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Lupins

Rothamsted Research

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96/R/LP/1

LUPINS

LUPIN GENOTYPES

Object: To assess the overwintering survival, crop structure, yield and date of maturity of several lines of winter lupins - Appletree.

Sponsors: G.F.J. Milford, H.J. Stevenson.

Design: 3 randomised blocks of 13 plots.

Plot dimensions: 2.88 x 9.0.

Treatments:

GENOTYPE

A	Detn 02
B	Detn 12
C	Detn 15
D	Detn 17
E	Detn 19
F	Detn 20
G	Detn 34
H	Detn 37
I	Detn 83
J	Detn 102
70	CH 304/70 (duplicated)
AR	Arthur

Experimental diary:

26-Jul-95 : B : Straw removed.
02-Aug-95 : B : Ploughed and furrow pressed.
11-Sep-95 : B : Rotary harrowed. All genotypes drilled at 40 seeds per m².
14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l, Spannit at 1.5 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
10-Jul-96 : B : Mistral at 1.0 l in 260 l.
18-Jul-96 : B : Benlate Fungicide at 1.1 kg with Pirimicarb 50 DG at 280 g and Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
11-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTES: (1) Plant density was monitored from October to May. Plant height was measured in March and July. Main stem leaf number and date of flowering were recorded. Plant structure was assessed in June and components of yield at harvest.
(2) Because of a harvesting error, the yield of one plot with **GENOTYPE I** was lost. An estimated value was used in the analysis. **GENOTYPE AR** failed and has been omitted from the analysis.

96/R/LP/1

GRAIN TONNES/HECTARE

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

GENOTYPE	
A	1.26
B	2.04
C	2.47
D	2.95
E	2.03
F	1.89
G	2.68
H	2.17
I	2.23
J	1.98
70	1.21
Mean	2.01

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

GENOTYPE	
0.357	min.rep
0.309	max-min

GENOTYPE	
max-min	70 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	22	0.437	21.8
GRAIN MEAN DM%	75.5		
PLOT AREA HARVESTED	0.00130		

96/W/LP/1

Previous crops: W. beans 1994, w. wheat 1995.

- NOTES: (1) Plant density was monitored from October to April, Dry matter assessments and leaf counts were made in January. Soil penetration resistance measurements were done in November.
(2) CULTIVTN 1, 2 and 5 failed and are omitted from the analysis.

GRAIN TONNES/HECTARE

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

FERT	F0	F1	Mean
CULTIVTN			
3	3.15	2.78	2.96
4	2.78	2.31	2.55
Mean	2.96	2.55	2.75

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

FERT	CULTIVTN*
0.119	FERT 0.168

* Within the same level of CULTIVTN only

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP.SP	4	0.205	7.5

GRAIN MEAN DM% 84.5

SUB-PLOT AREA HARVESTED 0.00154

96/R/LP/2

LUPINS

LINES AND SOWING DATES

Object: To test the effects of sowing date on the plant architecture and winter survival of lines of autumn-sown lupins - Appletree.

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

Design: 3 randomised blocks of 4 x 3 plots, analysed as (2 x 2) + 4.

Plot dimensions: 5.76 x 9.0.

Treatments: All combinations of:-

1. SEED LIN	Line:
70	CH 304/70
73	CH 304/73
DA	Dwarf 1
DB	Dwarf 2
2. SOW DATE	Sowing date:
E	Early 22-Aug-95
M	Middle 07-Sep-95
L	Late 20-Sep-95

For analysis only

3. LATE	SEED LIN	SOW DATE
70	70	L
73	73	L
LDA	DA	L
LDB	DB	L

NOTE: Early and middle sown seed lines CH304/70 and CH304/73 failed and have been omitted from the analysis.

