 : B : Decis at 300 ml in 200 l.
09-Jul-97 : B : Mistral at 1.0 l with BASF Dimethoate 40 at 850 ml in 300 l.
05-Sep-97 : B : Harvest at 3.0 l in 400 l.
22-Sep-97 : B : Combine harvested.

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

NOTE: Plant populations were assessed in spring and before harvest. Leaf and branch numbers were assessed in July. Light interception was measured frequently through the growing season. Dry matter and nitrogen content was measured on four occasions. After harvest oil and nitrogen content and grain density was measured.

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97/R/LP/13

GRAIN TONNES/HECTARE

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

SOW DATE / GENOTYPE	SE	SM	SL	Mean
ME	1.48	1.34	1.37	1.40
X	1.18	0.89	0.67	0.91
Mean	1.33	1.12	1.02	1.16

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

GENOTYPE	SOW DATE	GENOTYPE SOW DATE
0.124	0.152	0.215

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	10	0.263	22.7

GRAIN MEAN DM% 84.7

PLOT AREA HARVESTED 0.00216

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