Effect of Foliar Application of Sulfur and Manganese on Soybeans

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Objective

To evaluate grain yield response of soybeans to liquid manganese chelate with sulfur (EEZY MAN) when applied at soybean growth stage R3/R4.

Background

Crop Year: 2013  
Location: OSU Unger Farm  
County: Crawford  
Soil Type: Blount/Pewamo  
Drainage: Systematic  
Previous Crop: Corn  
Tillage: No – tillage  
Soil Test: pH 5.9, P 50 ppm, K 146 ppm  
SCN Count 1: 0 eggs per 100cc (drained)  
SCN Count 2: 2920 eggs per 100cc  
SCN Count Test 3: 1689 eggs per 100cc  
Soybean Planting Date: May 16, 2013  
Soybean Variety: Pioneer P93Y06  
Herbicide: 3.5 oz Canopy, 1 qt glyphosate  
Herbicide Post: 1 qt glyphosate 2 times  
Treatment Date: July 25 2013  
Soybean seeding rate: 168,000 seeds/acre  
Date of Harvest: October 2, 2013  
Rain fall: 25.57 inches (5/16-10/2)

Methods

Pioneer P93Y06 soybeans were planted at a rate of 168,000 seeds per acre on May 16th with a Great Plains 2010P, 10 inch precision drill. The following herbicides were applied on April 24: Canopy at a rate of 3.5 oz/acre with 1 quart/acre glyphosate. Postemergence weed control was accomplished with two applications of 1 quart of glyphosate/acre, applied on June 18 and July 22. The study was conducted both on systematically tiled ground and spot tiled ground (same field).

This study used a randomized complete block design with two treatments replicated four times to compare EEZY MAN at 2 qts/acre treated plots and an untreated control. EEZY MAN (manufactured by The Andersons) contains 2% combined sulfur and 5% chelated manganese by weight. Label suggested rates were 1-2 qts/acre in 10 -20 gallons of water/acre. Plots were treated on June 25 with a 10 foot CO2 plot sprayer. Each plot was 10 feet wide and 40 feet long. Plots were trimmed to 35 feet in length. Plots were harvested on October 2nd using a Hege 140 small plot combine harvesting the center five feet of the plot and the entire 35 foot length.

Treatments

1) EEZY MAN at 2 qts/acre applied in 15 gallons of water at 40 psi  
2) Control (no application of EEZYMAN)
Results

Table 1.  Soybean grain yield (adjusted to 13% moisture) in well-drained soil

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean yield (bu/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEZY MAN @ 2qts/ac</td>
<td>54.6</td>
</tr>
<tr>
<td>Control</td>
<td>56.2</td>
</tr>
<tr>
<td>F=.3, P&gt;F=.6, NS; CV =7</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.  Soybean grain yield (adjusted to 13% moisture) in poorly-drained soil

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean yield (bu/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEZY MAN @ 2qts/ac</td>
<td>42.7</td>
</tr>
<tr>
<td>Control</td>
<td>39.5</td>
</tr>
<tr>
<td>F=.33, P&gt;F=.59, NS; CV =18.9</td>
<td></td>
</tr>
</tbody>
</table>

Summary

There was not any treatment effect observed over the two field sites (same field, but different drainage). EEZY MAN cost $12.32 per acre at the rate used and another $10.00 for application and adjuvants for a total cost of $22.32 per acre. Soybeans were priced at $12.23 (cash) on 10/2/13. Therefore, to cover the cost of material and application, 1.8 bushels of soybeans per acre would be required.

Acknowledgement

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