



## CORN

### SECTION 3

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

Nicholas A. Tinsley, Ronald E. Estes, and Michael E. Gray

### 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 and Insecticide Application

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, except those with experimental designations, are listed in Appendix II.

### Agronomic Information

Agronomic information is listed in Table 3.1.

### 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 3.2. On 15 August (7 DAT), all insecticide treatments had significantly fewer corn rootworm beetles per plant than both the untreated check (UTC) and the Quilt Xcel fungicide treatment. On both 22 and 29 August (14 and 21 DAT, respectively), no significant differences in mean densities of corn rootworm beetles were observed among the treatments.

**TABLE 3.1** • Agronomic information for efficacy trial of experimental and commercially available foliar-applied insecticides and insecticide/fungicide combinations to control silk-feeding by corn rootworm beetles in Illinois, 2013

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

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



## CORN

**TABLE 3.2** • Evaluation of experimental and commercially available foliar-applied insecticides and insecticide/fungicide combinations to control silk-feeding by corn rootworm beetles in Illinois, 2013

Product <sup>1</sup>	Rate <sup>2</sup>	Mean no. corn rootworm beetles per plant <sup>3,4</sup>		
		15 Aug (7 DAT <sup>5</sup> )	22 Aug (14 DAT <sup>5</sup> )	29 Aug (21 DAT <sup>5</sup> )
Besiege	9	0.03 c	0.30 a	0.60 a
Cobalt Advanced	32	0.00 c	0.15 a	0.13 a
Cobalt Advanced + Headline SC	32 12	0.03 c	0.10 a	0.40 a
Endigo ZCX <sup>6</sup>	4.5	0.00 c	0.15 a	0.35 a
EXP1	14	0.00 c	0.10 a	0.38 a
Quilt Xcel	14	0.28 b	0.88 a	1.15 a
Warrior II	1.92	0.00 c	0.30 a	0.58 a
Warrior II + Quilt Xcel	1.92 14	0.00 c	0.13 a	0.58 a
Untreated check	—	0.85 a	0.93 a	0.98 a

<sup>1</sup> Crop oil concentrate was added to the spray solution for each product (excluding the stand-alone Cobalt Advanced treatment) at a rate of 1%.

<sup>2</sup> Rates of application for foliar insecticide/fungicide are ounces (oz) of product per acre.

<sup>3</sup> Means were derived from the numbers of beetles on 10 consecutive plants per plot in each of four replications.

<sup>4</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>5</sup> DAT = days after treatment (with insecticide/fungicide).

<sup>6</sup> Endigo ZCX is not currently labeled for commercial use.