



## CORN

### SECTION 4

## Evaluation of experimental and commercially available foliar-applied insecticides to control silk-feeding by corn rootworm beetles (*Diabrotica spp.*) in Illinois, 2013

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### Location

We established one trial at the Northern Illinois Agronomy Research Center near DeKalb (DeKalb 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 corn rootworm beetles were determined by counting the number of beetles on each of 10 consecutive plants per plot. After the application of insecticides, densities of corn rootworm beetles were assessed on 15, 22, and 29 August (7, 14, and 21 days after treatment [DAT], respectively).

### Planting, Insecticide Application, and Yield

The trial was planted on 24 May using a four-row, John Deere 7300 planter. Seeds were planted in 30-inch rows at an approximate depth of 1.75 inches. Insecticides were applied on 8 August with a CO<sub>2</sub> 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 29 November. Weights were converted to bushels per acre (bu/A) at 15.5% moisture.

### Agronomic Information

Agronomic information is listed in Table 4.1.

### 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

Prior to the application of insecticides on 8 August, there were 0.61 corn rootworm beetles per plant in the trial area. Mean densities of corn rootworm beetles following the application of insecticides are presented in Table 4.2. On all sampling dates, all treatments had significantly fewer corn rootworm beetles per plant than the untreated check (UTC). No significant differences in mean densities of corn rootworm beetles were observed among the insecticide treatments on any sampling date.

Mean yields are presented in Table 4.2. Mean yields ranged from 144.5 to 161.7 bu/A and were statistically similar for all treatments.

**TABLE 4.1** • Agronomic information for efficacy trial of experimental and commercially available foliar-applied insecticides to control silk-feeding by corn rootworm beetles in Illinois, 2013

Planting date	24 May
Harvest date	29 November
Hybrid	DEKALB DKC57-75RIB Genuity SmartStax RIB Complete <sup>1</sup>
Row spacing	30 inches
Seeding rate	36,000/acre
Previous crop	Corn
Tillage	Fall—disc ripper Spring—discovator

<sup>1</sup> Contains a 5% refuge-in-the-bag (non-Bt) seed-blend.



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**TABLE 4.2** • Evaluation of experimental and commercially available foliar-applied insecticides to control silk-feeding by corn rootworm beetles in Illinois, 2013

Product	Rate <sup>1</sup>	Mean no. corn rootworm beetles per plant <sup>2,3</sup>			Mean yield <sup>5,6</sup> (bu/A) 29 Nov
		15 Aug (7 DAT <sup>4</sup> )	22 Aug (14 DAT <sup>4</sup> )	29 Aug (21 DAT <sup>4</sup> )	
Endigo ZCX <sup>7</sup>	4	0.00 b	0.10 b	0.08 b	150.6 a
Hero	6	0.05 b	0.03 b	0.18 b	145.1 a
Warrior II + Lorsban 4E	1.6 8	0.03 b	0.00 b	0.25 b	144.5 a
Untreated check	—	0.95 a	0.98 a	0.85 a	161.7 a

<sup>1</sup> Rates of application for foliar insecticide are ounces (oz) of product per acre.

<sup>2</sup> Means were derived from the numbers of beetles on 10 consecutive plants per plot in each of four replications.

<sup>3</sup> Means in the same column and followed by the same letter do not differ significantly ( $P = 0.05$ , Duncan's New Multiple Range Test).

<sup>4</sup> DAT = days after treatment (with insecticide).

<sup>5</sup> Corn was harvested from the center two rows of each plot and converted to bushels per acre (bu/A) at 15.5% moisture.

<sup>6</sup> Means followed by the same letter do not differ significantly ( $P = 0.1$ , Duncan's New Multiple Range Test).

<sup>7</sup> Endigo ZCX is not currently labeled for commercial use.