

Evaluation of a YieldGard Rootworm Bt Corn Hybrid and the Equivalent Non-Bt Isoline

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Objective

To evaluate the effect of YieldGard Rootworm Bt technology on corn yields

Background

Cooperator:	Defiance Ag Research Assoc.	Soil test:	pH 6.9, P 22 ppm
County:	Defiance		K 144 ppm (11/24/03)
Nearest Town:	Defiance	Fertilizer:	N 156 lbs/A (28% sidedress)
Drainage:	Surface		6/20/03
Soil type:	Paulding Clay	Planting Date:	May 24 , 2003
	Roselms Silty Clay	Planting Rate:	30,500
Tillage:	No-till	Row Width:	30-inch
Previous Crop:	Soybean	Herbicides:	2,4-D 1 pt/A
Crop Rotation:	Corn/Soybean		Roundup Weather Max 16 oz/A
Hybrids:	DKC53-29 (YGRW)	Harvest Date:	November 26, 2003
	DK537		

Methods

Experimental design was a complete block with a single treatment along with a control, replicated five times. The treatment hybrid (YieldGard Rootworm, YGRW) contains, as the active ingredient, the *Bacillus thuringiensis* Cry3Bb1 delta endotoxin, which provides season-long protection against the western corn rootworm, and the northern corn rootworm larvae. The control hybrid is a copy of the corn hybrid genetics without the *Bacillus thuringiensis* Cry3Bb1 delta endotoxin.

The plots were planted with a 12 row, no-till planter with 6 rows of the treatment hybrid and 6 rows of the control hybrid. Individual plot size was 30ft X 300 ft. The previous crop was soybeans. The field selected for this study was not monitored in 2002 for the first year corn rootworm adult while planted to soybeans. The plots were not evaluated to determine root injury ratings. All twelve corn rows of individual replications were used for the yield record. Yield was determined by a calibrated GPS combine yield monitor. All replications were harvested by the same combine continuously on November 26, 2003. Fifteen foot borders were maintained on the field perimeter. All replications received the same chemical and fertilizer treatments.

Results

One replication for the treatment and control plots were not used for data analysis due to an external variable (possible spray drift) revealed on the GPS yield map.

Table 1. Corn yields.

Hybrid	Average Yield (bu/A)
DKC53-29 (YGRW)	127.0
DK537 (control)	127.8
Difference	0.8
LSD (0.05)	Not Significantly Different

Summary

The results of this plot indicate no statistical difference for yield between the selected YieldGard Rootworm hybrid and its equivalent isoline hybrid. The farm used for this plot has a crop rotation of corn and soybeans since a wheat crop harvested in 2000. The insect pressure potentially present that would warrant the use of YGRW corn hybrids would be the first year corn rootworm (FYCR). The FYCR has been reported as adult western corn rootworm beetles laying eggs in soybean fields and causing corn root damage the following year when planted to corn. Defiance County, OH monitoring of the FYCR has reported activity but none at economic threshold levels that would warrant the use of preventative treatments for the FYCR. The added cost of YGRW seed corn is not warranted unless the field is monitored at high FYCR levels the soybean year prior to planting corn or the producer is planting continuous corn.

The results also indicate that there is no yield consequence when planting this YGRW corn hybrid in the absence of FYCR pressure. “Yield drag”, a decline in yield potential due to the addition of the Bt technology in the hybrid, was not expressed for this corn hybrid when compared to its non-Bt isoline.

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