Nontraditional Fertilization of Corn at Planting

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Objective

To evaluate effects of pop-up and starter fertilizer application on yield and plant population of corn.

Background

Cooperator: Stephen Janos
Soil test: pH 7.4  P 72ppm
K 124ppm
County: Butler
Township: Milford
Drainage: Well drained to somewhat poorly drained
Soil Type: Russell-Miamian silt loam  Raub silt loam
Fertilizer: See Methods Below
Herbicide: Fieldmaster 4lbs/A
Planting date: 5/8/04
Planting rate (seeds/A): 30,000
Row width: 30 inches
Harvest date: 10/28/05
Insecticide: Poncho 250

Methods

The study employed a randomized complete block design with four replications. The treatments were:

1. 55 gallons of 28% UAN solution through the planter in a 5 in.x 2 in. placement, 165-0-0.
2. 48 gallons of 28% UAN solution plus 7 gallons of 12-0-0-26, ammonium sulfate, through the planter in a 5 in.x 2 in. placement, 152-0-0-18.
3. 55 gallons of 28% UAN solution in a 5 in x 2 in. placement through the planter plus 3.5 gallons of 9-19-3 placed on the seed as a pop up, 168-6-1.
4. 48 gallons of 28 % UAN solution plus 7 gallons of 12-0-0-26, ammonium sulfate, through the planter in a 5 in.x 2 in. placement plus 3.5 gallons of 9-19-3 placed on the seed as a pop up, 155-6-1-18.

Each plot was 20 ft. wide and ran the length of the field. The shortest plot was 485 feet and the longest was 763 feet. Five weeks after planting, plant population was determined for each plot by counting plants in a 1/1000 acre area in three locations in each plot. Grain yield and moisture of each plot was measured and adjusted to 14.5% moisture.
Results

Table 1. Effects of Pop-up and Starter Fertilizer Application on Plant Population, Grain Moisture and Grain Yield

<table>
<thead>
<tr>
<th>Treatment Number</th>
<th>Emerged Plant Population</th>
<th>Yield Bu./A</th>
<th>Grain Moisture</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAN row placement</td>
<td>28,438</td>
<td>227.4</td>
<td>16.3</td>
</tr>
<tr>
<td>UAN + NH4SO2 row placement</td>
<td>28,875</td>
<td>222.2</td>
<td>15.6</td>
</tr>
<tr>
<td>UAN row placement + pop-up seed placement</td>
<td>29,188</td>
<td>218.6</td>
<td>16.2</td>
</tr>
<tr>
<td>UAN + NH4SO2 row placement + pop-up seed placement</td>
<td>28,250</td>
<td>223.3</td>
<td>16.1</td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

Summary

There was no significant difference in plant population, grain yield or grain moisture at harvest among the treatments. Since the UAN row placement was the least cost, it was the most cost effective.

Acknowledgments

The author would like to thank Adam Smith Pioneer Seeds for his help with harvesting the plots and Stephan Janos for his cooperation in this project.