Effect of Warrior Applied at the R2 or R4 Growth Stage on Soybean Grain Yield

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Objective
To evaluate yield response of soybeans to Warrior (lambda-cyhalothrin) insecticide applied at soybean growth stages R2 or R4.

Background
Crop Year: 2014
Location: OSU Unger Farm
County/Town: Crawford
Soil Type: Blount/Pewamo
Drainage: Systematic
Previous Crop: Corn
Tillage: No – tillage
Soil Test: pH 6.5, P 63 ppm, K 197 ppm
Soybean Planting Date: May 11, 2014
Soybean Variety: NK- S29-V2 CMV+C (twin)
Pioneer 93Y05 (10 inch)
Herbicide: 3.5 oz Canopy, 1 quart glyphosate
Post: 1 quart glyphosate
Treatment Date: July 17, 2014 or August 1, 2014
Soybean Seeding Rate: 160,000 seeds/acre - Twins
168,000 seeds/acre-10 inch
Date of Harvest: October 2, 2014
Rainfall: 12.5 inches (from 5/11-9/1)

Methods
Trial A (Twins): NK S29-V2 soybeans containing SCN resistance source PI88788 to races R3 and MR14 were planted at a rate of 160,000 seeds per acre on May 11th with a Great Plains YP 425A, Twin row (rows 8 inches apart with a 22 in skip) precision planter.

Trial B (10 inch): Pioneer P93Y05 soybeans containing SCN resistance PI88788 were planted at a rate of 168,000 seeds per acre on May 10th with a Great Plains 2010P, 10 inch precision drill.

All treatments received the following burndown and pre-emergent herbicide applicationson May 1: Canopy at a rate of 3.5 oz/acre with 1 quart/acre glyphosate. Post emergence weed control was accomplished with one applications of 1 quart of glyphosate/acre, applied on July 2. The field is systematically tiled.

Treatments were Warrior (lambda-cyhalothrin) at 3.2 ounces/a applied at R2/R3, Warrior applied at 3.2 ounces/a at R4, and an untreated control. R2/R3 treatments were applied on July 17, with defoliation below 3% and grasshoppers, Japanese beetles and corn rootworm beetles present. R4 applications were made on August 1st with plant defoliation around 4 percent; the insects present included grasshoppers, bean leaf beetles, and green stink bugs. Each plot was sprayed with a CO2 small plot sprayer calibrated to deliver 15 gallons per acre at 40 PSI.
This study was arranged in a randomized complete block design replicated four times. Each plot was 10 feet wide and 45 feet long. Plots were trimmed to 40 feet in length. Plots were harvested on October 2nd using a Kincaid 8 XP small plot combine harvesting seven and a half feet of the plot and the entire 40 foot length.

**Treatments**
1) Warrior applied on July 16th at R2/R3
2) Warrior applied on August 1st at R4
3) Control

**Results**

Table 1. Trial A (Twin row soybeans): Soybean yield adjusted to 13.5 % moisture

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean yield (bu/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warrior @ R2</td>
<td>70.8</td>
</tr>
<tr>
<td>Warrior @ R4</td>
<td>68.9</td>
</tr>
<tr>
<td>Control</td>
<td>65.8</td>
</tr>
</tbody>
</table>

P>F=0.099, NS; STD=4.31; CV=6.32

Table 1. Trial B (10 inch soybeans): Soybean yield adjusted to 13.5 % moisture

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean yield (bu/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warrior @ R2</td>
<td>70.7</td>
</tr>
<tr>
<td>Warrior @ R4</td>
<td>69.2</td>
</tr>
<tr>
<td>Control</td>
<td>69.0</td>
</tr>
</tbody>
</table>

P>F=0.84, NS; STD=3.47; CV=4.99

**Summary**

There were no significant differences observed in yield. Defoliation levels and individual insect population levels were below threshold. In trial A there is a 5 bushel non-significant difference between the control and the R2 treatment based on the large CV we can concluded that there was a large yield variation between replications in this trial due to field variation.

**Acknowledgement**

The authors express appreciation to Chuck Smith for his cooperation and aid in the planting and harvest of this trial. Also to the OSU soybean performance team for harvesting the trials.