Corn Yield Response to Seeding Rate

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Objective
To determine effects of corn seeding rate on grain yield and profit.

Background
Crop Year: 2014
Location: Delta, OH
County: Fulton
Soil Type: Granby-Tedrow
Drainage: Systematic-40 ft laterals
Previous Crop: Soybeans

Tillage: Conservation
Soil Test: pH 6.2, P 92 ppm*, K 164 ppm
Planting Date: May 6, 2014
Nitrogen: 200 lbs at split at plant and sidedress
Harvest Date: October 25, 2014
Rainfall April-Sept: 14.64”
*Reported as Bray P1

Methods
This trial was designed with three treatments replicated four times in a randomized complete block design. Treatment plots were field length (at least 1,000 feet) by 20 feet wide. An 8-row White 6100 planter was used to plant the plot. Pioneer 0636 was the seed variety planted in all plots. All treatments received the same starter fertilizer, herbicide and sidedress nitrogen. Stand counts were taken prior to harvest by obtaining 8 counts per treatment and calculating the simple average. Plots were harvested with commercial combine. Yield was measured by using a calibrated Ag Leader yield monitor. Yields were shrunk to 15% moisture. Precipitation data was downloaded from weather.com.

Treatments:
1. 28,400 seeds per acre
2. 33,400 spa
3. 38,800 spa

Results
Table 1. Corn Yield (bu/ac) Response to Seeding Rate

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Harvest Stand</th>
<th>Dry Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,400 seeds/ac</td>
<td>28,100 plants/acre</td>
<td>179.9 a</td>
</tr>
<tr>
<td>33,400 spa</td>
<td>32,600 ppa</td>
<td>166.5 b</td>
</tr>
<tr>
<td>38,800 spa</td>
<td>35,900 ppa</td>
<td>162.6 b</td>
</tr>
</tbody>
</table>

LSD 11.98 (p<.05), CV 4.1 – Yes significant difference among treatments
Summary

<table>
<thead>
<tr>
<th>Seeding rate (x1,000)</th>
<th>Yield Bu/acre</th>
<th>Gross Revenue per acre</th>
<th>Seed Cost per acre</th>
<th>Net Revenue per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.4</td>
<td>179.9</td>
<td>$719.60</td>
<td>$97.41</td>
<td>$622.19</td>
</tr>
<tr>
<td>33.4</td>
<td>166.5</td>
<td>$666.00</td>
<td>$114.56</td>
<td>$551.44</td>
</tr>
<tr>
<td>38.8</td>
<td>162.6</td>
<td>$650.40</td>
<td>$133.08</td>
<td>$517.32</td>
</tr>
</tbody>
</table>

**Economics:** Gross income= yield x $4.00/bu; Seed cost= $3.43 per 1,000 seeds x seeding rate; Net revenue= Gross revenue – seed cost.

**Discussion:**
The results of this plot show a statistically significant difference of at least +13.4 bushel per acre in treatment 1 (28,400 seeds per acre) over treatments 2 and 3. Based on one year of data, a planted population of 28,400 seeds per acre resulted in the greatest returns per acre. Further data in the form of multi-year replications will add to the validity of these results. Conducting site specific seeding rate trials is the best way for a producer to optimize seeding rates.

**Acknowledgement**
The author expresses appreciation to on-farm collaborator Dick Snyder for his help in planting and harvesting this plot. Thanks to student worker Emily Herring and Tim Barney for assisting with data collection and data processing, respectively.

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