Corn Population Study

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Objective
To determine the effects of corn seeding rate on corn yields that will provide data for determining BMPs for corn seeding rates and may provide data points for determining variable rates for corn seeding.

Background
Crop Year: 2017
Location: Harrison Township
County/Town: Darke/New Madison
Soil Type: Crosby Silt Loam
Drainage: non systematic
Previous Crop: Soybeans
Tillage: Minimum Tillage
Planting Date: May 18, 2017
Nitrogen: 200 pounds/acre
Seeding Rate: Varied
Harvest Date: October 27, 2017
Rainfall: 29.31 in. - 4/15-9/15

Methods
Six corn populations, including the farmer’s typical variable rate, were replicated three times in a randomized complete block design. Treatments were planted with a 16 row Kinze planter, field length and .93 acres each. The farmer’s variable rate ranged from 26,000 to 38,000 in 4,000 unit increments and we prescribed based on soil type. All treatments received the same tillage and herbicide applications. Variety used was Pioneer P0825AMXT. Stand counts were taken at V4 by obtaining 2 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 12 row header. Yields and moistures were obtained using a calibrated yield monitor. Yields were adjusted to 15.5% moisture. Precipitation data were and 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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22,000</td>
<td>20,250</td>
<td>19.93</td>
<td>199.37 a</td>
</tr>
<tr>
<td>2</td>
<td>26,000</td>
<td>23,666</td>
<td>19.8</td>
<td>200.50 a</td>
</tr>
<tr>
<td>3</td>
<td>30,000</td>
<td>24,166</td>
<td>20.17</td>
<td>205.83 b</td>
</tr>
<tr>
<td>4</td>
<td>34,000</td>
<td>28,750</td>
<td>20.23</td>
<td>206.27 b</td>
</tr>
<tr>
<td>5</td>
<td>38,000</td>
<td>35,083</td>
<td>20.07</td>
<td>208.70 b</td>
</tr>
<tr>
<td>6</td>
<td>farmer variable</td>
<td>26,916</td>
<td>20.33</td>
<td>206.77 b</td>
</tr>
</tbody>
</table>

Grain Moisture CV %: 1.94 not significant

Yield LSD (0.10): 5.24, CV%: 1.73
Summary
In this plot, there was not a significant difference in the grain moisture at harvest. There was a significant difference in yield between the two lower seeding rates and the three higher seeding rates.

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

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