

Soybean Aphid *Aphis glycines* Matsumura (Homoptera: Aphididae) Insecticide Performance in O'Brien County, Iowa

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Introduction

In 2005, the soybean aphid reached economic populations in many Iowa counties. A frequent question from growers has been, "What product offer the highest level of control of soybean aphids under Iowa conditions?" To help answer this question we established a replicated field experiment at the Northwest Research Farm located in O'Brien County, Iowa.

Materials and Methods

Seven products or combinations of products were evaluated. Eight treatments (Table 1) were replicated four times in a randomized complete block design. Effectiveness of the treatments on aphid populations was determined by sampling consecutive plants at a randomly selected location. Plant counts were taken at one-week intervals starting after insecticides were applied on July 29 and ending on September 2. The mean number of aphids/plant was used to calculate the aphid days for each treatment.

Aphid days = [mean aphids/plant at previous date + current mean aphids/plant/2] × number of days between sampling.

Summing the aphid days accumulated during the growing season (cumulative aphid days) provides an estimate of the total aphid exposure that a soybean plant experienced. All treatments were harvested on October 7. Plots were grown using conventional production practices (Table 2).

Results and Discussion

Insecticide treatments did impact aphid populations (Figure 1). All insecticides impacted cumulative aphid days ($F=40.17$, $df=7, 21$, $P<0.0001$). However, they did not significantly impact yields compared with the control. Aphid populations were low at the time of insecticide application (16 aphids/plant), and yields ranged from a low of 51 bushels/acre (untreated) to a high of 54 bushels/acre (Proaxis). There was no difference in yield potential among labeled foliar insecticides ($F=1.3$, $df=7, 21$, $P=0.28$).

Conclusions

It is important to note that aphid populations were very low at the time of application and that aphids were still increasing when counting stopped on September 2. The products tested at the Northwest Research Farm in O'Brien County were also tested at the Northeast Research Farm in Floyd County, where we observed both population and yield responses. Aphid populations were much higher at the time of application (>200 aphids/plant) at the Floyd County farm.

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Table 1. Product rates and locations for 2005 soybean aphid efficacy trials.

Product	Formulation	Active ingredient	Rate
Control		N/A	
Orthene ¹	97 S	acephate	12 oz
Lorsban	75 WG	chlorpyrifos	0.5 lb
ProAxis	0.5 E	gamma-cyhalothrin	3.2 fl oz
Decis	1.5E	deltamethrin	1.9 fl oz
Lorsban + Baythroid	4E 2E	chlorpyrifos + cyfluthrin	16 fl oz 2 fl oz
Warrior	1 SC	lambda-cyhalothrin	3.2 fl oz
Baythroid	2E	cyfluthrin	2.8 fl oz

¹Orthene 97S is not labeled for use on soybeans in Iowa.

Table 2. Agronomic information for O'Brien County efficacy experiment.

Previous crop	Corn
Variety	K223 RR
Population	154K in 30 in.-rows
Planting date	5-20-2005
Harvest date	10-7-2005
Tillage	Conventional tillage
Insecticide application	Tractor mounted sprayer
Application date	7-29-2005
Nozzle	TeeJet 8002XR
Spacing	20"
Carrier	12 GPA
Pressure	40 PSI

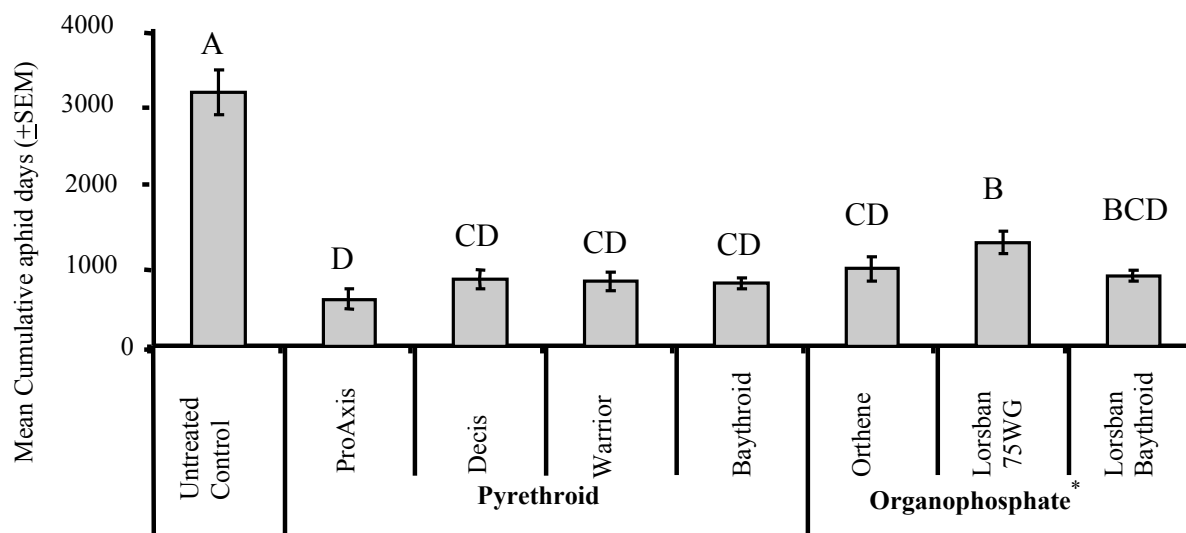


Figure 1. Effect of different insecticides grouped by mode of action on cumulative soybean aphid days after insecticide treatments were applied. Treatments were applied on July 29. Means labeled with a unique letter were significantly different ($P=0.05$).

* Lorsban Baythroid is a tank mix consisting of an organophosphate (Lorsban) and a pyrethroid (Baythroid).