1989

Effect of seed phosphorus, seed size and seedling density on the growth of lupins.

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M. D. Bolland

K. Adcock

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Experiment 89SC22. Effect of seed phosphorus, seed size and seedling density on the growth of lupins.

M. Riley, M.D.A. Bolland and K. Adcock.

Location

South Carrabin Research Station, Hayden paddock.

Treatments

A. Factorial combination of:
1. Soil P - 0, 300 kg superphosphate/ha drilled with seed.
2. Seed size - approximately 125, 170 g/1000 seed.
3. Seeding rate - 60, 80, 110 kg/ha.

Note: For these treatments seed contained 0.29% P

B. Factorial combination of:
1. Soil P - 0, 300 kg superphosphate/ha drilled with seed.
2. Seed P - 0.29, 0.38% (from 88E54).
3. Seed size - approximately 125, 170 g/1000 seed.

Note: For these treatments seed sown at 80 kg/ha.

Sowing details

Lupin cv. Danja lime pelleted and inoculated. Basal copper fertilizer applied at 1 kg/ha.

Sown on 17/5/89.

Harvested on 28/11/89.
Table 8. Effect of seed phosphorus (P) concentration, fertilizer P level, seed size and seeding rate on plant counts at six weeks, shoot dry matter (DM) at 12 and 21 weeks after sowing and seed yield at maturity of lupins cv. Gungurru grown at South Carrabin Research Station in 1989

<table>
<thead>
<tr>
<th>Fertilizer P (kg super/ha)</th>
<th>Seed P (%)</th>
<th>Seed size</th>
<th>Seed rate</th>
<th>Plant counts/m²</th>
<th>Shoot DM (kg/ha) 12 weeks</th>
<th>21 weeks</th>
<th>Seed DM (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>0</td>
<td>0.28</td>
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<td>93</td>
<td>476</td>
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<td></td>
<td>High</td>
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<td>122</td>
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<td>**</td>
<td>**</td>
<td>NS</td>
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<tr>
<td>Seed size</td>
<td>*</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>NS</td>
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B. 0 0.28 Small Medium 42 93 476 80
Large Medium 43 108 672 80
0.39 Small Medium 54 95 621 70
Large Medium 45 120 821 90
300 0.28 Small Medium 42 186 1608 350
Large Medium 34 212 1874 400
0.39 Small Medium 44 113 1498 210
Large Medium 42 150 1659 310

Soil P                    **         **        **        **
Seed P                    **         **        NS        **
Seed size                 *          *         NS        *
Soil P x seed P           NS         **        NS        **
Soil P x seed size        NS         NS        NS        NS
Seed P x seed size        NS         NS        NS        NS
Soil P x seed P x seed size | *    | NS        NS        NS

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Comments

1. Omitting superphosphate depressed seed dry matter at maturity and shoot DM during the season despite increasing plant counts at six weeks after sowing.

2. Plants grown from small seed had lower shoot DM at 12 and 21 weeks after sowing but at maturity seed size generally resulted in no difference in seed DM. Similarly decreasing seeding rate decreased plant density at six weeks, and shoot DM at 12 weeks but had not effect on seed DM at maturity.

3. Decreasing seed P concentration decreased plant density at six weeks, shoot DM at 12 weeks and increased seed DM at maturity in the plots treated with superphosphate.