On-Farm Soybean Row Spacing Trials

RFR-A1434

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Introduction
Most past research has shown a yield benefit to planting soybeans in rows more narrow than 30-in. However, narrow rows occasionally can result in more soybean disease problems, such as white mold, which can result in higher yields with wider rows. Yield differences between wide and narrow rows often vary from year-to-year and field-to-field.

Materials and Methods
In 2014, six trials were conducted in Cass, Sioux, and Buena Vista counties looking at the effect of different row spacing on soybean yield (Table 1). All trials were conducted on-farm by farmer cooperators using the farmers’ equipment. Strips were arranged in a randomized complete block design with at least three replications per treatment. Strip size varied from field to field depending on equipment size and the size of the field. All strips were machine harvested for grain yield.

Trials 1-5 compared soybeans planted in 15-in. rows with soybeans planted in 30-in. rows. In Trial 6, soybeans planted in 18-in. rows were compared with soybeans planted in 36-in. rows.

Results and Discussion
There was a yield advantage to the narrow rows in three of the six trials (Trials 2, 3, and 5). In Trials 2 and 3, the yield advantage was 7 bushels/acre, and in Trial 5 the advantage was 11 bushels/acre (Table 2). The 1 bushel/acre advantage to the 15-in. rows in Trial 1 also was nearly significant (P = 0.08). There was no significant difference in yield between the narrow rows and wide rows in Trials 4 and 6 at P = 0.05. These results confirm past research results that have shown soybeans often yield more in narrow rows, so switching from 30-in. or 36-in. rows to more narrow row spacings can increase soybean yields.
Table 1. Variety, planting date, planting population, previous crop, and tillage practices in on-farm soybean row spacing trials in 2014.

<table>
<thead>
<tr>
<th>Exp. no.</th>
<th>Trial</th>
<th>County</th>
<th>Variety</th>
<th>Planting date</th>
<th>Planting population (seeds/A)</th>
<th>Previous crop</th>
<th>Tillage</th>
</tr>
</thead>
<tbody>
<tr>
<td>140162</td>
<td>1</td>
<td>Sioux</td>
<td>Pioneer 91Y90</td>
<td>5/15/14</td>
<td>150,000</td>
<td>Corn</td>
<td>No-till</td>
</tr>
<tr>
<td>140610</td>
<td>2</td>
<td>Cass</td>
<td>Epplys ESB254NRR</td>
<td>6/6/14</td>
<td>160,000</td>
<td>Corn</td>
<td>Disked</td>
</tr>
<tr>
<td>140611</td>
<td>3</td>
<td>Cass</td>
<td>Epplys ESB281</td>
<td>5/31/14</td>
<td>170,000</td>
<td>Corn</td>
<td>No-till</td>
</tr>
<tr>
<td>140633</td>
<td>4</td>
<td>Cass</td>
<td>Asgrow 3031</td>
<td>5/18/14</td>
<td>145,000</td>
<td>Corn</td>
<td>No-till</td>
</tr>
<tr>
<td>140634</td>
<td>5</td>
<td>Cass</td>
<td>4-Star 2Y283</td>
<td>6/15/14</td>
<td>150,000</td>
<td>Sod</td>
<td>No-till</td>
</tr>
<tr>
<td>140203</td>
<td>6</td>
<td>Buena Vista</td>
<td>Asgrow 2433 RR</td>
<td>5/24/14</td>
<td>128,000</td>
<td>Corn</td>
<td>Fall rip, spring field cultivate</td>
</tr>
</tbody>
</table>

Table 2. Yields from on-farm soybean row spacing trials in 2014.

<table>
<thead>
<tr>
<th>Exp. no.</th>
<th>Trial</th>
<th>Treatments</th>
<th>Yield (bu/acre) x</th>
<th>P-value y</th>
</tr>
</thead>
<tbody>
<tr>
<td>140162</td>
<td>1</td>
<td>15-in rows</td>
<td>66 a</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-in rows</td>
<td>65 a</td>
<td></td>
</tr>
<tr>
<td>140610</td>
<td>2</td>
<td>15-in rows</td>
<td>62 a</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-in rows</td>
<td>55 b</td>
<td></td>
</tr>
<tr>
<td>140611</td>
<td>3</td>
<td>15-in rows</td>
<td>58 a</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-in rows</td>
<td>51 b</td>
<td></td>
</tr>
<tr>
<td>140633</td>
<td>4</td>
<td>15-in rows</td>
<td>60 a</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-in rows</td>
<td>59 a</td>
<td></td>
</tr>
<tr>
<td>140634</td>
<td>5</td>
<td>15-in rows</td>
<td>66 a</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30-in rows</td>
<td>55 b</td>
<td></td>
</tr>
<tr>
<td>140203</td>
<td>6</td>
<td>18-in rows</td>
<td>53 a</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36-inch rows</td>
<td>49 b</td>
<td></td>
</tr>
</tbody>
</table>

xValues denoted with the same letter within a trial are not significantly different at the significance level 0.05.

yP-Value = the calculated probability that the difference in yields can be attributed to the treatments and not other factors. For example, if a trial has a P-Value of 0.10, then we are 90 percent confident the yield differences are in response to treatments. For P = 0.05, we would be 95 percent confident.