Effects of Soybean Foliar Applications on Grain Yield

Harold D. Watters, Ohio State University Extension, Field Specialist Agronomic Systems

Objective
To determine the best foliar application to increase soybean yield at plant growth stage R3.

Background
Crop Year: 2013
Location: Hodge Farms
County/Town: Miami/ Tipp City
Soil Type: Brookston SiCL, with some Crosby
Drainage: Pattern tiled
Previous Crop: Corn

Tillage: No till
Soil Test: pH 6.2, BpH 6.7, CEC 19.3,
P 26ppm, K 155 ppm
Planting Date: May 14
Seeding Rate: 165,000 s/A
Harvest Date: September 24

Methods
The trial was established as a randomized complete block, with sixteen strips in the grower’s field; consisting of four treatments, replicated four times. The soybean variety was Wellman W4131RR. Foliar applications were applied at R3 reproductive growth stage (July 26), treated with a 60-foot wide sprayer in strips 1016 feet long. Harvest and a yield check was made with a Gleaner combine from one 30 feet wide pass from each plot. Grain was weighed by grain cart, calibrated against the local grain elevator’s certified scales. Yield was calculated in bushels/acre at 13% moisture.

The following four treatments and rates of products were evaluated.
   1) Untreated check
   2) Fungicide: Quadris Top (Azoxystrobin + Difenoconazole) at 12 oz/A with an insecticide: Warrior (Lambda-cyhalothrin) at 1.6 oz/A
   3) Liquid fertilizer: InstaGro (9-18-9) at 3 gallons/A
   4) Liquid fertilizer: Prudent Presto Red (6-18-5 with Mn & B plus biological) at 1 gallon/A, with Spunk (0-0-6.5-4.5) at 1 gallon/A plus sugar at 1 lb/A

Results
An ANOVA (analysis of variance) was conducted. Results are shown in Table 1.

<table>
<thead>
<tr>
<th>Foliar treatment</th>
<th>Yield (bu/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td>58.1</td>
</tr>
<tr>
<td>Fungicide + Insecticide (Quadris Top, Warrior)</td>
<td>60.6</td>
</tr>
<tr>
<td>Foliar fertilizer (InstaGro 9-18-9)</td>
<td>56.3</td>
</tr>
<tr>
<td>Prudent Presto Red, Spunk + sugar</td>
<td>56.5</td>
</tr>
<tr>
<td>LSD (0.10)</td>
<td>2.3</td>
</tr>
<tr>
<td>C.V. (coefficient of variance)</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Table 1. Soybean Yield following foliar applications at R3.
Summary
There was a significant difference among the treatments (p= 0.027) as shown in Table 1. The fungicide plus insecticide treatment (Quadris Top plus Warrior) was significantly higher in yield than the remaining treatments.

While there were noted a low incidence of Frogeye leaf spot, some Bean leaf beetle feeding and a low level of soybean aphids, levels appeared similar across treatments. No late greening effects were noted at one week before harvest.

Acknowledgement
The author expresses appreciation to Steve Hodge for treatment planning discussions, on farm applications and harvest, and to Robert Mullen for statistical assistance.

For more information, contact:
Harold D. Watters
OSU Extension
1100 S. Detroit St.
Bellefontaine, Ohio 43311
Insert watters.35@osu.edu