Experimental diary:

26-Jul-95 : B : Straw removed.
04-Aug-95 : B : Ploughed and furrow pressed, rolled.
22-Aug-95 : T : SOW DATE E: Cultivated by rotary grubber four times, rotary harrowed. Lines drilled at 42 seeds per m².
23-Aug-95 : B : Irrigated 20 mm.
24-Aug-95 : T : SOW DATE E: Stomp 400 SC at 5.0 l in 220 l. Spannit at 1.5 l in 220 l.
29-Aug-95 : B : Irrigated 20 mm.
07-Sep-95 : T : SOW DATE M: Rotary harrowed. Lines drilled at 42 seeds per m².
12-Sep-95 : T : SOW DATE M: Stomp 400 SC at 5.0 l in 220 l.
20-Sep-95 : T : SOW DATE L: Rotary harrowed. Lines drilled at 42 seeds per m².

96/R/LP/2

Experimental diary:

21-Sep-95 : T : SOW DATE L: Stomp 400 SC at 5.0 l in 220 l.
 18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
 29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
 11-Apr-96 : T : SEED LIN 70 (two plots), 73 (two plots), DA (three plots) and DB (one plot), SOW DATE L: Inter-row sprayed Gramoxone 100 at 4.0 l in 220 l.
 10-Jul-96 : B : Mistral at 1.0 l in 260 l.
 18-Jul-96 : B : Benlate Fungicide at 1.1 kg with Pirimicarb 50 DG at 280 g and Vassgro Spreader at 78 ml in 260 l.
 03-Sep-96 : B : Reglone at 3.0 l in 390 l.
 10-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTE: Plant density was monitored from October to April. Dry matter was assessed weekly April to August. Light interception measurements were made twice weekly April to August. Leaf and pod photosynthesis measurements were made frequently. Components of yield were assessed at harvest.

GRAIN TONNES/HECTARE

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

SEED LIN	DA	DB	Mean		
SOW DATE					
E	1.60	2.07	1.84		
M	1.47	1.07	1.27		
Mean	1.54	1.57	1.55		
LATE	70	73	LDA	LDB	Mean
	1.62	1.59	2.81	2.52	2.13

Grand mean 1.84

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

SOW DATE	SEED LIN	SOW DATE SEED LIN & LATE
0.476	0.476	0.674

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	14	0.825	44.7
GRAIN MEAN DM% 51.3		PLOT AREA HARVESTED 0.00130	

96/R/LP/3

Experimental diary:

18-Jul-96 : B : Pirimicarb 50 DG at 280 g with Vassgro Spreader at 78 ml in 260 l.
 03-Sep-96 : B : Reglone at 3.0 l in 390 l.
 11-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTE: Plant density was monitored October to April and thrips assessed. Samples were also taken monthly from October to April for disease assessment.

GRAIN TONNES/HECTARE

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

INSCTCDE	I-	IC	IF	Mean	
SOW DATE					
S1	1.21	1.23	1.28	1.24	
S2	2.52	2.69	2.61	2.60	
Mean	1.87	1.96	1.94	1.92	
AUT FUNG	F-	FS	FRB	Mean	
SOW DATE					
S1	1.51	1.14	1.07	1.24	
S2	2.48	2.72	2.61	2.60	
Mean	2.00	1.93	1.84	1.92	
AUT FUNG	F-	FS	FRB	Mean	
INSCTCDE					
I-	2.06	1.83	1.71	1.87	
IC	2.04	1.91	1.93	1.96	
IF	1.89	2.05	1.88	1.94	
Mean	2.00	1.93	1.84	1.92	
SOW DATE	INSCTCDE	AUT FUNG	F-	FS	FRB
S1	I-		1.79	0.93	0.92
	IC		1.34	1.13	1.23
	IF		1.41	1.36	1.05
S2	I-		2.32	2.72	2.51
	IC		2.74	2.69	2.63
	IF		2.37	2.74	2.71

96/R/LP/3

GRAIN TONNES/HECTARE

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

SOW DATE	INSCTCDE	AUT FUNG	SOW DATE INSCTCDE
0.135	0.166	0.166	0.235

SOW DATE	INSCTCDE	SOW DATE
AUT FUNG	AUT FUNG	INSCTCDE
		AUT FUNG
0.235	0.287	0.406

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	17	0.406	21.1
GRAIN MEAN DM%	84.9		
PLOT AREA HARVESTED	0.00176		

96/R/LP/4

LUPINS

FUSARIUM STUDY ON LUPINS

Object: To assess the effects of fungicidal seed treatments on plant survival and *fusarium* infection - Appletree.

