

# Evaluation of Foliar Insecticides In Soybean, 2011

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

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## AGRONOMIC:

Soybean Variety:	Channel 2500R2 Brand
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	10 May 2011
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 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 25 July 2011.
Previous Crop:	Corn
Soil Information:	Hastings/Crete silt loam
Herbicides Applied:	Broadcasted: Intrro @ 1 pt/acre, Valor XLT @ 5 oz/acre, RoundUp PowerMax @ 24 fl oz/acre and AMS @ 17 lbs/100 gal solution on 11 May 2011.
Cultivation:	Soybeans were cultivated on 30 June 2011.

### **DATA COLLECTION:**

Plant Populations:	The seeding rate was 150,000 seeds per acre.
Insect Sampling:	Insect populations were sampled prior to insecticide application (25 July) and 1 day, 3 days, 1 week, 2 weeks and 3 weeks after treatment (26 July, 29 July, 02 August, 09 August and 16 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, southern corn rootworm, western corn rootworm and grape colapsis; and Lepidopteran caterpillars were recorded per plot for each sample date.
Harvest Evaluations:	Plots were machine harvested on 27 September 2011. Soybean moisture levels and pounds of harvested grain 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:	8 rows x 47 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 25 July 2011:

Wind direction and speed:	SE @ < 5 mph
Air Temperature:	85 °F

**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	<b>Total</b>	<b>19.15</b>

<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>
		<b>Total</b>	<b>19.15</b>

**SEASONAL RECORD OF IRRIGATION:**

<u>Date</u>	<u>Amount (Inches)</u>
July 17	1.53
August 1	1.58
August 21	<u>1.53</u>
<b>Total</b>	4.64

<u>Month</u>	<u>Total (Inches)</u>
July	1.53
August	<u>3.11</u>
<b>Total</b>	4.64

**PRE-TREATMENT INSECT COUNTS**

**Total No. of Insects / 25 sweeps**

**July 25, 2011**

Product(s)	Rate of Product(s)/Acre	Bean Leaf Beetle Adults <sup>2</sup>	Southern Corn Rootworm Adults <sup>2</sup>	Brown Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Green Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Grasshoppers Adult <sup>2</sup> / Nymph <sup>2</sup>	<i>Dectes</i> Stem Borer Adults <sup>2</sup>	Lady Beetles Adult <sup>2</sup> / Larva <sup>2</sup>	Caterpillars <sup>2</sup>	Grape Colapsis Adults <sup>2</sup>
Leverage 360	2.8 fl oz	42.0	0.0	0.8 / 0	0 / 0	0 / 0.3	0.0	1.0 / 0	1.0	1.3
Lorsban 480EC	16 fl oz	34.8	0.0	1.8 / 0	0 / 0	0 / 0.0	0.5	0.5 / 0	0.5	0.5
Warrior	2.56 fl oz	33.8	0.5	1.0 / 0	0 / 0	0 / 0.3	0.3	1.3 / 0	0.8	1.3
Baythroid XL + Lorsban 480EC	2.0 fl oz 8.0 fl oz	31.8	0.5	0.8 / 0	0 / 0	0 / 0.5	0.0	1.3 / 0	1.3	1.0
Untreated	-----	28.8	0.0	1.5 / 0	0 / 0	0 / 0.5	0.0	2.0 / 0	1.0	0.3
Treatment Probability		0.3943	0.1243	0.5302 / 1	1 / 1	1 / 0.5258	0.1991	0.7481 / 1	0.6575	0.4982

