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86/R/LP/5 Growth Regulators - Lupins

Rothamsted Research

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86/R/LP/5

LUPINS

GROWTH REGULATORS

Object: To study the effects of rates and times of applying two growth regulators on the growth and yield of lupins (*Lupinus albus*) - Long Hoos V 6.

Sponsors: J. McEwen, D.P. Yeoman.

Design: 4 randomised blocks of 15 plots.

Whole plot dimensions: 2.4 x 5.0.

Treatments: All combinations of:-

1. GROW REG Growth regulators:
 2-CHLORO 2-chloroethylphosphonic acid (2CPA)
 MEP+2-CH Mepiquat chloride plus 2CPA
2. GR RATE Rates of application of growth regulators (g):
 2CPA Mepiquat chloride

| | | |
|---|-----|-----|
| 1 | 120 | 236 |
| 2 | 240 | 472 |
| 4 | 480 | 944 |
3. GR TIME Times of application of growth regulators:
 TERMINAL When first pods formed on terminal inflorescences on
 7 July, 1986
 SECNDARY When first pods formed on secondary inflorescences on
 18 July

plus one extra treatment:

EXTRA

NONE No growth regulator (triplicated)

NOTE: Treatment sprays were applied in 220 l.

Basal applications: Weedkillers: Glyphosate at 0.72 kg in 210 l.
Monolinuron at 0.77 kg with paraquat at 0.56 kg ion in 220 l.
Metamitron at 2.8 kg in 220 l. Fungicide: Benomyl at 0.56 kg in
220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l. Desiccant:
Diquat at 0.60 kg ion with a wetting agent ('Spreadite' at 0.56 l)
in 220 l.

Seed: Vladimir, dressed with thiram and inoculated with Rhizobium, sown
at 250 kg.

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Cultivations, etc.:- Glyphosate applied: 25 Sept, 1985. Harrowed: 15 Oct. Ploughed: 29 Nov. Spring-tine cultivated, seed sown: 30 Apr, 1986. Monolinuron and paraquat applied: 1 May. Metamitron applied: 13 June. Fungicide applied: 10 July. Insecticide applied: 18 July. Desiccant with wetter applied: 20 Nov. Combine harvested: 28 Nov. Previous crops: S. beans 1984, s. barley 1985.

NOTE: Plant counts were made at establishment. Components of yield and plant heights were measured at maturity.

GRAIN (90% DRY MATTER) TONNES/HECTARE

***** TABLES OF MEANS *****

| GR RATE | 1 | 2 | 4 | MEAN | | |
|------------|----------|----------|----------|----------|----------|----------|
| GRO REG | | | | | | |
| 2 CHLORO | 3.31 | 3.02 | 3.05 | 3.13 | | |
| MEP+2-CH | 2.94 | 3.05 | 3.06 | 3.02 | | |
| MEAN | 3.13 | 3.04 | 3.06 | 3.07 | | |
| GR TIME | TERMINAL | SECNDARY | MEAN | | | |
| GRO REG | | | | | | |
| 2 CHLORO | 3.11 | 3.15 | 3.13 | | | |
| MEP+2-CH | 2.98 | 3.05 | 3.02 | | | |
| MEAN | 3.04 | 3.10 | 3.07 | | | |
| GR TIME | TERMINAL | SECNDARY | MEAN | | | |
| GR RATE | | | | | | |
| 1 | 3.16 | 3.09 | 3.13 | | | |
| 2 | 2.97 | 3.10 | 3.04 | | | |
| 4 | 2.99 | 3.12 | 3.06 | | | |
| MEAN | 3.04 | 3.10 | 3.07 | | | |
| GR RATE | 1 | 2 | 4 | | | |
| GR TIME | TERMINAL | SECNDARY | TERMINAL | SECNDARY | TERMINAL | SECNDARY |
| GRO REG | | | | | | |
| 2 CHLORO | 3.43 | 3.20 | 2.92 | 3.13 | 2.97 | 3.14 |
| MEP+2-CH | 2.88 | 2.99 | 3.03 | 3.07 | 3.02 | 3.10 |
| EXTRA NONE | 3.28 | | | | | |
| GRAND MEAN | 3.11 | | | | | |

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GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | GRO REG | GR RATE | GR TIME | GRO REG GR RATE |
|-------|---------|---------|---------|--------------------|
| SED | 0.130 | 0.159 | 0.130 | 0.225 |

| TABLE | GRO REG GR TIME | GR RATE GR TIME | GRO REG GR RATE GR TIME |
|-------|--------------------|--------------------|-------------------------------|
| SED | 0.184 | 0.225 | 0.318 |

SED FOR COMPARING NONE WITH ANY ITEM IN
GR RATE.GR TIME.GRO REG TABLE IS 0.260

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|----------|----|-------|------|
| BLOCK.WP | 44 | 0.450 | 14.4 |

GRAIN MEAN DM% 54.0

PLOT AREA HARVESTED 0.00072