Sponsors: G.L. Bateman, J.F. Jenkyn.

Design: 4 randomised blocks of 2 x 4 plots.

Plot dimensions: 2.88 x 9.0.

Treatments: All combinations of:-

- | | |
|------------|---------------------------|
| 1. INOC | Inoculation: |
| I- | None |
| IF | <i>Fusarium avenaceum</i> |
| 2. SEED TR | Seed treatment: |
| - | None |
| IC | Iprodione and carbendazim |
| FEN | Fenpiclonil |
| FLU | Fludioxinil |

Experimental diary:

- 26-Jul-95 : B : Straw removed.
04-Aug-95 : B : Ploughed and furrow pressed, rolled.
12-Sep-95 : T : INOC IF: Inoculum applied.
13-Sep-95 : B : Rotary harrowed twice, CH304/70 drilled, at 40 seeds per m².
14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l, Spannit at 1.5 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
10-Jul-96 : B : Mistral at 1.0 l in 260 l.
18-Jul-96 : B : Benlate Fungicide at 1.1 kg with Pirimicarb 50 DG at 280 g and Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
11-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

- NOTES:** (1) Inoculum was applied on oat seed at 2 kg per plot.
(2) Plants were counted and diseases assessed.

96/R/LP/4

GRAIN TONNES/HECTARE

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

SEED TR	-	IC	FEN	FLU	Mean
INOC					
I-	0.99	1.04	1.14	0.81	0.99
IF	0.87	0.59	0.61	0.67	0.69
Mean	0.93	0.82	0.87	0.74	0.84

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

INOC	SEED TR	INOC SEED TR
0.107	0.151	0.214

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	21	0.302	36.0

GRAIN MEAN DM% 84.3

PLOT AREA HARVESTED 0.00227

96/R/LP/6

LUPINS

SPRING HERBICIDES

Object: To test herbicides applied in the spring at various rates on the survival of weeds and autumn-sown lupins - Appletree.

Sponsor: I. Shield.

Design: 3 randomised blocks of (5 X 4) + 2 plots.

Plot dimensions: 3.0 x 9.0.

Treatments: All combinations of:-

1. **HERBICIDE** Herbicide, common name (product name):

BR	Aziprotryne (Brasoran 50WP)
RP	Diflufenican (EXP 30930A, not commercially available)
FO	Cyanazine (Fortrol)
AS	Simazine (Atlas Simazine)
LO	Triasulfurin (Lo-gran 20 WG)

2. **HERBRATE** Herbicide product rate, all applied in 220 l:

	BR	RP	FO	AS	LO
Units	kg	l	l	l	g
1/2N Half normal	2.0	0.5	1.0	1.2	19
1N Normal	4.0	1.0	2.0	2.3	38
2N Twice normal	8.0	2.0	4.0	4.6	75
4N Four times normal	16.0	4.0	8.0	9.2	150

plus 2 extra plots

3. **EXTRA** Herbicide applied at normal rate:

KN	Metazachlor and quinmerac (Katamaran)
TX	MCPB (Tropotox)

For analysis tables only

	HERBICIDE	HERBRATE
LO 1/2N	LO	1/2N
LO 1N	LO	1N
LO 2N	LO	2N

LO 4N and TX failed and have been omitted from the analysis

Experimental diary:

26-Jul-95 : B : Straw removed.
04-Aug-95 : B : Ploughed and furrow pressed, rolled.
08-Sep-95 : B : Rotary harrowed, drilled CH304/70 at 40 seeds per m².

