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## Yields of the Field Experiments 1988

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### Lupins

#### Rothamsted Research

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88/R/LP/1

WINTER LUPINS

VARIETIES, SOWING DATES AND SEED DRESSINGS

**Object:** To compare three varieties of lupin (*Lupinus albus*) sown at two sowing dates with and without a seed dressing - Long Hoos V 6.

**Sponsors:** J. McEwen, H.L. Jones, D.P. Yeoman, A.W. Ferguson, J.F. Jenkyn.

**Design:** 2 randomised blocks of 12 plots.

**Whole plot dimensions:** 1.8 x 9.0.

**Treatments:** All combinations of:-

Whole plots

- |                    |   |
|--------------------|---|
| 1. <b>VARIETY</b>  | Varieties:                                  |
| LUCKY              | Lucky                                       |
| VLADIMIR           | Vladimir                                    |
| 2. <b>SOW DATE</b> | Dates of sowing:                            |
| 26 OCT             | 26 October, 1987                            |
| 3 DEC              | 3 December                                  |
| 3. <b>SEEDRESS</b> | Seed dressing:                              |
| NONE               | None  |
| FO+CA+TH           | Fosetyl-aluminium, captan and thiabendazole |

plus three extra treatments

- |                 |  |
|-----------------|--|
| <b>C8 EXTRA</b> | All variety C8:  |
| C8FSE           | Sown 26 Oct seed dressed with fosetyl-aluminium, captan and thiabendazole (duplicated) |
| C8FSL           | Sown 3 Dec seed dressed with fosetyl-aluminium, captan and thiabendazole               |
| C8SL            | Sown 3 Dec, no seed dressing   |

**Basal applications:** Manures: (0:18:36) at 1040 kg. Chalk at 2.9 t. Weedkillers: Paraquat at 0.80 kg ion in 220 l. Monolinuron at 0.46 kg and paraquat at 0.33 kg ion in 220 l. Fungicides: Benomyl at 0.50 kg in 220 l applied with the deltamethrin. Chlorothalonil at 1.0 kg with benomyl at 0.50 kg in 220 l applied with the pirimicarb. Insecticides: Deltamethrin at 0.075 kg. Pirimicarb at 0.14 kg.

**Seed:** Sown at 200 kg.

88/R/LP/1

Cultivations, etc: PK applied: 30 Sept, 1987. Chalk applied: 2 Oct.  
 Paraquat applied: 5 Oct. Monolinuron and paraquat applied after each sowing: 30 Oct, 8 Dec respectively. Benomyl and deltamethrin applied: 25 May, 1988. Chlorothalonil, benomyl and pirimicarb applied: 18 July. Combine harvested VLADIMIR: 14 Oct. Hand harvested LUCKY: 19 Oct. Stationary threshed LUCKY: 27 Oct. Hand harvested C8: 9 and 12 Dec. Stationary threshed C8: 12 and 13 Dec. Previous crops: Lupins 1986, fallow 1987.

**GRAIN (AT 90% DRY MATTER) TONNES/HECTARE**

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

| SEEDRESS       | NONE | FO+CA+TH | Mean |
|----------------|------|----------|------|
| <b>VARIETY</b> |      |          |      |
| LUCKY          | 0.89 | 0.73     | 0.81 |
| VLADIMIR       | 0.05 | 0.03     | 0.04 |
| Mean           | 0.47 | 0.38     | 0.42 |

| SOW DATE       | 26 OCT | 3 DEC | Mean |
|----------------|--------|-------|------|
| <b>VARIETY</b> |        |       |      |
| LUCKY          | 1.16   | 0.46  | 0.81 |
| VLADIMIR       | 0.06   | 0.02  | 0.04 |
| Mean           | 0.61   | 0.24  | 0.42 |

| SOW DATE        | 26 OCT | 3 DEC | Mean |
|-----------------|--------|-------|------|
| <b>SEEDRESS</b> |        |       |      |
| NONE            | 0.67   | 0.27  | 0.47 |
| FO+CA+TH        | 0.55   | 0.21  | 0.38 |
| Mean            | 0.61   | 0.24  | 0.42 |

| VARIETY  | SEEDRESS | 26 OCT | 3 DEC |
|----------|----------|--------|-------|
| LUCKY    | NONE     | 1.27   | 0.51  |
|          | FO+CA+TH | 1.05   | 0.41  |
| VLADIMIR | NONE     | 0.07   | 0.03  |
|          | FO+CA+TH | 0.06   | 0.00  |

| C8 EXTRA | C8FSE | C8FSL | C8SL | Mean |
|----------|-------|-------|------|------|
|          | 2.12  | 1.98  | 2.18 | 2.10 |

GRAND MEAN 0.98

MEAN DM% 60.0

PLOT AREA HARVESTED C8 EXTRA 0.00065

PLOT AREA HARVESTED OTHER VARIETIES 0.00162

88/R/LP/3

LUPINS

DESICCANTS AND FUNGICIDES

**Object:** To study the effects of times of applying desiccants and fungicides on senescence, grain quality and yield of lupins (*Lupinus albus*) - Long Hoos III 5.

