

Evaluation of Foliar-Applied Insecticides For Insect Control In Corn, 2011

Terry A DeVries, University of Nebraska, South Central Ag Laboratory, Clay Center, NE 68933

Robert J Wright, Dept. Of Entomology, University of Nebraska-Lincoln, Lincoln NE 68583-0816, rwright2@unl.edu

Background information pertaining to experiments conducted at Clay Center, NE during 2011.

AGRONOMIC:

Hybrid:	Stine 9724 (conventional)
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	12 May 2011
Planter:	4-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 19 July 2011.
Previous Crop:	Late planted corn
Soil Information:	Crete silt loam
Herbicides Applied:	Broadcasted: RoundUp PowerMax @ 24 fl oz/acre on 11 May and Lumax @ 2.75 qt/acre on 17 May 2011.
Fertilizer Applied:	210 lbs of N knifed in as NH ₃ on 04 April 2011.

DATA COLLECTION:

Plant Populations:	The total number of plants in the center two rows of each plot was recorded on 20 June 2011.
Phytotoxicity Evaluations:	Corn plants were evaluated for phytotoxic effects following insecticide applications 3 DAT (22 July) and 7 DAT (26 July). Phytotoxic effects were not observed 3 DAT or 7 DAT.
Ear Fill Evaluations:	The number of kernels that were not pollinated per primary ear per plot was recorded 16 DAT (04 August) in Rep 1, 17 DAT (05 August) in Rep 2 and 20 DAT (08 August) in Reps 3 and 4. Ten primary corn ears were evaluated per plot.

ENTOMOLOGICAL DATA:

Species present:	Western corn rootworm, <i>Diabrotica virgifera virgifera</i> LeConte
CRW egg hatch:	Initial hatch approximately on 02 June 2011.
Adult CRW Counts:	Adult western corn rootworm were pre-counted (18 July) and 16 DAT (04 August) in Rep 1, 17 DAT (05 August) in Rep 2 and 20 DAT (08 August) in Reps 3 and 4 on ten primary ears per plot.
Ear Feeding Damage:	Total area (cm ²) of ear feeding damage and Lepidopteran larval infestation percentage per ten ears per plot was recorded 16 DAT (04 August) in Rep 1, 17 DAT (05 August) in Rep 2 and 20 DAT (08 August) in Reps 3 and 4.

EXPERIMENTAL DESIGN:

Design:	Randomized complete block; replicated four times
Plot Size:	4 rows x 30 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 19 July (10:00 AM – 11:00 AM):

Wind Direction and Speed:	SSW @ < 10 mph
Air Temperature:	86-88° F
Relative Humidity:	55%
Crop Stage:	R1

RECORD OF RAINFALL: (01 April – 30 September 2011)

<u>Date</u>	<u>Amount (Inches)</u>	<u>Date</u>	<u>Amount (Inches)</u>
April 7	0.40	June 18	0.55
April 15	1.40	June 20	0.30
April 19	1.20	June 26	1.15
April 25	0.55	July 2	1.25
May 11	0.30	July 6	0.80
May 13	0.50	July 7	0.30
May 18	0.25	July 21	0.25
May 19	0.25	July 24	1.10
May 20	1.00	July 28	0.10
May 21	0.25	August 4	0.10
May 24	0.45	August 5	0.40
May 25	0.45	August 8	0.55
May 26	0.70	August 10	0.10
May 31	0.95	August 15	0.75
June 2	0.20	August 30	1.60
June 15	0.05	September 2	<u>0.45</u>
June 16	0.50	Total	19.15
<u>Month</u>	<u>Total (Inches)</u>	<u>Month</u>	<u>Total (Inches)</u>
April	3.55	July	3.80
May	5.10	August	3.50
June	2.75	September	<u>0.45</u>
		Total	19.15

SEASONAL RECORD OF IRRIGATION:

<u>Date</u>	<u>Amount (Inches)</u>
July 19	1.39
August 1	1.44
August 22	<u>1.53</u>
Total	4.36
<u>Month</u>	<u>Total (Inches)</u>
July	1.39
August	<u>2.97</u>
Total	4.36

Evaluation of Foliar-Applied Insecticides For Insect Control In Corn, 2011

Insecticide Product	Rate of Insecticide	Total Area (cm ²) of Feeding Damage Per 10 Ears ¹ (04, 05 & 08 August)	Avg. No. of Unpollinated Kernels Per Ear ¹ (04, 05 & 08 August)	% Ears with no Lepidoptera Larval Feeding Damage ^{2,3} (04, 05 & 08 August)	Total No. of WCR Adults Per 10 Ears ¹ (04, 05 & 08 August)	Total No. of WCR Adults Per 10 Ears ² (19 July)	Total No. of Plants Per Plot ² (20 June)
Endigo 2.06 ZC	4 fl oz/acre	0.13 a	26.6 ab	97.5	10.8 bcd	4.5	96.8
Endigo ZCX 2.71 ZC	4 fl oz/acre	0.50 a	45.4 d	92.5	16.0 d	4.5	103.3
Warrior II 2.09 CS	1.92 fl oz/acre	0.06 a	42.9 cd	97.5	13.0 cd	5.5	100.0
Actara 25 WG	5.5 oz/acre	2.50 b	38.3 bcd	82.5	10.5 bcd	5.0	97.0
Voliam Xpress 1.25 ZC	9 fl oz/acre	0.00 a	28.7 abc	100.0	13.3 cd	4.5	97.3
Baythroid XL 1 EC	2.8 fl oz/acre	0.31 a	18.4 a	92.5	3.0 a	4.8	104.5
Cobalt 2.54 EC	33.3 fl oz/acre	0.19 a	43.3 cd	92.5	8.8 abc	5.8	101.0
Untreated	-----	0.81 a	29.0 abc	90.0	5.3 ab	3.8	102.0
	<i>Treatment Probability</i>	<i>0.0019</i>	<i>0.0197</i>	<i>0.1105³</i>	<i>0.0148</i>	<i>0.8120</i>	<i>0.1294</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).

³Averages were converted by the angular transformation of percentages to degrees, before PROC MIXED, original percentages are reported.