SECTION 8

Evaluation of foliar-applied insecticides to control Japanese beetles (*Popillia japonica*) in soybean in Illinois, 2013

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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 40 ft. Densities of Japanese beetles were determined by taking 20 sweeps per plot with a 15-inch diameter sweep net. Densities of Japanese beetles were assessed on 25 July and on 1, 8, and 15 August (0, 7, 14, and 21 days after treatment [DAT], respectively).

Planting, Insecticide Application, and Yield

The trial was planted on 20 May using a 16-row Case IH Model 1250 planter. Seeds were planted in 30-inch rows at an approximate depth of 1 inch. Insecticides were applied on 25 July with a CO_2 backpack sprayer and a four-row boom. TeeJet TTJ60-11002 spray tips were calibrated to deliver a volume of 20 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 2 October. Weights were converted to bushels per acre (bu/A) at 13% moisture.

Agronomic Information

Agronomic information is listed in Table 8.1.

Climatic Conditions

Temperature and precipitation data are presented in Appendix III.

Statistical Analysis

Data were analyzed using ARM 8 (Agricultural Research Manager), revision 8.5.0 (Copyright© 1982–2012 Gylling Data Management, Inc., Brookings, SD).

Results and Discussion

Mean densities of Japanese beetles are presented in Table 8.2. On 25 July (0 DAT), mean beetle densities were substantial (19.7 Japanese beetles per 20 sweeps when averaged across all treatments). On 1 August (7 DAT), all treatments had significantly fewer Japanese beetles per 20 sweeps than the untreated check (UTC). On 8 August (14 DAT), only Fanfare 2EC, Hero, Leverage 360, and SkyRaider at 3 oz/A had significantly fewer Japanese beetles per 20 sweeps than the UTC. A similar trend was observed on 15 August (21 DAT), although SkyRaider at 6 oz/A had significantly fewer Japanese beetles per 20 sweeps than the UTC as well.

Mean yields are presented in Table 8.2. No significant differences in mean yields were observed.

TABLE 8.1 ♦ Agronomic information for efficacy trial of foliar-applied insecticides to control Japanese beetles in soybean, Morrison, University of Illinois, 2013

Planting date	20 May
Harvest date	2 October
Variety	Pioneer 92Y51
Row spacing	30 inches
Seeding rate	150,000/acre
Previous crop	Corn
Tillage	Fall—vertical tillage Spring—vertical tillage

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TABLE 8.2 ✦ Evaluation of foliar-applied insecticides to control Japanese beetles in soybean, Morrison, University of Illinois, 2013

Product[1]	Rate[2]	Mean no. Japanese beetles per 20 sweeps[3,4]				Mean yield[6,7] (bu/A) 2 Oct
		25 July (0 DAT[5])	1 Aug (7 DAT[5])	8 Aug (14 DAT[5])	15 Aug (21 DAT[5])	
Brigadier	3.05	12.0 a	5.5 b	38.3 a	14.3 abc	61.5 a
Brigadier	6.1	17.8 a	3.8 b	13.8 bc	15.3 abc	61.6 a
Cobalt Advanced	18	17.5 a	5.8 b	20.5 abc	13.3 abc	62.3 a
Endigo ZC	4.5	24.0 a	2.3 b	27.3 ab	11.3 abc	64.3 a
Fanfare 2EC	6.4	16.0 a	0.8 b	3.5 c	6.8 c	61.9 a
Hero	5.12	24.5 a	1.3 b	3.3 c	9.0 bc	60.2 a
Leverage 360	2.8	29.5 a	1.8 b	1.8 c	7.8 c	62.1 a
Silencer	3.2	18.3 a	5.5 b	31.5 ab	12.0 abc	62.0 a
SkyRaider	3	12.8 a	2.5 b	4.3 c	6.8 c	63.2 a
SkyRaider	6	25.8 a	3.0 b	14.0 bc	10.5 bc	63.1 a
Warrior II	1.6	20.3 a	7.8 b	27.0 ab	17.3 ab	64.3 a
Untreated check	—	17.3 a	32.5 a	24.3 ab	19.8 a	61.7 a

[1] Non-ionic surfactant was added to the spray solution for each product at a rate of 0.25%.
[2] Rates of application for foliar insecticide are ounces (oz) of product per acre.
[3] Means were derived from the numbers of beetles in 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).