

Herculex Bt Transgenic Corn Hybrids and Force 3G At Planting for Larval CRW Control

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Background information pertaining to corn rootworm experiments conducted at Clay Center, NE during 2008.

Agronomic

Hybrids (Traits):	Pioneer 32T84 (Herculex [®] I, LibertyLink [®] and Roundup Ready [®]) and 32T85 (Herculex [®] XTRA, LibertyLink [®] and RoundUp Ready [®])
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	30 April 2008
Planter:	No-till slot-planted into established ridge with 4-row 7300 JD Maximerge vacuum planter
Planting Depth:	2 inches
Application Equipment:	<u>Granular Insecticides:</u> Standard insecticide boxes were used to apply Force [®] 3G in a t-band application at 4 oz product/1000 row ft. <u>Seed Treatments:</u> All were applied commercially.
Previous Crop:	Late planted corn
Soil Information:	Crete silt loam
Herbicides Applied:	Broadcasted: Lexar [®] @ 3 Qt/acre, Roundup WeatherMax [®] @ 26 fl oz/acre and AMS @ 17 lbs/100 gal solution on 05 May 2008. Broadcasted: Roundup WeatherMax [®] @ 26 fl oz/acre and AMS @ 17 lbs/100 gal solution on 30 May 2008
Fertilizer Applied:	170 lbs of N knifed in as NH ₃ on 16 April 2008. 5 GPA of 10-34-0 starter fertilizer was applied in furrow at planting.

Data Collection:

Plant Population:	The total number of plants per plot were recorded on 29 May 2008.
Extended Leaf Height:	Extended leaf heights were recorded in inches from 20 randomly selected plants per plot on 16 June 2008.
Lodged Plants:	The total number of root lodged plants per plot was recorded on 09 July and 25 September 2008 and converted to percentage of plants lodged.
Harvest Evaluations:	Plots were machine harvested on 05 November 2008. Percent moisture and lbs of grain were recorded and converted to 56 lbs/bu @ 15% moisture to evaluate yield.

Entomological Data:

Species present:	Predominantly western corn rootworm, <i>Diabrotica virgifera virgifera</i> LeConte, and a few northern corn rootworm, <i>D. barberi</i> Smith and Lawrence.
CRW egg hatch:	First observed on 02 June 2008.
Root Evaluation:	Iowa 0-3 root damage scale was used to evaluate larval corn rootworm injury in each treatment per replication. Five randomly selected plants were dug from each plot.
Root Evaluation Date:	14 July 2008

Experimental Design

Design:	Randomized Complete Block Replicated four times
Plot Size:	4 rows x 147 feet
Statistical Analyses:	PROC MIXED, with mean separation using the differences of least square means (MIXED; $p t >0.05$).

Environmental

Conditions at planting:	
Wind direction and speed:	SE @ 10-20 mph
Soil surface condition:	Excellent
Subsoil moisture:	Moist-Excellent

Record of Rainfall: (April 1 - October 29)

<u>Date</u>	<u>Amount (Inches)</u>	<u>Date</u>	<u>Amount (Inches)</u>
April 3	0.41	July 10	1.85
April 8	0.18	July 12	0.25
April 10	1.21	July 15	0.20
April 17	0.80	July 16	2.14
April 18	1.15	July 18	1.15
April 24	0.30	August 6	0.30
April 26	0.30	August 9	1.45
May 6	1.31	August 12	0.45
May 8	0.26	August 14	0.15
May 10	1.13	August 23	0.23
May 21	0.25	September 1	1.02
May 22	1.45	September 8	0.65
May 23	1.01	September 11	0.25
May 26	0.10	September 12	0.25
May 27	0.26	October 6	1.60
May 29	0.10	October 13	1.40
June 4	1.10	October 14	0.95
June 5	0.15	October 21-23	2.80
June 7	0.26		
June 11	0.35		
June 24	1.29		
June 27	0.45		

<u>Month</u>	<u>Total (Inches)</u>
April	4.35
May	5.87
June	3.60
July	5.59
August	2.58
September	1.92
October	<u>6.75</u>
Total	30.66

Seasonal Record of Irrigation:

<u>Date</u>	<u>Amount (Inches)</u>	<u>Month</u>	<u>Total (Inches)</u>
July 31	1.70	July	1.70
August 6	1.71	August	<u>3.29</u>
August 26	<u>1.58</u>	Total	4.99
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Hybrid	Trait(s) ¹	Seed Treatment	Insecticide Application ²	Yield ³ (bu/acre) (05 Nov.)	Avg.				
					Root Ratings ³ (0-3 Scale) (14 July)	% Root Lodging ³ (25 Sept.)	% Root Lodging ⁴ (09 July)	Avg. Extended Leaf Height ⁴ (Inches) (16 June)	Avg. No. Of Plants Per Acre ⁴ (29 May)
Pioneer 32T85	HXX	Poncho [®] 250	-----	229.5 ab	0.17 a	0.0 a	0.1	32.8	29,517
Pioneer 32T84	HX1	Poncho [®] 250	Force [®] 3G ²	237.0 a	0.53 a	0.6 a	0.1	33.0	29,311
Pioneer 32T84	HX1	Poncho [®] 250	-----	220.4 b	1.80 b	34.6 b	1.5	33.7	29,591
Treatment Probability					0.0004	<.0001	0.1193	0.7133	0.7630

¹HXX; contains Herculex[®] I and the Herculex[®] Rootworm genes and HX1; contains Herculex[®] I insect protection.

²Force[®] 3G applied at 4 oz product/1000 row ft in a t-band placement via standard insecticide boxes.

³Means in column followed by the same lowercase letter are not statistically different using the differences of least square means (MIXED; p|t|>0.05).

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