96/R/LP/6

Experimental diary:

14-Sep-95 : B : Stomp 400 at 5.0 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in
200 l.
15-Mar-96 : T : **HERBICIDE AS**: Treatments applied.
29-Mar-96 : B : One-half of all the plots in one block were sprayed in
error with Atlas Simazine at 2.3 l in 200 l.
25-Apr-96 : T : **EXTRA KN**: Katamaran at 2.5 l in 220 l.
: T : **EXTRA TX**: Tropotox at 5.6 l in 220 l.
: T : **HERBICIDE BR, RP, FO**: Treatments applied.
26-Apr-96 : T : **HERBICIDE LO**: Treatments applied.
10-Jul-96 : B : Mistral at 1.0 l in 260 l.
18-Jul-96 : B : Benlate Fungicide at 1.1 with Pirimicarb 50 DG at 280 g
and Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
11-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTE: Plants were counted in May and June, samples were taken in May for dry matter analysis.

96/R/LP/6

GRAIN TONNES/HECTARE

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

HERBRATE HERBCIDE	1/2N	1N	2N	4N	Mean
BR	1.22	1.27	0.39	0.98	0.96
RP	1.00	0.62	1.32	0.88	0.95
FO	0.92	0.82	0.99	0.79	0.88
AS	1.11	1.36	0.69	1.08	1.06
Mean	1.06	1.02	0.85	0.93	0.97
EXTRA	KN	LO 1/2N	LO 1N	LO 2N	
	1.14	0.89	0.28	0.24	

Grand mean 0.90

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

HERBCIDE	HERBRATE	HERBCIDE HERBRATE & EXTRA
0.210	0.210	0.420

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	38	0.514	57.2

GRAIN MEAN DM% 73.7

PLOT AREA HARVESTED 0.00161

96/R/LP/7

WINTER LUPINS

GROWTH REGULATOR STUDY

Object: To assess the effectiveness of growth regulators in shortening and/or strengthening lupin plants at risk of lodging - Appletree.

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

Design: 3 randomised blocks of 6 plots.

Plot dimensions: 3.0 x 9.0.

Treatments:

GROW REG	Growth regulator, common name (product name):
-	None
TR	Triapenthenol
CU	Paclobutrazol (Cultar)
AD	Chlormequat (Adjust)
FO	Tebuconazole (Folicur)
AD+FO	Chlormequat and tebuconazole

Experimental diary:

26-Jul-95 : B : Straw removed.
04-Aug-95 : B : Ploughed and furrow pressed.
08-Sep-95 : B : Rotary harrowed twice, CH304/70 drilled at 40 seeds per m².
14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
25-Apr-96 : T : **GROW REG AD:** Adjust at 3.0 l in 220 l.
 : T : **GROW REG CU:** Cultar at 0.75 l in 220 l.
 : T : **GROW REG AD+FO:** Adjust at 1.5 l with Folicur at 1.0 l in 220 l.
 : T : **GROW REG FO:** Folicur at 1.0 l in 220 l.
 : T : **GROW REG TR:** Triapenthenol at 700 g in 220 l.
10-Jul-96 : B : Mistral at 1.0 l in 260 l.
18-Jul-96 : B : Benlate Fungicide at 1.1 kg with Pirimicarb 50 DG at 280 g and Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
11-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTE: Plant density was assessed in April and at harvest. Plant height was measured regularly April to July. Stem diameters, dry matter and plant components were measured in July. Components of yield were assessed at harvest.

96/R/LP/7

GRAIN TONNES/HECTARE

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

GROW REG	
-	1.00
TR	1.62
CU	1.33
AD	1.62
FO	1.55
AD+FO	1.87
Mean	1.50

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

GROW REG	
	0.329

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	10	0.402	26.8

GRAIN MEAN DM% 84.8

PLOT AREA HARVESTED 0.00161

96/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 - Appletree.

