

 CORN

SECTION 2

Comparison of experimental and commercially available granular insecticides to control corn rootworm larvae (*Diabrotica spp.*) in Illinois, 2008

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Location

We established one trial at the University of Illinois Agricultural Engineering Farm near Urbana (Champaign County).

Experimental Design and Methods

The experimental design was a randomized complete block with four replications. The plot size for each treatment was 5 ft (two rows) x 30 ft. Five randomly selected root systems were extracted from the first row of each plot on 22 July. The root systems were washed and rated for corn rootworm larval injury using the 0 to 3 node-injury scale developed by Oleson et al. (2005) (Appendix I). Percentage of lodged plants (plants leaning at 45° or less from the soil surface) was determined on 22 September.

Planting and Insecticide Application

The trial was planted on 7 May using a four-row, Almaco constructed planter with John Deere 7300 row units with Precision Planting finger pick-up style metering units. All granular insecticides were applied through modified SmartBox metering units mounted to each row of the planter. Plastic tubes directed the insecticide granules to the seed furrow. All insecticides were applied in front of the planter's firming wheels. Cable-mounted tines were attached behind each of the planter row units to improve insecticide incorporation.

Active ingredients for all chemical insecticides, except those with experimental numbers, are listed in Appendix II.

Agronomic Information

Agronomic information is listed in Table 2.1.

Climatic Conditions

Temperature and precipitation data are presented in Appendix III.

Statistical Analysis

Data were analyzed using ARM 7 (Agricultural Research Manager), revision 7.4.2. (Copyright© 1982–2008 Gylling Data Management, Inc., Brookings, SD).

Results and Discussion

The level of rootworm injury to the untreated check (UTC) plots was moderate to high, with a mean node-injury rating of 2.11. All of the granular insecticide treatments provided acceptable protection (node-injury ratings <1.0) against corn rootworm larval damage with node-injury ratings ranging from 0.09 to 0.89, all significantly less than the mean node-injury rating of the UTC. Counter 15G and 20G provided excellent root protection with node-injury ratings of 0.14 and 0.09, respectively, although not statistically different from the mean node-injury ratings for the other granular products in the trial. Percentage lodging values for all plots were assessed on 22 September. Plots treated with Fortress Plus 5G and both Counter 15G and 20G had significantly less lodging than the untreated check plots.

TABLE 2.1 • Agronomic information for efficacy trial of experimental and commercially available insecticides to control corn rootworm larvae, Urbana, University of Illinois, 2008

Planting date	6 May
Root evaluation date	22 July
Row spacing	30 inches
Seeding rate	33,000/acre
Previous crop	Trap crop (late-planted corn and pumpkins)
Tillage	Fall—chisel plow Spring—field cultivator



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TABLE 2.2 • Evaluation of experimental and commercially available insecticides for control of corn rootworm larvae, Urbana, University of Illinois, 2008

Product ¹	Rate ²	Placement	Mean node-injury rating ^{3,4,5} 22 July	% lodging ^{5,6} 22 Sept
AMV 101G	3.7	Furrow	0.86 b	43 ab
Counter 15G	8.0	Furrow	0.14 b	9 b
Counter 20G	6.0	Furrow	0.09 b	24 b
Fortress 5G	3.7	Furrow	0.89 b	55 ab
Fortress Plus 5G	3.7	Furrow	0.56 b	24 b
UTC ⁷	—	—	2.11 a	81 a

¹ All insecticides were applied with modified SmartBox metering units.

² Rates of application for band and furrow placements are ounces (oz) of product per 1,000 ft of row.

³ Mean node-injury ratings are based on the 0 to 3 node-injury scale (Oleson et al. 2005, Appendix I).

⁴ Mean node-injury ratings were derived from five root systems per treatment in each of four replications.

⁵ Means followed by the same letter do not differ significantly ($P = 0.05$, Duncan's New Multiple Range Test).

⁶ Percentage of plants leaning at 45° or less from the soil surface.

⁷ UTC = untreated check.