SOYBEANS

SECTION 5

Evaluation of experimental and commercially available foliar-applied insecticides and insecticide/fungicide combinations to control Japanese beetles (Popillia japonica) in soybean in Illinois, 2014

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Location

We established one trial at the Adam Yoeckel Farm near Morrison (Whiteside County).

Experimental Design and Methods

The experimental design was a randomized complete block with four replications. The plot size for each treatment was 10 ft (four rows) x 20 ft. Densities of Japanese beetles were determined by taking 20 sweeps per plot with a 15inch diameter sweep net. After the application of products, densities were assessed on 21 and 28 August (7 and 14 days after treatment [DAT], respectively) and on 4 September (21 DAT).

Planting, Insecticide Application, and Yield

The trial was planted on 23 May using a 16-row, Case IH Model 1240 Early Riser planter. Seeds were planted in 30inch rows at an approximate depth of 1 inch. Products were applied on 14 August with a CO₂ backpack sprayer and a fourrow boom. TeeJet TTJ60-11002 spray tips were calibrated to deliver a volume of 15 gallons per acre (gal/A). Active ingredients for all insecticides and fungicides are listed in Appendix II.

Yields were estimated by harvesting the center two rows of each plot on 10 October. Weights were converted to bushels per acre (bu/A) at 13% moisture.

Agronomic Information

Agronomic information is listed in Table 5.1.

Climatic Conditions

Temperature and precipitation data are presented in Appendix

Statistical Analysis

Data were analyzed using ARM 9 (Agricultural Research Manager), revision 9.2014.2 (Copyright[©] 1982–2014 Gylling Data Management, Inc., Brookings, SD).

Results and Discussion

Prior to the application of products on 14 August, there was an average of 3.3 Japanese beetles per 20 sweeps in the trial area. Mean densities of Japanese beetles following the application of products are presented in Table 5.2.

On 21 August (7 DAT), all products (excluding Transform WG) had a significantly lower mean number of Japanese beetles per 20 sweeps than the untreated check (UTC). Similarly, on 28 August (14 DAT), most products (excluding Transform WG and Quilt Xcel) continued to have a significantly lower mean number of Japanese beetles per 20 sweeps than the UTC. By 4 September (21 DAT), mean numbers of Japanese beetles per 20 sweeps were low for all treatments, including the UTC—no significant differences among the treatments were observed.

Mean yields are presented in Table 5.2. Mean yields were statistically similar for all treatments and ranged from 63.3 to 72.4 bu/A.

TABLE 5.1 • Agronomic information for efficacy trial of experimental and commercially available foliar-applied insecticides and insecticide/fungicide combinations to control Japanese beetles in soybean, Morrison, University of Illinois, 2014

Planting date	23 May	
Harvest date	10 October	
Variety	Burrus 28V2	
Row spacing	30 inches	
Seeding rate	155,000/acre	
Previous crop	Corn	
Tillage	Fall—vertical tillage	



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TABLE 5.2 • Evaluation of experimental and commercially available foliar-applied insecticides and insecticide/fungicide combinations to control Japanese beetles in soybean, Morrison, University of Illinois, 2014

Product ¹	Rate ²	Mean no. Japanese beetles per 20 sweeps ^{3,4}			Mean yield ^{6,7} (bu/A)
		21 Aug (7 DAT⁵)	28 Aug (14 DAT ⁵)	4 Sep (21 DAT ⁵)	10 Oct
Besiege	8.9	0.8 c	1.8 cd	0.0 a	66.2 a
Cobalt Advanced	26	1.5 bc	0.3 d	0.3 a	68.0 a
Cobalt Advanced + Headline	26 12.4	0.5 c	0.8 d	0.8 a	68.8 a
Endigo ZCX ⁸	4.5	0.3 с	0.8 d	0.5 a	65.1 a
Quilt Xcel	14	5.8 b	11.3 a	2.0 a	66.7 a
Quindigo ⁸	14	0.5 c	0.5 d	0.3 a	68.9 a
Transform WG	1	12.0 a	6.0 bc	1.0 a	63.3 a
Warrior II	1.92	0.5 c	1.8 cd	0.0 a	72.4 a
Warrior II + Assail 30SG	1.92 1.67	1.5 bc	3.0 cd	1.0 a	69.1 a
Warrior II + Quilt Xcel	1.92 14	0.5 c	0.0 d	0.5 a	67.1 a
Untreated check	_	11.8 a	9.8 ab	1.0 a	66.4 a

¹ Crop oil concentrate was added to the spray solution for each product (excluding the Cobalt Advanced and Cobalt Advanced + Headline treatments) at a rate of 1% v/v.

² Rates of application for foliar insecticides/fungicides are ounces (oz) of product per acre.

³ Means were derived from the numbers of insects per 20 sweeps per plot in each of four replications.

⁴ Means in the same column and followed by the same letter do not differ significantly (P = 0.05, Duncan's New Multiple Range Test).

⁵ DAT = days after treatment (with insecticide/fungicide).

⁶ Soybeans were harvested from the center two rows of each plot and converted to bushels per acre (bu/A) at 13% moisture.

Means followed by the same letter do not differ significantly (P = 0.1, Duncan's New Multiple Range Test).

⁸ Product is not currently labeled for commercial use.