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

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

Whole plot dimensions: 3.0 x 9.0.

Treatments: All combinations of :-

1. GENOTYPE

70	CH304/70
73	CH304/73
DA	Dwarf A
DB	Dwarf B

2. ROW SPAC

Row spacing, cm:

12
36

3. SEED RAT

Seed rate, seeds per m²:

40
80

Experimental diary:

26-Jul-95 : B : Straw removed.
04-Aug-95 : B : Ploughed and furrow pressed.
11-Sep-95 : T : ROW SPAC 36: Rotary harrowed, genotypes drilled.
12-Sep-95 : T : ROW SPAC 12: Genotypes broadcast by hand, rotary harrowed.
14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
10-Jul-96 : B : Mistral at 1.0 l in 260 l.
18-Jul-96 : B : Benlate Fungicide at 1.1 kg with Pirimicarb 50 DG at 280 g and Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
10-Sep-96 : T : GENOTYPE DA, DB: Combine harvested.
11-Sep-96 : T : GENOTYPE 70, 73: Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTE: Plant density was assessed October to April. Light interception was measured weekly April to harvest. Components of yield were assessed at harvest.

96/R/LP/10

GRAIN TONNES/HECTARE

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

ROW SPAC	12	36	Mean
GENOTYPE			
70	1.46	0.92	1.19
73	1.57	0.70	1.13
DA	3.17	3.07	3.12
DB	2.46	2.31	2.39
Mean	2.16	1.75	1.96

SEED RAT	40	80	Mean
GENOTYPE			
70	1.22	1.17	1.19
73	1.24	1.03	1.13
DA	2.93	3.31	3.12
DB	2.57	2.20	2.39
Mean	1.99	1.93	1.96

SEED RAT	40	80	Mean
ROW SPAC			
12	2.18	2.15	2.16
36	1.80	1.70	1.75
Mean	1.99	1.93	1.96

	ROW SPAC	12	36	
GENOTYPE SEED RAT	40	80	40	80
70	1.45	1.47	0.99	0.86
73	1.60	1.53	0.88	0.52
DA	3.02	3.31	2.85	3.30
DB	2.66	2.27	2.49	2.14

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

GENOTYPE	ROW SPAC	SEED RAT	GENOTYPE
			ROW SPAC
0.140	0.099	0.099	0.198
GENOTYPE	ROW SPAC	GENOTYPE	
SEED RAT	SEED RAT	ROW SPAC	
		SEED RAT	
0.198	0.140	0.281	

96/R/LP/10

GRAIN TONNES/HECTARE

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	28	0.344	17.5

GRAIN MEAN DM% 83.3

PLOT AREA HARVESTED	ROW SPAC	12	0.00207
	ROW SPAC	36	0.00227

96/R/LP/11

WINTER LUPINS

FOLIAR DISEASES AND FUNGICIDES A

Object: To determine the importance of foliar diseases and to test the effects of fungicides on winter-sown lupins - Appletree.

Sponsors: G.L. Bateman, J.F. Jenkyn.

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 2.88 x 9.0.

Treatments:

FUNGICIDE	Fungicide and timing:
-	None
C1	Iprodione and thiophanate-methyl, 26 Apr 1996
C2	Iprodione and thiophanate-methyl, 30 May
C3	Iprodione and thiophanate-methyl, 19 June
C12	Iprodione and thiophanate-methyl, 26 Apr and 30 May
C13	Iprodione and thiophanate-methyl, 26 Apr and 19 June
C23	Iprodione and thiophanate-methyl, 30 May and 19 June
C123	Iprodione and thiophanate-methyl, 26 Apr, 30 May and 19 June
F23	Tebuconazole, 30 May and 19 June
S23	Prochloraz, 30 May and 19 June

Experimental diary:

26-Jul-95 : B : Straw removed.
04-Aug-95 : B : Ploughed and furrow pressed.
08-Sep-95 : B : Rotary harrowed, CH304/70 drilled at 40 seeds per m².
14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
26-Apr-96 : T : FUNGICIDE C1, C12, C13, C123: Compass at 3.0 l in 220 l.
30-May-96 : T : FUNGICIDE C2, C12, C23, C123: Compass at 3.0 l in 220 l.
 : T : FUNGICIDE F23: Folicur at 1.0 l in 220 l.
 : T : FUNGICIDE S23: Barclay Eytak at 1.0 l in 220 l.
19-Jun-96 : T : FUNGICIDE C3, C13, C23, C123: Compass at 3.0 l in 220 l.
 : T : FUNGICIDE F23: Folicur at 1.0 l in 220 l.
 : T : FUNGICIDE S23: Sportak 45 at 1.0 l in 220 l.
18-Jul-96 : B : Pirimicarb 50 DG at 280 g with Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
12-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

96/R/LP/11

GRAIN TONNES/HECTARE

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

FUNGCIDE	
-	1.01
C1	0.80
C2	0.68
C3	1.08
C12	1.14
C13	0.92
C23	1.22
C123	0.70
F23	0.63
S23	0.55
Mean	0.87

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

FUNGCIDE
0.253

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.310	35.6
GRAIN MEAN DM%	82.8		
PLOT AREA HARVESTED	0.00227		

96/R/LP/12

WINTER LUPINS

FOLIAR DISEASES AND FUNGICIDES B

Object: To determine the importance of foliar diseases and to test the effect of fungicides on winter-sown lupins - Appletree.

Sponsors: G.L. Bateman, J.F. Jenkyn.

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 2.88 x 9.0.

Treatments:

FUNGICIDE	Fungicide and timing:
-	None
C1	Iprodione and thiophanate-methyl, 26 Apr 1996
C2	Iprodione and thiophanate-methyl, 30 May
C3	Iprodione and thiophanate-methyl, 19 June
C12	Iprodione and thiophanate-methyl, 26 Apr and 30 May
C13	Iprodione and thiophanate-methyl, 26 Apr and 19 June
C23	Iprodione and thiophanate-methyl, 30 May and 19 June
C123	Iprodione and thiophanate-methyl, 26 Apr, 30 May and 19 June
F23	Tebuconazole, 30 May and 19 June
S23	Prochloraz, 30 May and 19 June

Experimental diary:

- 26-Jul-95 : B : Barley straw removed.
04-Aug-95 : B : Ploughed and furrow pressed.
08-Sep-95 : B : Rotary harrowed, CH304/70 drilled at 40 seeds per m².
14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l.
18-Oct-95 : B : Laser at 0.75 l with Atlas Adjuvant Oil at 1.6 l in 200 l.
28-Mar-96 : B : Oat seed inoculum applied at 121 kg.
29-Mar-96 : B : Atlas Simazine at 2.3 l in 200 l.
26-Apr-96 : T : FUNGICIDE C1, C12, C13, C123: Compass at 3.0 l in 220 l.
30-May-96 : T : FUNGICIDE C2, C12, C23, C123: Compass at 3.0 l in 220 l.
: T : FUNGICIDE F23: Folicur at 1.0 l in 220 l.
: T : FUNGICIDE S23: Barclay Eytak at 1.0 l in 220 l.
19-Jun-96 : T : FUNGICIDE C3, C13, C23, C123: Compass at 3.0 l in 220 l.
: T : FUNGICIDE F23: Folicur at 1.0 l in 220 l.
: T : FUNGICIDE S23: Sportak 45 at 1.0 l in 220 l.
18-Jul-96 : B : Pirimicarb 50 DG at 280 g with Vassgro Spreader at 78 ml in 260 l.
03-Sep-96 : B : Reglone at 3.0 l in 390 l.
12-Sep-96 : B : Combine harvested.

