Boron toxicity in peas

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3. BORON TOXICITY IN PEAS
- 87SG3/4864 EX

AIM: To investigate the effects of high levels of soil boron on the growth of field peas.

METHOD: Peas were grown amongst plots of Stirling barley on a soil with naturally high levels of boron. Both the peas and barley were sampled at several stages, analyzed for concentrations of boron, and assessed for leaf injury due to boron toxicity.

LOCATION: Adjacent to 87SG1 on the Salmon Gums Research Station.

SOIL: Kumari - a red-brown calcareous earth with naturally high levels of boron.

RESULTS: Sown - June 2
- Dundale peas at 100 kg/ha
- Stirling barley at 50 kg/ha
- Superphosphate at 104 kg/ha

Harvested - November 12.

Table 7. The dry weights of shoots and grain yields of peas and barley grown on a soil with naturally high levels of boron

<table>
<thead>
<tr>
<th></th>
<th>Cultivar</th>
<th>Dry weights of shoots</th>
<th>Grain yields</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T2</td>
<td>T3</td>
</tr>
<tr>
<td>Peas</td>
<td></td>
<td>0.94</td>
<td>2.74</td>
</tr>
<tr>
<td>Barley</td>
<td></td>
<td>1.97</td>
<td>4.47</td>
</tr>
</tbody>
</table>

T2 - August 19; barley Zadoks 26/32; peas 11 bracks, 1 extra branch.
T3 - September 24; barley Zadoks 61; peas flowering.
T4 - November 10; barley Zadoks 9-; peas senesced.
Table 8. Ratings of leaf injury due to boron toxicity on the primary tillers of barley and peas grown on a soil with naturally high levels of boron

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Stage</th>
<th>Ratings of leaf injury on primary tiller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>YEB</td>
</tr>
<tr>
<td>Barley</td>
<td>T2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>4</td>
</tr>
<tr>
<td>Peas</td>
<td></td>
<td>No abnormal leaf markings during growth i.e. necrosis or leopard spotting</td>
</tr>
</tbody>
</table>

RESULTS: Results of analyses for concentrations of boron in the tissues of barley and peas have yet to be completed. Preliminary results indicate:

1. The symptoms of dark necrotic spots and lesions that are associated with boron toxicity in barley were not evident on the leaves of adjacent peas. The peas grew free of any abnormal leaf markings.

2. Ratings of injury due to boron toxicity on the leaves from the primary tillers of Stirling barley increased during the season.