Research Notes: Italy: Light shock in soybean plantlets?

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1) Light shock in soybean plantlets?

In a new soybean breeding program, 70 cross combinations were performed between the following varieties: 'Agripro', 'Beeson', 'Caloria', 'Corsoy', 'Extra Early', 'Mikawashima', 'Norman', 'SRF150', 'SRF307 P', 'TXK505', 'TXK535', 'Vansoy', and 'Wells'. Mother plants were the varieties indicated in Table 1; in this table is also reported the number of combinations involving each variety used as female and the number of seeds obtained.

Table 1. Results of the crosses and their survival

<table>
<thead>
<tr>
<th>Bearing seed variety</th>
<th>No. of combinations</th>
<th>No. of seeds obtained</th>
<th>No. of plantlets survived</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agripro</td>
<td>6</td>
<td>15</td>
<td>0</td>
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<tr>
<td>Beeson</td>
<td>8</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Corsoy</td>
<td>6</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Mikawashima</td>
<td>8</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Norman</td>
<td>7</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>SRF150</td>
<td>6</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>SRF307 P</td>
<td>6</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>TXK505</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>TXK535</td>
<td>7</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Vansoy</td>
<td>9</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>Wells</td>
<td>6</td>
<td>15</td>
<td>0</td>
</tr>
</tbody>
</table>

The 263 F₁ seeds were sown in plastic containers with holes, of diameter of 5 cm and 8 cm deep, on May 30 in a slight shadow greenhouse, randomizing the 70 combinations. Emergence was pretty normal, but on June 15, when the plantlets with open cotyledons were transplanted, most of them showed some discoloration of green tissues and only 33 plants survived a few days. They came from crosses between Mikawashima (as mother plant), x Wells, SRF307 P, SRF150, Beeson, Caloria, Corsoy, and TXK505. Also all seedlings of SRF150 x Wells and SRF150 x Beeson survived.

Since no disease symptom was found and the quite normal techniques were applied, we have strong suspicions that light shock and, in second instance, temperature shock, were crucial for most of the plants. Moreover, because of the different mortality rate, we suggest that genetic background is involved.
Thus, Mikawashima, a Japanese variety already mentioned (Olivieri and Parrini, 1983; Parrini and Olivieri, 1984) for having its high unitary seed weight enhanced the plant yield in our breeding programs, seems also endowed with other particular genes.

References


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