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SOYBEAN: *Glycine max* (L.) 'Pioneer 93Y12'

**EFFICACY OF FOLIAR INSECTICIDES AGAINST BEAN LEAF BEETLE,
SOUTHERN CORN ROOTWORM, STINK BUG, GRASSHOPPER, LEPIDOPTERAN
CATERPILLAR AND SOYBEAN STEM BORER IN SOYBEAN, 2010**

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Bean Leaf Beetle (BLB): *Cerotoma trifurcata* (Förster)

Southern Corn Rootworm (SCR): *Diabrotica undecimpunctata howardi* Barber

Brown Stink Bug (BSB): *Euschistus servus* (Say)

Green Stink Bug (GSB): *Acrosternum hilare* (Say)

Grasshoppers (GHOP): *Melanoplus* spp.

Soybean stem borer (SSB): *Dectes texanus texanus* LeConte

Caterpillars (CAT): Lepidoptera: Arctiidae/Noctuidae

Beneficial Lady Beetles (LB): Coleoptera: Coccinellidae

A field study was conducted at the University of Nebraska's South Central Ag Laboratory near Clay Center, NE to evaluate the effectiveness of foliar-applied insecticides against soybean insect pests during 2010. Experimental design was a RCB with 4 replicates. Plot size was 16 rows x 420 ft length (N-S orientation) in 30-inch row spacing. Soybean variety 'Pioneer 93Y12' was planted at a seeding rate of 140,000 seeds per acre on 28 May. A sweep net (25 sweeps/plot) was used to sample insect populations. The number of BLB adults, SCR adults, BSB adults and nymphs, GSB adults and nymphs, GHOP adults and nymphs, SSB adults, CAT and beneficial LB adults and nymphs were recorded. Pre-treatment (PRE) insect populations were sampled on 29 Jul. Foliar liquid insecticide treatments were applied on 29 Jul. Treatments were broadcast over the plant canopy in an 18.1 gpa water solution via a 20-inch nozzle spacing @ 25 psi. Post-treatment insect populations were sampled 4 DAT (02 Aug), and 1, 2 and 3 WAT (05 Aug, 12 Aug and 19 Aug). Plots were machine harvested on 30 Sept. Percent

moisture and lbs of grain were recorded and corrected to 60 lbs/bu @ 13% moisture. Data were analyzed by ANOVA with mean separation using differences of least square means ($P = 0.05$).

Insect pest populations were present at moderate to low levels. Baythroid XL and Leverage 360 significantly reduced BLB populations 4 DAT compared to the untreated check (Table 2). Yield levels were NS influenced by the application of a foliar-applied insecticide (Table 6).

Table 1.

No./25 sweeps PRE													
Treatment/ Formulation ¹	Rate-amt form/acre	BLB	SCR	BSB		GSB		GHOP		SSB	CAT	LB	
		Adult ³	Adult ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Larva ³	Adult ³	Larva ³
Leverage 360	2.8 fl oz	11.5	21.8	0.5	0	0.8	0.0	0.8	3.8	0.0	3.0	1.3	0
Baythroid XL	2.8 fl oz	10.5	19.8	0.3	0	0.0	0.3	0.0	4.3	0.8	2.5	2.3	0
Untreated check	-----	9.5	15.0	0.3	0	0.8	0.3	0.8	5.0	0.5	1.5	2.0	0

P 0.8159 0.3146 0.7479 1 0.2441 0.6224 0.3378 0.8868 0.2746 0.7965 0.6906 1

Table 2.

No./25 sweeps 4 DAT													
Treatment/ Formulation ¹	Rate-amt form/acre	BLB	SCR	BSB		GSB		GHOP		SSB	CAT	LB	
		Adult ²	Adult ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Larva ³	Adult ³	Larva ³
Leverage 360	2.8 fl oz	2.3 a	3.5	0.0	0	0.3	0.3	0.3	2.0	0	0.0	0.3	0.5
Baythroid XL	2.8 fl oz	2.8 a	4.8	0.3	0	0.3	0.3	0.5	2.5	0	0.0	0.3	0.0
Untreated check	-----	9.3 b	7.5	0.3	0	0.3	0.5	1.0	1.0	0	1.5	0.3	0.0

P 0.0239 0.0950 0.6224 1 1.0000 0.8240 0.6892 0.4219 1 0.1664 1.0000 0.1250

Table 3.