**Sponsors:** H.L. Jones, J. Lacey.

**Design:** 2 randomised blocks of 30 plots.

**Whole plot dimensions:** 2.4 x 5.0.

**Treatments:** All combinations of:-

1. **DESICCANT**            Desiccants:  
  
    DIQUAT                Diquat at 0.15 kg ion  
    MET+FEN              Metoxuron at 2.0 kg plus fentin hydroxide at 0.20 kg  
    GLYPHOS              Glyphosate at 1.08 kg  
    NACL                  Sodium chloride at 6.25 kg
  
2. **FUNGICIDE**            Fungicide applied 10 days before desiccant (29 Sept, 1988, 10 Oct, 20 Oct):  
  
    NONE                  None  
    PROPICON              Propiconazole at 0.125 kg
  
3. **APP TIME**            Times of applying desiccants:  
  
    EARLY                When leaf fall complete (10 Oct)  
    MIDDLE               10 days after EARLY (20 Oct)  
    LATE                  18 days after EARLY (28 Oct)

plus an extra treatment given no desiccants or fungicides:

**EXTRA**

NONE                    None (septuplicated)

**NOTES:** (1) All spray treatments were applied in 220 l.  
(2) Additional planned treatments with fungicides alone were omitted.

**Basal applications:** Manure: Chalk at 2.9 t. Weedkillers: Terbutryne at 0.98 kg and terbuthylazine at 0.42 kg in 220 l. Metamitron at 1.4 kg in 220 l applied with the benomyl and pirimicarb. Fungicides: Benomyl at 0.56 kg when applied with the metamitron and the first pirimicarb and at 1.0 kg applied with chlorothalonil at 1.0 kg in 220 l applied with the second pirimicarb. Insecticide: Pirimicarb at 0.14 kg applied on two occasions.

**Seed:** Vladimir, sown at 210 kg.

88/R/LP/3

**Cultivations, etc.:-** Chalk applied: 1 Oct, 1987. Ploughed: 11 Dec. Spring-tine cultivated twice, seed sown, rolled: 11 Mar, 1988. Terbutryne and terbuthylazine applied: 17 Mar. Metamitron, benomyl and pirimicarb applied: 20 June. Chlorothalonil, benomyl and pirimicarb applied: 15 July. Combine harvested: 4 Nov. Previous crops: Cabbages 1986, fallow 1987.

**GRAIN (AT 90% DRY MATTER) TONNES/HECTARE**

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

| <b>FUNGCIDE</b> | <b>NONE</b>     | <b>PROPICON</b> | <b>Mean</b>   |             |
|-----------------|-----------------|-----------------|---------------|-------------|
| <b>DESICCNT</b> |                 |                 |               |             |
| DIQUAT          | 1.80            | 1.72            | 1.76          |             |
| MET+FEN         | 1.85            | 1.92            | 1.88          |             |
| GLYPHOS         | 1.80            | 1.80            | 1.80          |             |
| NACL            | 1.87            | 1.99            | 1.93          |             |
| Mean            | 1.83            | 1.86            | 1.84          |             |
| <b>APP TIME</b> | <b>EARLY</b>    | <b>MIDDLE</b>   | <b>LATE</b>   | <b>Mean</b> |
| <b>DESICCNT</b> |                 |                 |               |             |
| DIQUAT          | 2.04            | 1.89            | 1.36          | 1.76        |
| MET+FEN         | 1.97            | 1.94            | 1.74          | 1.88        |
| GLYPHOS         | 1.70            | 1.74            | 1.95          | 1.80        |
| NACL            | 1.70            | 2.07            | 2.03          | 1.93        |
| Mean            | 1.85            | 1.91            | 1.77          | 1.84        |
| <b>APP TIME</b> | <b>EARLY</b>    | <b>MIDDLE</b>   | <b>LATE</b>   | <b>Mean</b> |
| <b>FUNGCIDE</b> |                 |                 |               |             |
| NONE            | 1.89            | 1.78            | 1.82          | 1.83        |
| PROPICON        | 1.82            | 2.04            | 1.71          | 1.86        |
| Mean            | 1.85            | 1.91            | 1.77          | 1.84        |
| <b>DESICCNT</b> | <b>APP TIME</b> | <b>EARLY</b>    | <b>MIDDLE</b> | <b>LATE</b> |
| DIQUAT          | NONE            | 2.03            | 1.79          | 1.58        |
|                 | PROPICON        | 2.05            | 1.98          | 1.13        |
| MET+FEN         | NONE            | 1.72            | 1.82          | 2.02        |
|                 | PROPICON        | 2.23            | 2.06          | 1.47        |
| GLYPHOS         | NONE            | 1.92            | 1.53          | 1.94        |
|                 | PROPICON        | 1.48            | 1.96          | 1.96        |
| NACL            | NONE            | 1.88            | 1.99          | 1.75        |
|                 | PROPICON        | 1.52            | 2.14          | 2.30        |
| <b>EXTRA</b>    | <b>NONE</b>     | 1.77            |               |             |
| Grand mean      |                 | 1.83            |               |             |

