

Syngenta

Herculex Traits and Force CS Evaluations, Clay Center, NE, 2009

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Background information pertaining to corn rootworm experiments conducted at Clay Center, NE during 2009.

AGRONOMIC:

Hybrids (Traits):	Pioneer 33P83 (HXX/LL/RR2) and 33P84 (HX1/LL/RR2)
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	28 April 2009
Planter:	2-row 7100 JD Maximerge with finger pickup units.
Planting Depth:	2 inches
Application Equipment:	<u>Liquid Insecticides:</u> CO ₂ pressurized sprayer mounted on planter; treatments applied in a 5 GPA solution via 7 inch t-band over the open seed furrow in front of the press wheels.
Previous Crop:	Late planted corn
Soil Information:	Crete silt loam
Herbicides Applied:	Broadcasted: Lumax @ 2.5 qt/acre, RoundUp Original @ 24 fl oz/acre and AMS @ 17 lbs/100 gal solution on 05 May 2009. Broadcasted: RoundUp WeatherMax @ 22 fl oz/acre and AMS @ 17 lbs/100 gal solution on both 22 May and 05 June 2009 to control volunteer corn.
Fertilizer Applied:	200 lbs of N knifed in as NH ₃ on 02 April 2009. 5 GPA of 10-34-0 starter fertilizer was applied in furrow at planting.

DATA COLLECTION:

Plant Populations:	The total number of plants per plot was recorded on 29 May 2009.
Extended Leaf Heights:	Extended leaf heights were recorded from 20 randomly selected plants per plot on 15 June 2009.
Lodged Plants:	The total number of lodged plants per plot was recorded on 10 September 2009.
Harvest Evaluations:	Plots were machine harvested on 06 November 2009. Percent moisture and lbs of grain were recorded and converted to 56 lbs/bu @ 15% moisture to evaluate yield. <i>Some plots were suspected to have deficient nitrogen levels due to a single knife being obstructed or reduced flow of anhydrous ammonia at the time of anhydrous application on 02 April 2009. Yields from these suspected N-deficient plots were removed from the complete data set; remaining yield levels were also subsequently analyzed.</i>

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 29-31 May 2009.
Root Evaluation:	Iowa 0-3 root damage scale was used to evaluate larval corn rootworm injury in each treatment per replication. Six randomly selected plants were dug from each plot.
Root Evaluation Date:	09 July 2009

EXPERIMENTAL DESIGN:

Design:	Randomized complete block; replicated four times
Plot Size:	2 rows x 141-143 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 @ 10-13 mph
Soil surface condition:	Excellent-Moist
Subsoil moisture:	Excellent

RECORD OF RAINFALL: (April 1 – November 6)

<u>Date</u>	<u>Amount (Inches)</u>	<u>Date</u>	<u>Amount (Inches)</u>
April 1	0.35	June 21	0.10
April 13	0.40	June 23	0.25
April 17	0.30	June 26	0.20
April 29	0.65	July 3	0.25
April 30	0.15	July 25	1.20
May 4	0.30	August 5	0.40
May 8	0.30	August 26	3.60
May 11	0.15	Sept. 13	1.15
May 13	0.20	Sept. 14	0.35
May 27	0.35	October 6	0.50
June 1	0.70	October 8	0.20
June 2	0.25	October 10	0.15
June 8	0.85	October 13	0.25
June 10	0.30	October 21	0.70
June 16	2.55	October 22	0.63
June 20	0.25	October 29	<u>0.50</u>
		<i>Total</i>	<i>18.48</i>

<u>Month</u>	<u>Total (Inches)</u>	<u>Month</u>	<u>Total (Inches)</u>
April	1.85	August	4.00
May	1.30	September	1.50
June	5.45	October	<u>2.93</u>
July	1.45	<i>Total</i>	<i>18.48</i>

SEASONAL RECORD OF IRRIGATION:

<u>Date</u>	<u>Amount (Inches)</u>
July 7	1.39
July 13	1.50
July 21	1.22
August 3	1.21
August 10	1.48
August 17	<u>1.42</u>
<i>Total</i>	8.22

<u>Month</u>	<u>Total (Inches)</u>
July	4.11
August	<u>4.11</u>
<i>Total</i>	8.22

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Traits	Insecticide Product	Rate of Insecticide	Yield ² (bu/acre) (06 November)	Yields w/ N-deficient plots removed ² (06 November)	Avg. Root Ratings ¹ (0-3 Scale) (09 July)	Total No. Of Root Lodged Plants ¹ (10 Sept.)	Avg. Extended Leaf Height ² (15 June)	Avg. No. Of Plants Per Acre ² (29 May)
HXX/LL/RR2	-----	-----	240.3	252.7	0.18 a	0.0 a	37.8	30,515
HXX/LL/RR2	Force 2.08 CS	0.46 fl oz/1000 row ft	226.1	237.1	0.08 a	0.0 a	37.4	30,315
HXX/LL/RR2	Force 2.08 CS	0.34 fl oz/1000 row ft	231.7	231.7	0.09 a	0.0 a	37.2	29,926
HX1/LL/RR2	-----	-----	218.8	240.8	1.36 b	23.0 b	37.0	30,255
HX1/LL/RR2	Force 2.08 CS	0.46 fl oz/1000 row ft	218.5	244.7	0.27 a	0.0 a	37.7	29,842
HX1/LL/RR2	Force 2.08 CS	0.34 fl oz/1000 row ft	251.0	251.0	0.27 a	0.0 a	37.7	30,359
		<i>Treatment Probability</i>	<i>0.3334</i>	<i>0.0691</i>	<i><.0001</i>	<i>0.0002</i>	<i>0.3445</i>	<i>0.6706</i>

¹Means in column followed by the same lowercase letter are not statistically different using the differences of least square means (MIXED; p|t|>0.05).

²Means in column are not statistically different using the differences of least square means (MIXED; p|t|>0.05).