

**FINAL REPORT – MICHIGAN STATE UNIVERSITY
2009 FIELD SEASON**

Herculex Xtra Efficacy on CRW and WBC, Michigan State University

Trial Location: Michigan / Ingham County / MSU campus / Plant Pathology Farm

GPS Coords: 42°41'13.52" N, 84°29'03.48" W

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Crop/Pest: corn/ rootworm and western bean cutworm

Planting Date/Rate: 13 May 2009 / 31,700

Varieties:

- TMF2W583 RR2 (= Untreated)
- TMF2W587 RR2, LL, Cry1F, Cry 34/35 (= Herculex Extra)

Treatments, Variety x WBC infestation

- Untreated x Uninfested
- Herc Extra x Uninfested
- Untreated x Infested
- Herc Extra x Infested

Plot layout: 6 reps x 4 treatments = 16 plots, 4 rows by 80 feet

Completely randomized design

*Note, plot was divided in half in July, to create a 30 ft plot to infest with WBC, and a 40 foot plot for CRW ratings and yield.

Fertilizer Applications:

- At planting: 200 lbs/ acre of 12-12-12
- Side-dress: 22 June, 28% N at 35 gal/acre

Pesticide Applications (rate per acre)

- 20 May: Roundup Weathermax (22 oz)

Trial evaluation and maintenance dates:

- Root rating: 11 August, 2009
- Lodging: 11 August and 26 October, 2009
- WBC infestation: 1 August, 2009. Individual egg masses pinned on plants to achieve a 5% infestation rate in the overall plot.
- WBC ear damage rating: 26 October, 2009

Weather Data: Station located MSU Hort ~ 0.5 miles

Note: This summer was one of the coolest on record in central Michigan. This likely affected ear development (see below). By the end of July, central Michigan was more than 200 DDs behind previous years.

Month	Precip	DD50 '09	DD50 avg
April	6.5	124	137
May	4.3	272	275
June	5.0	483	537
July	2.4	498	615
August	4.1	554	576
Sept	0.9	390	395

Data Summary:

Treatment	Corn Rootworm			WBC
	root rating	% lodging		% ears damaged
		August	Oct	
Non	0.66 a	24.5 a	20.3 a	20% a
Herculex	0.03 b	2.5 b	3.3 b	1.7% b
F, p values	27.8 0.000	6.9 0.047	13.3 0.015	14.24 0.030

Root ratings were taken on 11 August by digging five plants in rows 1 and 4 of each plot. Adult rootworm pressure was high, close to 1 adult beetle per plant. Root ratings averaged 0.66 in the non-transgenic plots (over half a node gone) and 0.02 in the Herculex Xtra plots (minimal feeding).

Lodging was rated twice, once at the time of root rating on 11 August and again before harvest on 26 October. Twenty consecutive plants were examined in rows 2 and 3 for a total of 40 plants. Lodging was significantly different, 2-3% in Herculex Extra plots and 20-24% in non transgenic plots.

Western bean cutworm feeding was assessed prior to harvest on 26 October. Ears from 20 consecutive feet of rows 2 and 3 were collected, husked, and examined for feeding. Ears were rated as damaged or undamaged. Damage was generally limited to a few kernels on the tip or side of the ear, but fungus growth was very common even with limited feeding. WBC damage differed significantly between treatments. With an initial 5% of the plants infested, 20% of the conventional ears had feeding while 1.7% of the Herculex ears were damaged.