Corn Population and Nitrogen Trial

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Corn Population and Nitrogen Trial

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**Introduction**

Corn plant populations have increased at approximately 400 plants/acre per year over the last two decades. Seeding rates are now commonly in the 32,000 to 38,000 seeds/acre range with some hybrids being recommended at higher seeding rates. Because corn plant populations and grain yields are increasing, there has been a renewed interest in looking at corn seeding rate and nitrogen rate interactions.

**Materials and Methods**

This trial was conducted beginning in 2016 using Stine 9538-20 planted April 19. This trial was set up as a randomized complete block design. It was designed to compare two seeding rates (35,000 and 45,000 seeds/acre) and two nitrogen rates (160 and 210 lb N/acre). Pre-planting 160 lb N/acre of UAN was applied to all plots, and an additional sidedress of 50 lb N/acre of UAN was applied to specific plots June 9.

**Results and Discussion**

The main effects and interaction effects of seeding rate and nitrogen rate were not found to be statistically significant (Table 1). Although there was numerical evidence the 45,000 seeds/acre and 210 lb N/acre treatment was higher yielding, the additional cost ($49.80/acre) was not captured with enough yield response to pay for the additional inputs.

**Acknowledgements**

This trial would not have been possible without contributions from Stine Seed Company.

### Table 1. Corn grain yields and cost of added inputs for the seeding rate × nitrogen trial in 2016.

<table>
<thead>
<tr>
<th></th>
<th>160 lb N/ac</th>
<th>210 lb N/ac</th>
<th>35,000 seeds/ac</th>
<th>45,000 seeds/ac</th>
<th>160 lb N/ac</th>
<th>210 lb N/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>grain yield (bu/ac)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160 lb N/ac</td>
<td>192.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>210 lb N/ac</td>
<td></td>
<td>194.6</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>P = 0.5467</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>35,000 seeds/ac</td>
<td>192.3</td>
<td>191.4</td>
<td>191.8</td>
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<tr>
<td>45,000 seeds/ac</td>
<td></td>
<td></td>
<td></td>
<td>195.2</td>
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</tr>
<tr>
<td>P = 0.3983</td>
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<td></td>
<td></td>
<td>P = 0.3611</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1P-values within boxes are used to compare yields of the main effects or interaction effects within each box.  
2Difference in cost between the baseline treatment 35,000 seeds/acre and 160 lb N/acre and added input. The number in parenthesis below the cost is the equivalent bushels/acre needed to return cost of inputs.  
Note: Difference in cost was calculated based on $3.43/1,000 seeds and $0.31/lb N (Source: Estimated Cost of production FM1712 publication). The difference in cost was then divided by the calendar year corn price of $3.40 (Source: Ag Decision Maker File A2-11 for Iowa Cash Corn & Soybean Prices).