Previous crops: W. rape 1994, w. barley 1995.

NOTES: (1) Inoculum was *Pleiochaeta setosa* on oat seed.
(2) Disease caused by *P.setosa* was assessed in June.

96/R/LP/12

GRAIN TONNES/HECTARE

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

FUNGCIDE	
-	1.10
C1	0.91
C2	1.02
C3	0.78
C12	0.68
C13	0.76
C23	0.83
C123	1.06
F23	0.75
S23	0.47
Mean	0.84

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

FUNGCIDE
0.189

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.231	27.6
GRAIN MEAN DM%	83.1		
PLOT AREA HARVESTED	0.00227		

96/R/LP/13

LUPINS

SPRING-SOWN GENOTYPES AND SOWING DATES

Object: To measure the growth and yield of two winter lupin genotypes sown in spring - Long Hoos V 8.

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

Design: 4 randomised blocks of 3 x 2 plots.

Whole plot dimensions: 3.0 x 9.0.

Treatments: All combinations of:-

1. **SOW DATE** Dates of sowing:

S1	14-Mar-96
S2	28-Mar-96
S3	10-Apr-96

3. **GENOTYPE**

70	CH304/70
73	CH304/73

Experimental diary:

17-Nov-95 : B : Ploughed.
13-Mar-96 : B : Heavy spring-tine cultivated.
14-Mar-96 : T : **SOW DATE** S1: Genotypes, dressed Germipro, drilled at 200 kg.
15-Mar-96 : T : **SOW DATE** S1: Stomp 400 SC at 5.0 l in 220 l.
28-Mar-96 : T : **SOW DATE** S2: Genotypes drilled at 200 kg.
02-Apr-96 : T : **SOW DATE** S2: Stomp 400 SC at 5.0 l in 220 l.
10-Apr-96 : T : **SOW DATE** S3: Genotypes drilled at 200 kg.
11-Apr-96 : T : **SOW DATE** S3: Stomp 400 SC at 5.0 l in 220 l.
05-Jun-96 : B : Lo-gran 20 WG at 18.8 g in 200 l.
26-Jul-96 : B : Pirimicarb 50 DG at 280 g with Vassgro Spreader at 120 ml in 400 l.
30-Jul-96 : B : Mistral at 1.0 l in 400 l.
17-Oct-96 : T : **SOW DATE** S1 **GENOTYPE** 70: Combine harvested.
06-Nov-96 : T : **SOW DATE** S1, S2, S3 **GENOTYPE** 73 and **SOW DATE** S2, **GENOTYPE** 70: Combine harvested.
02-Dec-96 : T : **SOW DATE** S3 **GENOTYPE** 70: Topped.

Previous crops: S. beans 1994, s. wheat and s. barley 1995

96/R/LP/13

- NOTES: (1) Plant density was assessed in autumn. Main stem leaf numbers and date of flowering was noted. Plant structure was assessed in July and heights measured in August. Components of yield were assessed at harvest.
- (2) The treatment combination **SOW DATE** S3, **GENOTYPE** 70 was not harvested as it failed to mature. This has been omitted from the analysis.

GRAIN TONNES/HECTARE

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

GENOTYPE	70	73
SOW DATE		
S1	1.83	2.07
S2	1.79	1.99
S3	*	1.95

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

SOW DATE
GENOTYPE
0.155

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	12	0.219	11.4
GRAIN MEAN DM%	73.0		
PLOT AREA HARVESTED	0.00207		

96/R/LP/14

SPRING LUPINS

DESICCATION, TIMING AND METHOD

Object: To test the effect of desiccation on harvest date and seed quality of s. lupins - Long Hoos VI/VII 1.

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

Design: 5 randomised blocks of 3 plots.

Whole plot dimensions: 3.0 x 9.0.

