Soybean Yield Response to Plant Populations

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Objective
To determine the effects of seeding rate on soybean yield.

Background
Crop Year: 2017
Location: Tuscarawas, OH
County/Town: Tuscarawas
Soil Type: Silt Loam Tioga
Drainage: None
Previous Crop: Corn
Tillage: No-till
Soil Test: pH 6.1, P 44ppm (M3), K 229ppm
Planting Date: June 1, 2017
Nitrogen: None
Seeding Rate: Varied
Harvest Date: October 31, 2017

Methods
Four soybean seeding rates were tested using a randomized complete block design with three replications. The seeding rates included: 80,000; 100,000; 130,000; and 160,000 seeds per acre. The strip plots were planted using a John Deere 1790 planter and harvested with a Caterpillar combine equipped with an Ag Leader Integra yield monitor. All tillage, fertilizer and pesticide applications were consistently applied across the treatments.

Results

<table>
<thead>
<tr>
<th>Treatment (seeds/ac.)</th>
<th>Average Emergence (plants/ac.)</th>
<th>Yield (bu/ac.)</th>
<th>Fixed Cash Price/bu.</th>
<th>Gross Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>80,000</td>
<td>76,533</td>
<td>51 a</td>
<td>$9.12</td>
<td>$468.76</td>
</tr>
<tr>
<td>100,000</td>
<td>94,667</td>
<td>52 a</td>
<td>$9.12</td>
<td>$476.97</td>
</tr>
<tr>
<td>130,000</td>
<td>124,800</td>
<td>51 a</td>
<td>$9.12</td>
<td>$466.03</td>
</tr>
<tr>
<td>160,000</td>
<td>153,066</td>
<td>51 a</td>
<td>$9.12</td>
<td>$465.12</td>
</tr>
</tbody>
</table>

(Note: CV% 2.24. No statistically significant yield difference among treatments at 90% confidence level. Seed cost is $56 per bag)

Summary
The results of this on-farm study are similar to other findings with respect to seeding rate and final yield. This study demonstrated that farmers growing soybeans may be able to save money by planting less seeds per acre. In this study, planting 100,000 seeds per acre resulted in the greatest yield and achieved the highest gross revenue of all treatments.
Acknowledgement

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