

Evaluation of Granular and Liquid Insecticide Formulations 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):	Novartis N71M-GT/CB/LL
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	01 May 2008
Planter:	2-row 7100 JD Maximerge with finger pickup units.
Planting Depth:	2 inches
Application Equipment:	<u>Granular Insecticides:</u> Standard insecticide boxes. <u>Liquid Insecticides:</u> CO ₂ pressurized sprayer mounted on planter; treatments applied in a 5 GPA solution via microtubes positioned between the tru-v disc openers or 7 inch t-band over the open seed furrow and in front of the press wheels.
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 Populations:	The total number of plants per plot was recorded on 21 May 2008 and converted to plants per acre.
Phytotoxicity:	Phytotoxic effects were not observed on 30 May 2008.
Herbicide Damage:	The total number of dead plants per plot were recorded on 04 June 2008 as a result of the glyphosate application on 30 May 2008.
Lodged Plants:	The total number of lodged plants per plot were recorded on 09 July and 25 September 2008 and converted to percentage of plants lodged.
Harvest Evaluations:	Plots were machine harvested on 02 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:	15 July 2008

Experimental Design

Design:	Randomized complete block Replicated four times
Plot Size:	2 rows x 145 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:	WNW @ 12-16 mph
Soil surface condition:	Excellent
Subsoil moisture:	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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Insecticide Product	Rate of Insecticide	Placement	Yield ² (bu/acre) (02 Nov.)	Avg. Root Ratings ¹ (0-3 Scale) (15 July)	% Root Lodging ¹ (25 Sept.)	% Root Lodging ¹ (09 July)	Avg. No. Of Dead Plants Per Acre ² (04 June)	Avg. No. Of Plants Per Acre ² (21 May)	
Aztec [®] 2.1G	6.7 oz/1000 row ft	In furrow	197.0	0.18 a	0.0 a	0.1 a	2,784	29,709	
Force [®] CS	0.46 fl oz/1000 row ft	T-band	197.8	0.30 ab	0.3 a	0.2 a	3,271	29,918	
Force [®] CS	0.46 fl oz/1000 row ft	In furrow	193.1	0.38 ab	0.1 a	0.1 a	3,099	29,509	
Aztec [®] 2.1G	6.7 oz/1000 row ft	T-band	195.0	0.41 ab	0.6 a	0.1 a	3,392	29,975	
Force [®] 3G	4 oz/1000 row ft	In furrow	198.0	0.44 ab	0.1 a	0.1 a	3,257	29,944	
Force [®] 3G	4 oz/1000 row ft	T-band	195.3	0.54 b	0.4 a	0.1 a	3,127	30,510	
Capture [®] LFR	0.49 fl oz/1000 row ft	T-band	194.6	0.59 b	0.6 a	0.2 a	3,888	30,597	
Capture [®] LFR	0.49 fl oz/1000 row ft	In furrow	200.7	0.62 b	0.2 a	0.0 a	3,344	29,769	
Lorsban [®] 15G	8 oz/1000 row ft	T-band	191.2	1.11 c	7.2 a	0.1 a	3,090	29,927	
Untreated	-----	-----	191.6	1.52 d	22.2 b	2.6 b	3,193	29,636	
			<i>Treatment Probability</i>	<i>0.5582</i>	<i><0.0001</i>	<i>0.0005</i>	<i>0.0241</i>	<i>0.4032</i>	<i>0.0509</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).