

Evaluation of Foliar Insecticides for Adult Corn Rootworm Control

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Background information pertaining to corn rootworm experiments conducted at Clay Center, NE during 2010.

AGRONOMIC:

Hybrids:	DeKalb DKC 52-45 and Pioneer 1173H blend
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	01 June 2010
Planter:	8-row 7300 JD Maximerge with vacuum seed metering units.
Planting Depth:	2 inches
Application Equipment:	<u>Liquid Insecticides:</u> Rear-mounted boom system on a high clearance applicator. Liquid treatments were broadcast over the plant canopy in a 10 GPA water solution via 20-inch nozzle spacing (T-Jet 110001VS) @ 30 psi and travel speed of 2.4 mph on 30 July 2010.
Previous Crop:	Corn
Soil Information:	Butler/Crete silt loam
Herbicides Applied:	Broadcasted: Lexar @ 3.0 qt/acre on 02 June 2010.
Fertilizer Applied:	160 lbs of N knifed in as NH ₃ on 19 April 2010.

DATA COLLECTION:

Plant Populations:	The total number of plants per plot was recorded on 03 August 2010.
Adult CRW Counts:	Adult western corn rootworm (WCR) and southern corn rootworm (SCR) were pre-counted (30 July) on ten primary ears per plot prior to insecticide treatment applications and 3, 7 and 14 days after treatment (02 August, 06 August, 13 August and 20 August).
Silk Clipping Evaluations:	Percent silk clipping was determined by the evaluation of ten primary ears per plot seven days after treatment on 06 August.
Ear Fill Evaluations:	The total number of kernels that were not pollinated per five ears per plot was recorded on 02 September (Reps 1 & 3) and 08 September (Reps 2 & 4).

ENTOMOLOGICAL DATA:

Species present:	Western corn rootworm, <i>Diabrotica virgifera virgifera</i> LeConte and southern corn rootworm, <i>Diabrotica undecimpunctata howardi</i> Barber.
CRW egg hatch:	First observed 02 June 2010.

EXPERIMENTAL DESIGN:

Design:	Randomized complete block; replicated four times
Plot Size:	4 rows x 40 feet
Statistical Analyses:	PROC MIXED, with mean separation using the differences of least square means (MIXED; $p t >0.05$).

ENVIRONMENTAL:

Conditions at time of treatment applications on 30 July (10:15 AM – 11:15 AM):

Wind Direction and Speed:	NNE @ < 5 mph
Air Temperature:	79° F
Relative Humidity:	83%
Crop Stage:	Early-Mid Green silk

RECORD OF RAINFALL: (April 1 – August 31)

<u>Date</u>	<u>Amount (Inches)</u>	<u>Date</u>	<u>Amount (Inches)</u>
April 7	0.80	June 7	0.90
April 10	0.40	June 12	2.25
April 22	1.00	June 14	1.10
May 7	0.42	June 19	2.30
May 10	0.10	June 21	1.60
May 11	0.70	June 22	0.50
May 13	0.40	June 23	0.07
May 17	0.30	July 3	1.70
May 20	1.50	July 12	0.30
May 25	1.05	July 22	0.25
May 26	0.75	August 4	0.35
May 29	0.35	August 17	0.50
		August 20	0.60
		August 24	<u>2.20</u>
		Total	22.39
<u>Month</u>	<u>Total (Inches)</u>	<u>Month</u>	<u>Total (Inches)</u>
April	2.20	June	8.72
May	5.57	July	2.25
		August	<u>3.65</u>
		Total	22.39

SEASONAL RECORD OF IRRIGATION:

<u>Date</u>	<u>Amount (Inches)</u>
July 20	1.37
July 26	1.43
August 3	1.45
August 9	1.43
September 2	<u>1.14</u>
Total	6.82
<u>Month</u>	<u>Total (Inches)</u>
July	2.80
August	2.88
September	<u>1.14</u>
Total	6.82

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Insecticide Product	Rate of Insecticide	<u>AVG. NO. OF ADULT WCR / 10 PRIMARY EARS</u>				Pre-Counts ² (30 Jul)	% Silk Clipping ¹ (06 Aug)	Avg. No. of Kernels Not Pollinated Per 5 Ears ² (02 & 08 Sept)	Avg. No. Of PPA ² (03 Aug)
		21 DAT ² (20 Aug)	14 DAT ¹ (13 Aug)	7 DAT ¹ (06 Aug)	3DAT ¹ (02 Aug)				
Endigo 2.06 ZC	4.50 fl oz/acre	7.5	4.8 a	1.5 a	0.3 a	5.8	5.0 a	5.5	25,120
Warrior II 2.09 CS	1.92 fl oz/acre	9.3	5.8 a	1.5 a	0.0 a	3.5	7.5 a	4.8	24,002
Hero 1.24 EC	7.00 fl oz/acre	9.5	3.0 a	2.3 a	0.5 a	6.8	2.5 a	4.8	25,441
Untreated	-----	10.3	16.0 b	10.0 b	6.0 b	3.3	42.5 b	6.0	24,824
	<i>Treatment Probability</i>	<i>0.8935</i>	<i>0.0008</i>	<i>0.0031</i>	<i><0.0001</i>	<i>0.2572</i>	<i>0.0084</i>	<i>0.9720</i>	<i>0.4012</i>

Insecticide Product	Rate of Insecticide	<u>AVG. NO. OF ADULT SCR / 10 PRIMARY EARS</u>				Pre-Counts ² (30 July)
		21 DAT ² (20 August)	14 DAT ¹ (13 August)	7 DAT ¹ (06 August)	3DAT ¹ (02 August)	
Endigo 2.06 ZC	4.50 fl oz/acre	0.0	0.3 a	0.3 a	0.0 a	2.0
Warrior II 2.09 CS	1.92 fl oz/acre	0.0	0.0 a	0.0 a	0.0 a	2.8
Hero 1.24 EC	7.00 fl oz/acre	0.5	0.5 a	0.3 a	0.0 a	1.3
Untreated	-----	0.0	3.0 b	3.8 b	2.8 b	2.5
	<i>Treatment Probability</i>	<i>0.4262</i>	<i>0.0036</i>	<i>0.0078</i>	<i><0.0001</i>	<i>0.6310</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).

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