

Evaluation of Foliar-Applied Insecticides in Soybean

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 insecticide experiments conducted at Clay Center, NE during 2010.

AGRONOMIC:

Soybean Variety:	Pioneer 93Y12
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	28 May 2010
Planter:	8-row 7300 JD Maximerge with vacuum seed metering units.
Planting Depth:	1-inch
Application Equipment:	<u>Liquid Insecticides:</u> Rear-mounted boom system on tractor. Liquid treatments were broadcast over the plant canopy in an 18.1 GPA water solution via 20-inch nozzle spacing (T-Jet 8002DG) @ 25 psi on 29 July 2010.
Previous Crop:	Sorghum
Soil Information:	Hastings/Crete silt loam
Herbicides Applied:	Broadcasted: RoundUp PowerMax @ 32 fl oz/acre and AMS @ 17 lbs/100 gal solution on 08 July 2010.

DATA COLLECTION:

Plant Populations:	The seeding rate was 140,000 seeds per acre.
Insect Sampling:	Insect populations were sampled prior to insecticide application (29 July) and 4 days, 1 week, 2 weeks and 3 weeks after treatment (02 August, 05 August, 12 August and 19 August). A sweep net (25 sweeps/plot) was used to sample insect populations. The total number of adult and nymphal brown stink bug, green stink bug and grasshopper; adult and larval lady beetle; adult <i>Dectes</i> stem borer, bean leaf beetle and southern corn rootworm; and Lepidopteran caterpillars were recorded per plot for each sample date.
Harvest Evaluations:	Plots were machine harvested on 30 September 2010. Grain moisture levels and lbs of grain harvested per plot were used to calculate final yield levels at 60 lbs/bu and 13% moisture.

EXPERIMENTAL DESIGN:

Design:	Randomized complete block; replicated four times
Plot Size:	16 rows x 420 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 29 July:

Wind direction and speed:	SE @ 8-11 mph
Air Temperature:	72-82 °F

RECORD OF RAINFALL: (April 1 – September 30)

<u>Date</u>	<u>Amount (Inches)</u>	<u>Date</u>	<u>Amount (Inches)</u>
April 7	0.80	June 21	1.60
April 10	0.40	June 22	0.50
April 22	1.00	June 23	0.07
May 7	0.42	July 3	1.70
May 10	0.10	July 12	0.30
May 11	0.70	July 22	0.25
May 13	0.40	August 4	0.35
May 17	0.30	August 17	0.50
May 20	1.50	August 20	0.60
May 25	1.05	August 24	2.20
May 26	0.75	Sept. 1	0.15
May 29	0.35	Sept. 13	0.70
June 7	0.90	Sept. 15	0.35
June 12	2.25	Sept. 23	<u>0.50</u>
June 14	1.10	Total	24.09
June 19	2.30		
<u>Month</u>	<u>Total (Inches)</u>	<u>Month</u>	<u>Total (Inches)</u>
April	2.20	July	2.25
May	5.57	August	3.65
June	8.72	September	<u>1.70</u>
		Total	24.09

SEASONAL RECORD OF IRRIGATION:

<u>Date</u>	<u>Amount (Inches)</u>
July 21	1.50
July 27	0.60
August 3	1.50
August 10	<u>1.50</u>
Total	5.10
<u>Month</u>	<u>Total (Inches)</u>
July	2.10
August	<u>3.00</u>
Total	5.10

PRE-TREATMENT INSECT COUNTS

Total No. of Insects / 25 sweeps

July 29, 2010

Product	Rate of Product	Bean Leaf Beetle Adults ²	Southern Corn Rootworm Adults ²	Brown Stink Bugs Adult ² / Nymph ²	Green Stink Bugs Adult ² / Nymph ²	Grasshoppers Adult ² / Nymph ²	<i>Dectes</i> Stem Borer Adults ²	Lady Beetles Adult ² / Larva ²	Caterpillars ²
Leverage 360	2.8 fl oz	11.5	21.8	0.5 / 0	0.8 / 0.0	0.8 / 3.8	0.0	1.3 / 0	3.0
Baythroid XL	2.8 fl oz	10.5	19.8	0.3 / 0	0.0 / 0.3	0.0 / 4.3	0.8	2.3 / 0	2.5
Untreated	-----	9.5	15.0	0.3 / 0	0.8 / 0.3	0.8 / 5.0	0.5	2.0 / 0	1.5
Treatment Probability		0.8159	0.3146	0.7479 / 1	0.2441 / 0.6224	0.3378 / 0.8868	0.2746	0.6906 / 1	0.7965