**1 DAY AFTER TREATMENT INSECT COUNTS**

**Total No. of Insects / 25 sweeps**

**July 26, 2011**

Product(s)	Rate of Product(s)/Acre	Bean Leaf Beetle Adults <sup>1</sup>	Southern Corn Rootworm Adults <sup>2</sup>	Brown Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Green Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Grasshoppers Adult <sup>2</sup> / Nymph <sup>2</sup>	<i>Dectes</i> Stem Borer Adults <sup>2</sup>	Lady Beetles Adult <sup>2</sup> / Larva <sup>2</sup>	Caterpillars <sup>2</sup>	Grape Colapsis Adults <sup>2</sup>
Leverage 360	2.8 fl oz	0.8 a	0	0.0 / 0	0.0 / 0	0 / 0	0.0	0.3 / 0	0.3	0
Lorsban 480EC	16 fl oz	3.5 a	0	0.5 / 0	0.0 / 0	0 / 0	0.0	0.5 / 0	0.3	0
Warrior	2.56 fl oz	0.8 a	0	0.3 / 0	0.3 / 0	0 / 0	0.0	0.0 / 0	0.3	0
Baythroid XL + Lorsban 480EC	2.0 fl oz 8.0 fl oz	0.0 a	0	0.0 / 0	0.0 / 0	0 / 0	0.0	0.3 / 0	0.0	0
Untreated	-----	21.0 b	0	0.3 / 0	0.0 / 0	0 / 0	0.3	0.8 / 0	0.0	0
Treatment Probability		<0.0001	1	0.6795	0.4449 / 1	1 / 1	0.4449	0.4735	0.7166	1

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

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

### 3 DAYS AFTER TREATMENT INSECT COUNTS

Total No. of Insects / 25 Sweeps

July 29, 2011

Product(s)	Rate of Product(s)/Acre	Bean Leaf Beetle Adults <sup>1</sup>	Southern Corn Rootworm Adults <sup>2</sup>	Brown Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Green Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Grasshoppers Adult <sup>2</sup> / Nymph <sup>2</sup>	<i>Dectes</i> Stem Borer Adults <sup>2</sup>	Lady Beetles Adult <sup>1</sup> / Larva <sup>2</sup>	Caterpillars <sup>2</sup>	Grape Colapsis Adults <sup>2</sup>
Leverage 360	2.8 fl oz	1.8 a	0.0	1.0 / 0	0.0 / 0	0.0 / 0.5	0.0	0.3 cd / 0	0	0.3
Lorsban 480EC	16 fl oz	5.3 a	0.5	0.8 / 0	0.3 / 0	0.0 / 0.3	0.0	1.8 ab / 0	0	0.0
Warrior	2.56 fl oz	1.0 a	0.0	0.3 / 0	0.0 / 0	0.3 / 0.5	0.3	0.0 d / 0	0	0.0
Baythroid XL + Lorsban 480EC	2.0 fl oz / 8.0 fl oz	5.3 a	0.0	1.3 / 0	0.0 / 0	0.0 / 0.3	0.3	1.0 bc / 0	0	0.0
Untreated	-----	17.5 b	0.3	1.3 / 0	0.0 / 0	0.3 / 0.3	0.3	2.0 a / 0	0	0.5
Treatment Probability		0.0003	0.1586	0.6911 / 1	0.4449 / 1	0.5732 / 0.9424	0.7166	0.0022 / 1	1	0.4449

### 7 DAYS AFTER TREATMENT INSECT COUNTS

Total No. of Insects / 25 sweeps

August 2, 2011

Product(s)	Rate of Product(s)/Acre	Bean Leaf Beetle Adults <sup>2</sup>	Southern Corn Rootworm Adults <sup>2</sup>	Brown Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Green Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Grasshoppers Adult <sup>2</sup> / Nymph <sup>2</sup>	<i>Dectes</i> Stem Borer Adults <sup>2</sup>	Lady Beetles Adult <sup>2</sup> / Larva <sup>2</sup>	Caterpillars <sup>2</sup>
Leverage 360	2.8 fl oz	3.0	0.0	0.5 / 0	0 / 0	0.0 / 0.0	0.3	0.0 / 0	0
Lorsban 480EC	16 fl oz	5.5	0.5	0.3 / 0	0 / 0	0.0 / 0.3	0.0	0.0 / 0	0
Warrior	2.56 fl oz	10.5	0.3	0.8 / 0	0 / 0	0.3 / 0.5	0.0	0.8 / 0	0
Baythroid XL + Lorsban 480EC	2.0 fl oz / 8.0 fl oz	8.5	0.0	0.3 / 0	0 / 0	0.0 / 0.5	0.0	0.0 / 0	0
Untreated	-----	8.0	1.0	0.0 / 0	0 / 0	0.3 / 0.3	0.0	0.0 / 0	0
Treatment Probability		0.0901	0.0642	0.6213 / 1	1 / 1	0.4449 / 0.6911	0.4449	0.4449 / 1	1

