



SOYBEANS

SECTION 11

Evaluation of experimental and commercially available foliar-applied insecticides to control soybean aphids (*Aphis glycines*) in Illinois, 2011

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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 30 ft. Insecticides were applied to designated plots on 19 August. Prior to insecticide application, densities of soybean aphids were estimated by counting the total number of aphids on 20 randomly selected plants in the trial area. After the application of insecticides, densities of soybean aphids were estimated by counting the total number of aphids on five plants in each plot. Soybean aphid densities were assessed on 27 August, and on 3 and 10 September (7, 14, and 21 days after treatment [DAT], respectively).

Planting, Insecticide Application, and Yield

The trial was planted on 10 May using a four-row, vacuum style planter constructed by Seed Research Equipment Solutions (SRES). Seeds were planted in 30-inch rows at an approximate depth of 1 inch. Insecticides were applied on 20 August with a CO₂ backpack sprayer and a four-row boom. TeeJet TTJ60-1102VP spray tips were calibrated to deliver a volume of 20 gallons per acre (gal/A). Active ingredients for all insecticides, including those not registered for commercial use, are listed in Appendix II.

Yields were estimated by harvesting the center two rows of each plot on 6 October. Weights were converted to bushels per acre (bu/A) at 13% moisture.

Agronomic Information

Agronomic information is listed in Table 11.1.

Climatic Conditions

Temperature and precipitation data are presented in Appendix III.

Statistical Analysis

Data were analyzed using ARM 8 (Agricultural Research Manager), revision 8.3.4 (Copyright© 1982–2011 Gylling Data Management, Inc., Brookings, SD).

Results and Discussion

Mean percent phytotoxicity, densities of soybean aphids, and yield are reported in Table 11.2.

No plant phytotoxicity was observed following insecticide application, indicating that the experimental compound Transform caused no observable damage to plant health.

Densities of soybean aphids were extremely small across all sampling dates and never exceeded 3 aphids per plant. No significant differences in numbers of soybean aphids were observed throughout the duration of the study.

Due to the low number of soybean aphids, no significant differences in yield were observed among any of the treatments. This observation further justifies the value of scouting and the economic threshold (250 soybean aphids per plant, Ragsdale et al. 2007) and demonstrates that there is no guaranteed benefit from “insurance applications” of insecticides.

TABLE 11.1 + Agronomic information for efficacy trial of experimental and commercially available foliar-applied insecticides to control soybean aphids, Morrison, University of Illinois, 2011

Planting date	10 May
Harvest date	6 October
Soybean variety	Pioneer 92Y80
Row spacing	30 inches
Seeding rate	140,000/acre
Previous crop	Corn
Tillage	Spring—vertical tillage



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TABLE 11.2 • Evaluation of experimental and commercially available foliar-applied insecticides to control soybean aphids, Morrison, University of Illinois, 2011

Product	Rate ¹	% Phytotoxicity 27 Aug (7 DAT ⁴)	Mean no. soybean aphids per plant ^{2,3}			Mean yield (bu/acre) ^{5,6} 6 Oct
			27 Aug ³ (7 DAT ⁴)	3 Sep ³ (14 DAT ⁴)	10 Sep ³ (21 DAT ⁴)	
Cobalt Advanced	13	0.0 a	0.0 a	2.2 a	0.4 a	46 a
Lorsban Advanced	16	0.0 a	0.1 a	0.0 a	0.7 a	43 a
Transform ⁷	0.43	0.0 a	0.1 a	0.6 a	0.0 a	42 a
Transform ⁷	0.51	0.0 a	0.0 a	0.1 a	0.0 a	48 a
Transform ⁷	0.71	0.0 a	0.0 a	0.4 a	0.2 a	45 a
Warrior II	1.28	0.0 a	0.0 a	0.0 a	0.8 a	47 a
UTC ⁸	—	0.0 a	0.3 a	0.3 a	2.6 a	46 a

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

² Means were derived from the numbers of soybean aphids on five plants in each plot in each of four replications.

³ Means followed by the same letter do not differ significantly ($P = 0.05$, Duncan's New Multiple Range Test).

⁴ DAT = days after treatment (with insecticide).

⁵ Soybeans were harvested from the center two rows of each plot and converted to bushels per acre (bu/A) at 13% moisture.

⁶ Means followed by the same letter do not differ significantly ($P = 0.10$, Duncan's New Multiple Range Test).

⁷ Transform is not registered for commercial use.

⁸ UTC = untreated check.