

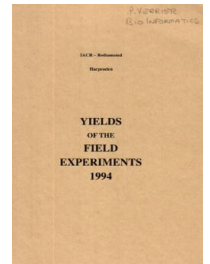
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# Yields of the Field Experiments 1994

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## Winter Lupins

### Rothamsted Research

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94/R/LP/2

WINTER LUPINS

SOWING DATES AND POPULATION

**Object:** To study the effects of sowing date and plant density on plant structure, yield, components of yield and harvest date - Great Harpenden I.

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

**Design:** 4 blocks of 4 plots split into 4 sub-plots.

**Whole plot dimensions:** 14.52 x 6.0.

**Treatments:**

Whole plots

1. SOW DATE	Date of sowing:
S1	2 September, 1993
S2	22 September
S3	17 October
S4	28 October

Sub-plots

2. POPULATN	Number of seeds sown per m <sup>2</sup> :
P1	28
P2	42
P3	56
P4	70

**Experimental diary:**

- 31-Aug-93 : B : Ploughed and furrow pressed.
- 01-Sep-93 : B : Rolled, rotary harrowed.
- 02-Sep-93 : T : SOW DATE S1: Rotary harrowed, CH304/70, dressed iprodione and carbendazim, drilled.
- 06-Sep-93 : T : SOW DATE S1: Opogard 500 FW at 2.8 l in 220 l.
- 20-Sep-93 : T : SOW DATE S2: Rotary harrowed.
- 22-Sep-93 : T : SOW DATE S2: Rotary harrowed, CH304/70, dressed iprodione and carbendazim, drilled. Opogard 500 FW at 2.8 l in 220 l.
- 15-Oct-93 : T : SOW DATE S3, S4: Spring-tine cultivated.
- 16-Oct-93 : T : SOW DATE S3: Rotary harrowed.
- 17-Oct-93 : T : SOW DATE S3: CH304/70, dressed iprodione and carbendazim, drilled.
- 28-Oct-93 : T : SOW DATE S4: CH304/70, dressed iprodione and carbendazim, drilled.
- 01-Nov-93 : T : SOW DATE S3, S4: Opogard 500 FW at 2.8 l in 220 l.
- 23-Dec-93 : B : Sportak 45 at 1.1 l in 220 l.
- 16-Feb-94 : B : Atlas Simazine at 1.0 l in 200 l.

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**Experimental diary:**

30-Mar-94 : T : **SOW DATE** S4: Heavy spring-tine cultivated.  
 20-Apr-94 : T : **SOW DATE** S4: Rotary harrowed, Minori drilled.  
 21-Apr-94 : T : **SOW DATE** S1: Laser at 1.25 l in 186 l.  
 29-Apr-94 : T : **SOW DATE** S4: Opogard 500 SC at 2.8 l in 220 l.  
 08-Jul-94 : B : Atlas Dimethoate 40 at 850 ml in 200 l.  
 06-Sep-94 : T : **SOW DATE** S1, S2: Combine harvested.  
 19-Oct-94 : T : **SOW DATE** S4: Combine harvested.

Previous crops: W. wheat 1992, w. barley 1993.

**NOTES:** (1) All seed was inoculated with rhizobium.  
 (2) Lupins on the S3 and S4 plots failed. S4 plots were resown with a spring variety.

**GRAIN TONNES/HECTARE**

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

POPULATN SOW DATE	P1	P2	P3	P4	Mean
S1	1.94	1.92	2.20	2.55	2.15
S2	0.33	0.37	0.56	1.07	0.58
S4	0.10	0.04	0.07	0.20	0.10
Mean	0.79	0.78	0.94	1.27	0.94

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

	SOW DATE	POPULATN	SOW DATE POPULATN
s.e.d.	0.152	0.147	0.267
Except when comparing means with the same level(s) of			
<b>SOW DATE</b>			0.254

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	6	0.214	22.7
BLOCK.WP.SP	27	0.360	38.1

GRAIN MEAN DM% 79.1

SUB PLOT AREA HARVESTED 0.00058 (**SOW DATE** S1, S2)  
 0.00090 (**SOW DATE** S4)

94/R/LP/3

WINTER LUPINS

SOWING DATES, PESTS AND DISEASES

**Object:** To measure overwinter losses in early and late sown lupins and to identify any pests or diseases causing such losses - Great Harpenden I.

**Sponsors:** A.W. Ferguson, G. L. Bateman, G.F.J. Milford, I. Shield, J.M. Day.

**Design:** 3 blocks of a half-replicate of 2 x 2 x 2 x 2 x 2 plots.

**Whole plot dimensions:** 2.88 x 15.0.

**Treatments:**

- |             |                                  |
|-------------|----------------------------------|
| 1. SOW DATE | Date of sowing:                  |
| E           | 23 September, 1993               |
| L           | 20 October                       |
| 2. SEED TRT | Seed treatment:                  |
| 1-          | None                             |
| 1T          | Thiram                           |
| 3. SOIL INS | Soil-applied insecticide:        |
| 2-          | None                             |
| 2C          | Chlorpyrifos                     |
| 4. AUT SPRY | Autumn fungicide:                |
| A-          | None                             |
| AP          | Prochloraz                       |
| 5. SUM FUNG | Summer fungicide:                |
| F-          | None                             |
| FF          | Iprodione and thiophanate-methyl |
| 6. SUM INS  | Summer insecticide:              |
| I-          | None                             |
| IA          | Pirimicarb                       |
| ID          | Dimethoate                       |

**NOTE:** SEED TRT 1T: Thiram, as Agrichem Flowable Thiram, was applied at 900 g active ingredient per t of seed.





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GRAIN TONNES/HECTARE

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

AUT SPRY SOW DATE	A-	AP	Mean
E	1.01	1.15	1.08
L	0.11	0.09	0.10
Mean	0.56	0.62	0.59