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**14 DAYS AFTER TREATMENT INSECT COUNTS**

**Total No. of Insects / 25 Sweeps**

**August 9, 2011**

Product(s)	Rate of Product(s)/Acre	Bean Leaf Beetle Adults <sup>1</sup>	Southern Corn Rootworm Adults <sup>2</sup>	Brown Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Green Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Grasshoppers Adult <sup>2</sup> / Nymph <sup>2</sup>	<i>Dectes</i> Stem Borer Adults <sup>2</sup>	Lady Beetles Adult <sup>2</sup> / Larva <sup>2</sup>	Caterpillars <sup>2</sup>
Leverage 360	2.8 fl oz	12.3 a	0.8	0.5 / 0.0	0.0 / 0	0 / 0.3	0.3	0.8 / 0	0
Lorsban 480EC	16 fl oz	17.0 ab	0.3	1.0 / 0.0	0.0 / 0	0 / 0.0	0.0	0.5 / 0	0
Warrior	2.56 fl oz	25.0 b	0.5	0.5 / 0.0	0.3 / 0	0 / 0.3	0.0	1.8 / 0	0
Baythroid XL + Lorsban 480EC	2.0 fl oz 8.0 fl oz	10.8 a	0.8	0.3 / 0.3	0.0 / 0	0 / 0.0	0.0	0.0 / 0	0
Untreated	-----	12.0 a	0.5	0.0 / 0.0	0.0 / 0	0 / 0.3	0.0	0.0 / 0	0
Treatment Probability		0.0406	0.7854	0.2065 / 0.4449	0.4449 / 1	1 / 0.7166	0.4449	0.2062 / 1	1

**21 DAYS AFTER TREATMENT INSECT COUNTS**

**Total No. of Insects / 25 Sweeps**

**August 16, 2011**

Product(s)	Rate of Product(s)/Acre	Bean Leaf Beetle Adults <sup>1</sup>	Southern Corn Rootworm Adults <sup>2</sup>	Western Corn Rootworm Adults <sup>2</sup>	Brown Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Green Stink Bugs Adult <sup>2</sup> / Nymph <sup>2</sup>	Grasshoppers Adult <sup>2</sup> / Nymph <sup>2</sup>	<i>Dectes</i> Stem Borer Adults <sup>2</sup>	Lady Beetles Adult <sup>2</sup> / Larva <sup>2</sup>	Caterpillars <sup>2</sup>
Leverage 360	2.8 fl oz	16.0 a	0.3	0.3	0.5 / 0.3	0.0 / 0	0.0 / 0.3	0.0	0 / 0	0.3
Lorsban 480EC	16 fl oz	29.3 b	0.3	0.8	0.8 / 1.8	0.3 / 0	0.5 / 0.0	0.0	0 / 0	0.0
Warrior	2.56 fl oz	35.8 b	0.5	0.5	0.0 / 0.5	0.3 / 0	0.0 / 0.0	0.3	0 / 0	0.0
Baythroid XL + Lorsban 480EC	2.0 fl oz 8.0 fl oz	33.5 b	0.5	0.0	0.3 / 1.3	0.0 / 0	0.3 / 0.0	0.0	0 / 0	0.0
Untreated	-----	25.0 ab	0.3	0.0	0.3 / 2.0	0.0 / 0	0.0 / 0.3	0.0	0 / 0	0.3
Treatment Probability		0.0363	0.8960	0.5732	0.2520 / 0.1136	0.5732 / 1	0.1991 / 0.4449	0.4449	1 / 1	0.5732

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**HARVEST DATA**  
**September 27, 2011**

Product(s)	Rate of Product(s)/Acre	% Moisture <sup>2</sup>	Yield <sup>2</sup> (bu/acre)
Leverage 360	2.8 fl oz	9.5	78.7
Lorsban 480EC	16 fl oz	9.6	74.9
Warrior	2.56 fl oz	9.5	77.7
Baythroid XL + Lorsban 480EC	2.0 fl oz 8.0 fl oz	9.5	77.6
Untreated	-----	9.6	76.4
Treatment Probability		0.5271	0.2572

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