Roundup Ready Soybean Planting Rates
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Objective
To determine the effect on soybean yield of different seeding rates utilizing Roundup Ready seed.

Background
Cooperator: Dean Koehler  Soil Test: pH 6.5, P 23 lbs/A,
County: Wyandot  K 233 lbs/A, OM 2.3%
Nearest Town: Upper Sandusky  Fertilizer: None
Soil type: Blount  Herbicides: Roundup Ultra
Drainage: Surface, minimal tile  Variety: Callahan 9366
Tillage: No-till  Planting Date: May 10, 1999
Previous Crop: Corn  Harvest Date: October 16, 1999

Methods
With the increase in seed cost and technology fees associated with Roundup Ready soybean seed, a study was designed to compare different seeding rates to determine the most profitable population. A 30-foot John Deere Air Seeder, set up with seed monitors, was used to no-till plots into corn stubble. The three targeted seeding rates were 100,000, 150,000, and 200,000 seed per acre. The plots were randomized and replicated four times. Each of the 12 plots were 0.77 acres (30' x 1,175') in size. Yield was measured by a weigh wagon provided by Reile Farms. Harvest populations were based on randomly selecting 10-foot strips across the plots and counting the stand for two rows in each strip. Two strips were measured at the east third of the field, two strips in the center third, and two at the west third. Counts were averaged for each plot and adjusted to represent plants per acre. These counts were made one week prior to harvest.

Results

<table>
<thead>
<tr>
<th>Planted Population (seeds/A)</th>
<th>Harvest Population (plants/A)</th>
<th>Yield (bu/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000</td>
<td>87,483 a</td>
<td>28.85 a</td>
</tr>
<tr>
<td>150,000</td>
<td>141,933 b</td>
<td>32.24 b</td>
</tr>
<tr>
<td>200,000</td>
<td>178,233 c</td>
<td>33.58 b</td>
</tr>
</tbody>
</table>

Analysis of the data reveals that each harvested population range is statistically different from each other (LSD 0.05 = 23.192) at the 95 percent confidence level. Harvested yields of the two highest plant populations were not significantly different from each other at the 5 percent significance level. The lowest population yield was significantly lower than the yields of the higher two planting rates (LSD 0.05 = 2.45).
**Summary and Notes**

The field was in a very dry weather pattern during the growing season. The decreased yield in the lower population strips is believed to be partially due to the moisture lost because it took longer for these plants to canopy. Early in the season, increased weed pressure was expected as the population rate decreased. There was no visible difference in weed populations at harvest. This was also partially attributed to the dry growing season.

The difference between the three treatments, assuming a $5 value for soybeans and a $22 cost for seed beans (50 pound bag @ 2,800 seeds per pound) and using the 200,000/150,000 as the standard, is as follows:

<table>
<thead>
<tr>
<th>Planted Population (seeds/A)</th>
<th>Change in Seed Cost ($/A)</th>
<th>Change in Soybean Sales ($/A)</th>
<th>Net Revenue Difference ($/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200,000 and 150,000 Standard Standard -9.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100,000                      14.26                        -23.65                       -9.39</td>
<td></td>
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</tr>
</tbody>
</table>

These differences are based on one location and one growing season. Additional sites and years of data will better define the optimal plant population for Roundup Ready soybeans.

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