AUT SPRY SEED TRT	A-	AP	Mean
1-	0.63	0.63	0.63
1T	0.49	0.60	0.54
Mean	0.56	0.62	0.59

AUT SPRY SOIL INS	A-	AP	Mean
2-	0.67	0.68	0.68
2C	0.45	0.56	0.50
Mean	0.56	0.62	0.59

SUM FUNG SOW DATE	F-	FF	Mean
E	1.15	1.01	1.08
L	0.10	0.10	0.10
Mean	0.62	0.55	0.59

SUM FUNG SEED TRT	F-	FF	Mean
1-	0.65	0.62	0.63
1T	0.60	0.49	0.54
Mean	0.62	0.55	0.59

SUM FUNG SOIL INS	F-	FF	Mean
2-	0.67	0.68	0.68
2C	0.58	0.42	0.50
Mean	0.62	0.55	0.59

SUM FUNG AUT SPRY	F-	FF	Mean
A-	0.55	0.57	0.56
AP	0.70	0.54	0.62
Mean	0.62	0.55	0.59

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GRAIN TONNES/HECTARE

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

SUM INS SOW DATE	I-	IA	ID	Mean
E	1.20	1.25	0.80	1.08
L	0.10	0.09	0.10	0.10
Mean	0.65	0.67	0.45	0.59

SUM INS SEED TRT	I-	IA	ID	Mean
1-	0.68	0.70	0.53	0.63
1T	0.62	0.65	0.37	0.54
Mean	0.65	0.67	0.45	0.59

SUM INS SOIL INS	I-	IA	ID	Mean
2-	0.80	0.77	0.46	0.68
2C	0.49	0.58	0.43	0.50
Mean	0.65	0.67	0.45	0.59

SUM INS AUT SPRY	I-	IA	ID	Mean
A-	0.59	0.64	0.46	0.56
AP	0.71	0.71	0.44	0.62
Mean	0.65	0.67	0.45	0.59

SUM INS SUM FUNG	I-	IA	ID	Mean
F-	0.65	0.76	0.47	0.62
FF	0.65	0.59	0.42	0.55
Mean	0.65	0.67	0.45	0.59

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GRAIN TONNES/HECTARE

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

SOW DATE	SEED TRT	SOIL INS	AUT SPRY
0.081	0.081	0.081	0.081
SUM FUNG	SUM INS	SOW DATE	SOW DATE
0.081	0.099	SEED TRT	SOIL INS
		0.115	0.115
SEED TRT	SOW DATE	SEED TRT	SOIL INS
SOIL INS	AUT SPRY	AUT SPRY	AUT SPRY
0.115	0.115	0.115	0.115
SOW DATE	SEED TRT	SOIL INS	AUT SPRY
SUM FUNG	SUM FUNG	SUM FUNG	SUM FUNG
0.115	0.115	0.115	0.115
SOW DATE	SEED TRT	SOIL INS	AUT SPRY
SUM INS	SUM INS	SUM INS	SUM INS
0.141	0.141	0.141	0.141
SUM FUNG			
SUM INS			
0.141			

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	20	0.281	47.7
GRAIN MEAN DM%	80.5		
PLOT AREA HARVESTED	0.00216		



94/R/LP/9

SPRING LUPINS

SOWING DATES OF SPRING LUPINS

**Object:** To observe the development of a variety of lupin sown on three dates in spring. To measure the physiological development and yield, and to relate these to sowing date and period of vernalisation - Long Hoos IV 3.

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

**Design:** 5 randomised blocks of 3 plots.

**Whole plot dimensions:** 2.88 x 9.0.

**Treatments:**

**SOW DATE**            Date of sowing:

E                      Early 7 March, 1994

M                      Middle 14 March

L                      Late 29 March

**Experimental diary:**

01-Nov-93 : B : Sting CT at 4.0 l in 200 l.

04-Nov-93 : B : Ploughed.

07-Mar-94 : T : **SOW DATE** E: Rotary harrowed, CH304/73 drilled at 60 seeds per m<sup>2</sup>.

10-Mar-94 : T : **SOW DATE** E: Opogard 500 SC at 2.8 l in 220 l.

14-Mar-94 : T : **SOW DATE** M: Rotary harrowed, CH304/73 drilled at 60 seeds per m<sup>2</sup>.

18-Mar-94 : T : **SOW DATE** M: Opogard 500 SC at 2.8 l in 220 l.

29-Mar-94 : T : **SOW DATE** L: Rotary harrowed, CH304/73 drilled at 60 seeds per m<sup>2</sup>.

12-Apr-94 : T : **SOW DATE** L: Opogard 500 SC at 2.8 l in 220 l.

29-Sep-94 : T : **SOW DATE** E: Hand harvested.

10-Oct-94 : T : **SOW DATE** M: Hand harvested.

01-Nov-94 : T : **SOW DATE** L: Hand harvested.

Previous crops: Fallow 1992, w. rape and shepherd's purse 1993.

**NOTES:** (1) Plant populations were assessed at emergence and in June, leaf primordia were counted in late spring. Leaves, branches and florets were counted in July and at harvest components of yield were assessed.

(2) The yield of one plot was lost during harvesting, with treatment E. An estimated value was used in the analysis

94/R/LP/9

GRAIN TONNES/HECTARE

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

SOW DATE

E	2.26
M	2.52
L	1.52
Mean	2.10

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

SOW DATE

0.154

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	7	0.243	11.6
GRAIN MEAN DM%	80.0		
PLOT AREA HARVESTED	0.00171		