Treatments:

TIMING Timing of applying desiccant:

-	None
E	Early
L	Late

Experimental diary:

21-Nov-95 : B : Ploughed.
13-Mar-96 : B : Heavy spring-tine cultivated.
14-Mar-96 : B : CH304/73, dressed Germipro, drilled at 80 seeds per m².
15-Mar-96 : B : Stomp 400 SC at 5.0 l in 200 l.
30-May-96 : B : Lo-gran 20 WG at 18.8 g in 200 l.
19-Jun-96 : B : Lo-gran 20 WG at 18.8 g in 200 l.
09-Jul-96 : B : Wild oats pulled by hand.
26-Jul-96 : B : Pirimicarb 50 DG at 280 g with Vassgro Spreader at 120 ml in 400 l.
30-Jul-96 : B : Mistral at 1.0 l in 400 l.
06-Sep-96 : T : **TIMING** E: Stefes Glyphosate at 3.0 l in 220 l.
24-Sep-96 : T : **TIMING** L: Stefes Glyphosate at 3.0 l in 220 l.
17-Oct-96 : B : Combine harvested.

Previous crops: W. and s. rape 1994, set-aside 1995.

NOTE: A planned treatment of swathing early and late did not take place and yields from these plots have been ignored.

96/R/LP/14

GRAIN TONNES/HECTARE

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

TIMING

-	2.34
E	2.51
L	2.38
Mean	2.41

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

TIMING

0.143

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	8	0.226	9.4
GRAIN MEAN DM%	79.8		
PLOT AREA HARVESTED	0.00207		

96/R/LP/15

LUPINS

NITROGEN AND RIPENING

Object: To study the effects of nitrogen supply and premature crop senescence by desiccation upon time of ripening, yield and quality - Sawyers I E.

Sponsors: I. Shield, D. Newton (Newcastle University).

Design: 4 randomised blocks of 3 x 2 plots.

Whole plot dimensions: 3.0 x 9.0.

Treatments: All combinations of:-

1. **NITROGEN** Foliar N (kg):
 N0 None
 N1 30 in one application
 N2 60 in two applications of 30, one week apart

2. **DESCCANT** Desiccant:
 - None
 G Glyphosate

NOTE: LP/15 was sited over a previous experiment testing chemicals for insect control, which was discontinued owing to a lack of insects. No residual effects were evident.

Experimental diary:

- 08-Sep-95 : B : Rotary harrowed, CH304/70, dressed Germipro and Promet, drilled at 40 seeds per m².
- 14-Sep-95 : B : Stomp 400 SC at 5.0 l in 200 l.
- 12-Oct-95 : B : Draza at 5.5 kg.
- 02-Apr-96 : B : Atlas Simazine at 2.3 l in 200 l.
- 20-Jun-96 : B : Mistral at 1.0 l in 200 l.
- 27-Jun-96 : T : **NITROGEN** N1, N2: 46% N at 65.2 kg in 400 l.
- 05-Jul-96 : T : **NITROGEN** N2: 46% N at 65.2 kg in 400 l.
- 18-Jul-96 : B : Benlate Fungicide at 1.1 kg with Pirimicarb 50 DG at 280 g and Vassgro Spreader at 80 ml in 260 l.
- 08-Aug-96 : T : **DESCCANT** G: Roundup at 3.0 l in 220 l.
- 02-Sep-96 : B : Combine harvested.

Previous crops: W. wheat 1994, fallow 1995.

NOTE: Components of yield were assessed at harvest. Nitrogen and oil content of grain was measured.

96/R/LP/15

GRAIN TONNES/HECTARE

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

DESCCANT NITROGEN	-	G	Mean
N0	1.68	1.67	1.67
N1	1.77	1.68	1.73
N2	1.41	1.24	1.32
Mean	1.62	1.53	1.57

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

NITROGEN	DESCCANT	NITROGEN DESCCANT
0.108	0.088	0.152

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	15	0.215	13.7
GRAIN MEAN DM%	83.5		
PLOT AREA HARVESTED	0.00197		