Evaluation of Insecticides for Soybean Aphid Control

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Objective

To determine the benefits of insecticide application to soybeans for control of soybean aphids.

Background

Soil Type:	Hoytville clay
Drainage:	Tile- nonsystematic
Previous Crop:	Corn
Tillage:	fall disk/ripper; spring field cultivate (2x)
Soil Test (2005):	pH 6.7, P 30 ppm, K 169 ppm
Fertilizer:	390 lb/A 4-18-39 surface broadcast (Fall 2004)
Herbicide:	
PRE(May 17):	14 oz/A Define SC + 8 oz/A Sencor DF + 2.1 oz/A Sceptor
POST(June 20):	16 oz/A Flexstar + 8 oz/A Select + 17 lb/100 gallons AMS + 1% v/v COC
Variety:	Garst D308
Row width:	15 inches
Planting Rate:	190,000 seeds/A
Planting Date:	May 17, 2005
Harvest Date:	October 4, 2005

Methods

This study consisted of four treatments replicated two times in a complete randomized block design. The insecticides tested represent only a portion of the insecticides approved for spraying soybeans for aphid control. Space limitation and availability of product in our inventory were the factors that determined insecticides tested and number of replications. The treatments are as follows:

1. Asana XL @ 6.4 oz/acre
2. Lorsban 4E @ 1.0 pt/acre
3. Warrior @ 3.2 oz/acre
4. Untreated check

All applications were made (August 2) with an Application Systems ground sprayer operated at 45 psi application pressure in 15 gallons per acre spray volume. Turbo TeeJeet wide angle flat spray tips (TT11002) on 15 inch spacing were used for all applications. Application timing was based on scouting of the field to determine when aphid populations exceeded the economic threshold level of >250 aphids per plant with populations still rising. Soybean plant development was R4 at time of application. Plot size was 45 feet wide by 350 feet long.

Harvest populations (September 30) were estimated by counting the number of plants in the row on each side of a 10 foot section at three different locations in each plot. The average number of plants counted per 10 feet was converted to plants per acre. Yields were determined by harvesting each plot with a John Deere 6620 combine equipped with a calibrated AgLeader PF3000 yield monitor. The entire plot was harvested due to the relatively small size of the plots. Plot weights were measured with a calibrated weigh wagon and moistures were taken from the combine yield monitor. All yields were adjusted to a 13% moisture standard.

Results

Table 1. Soybean harvest population, moisture, and yield means for each treatment.

Treatment	Harvest Population	Moisture	Yield
	(plants/A)	(%)	(bu/A)
Asana XL @ 6.4 oz/A	153,300	10.2	66.7 a
Lorsban 4E @ 1.0 pt/A	147,800	10.5	65.0 b
Warrior @ 3.2 oz/A	144,900	10.4	66.4 a
Untreated Check	149,300	10.3	62.3 c
LSD (P=0.05)	NS	NS	1.2
F-test	2.1	1.5	56.5
CV (%)	2.3	1.4	<1

NS= not significant

Summary

Results of this study indicate a statistical difference in yield between the treatments with all insecticide treatments being better than the untreated check. There was also a statistical difference in yield for the Asana XL and Warrior as compared to Lorsban 4E. Spot checks of the plots for aphid control taken 3 weeks after insecticide applications were made indicated >325 aphids/plant in the untreated checks, an average of 13 aphids/plant in the Lorban 4E plots, an average of 3 aphids/plant in the Asana XL plots, and 0 aphids/plant in the Warrior plots. These spot check counts appear to indicate the Warrior and Asana XL may have better residual control for aphids than Lorban 4E. There were no statistical differences for soybean harvest populations or moistures between the treatments.

Economic analysis indicates a positive return on investment for spraying insecticides for aphid control. This economic analysis is based on 2005 in-season prices for insecticides and $5 per bushel for soybeans.

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