4 DAYS AFTER TREATMENT INSECT COUNTS

Total No. of Insects / 25 Sweeps

August 2, 2010

Product	Rate of Product	Bean Leaf Beetle Adults ¹	Southern Corn Rootworm Adults ²	Brown Stink Bugs Adult ² / Nymph ²	Green Stink Bugs Adult ² / Nymph ²	Grasshoppers Adult ² / Nymph ²	<i>Dectes</i> Stem Borer Adults ²	Lady Beetles Adult ² / Larva ²	Caterpillars ²
Leverage 360	2.8 fl oz	2.3 a	3.5	0.0 / 0	0.3 / 0.3	0.3 / 2.0	0	0.3 / 0.5	0.0
Baythroid XL	2.8 fl oz	2.8 a	4.8	0.3 / 0	0.3 / 0.3	0.5 / 2.5	0	0.3 / 0.0	0.0
Untreated	-----	9.3 b	7.5	0.3 / 0	0.3 / 0.5	1.0 / 1.0	0	0.3 / 0.0	1.5
Treatment Probability		0.0239	0.0950	0.6224 / 1	1.0000 / 0.8240	0.6892 / 0.4219	1	1.0000 / 0.1250	0.1664

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).

7 DAYS AFTER TREATMENT INSECT COUNTS

Total No. of Insects / 25 sweeps

August 5, 2010

Product	Rate of Product	Bean Leaf Beetle Adults ²	Southern Corn Rootworm Adults ²	Brown Stink Bugs Adult ² / Nymph ²	Green Stink Bugs Adult ² / Nymph ²	Grasshoppers Adult ² / Nymph ²	<i>Dectes</i> Stem Borer Adults ²	Lady Beetles Adult ² / Larva ²	Caterpillars ¹
Leverage 360	2.8 fl oz	8.5	9.3	0.3 / 0	0.0 / 0.0	0 / 2.8	0	0.0 / 0.0	0.0 a
Baythroid XL	2.8 fl oz	13.5	5.8	0.0 / 0	0.3 / 0.3	0 / 2.8	0	1.3 / 0.3	0.0 a
Untreated	-----	12.3	5.0	0.0 / 0	0.3 / 0.0	0 / 2.0	0	0.3 / 0.3	1.0 b
Treatment Probability		0.3481	0.0873	0.4219 / 1	0.6224 / 0.4219	1 / 0.7164	1	0.1780 / 0.6224	0.0370

14 DAYS AFTER TREATMENT INSECT COUNTS

Total No. of Insects / 25 Sweeps

August 12, 2010

Product	Rate of Product	Bean Leaf Beetle Adults ¹	Southern Corn Rootworm Adults ²	Brown Stink Bugs Adult ² / Nymph ²	Green Stink Bugs Adult ² / Nymph ²	Grasshoppers Adult ² / Nymph ²	<i>Dectes</i> Stem Borer Adults ²	Lady Beetles Adult ² / Larva ²	Caterpillars ¹
Leverage 360	2.8 fl oz	14.3 b	7.3	0.0 / 0	0 / 0.0	0.5 / 1.8	0.3	0.5 / 0	0.5 ab
Baythroid XL	2.8 fl oz	7.0 a	3.5	0.3 / 0	0 / 0.3	0.0 / 1.8	0.0	0.0 / 0	0.0 a
Untreated	-----	4.8 a	5.0	0.0 / 0	0 / 0.0	1.0 / 1.0	0.0	0.5 / 0	1.8 b
Treatment Probability		0.0112	0.1474	0.4219 / 1	1 / 0.4219	0.2441 / 0.7164	0.4219	0.2963 / 1	0.0333

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21 DAYS AFTER TREATMENT INSECT COUNTS

Total No. of Insects / 25 Sweeps

August 19, 2010

Product	Rate of Product	Bean Leaf Beetle Adults ²	Southern Corn Rootworm Adults ²	Brown Stink Bugs Adult ² / Nymph ²	Green Stink Bugs Adult ² / Nymph ²	Grasshoppers Adult ² / Nymph ²	<i>Dectes</i> Stem Borer Adults ²	Lady Beetles Adult ² / Larva ²	Caterpillars ²
Leverage 360	2.8 fl oz	9.8	2.8	0.5 / 0.0	0 / 0	0.5 / 1.3	0	0 / 0	0.5
Baythroid XL	2.8 fl oz	15.8	2.0	0.3 / 0.8	0 / 0	0.0 / 0.8	0	0 / 0	0.0
Untreated	-----	15.5	2.0	0.0 / 0.5	0 / 0	1.0 / 0.5	0	0 / 0	0.5
Treatment Probability		0.4400	0.7674	0.5694 / 0.2746	1 / 1	0.3227 / 0.5227	1	1 / 1	0.4219

HARVEST DATA

September 30, 2010

Product	Rate of Product	% Moisture ²	Yield ² (bu/acre)
Leverage 360	2.8 fl oz	10.6	68.2
Baythroid XL	2.8 fl oz	10.7	67.0
Untreated	-----	10.6	64.9
Treatment Probability		0.7996	0.0544

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