



CORN

SECTION 2

Comparison of Herculex Rootworm (HxRW) hybrids to control corn rootworm larvae (*Diabrotica spp.*) in Illinois, 2007

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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

With the cooperation of Pioneer Hi-Bred International, Inc., we evaluated the efficacy of five Herculex Rootworm (HxRW) hybrids and two check (non-rootworm Bt) hybrids against corn rootworm larvae. All hybrids were selected by Pioneer personnel; we were not informed about the genetic backgrounds nor provided with the names of the hybrids. Treatments were labeled only with letters of the alphabet—A through G for the hybrids provided.

The experimental design was a randomized complete block with four replications. The plot size for each hybrid was 10 ft (four rows) x 30 ft. Five randomly selected root systems were extracted from the first row of each four-row plot on 10 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 consistency (percentage of roots with a rating less than 1.0) also was determined for each hybrid.

Planting Information

The trial was planted on 2 May using a four-row, Almaco constructed planter with John Deere 7300 row units with Precision Planting finger pick-up style metering units.

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 7.3.6. (Copyright® 1982–2007 Gylling Data Management, Inc., Brookings, SD).

Results and Discussion

The level of rootworm injury to the check (non-rootworm Bt) hybrids was moderate to high, with mean node-injury ratings of 1.41 and 1.98 for hybrids A and F, respectively. (We were not made aware that hybrids A and F were non-rootworm Bt checks until after evaluations had been completed.) The mean node-injury ratings for all of the HxRW hybrids were very low, ranging from 0.04 to 0.13, indicating excellent protection against rootworm larval injury. Percentage consistency values for all HxRW hybrids was 100% (all node injury ratings <1.0). Based on the data we have gathered from two years of testing various Pioneer HxRW hybrids, the hybrids we have evaluated seem to provide excellent protection against corn rootworm larval injury, with little variation in rootworm larval injury among different hybrids.

TABLE 2.1 • Agronomic information for efficacy trial of Herculex Rootworm (HxRW) hybrids to control corn rootworm larvae, Urbana, University of Illinois, 2007

Planting date	2 May
Root evaluation date	10 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 Herculex RW (HxRW) hybrids for control of corn rootworm larvae, Urbana, University of Illinois, 10 July, 2007

Hybrid	Mean node-injury rating ^{1,2,3}	% consistency ⁴
Hybrid A (non-rootworm Bt check)	1.41 a	55
Hybrid B	0.06 b	100
Hybrid C	0.06 b	100
Hybrid D	0.12 b	100
Hybrid E	0.04 b	100
Hybrid F (non-rootworm Bt check)	1.98 a	25
Hybrid G	0.13 b	100

¹ Mean node-injury ratings are based on the 0 to 3 node-injury scale (Oleson et al. 2005, Appendix I).

² Mean node-injury ratings were derived from five root systems per treatment 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 Percentage of roots with a node-injury rating <1.0.