The Doubled Haploid Facility at Iowa State University is developing new haploid inducing lines combining high induction rates with adaptation to the growing conditions in the Midwest. A first set of haploid inducing lines developed in a B73 background will be released in April 2014.

**Line description:**

The first set of haploid inducing lines to be released have the dominant color marker \(R1-nj\) for haploid selection, which results in a purple colored aleurone and embryo, if present.

Below is some data collected during the summer 2013 growing season for the three most promising Midwest haploid inducer lines compared to our standard inducer RWS/RWK-76, licensed from University of Hohenheim.

<table>
<thead>
<tr>
<th></th>
<th>RWS/RWK-76</th>
<th>BHI_01</th>
<th>BHI_02</th>
<th>BHI_03</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plant height:</strong></td>
<td>~5 feet</td>
<td>~6 feet</td>
<td>~6 feet</td>
<td>~6 feet</td>
</tr>
<tr>
<td><strong>Germination rate</strong></td>
<td>51.3%***</td>
<td>41.2%</td>
<td>88.6%</td>
<td>70.2%</td>
</tr>
<tr>
<td><strong>Germination rate</strong></td>
<td>In field 2013</td>
<td>---</td>
<td>17.6%</td>
<td>12.8%</td>
</tr>
<tr>
<td><strong>Self-induction</strong></td>
<td>---</td>
<td>1396</td>
<td>1470</td>
<td>1486</td>
</tr>
<tr>
<td><strong>GDU to 50%</strong></td>
<td>---</td>
<td>1470</td>
<td>1486</td>
<td></td>
</tr>
<tr>
<td><strong>Average seed set</strong></td>
<td>40 k/cob**</td>
<td>71 k/cob</td>
<td>94 k/cob</td>
<td>101 k/cob</td>
</tr>
<tr>
<td><strong>Average seed set</strong></td>
<td>on conventional hybrid*</td>
<td>273 k/cob</td>
<td>203 k/cob</td>
<td>260 k/cob</td>
</tr>
<tr>
<td><strong>Induction rate</strong></td>
<td>13.7%</td>
<td>17.0%</td>
<td>14.2%</td>
<td>12.0%</td>
</tr>
</tbody>
</table>

*conventional hybrid: Viking – 60-01N, pollinated once  **data from winter 2012/2013 in Chile, our standard inducer is a cross between two closely related haploid inducing lines RWS and RWK-76  ***germination in the greenhouse after floating seed in water, to remove seed with no or damaged embryo (on average 15-20% of the seed were discarded per batch)
Outlook:

The Doubled Haploid Facility is developing a variety of haploid inducing lines in different genetic backgrounds, with additional selectable markers and application in specialty corn.

Popcorn Inducer Lines:
- haploid inducing lines able to overcome the dent sterility used in popcorn breeding;
- selectable marker: R1-nj and Pl1 (red root);
- expected release April 2015

additional Midwest Inducer Lines:
- haploid inducing lines in genetic backgrounds belonging to different heterotic groups, adapted to Midwest growing conditions;
- selectable marker: R1-nj and Pl1 (red root);
- expected release fall 2015

Inducer Lines with special selectable markers:
- haploid inducing lines with additional selectable markers at the seedling level, useful in colored donor material like Indian Corn or in the presence of the C1 allele, a suppressor of R1-nj;
- expected release: April 2016

Contact Information:

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