88/R/LP/3

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

|                      |                      |                                  |                      |
|----------------------|----------------------|----------------------------------|----------------------|
| DESICCNT             | FUNGCIDE             | APP TIME                         | DESICCNT<br>FUNGCIDE |
| 0.188                | 0.133                | 0.163                            | 0.266                |
| DESICCNT<br>APP TIME | FUNGCIDE<br>APP TIME | DESICCNT<br>FUNGCIDE<br>APP TIME |                      |
| 0.326                | 0.231                | 0.461                            |                      |

SED for comparing NONE with any item in  
DESICCNT.FUNGCIDE.APP TIME table is 0.352

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

| Stratum             | d.f.    | s.e.  | cv%  |
|---------------------|---------|-------|------|
| BLOCK.WP            | 34      | 0.461 | 25.2 |
| GRAIN MEAN DM%      | 78.2    |       |      |
| PLOT AREA HARVESTED | 0.00072 |       |      |

88/R/PE/1

PEAS

EFFECTS OF PEA SEED-BORNE MOSAIC VIRUS

**Object:** To study the transmission, symptoms and effects on yield of pea seed-borne mosaic virus in two varieties of peas with and without insecticide - Long Hoos IV 6.

**Sponsors:** A.J. Cockbain, D. Wang.

**Design:** 4 randomised blocks of 2 whole plots split into 3.

**Whole plot dimensions:** 9.2 x 5.0.

**Treatments:** All combinations of:-

Whole plots

1. **INSCTCDE** Insecticide:

|          |  |
|----------|--|
| NONE     | None   |
| PH+CY+PI | Phorate at 1.7 kg to the seedbed on 26 Apr, 1988.<br>Cypermethrin at 0.025 kg with pirimicarb at 0.14 kg in 220 l on 1 and 20 June, 5 July |

Sub plots

2. **VAR INF** Varieties and infection:

|         |  |
|---------|--|
| PROGR H | Progreta, healthy stock                                    |
| WAVER H | Waverex, healthy stock                                     |
| WAVER I | Waverex, seed infected with 4% pea seed-borne mosaic virus |

**NOTE:** Plots were netted against birds from early June to harvest.

**Basal applications:** Manure: Chalk at 2.9 t. Weedkillers: Terbutryne at 0.98 kg and terbuthylazine at 0.42 kg in 220 l. Fungicides: Benomyl at 0.50 kg with chlorothalonil at 1.0 kg in 220 l on four occasions. Desiccant: Diquat at 0.60 kg ion in 220 l.

**Seed:** All sown at 600,000 seeds per hectare:

Progreta at 200 kg.  
Waverex (healthy) at 66 kg.  
Waverex (infected) at 54 kg.

**Cultivations, etc.:-** Chalk applied: 2 Oct, 1987. Ploughed: 14 Dec. Rotary harrowed, seed sown: 26 Apr, 1988. Weedkillers applied: 27 Apr. Fungicides applied: 30 June, 2, 11, 23 Aug. Desiccant applied: 5 Sept. Combine harvested: 9 Sept. Previous crops: Maize 1986, fallow 1987.

**NOTE:** Aphid numbers were assessed during the growing season. Virus incidence was assessed in the plants during the season and in the seed from all plots after harvest.

88/R/PE/1

GRAIN TONNES/HECTARE

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

| VAR INF<br>INSCDCDE | PROGR H | WAVER H | WAVER I | Mean |
|---------------------|---------|---------|---------|------|
| NONE                | 2.81    | 2.49    | 1.22    | 2.17 |
| PH+CY+PI            | 3.65    | 2.87    | 2.30    | 2.94 |
| Mean                | 3.23    | 2.68    | 1.76    | 2.56 |

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

| VAR INF | INSCDCDE*<br>VAR INF |
|---------|----------------------|
| 0.158   | 0.223                |

\* Within the same level of INSCDCDE only

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

| Stratum     | d.f. | s.e.  | cv%  |
|-------------|------|-------|------|
| BLOCK.WP.SP | 12   | 0.316 | 12.4 |

GRAIN MEAN DM% 77.8

SUB PLOT AREA HARVESTED 0.00072