No./25 sweeps 1 WAT													
Treatment/ Formulation ¹	Rate-amt form/acre	BLB	SCR	BSB		GSB		GHOP		SSB	CAT	LB	
		Adult ³	Adult ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Larva ²	Adult ³	Larva ³
Leverage 360	2.8 fl oz	8.5	9.3	0.3	0	0.0	0.0	0	2.8	0	0.0 a	0.0	0.0
Baythroid XL	2.8 fl oz	13.5	5.8	0.0	0	0.3	0.3	0	2.8	0	0.0 a	1.3	0.3
Untreated check	-----	12.3	5.0	0.0	0	0.3	0.0	0	2.0	0	1.0 b	0.3	0.3

P 0.3481 0.0873 0.4219 1 0.6224 0.4219 1 0.7164 1 0.0370 0.1780 0.6224

Table 4.

No./25 sweeps 2 WAT													
Treatment/ Formulation ¹	Rate-amt form/acre	BLB	SCR	BSB		GSB		GHOP		SSB	CAT	LB	
		Adult ²	Adult ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Larva ²	Adult ³	Larva ³
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 ab	0.5	0
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 a	0.0	0
Untreated check	-----	4.8 a	5.0	0.0	0	0	0.0	1.0	1.0	0.0	1.8 b	0.5	0

P 0.0112 0.1474 0.4219 1 1 0.4219 0.2441 0.7164 0.4219 0.0333 0.2963 1

Table 5.

No./25 sweeps 3 WAT													
Treatment/ Formulation ¹	Rate-amt form/acre	BLB	SCR	BSB		GSB		GHOP		SSB	CAT	LB	
		Adult ³	Adult ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Nymph ³	Adult ³	Larva ³	Adult ³	Larva ³
Leverage 360	2.8 fl oz	9.8	2.8	0.5	0.0	0	0	0.5	1.3	0	0.5	0	0
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 check	-----	15.5	2.0	0.0	0.5	0	0	1.0	0.5	0	0.5	0	0

P 0.4400 0.7674 0.5694 0.2746 1 1 0.3227 0.5227 1 0.4219 1 1

Table 6.

Treatment/ Formulation ¹	Rate-amt form/acre	% Moisture ³	Yield (bu/acre) ³
Leverage 360	2.8 fl oz	10.6	68.2
Baythroid XL	2.8 fl oz	10.7	67.0
Untreated check	-----	10.6	64.9

P 0.7996 0.0544

¹Treatments were broadcast over the plant canopy in an 18.1 GPA water solution via a 20-inch nozzle spacing @ 25 psi on 29 Jul.

²Means in column followed by the same lowercase letter are NS different using the differences of least square means (MIXED; p|t|>0.05).

³Means in column are NS different using the differences of least square means (MIXED; p|t|>0.05)

Part II. Materials Tested for Arthropod Management

(F)

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Trade Name	Formulation	Common Name	Composition	Manufacturer
Baythroid	XL	beta-	reaction mixture comprising the enantiomeric pair (<i>R</i>)-	Bayer AG

		cyfluthrin	α -cyano-4-fluoro-3-phenoxybenzyl (1 <i>S</i> ,3 <i>S</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate and (<i>S</i>)- α -cyano-4-fluoro-3-phenoxybenzyl (1 <i>R</i> ,3 <i>R</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate in ratio 1:2 with the enantiomeric pair (<i>R</i>)- α -cyano-4-fluoro-3-phenoxybenzyl (1 <i>S</i> ,3 <i>R</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate and (<i>S</i>)- α -cyano-4-fluoro-3-phenoxybenzyl (1 <i>R</i> ,3 <i>S</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	Agriculture Division P.O. Box 4913, Hawthorn Road Kansas City, MO 64120
Leverage	360	imidacloprid and beta-cyfluthrin	(<i>E</i>)-1-(6-chloro-3-pyridylmethyl)- <i>N</i> -nitroimidazolidin-2-ylideneamine AND reaction mixture comprising the enantiomeric pair (<i>R</i>)- α -cyano-4-fluoro-3-phenoxybenzyl (1 <i>S</i> ,3 <i>S</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	Bayer AG Agriculture Division P.O. Box 4913, Hawthorn Road Kansas City, MO 64120

			<p>and (<i>S</i>)-α-cyano-4-fluoro-3-phenoxybenzyl (1<i>R</i>,3<i>R</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate in ratio 1:2 with the enantiomeric pair (<i>R</i>)-α-cyano-4-fluoro-3-phenoxybenzyl (1<i>S</i>,3<i>R</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate and (<i>S</i>)-α-cyano-4-fluoro-3-phenoxybenzyl (1<i>R</i>,3<i>S</i>)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate</p>	
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