Corn Population Study, Darke County

Samuel G. Custer, Ohio State University Extension Educator, Darke County

Objective
To determine the effects of corn seeding rate on corn yields to determine best management practices for corn seeding rates and provide data points for determining variable rates for corn seeding.

Background
Crop Year: 2018
Location: Adams Township
County/Town: Darke/Bradford
Soil Type: Miamian Silt Loam
   Brookston Silty Clay Loam
Drainage: Systematic Pattern
Previous Crop: Soybeans
Tillage: Minimum Tillage
Soil Test: pH 6.3, P 24 ppm BP1, K 129 ppm
Planting Date: May 1, 2018
Nitrogen: 200 units per acre
Seeding Rate: Varied
Harvest Date: October 11, 2018
Rainfall: 14.25 in – April-August

Methods
Five corn populations were replicated three times in a randomized complete block design. Treatments were planted with a 12 row Kinze planter, 500 feet in length. All treatments received the same tillage and herbicide applications. Variety used was Dekalb 6220. Stand counts were taken at V4 by obtaining two counts using 1/1,000th of an acre per treatment and calculating the simple average. Plots were harvested with a commercial combine equipped with a 6 row header. Yields and moistures were obtained by using a calibrated yield monitor. Yields were verified using a grain cart. Yields were adjusted to 15.5% moisture. Precipitation data was obtained from cocorahs.org and recorded daily.

Results

<table>
<thead>
<tr>
<th>No.</th>
<th>Target Planting Population</th>
<th>V4 Stand Count</th>
<th>Grain Moisture %</th>
<th>Treatment Average (bu./acre)</th>
<th>Return Above Seed ($/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22,000</td>
<td>21,417</td>
<td>15.4</td>
<td>207 d</td>
<td>648</td>
</tr>
<tr>
<td>2</td>
<td>26,000</td>
<td>25,500</td>
<td>15.5</td>
<td>219 c</td>
<td>676</td>
</tr>
<tr>
<td>3</td>
<td>30,000</td>
<td>31,083</td>
<td>15.4</td>
<td>227 b</td>
<td>690</td>
</tr>
<tr>
<td>4</td>
<td>34,000</td>
<td>31,583</td>
<td>15.5</td>
<td>231 a</td>
<td>690</td>
</tr>
<tr>
<td>5</td>
<td>38,000</td>
<td>37,333</td>
<td>15.5</td>
<td>232 a</td>
<td>679</td>
</tr>
</tbody>
</table>

Grain Moisture CV %: 0.66; Not significant

Yield LSD (0.10): 2.26; CV %: 0.67
Summary
In this plot, there was no significant difference in the grain moisture at harvest. There was a significant difference in yield with the 34,000 and 38,000 seeding rates yielding significantly better than the other rates. The 30,000 and 34,000 Return above seed cost per acre was the best.

Acknowledgement
The author expresses appreciation to on-farm collaborators Overholser Farms for the land use, planting and harvesting of this plot.