SOYBEANS

SECTION 6

Evaluation of foliar-applied insecticides 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 15-inch diameter sweep net. After the application of insecticides, densities were assessed on 21 and 28 August (7 and 14 days after treatment [DAT], respectively) and on 4 and 11 September (21 and 28 DAT, respectively).

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 30-inch rows at an approximate depth of 1 inch. Insecticides were applied on 14 August with a CO_2 backpack sprayer and a four-row boom. TeeJet TTJ60-11002 spray tips were calibrated to deliver a volume of 15 gallons per acre (gal/A). Active ingredients for all insecticides are listed in Appendix II.

Yields were estimated by harvesting the center two rows of each plot on 20 October. Weights were converted to bushels per acre (bu/A) at 13% moisture.

Agronomic Information

Agronomic information is listed in Table 6.1.

Climatic Conditions

Temperature and precipitation data are presented in Appendix III.

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 6.2.

On 21 and 28 August (7 and 14 DAT, respectively), all products had a significantly lower mean number of Japanese beetles per 20 sweeps than the untreated check (UTC). By 4 September (21 DAT), mean numbers of Japanese beetles per 20 sweeps were low for all treatments, including the UTC, and were statistically similar. This trend continued on 11 September (28 DAT).

Mean yields are presented in Table 6.2. Mean yields were statistically similar for all treatments and ranged from 63.2 to 69.9 bu/A.

TABLE 6.1 ♦ Agronomic information for efficacy trial of foliar-applied insecticides to control Japanese beetles in soybean, Morrison, University of Illinois, 2014

Planting date	23 May
Harvest date	20 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 6.2 ✦ Evaluation of foliar-applied insecticides 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) 20 Oct
		21 Aug (7 DAT[5])	28 Aug (14 DAT[5])	4 Sep (21 DAT[5])	11 Sep (28 DAT[5])	
Brigadier	3.05	0.0 b	1.8 b	0.8 a	0.5 a	66.2 a
Brigadier	6.1	0.0 b	1.3 b	0.8 a	0.3 a	66.0 a
Cobalt Advanced	18	0.3 b	2.5 b	2.0 a	0.3 a	66.2 a
Endigo ZC	4.5	0.0 b	0.0 b	0.8 a	0.5 a	63.3 a
Hero	5.12	0.3 b	0.0 b	0.0 a	0.8 a	63.2 a
Leverage 360	2.8	0.3 b	1.3 b	0.5 a	0.3 a	69.9 a
Skyraider	3	0.8 b	1.5 b	0.5 a	0.0 a	66.2 a
Skyraider	4	0.0 b	0.3 b	0.3 a	0.0 a	66.6 a
Skyraider	6	0.0 b	1.8 b	0.5 a	0.3 a	67.6 a
Untreated check	—	6.8 a	8.3 a	2.8 a	0.3 a	64.0 a

[1] Non-ionic surfactant was added to the spray solution for each product at a rate of 0.25% v/v.
[2] Rates of application for foliar insecticides 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).
[6] Soybeans were harvested from the center two rows of each plot and converted to bushels per acre (bu/A) at 13% moisture.
[7] Means followed by the same letter do not differ significantly ($P = 0.1$, Duncan's New Multiple Range Test).