Nontraditional Fertilization of Corn at Planting

Steve Bartels, Agriculture and Natural Resources Extension Educator, Butler Co. Ohio

Objective

To evaluate the impact of applying different combinations of pop up and starter fertilizer to corn at planting on grain yield, moisture and initial plant population.

Background

Cooperator: Stephan Janos                          Soil test: pH 7.7 P 21ppm K 99 ppm
County: Butler                                       Fertilizer: See Methods
Township: Milford                                     Herbicide: Lexar 2.78 lbs., Mirage 1 lb
Drainage: Well drained                   Row width: 30 inches
Soil Type: Genesee                                    Planting date: April 13
Tillage: No till                                       Planting rate (seeds/A): 31,000
Previous crop: Soybeans                                 Harvest date: October 3
Hybrid : Eberts 2611

Methods

Treatments were planted in blocks and the treatments were randomized within each block. The four treatments were replicated four times. Each treatment was 8 rows wide and of various length. The treatments were:

1. 50 gallons of 28% N solution through the planter in a 5 in by 2 in. placement, 150-0-0.
2. 43 gallons of 28% N solution plus 7 gallons of 12-0-0-26 through the planter in a 5 in. by 2 in. placement, 137-0-0-18.
3. 50 gallons of 28% N solution in a 5 in by 2 in. placement through the planter plus 3.5 gallons of 9-19-3 placed on the seed as a pop up, 153-7-1.
4. 43 gallons of 28 % N solution plus 7 gallons of 12-0-0-26 through the planter in a 5 in. by 2 in. placement plus 3.5 gallons of 9-19-3 placed on the seed as a pop up, 140-7-1-18.

Population was estimated by counting plants in 1/1000 acre in three different areas in each treatment five weeks after emergence. Yield was determined by weighing and adjusting to 15.5% moisture.
Results

Table 1. Starter and Pop-up Fertilizer Treatment Effect on Early Population, Grain Moisture, and Grain Yield

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Population</th>
<th>Yield Bu./A</th>
<th>Moisture</th>
</tr>
</thead>
<tbody>
<tr>
<td>28%</td>
<td>28,375</td>
<td>143.1</td>
<td>12.7</td>
</tr>
<tr>
<td>28%+ sulfur</td>
<td>28,167</td>
<td>143.9</td>
<td>13.3</td>
</tr>
<tr>
<td>28%+ pop up</td>
<td>28,916</td>
<td>150.2</td>
<td>13.1</td>
</tr>
<tr>
<td>28%+ sulfur+ pop up</td>
<td>29,000</td>
<td>155.3</td>
<td>13.0</td>
</tr>
<tr>
<td>LSD (0.1)</td>
<td>NS</td>
<td>NS</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Summary

There was no significant difference in initial plant populations or yield for any of the treatments. The treatment using only 28% solution in a 5 inch by 2 inch placement was significantly dried at harvest. The treatment which used 28% solution plus sulfur added to the 28% and a pop-up, 9-19-9 placed on the seed produced the highest yield and the highest population. This treatment did not increase yield sufficiently with corn priced at $2.00 per bushel to cover the cost of the treatment. With corn priced at $2.00 per bushel, the most cost effective treatment was 28% alone.