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Abstract
We investigated the importance of insecticide coverage as it relates to tank mixes of insecticides with postemergent herbicides. Glyophosate is applied to reduce drift, with low pressure and large droplet size. We refer to this as a herbicide best practice (HBP), which is different from how insecticides should be applied for maximum aphid control. An insecticide best practice (IBP) would be an application with high pressure and small droplet size. We also compared insecticides of different classes alone and in combination. Pyrethroids have a longer residual activity, while organophosphates tend to kill more quickly. Combining these may improve efficacy.

Keywords
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Disciplines
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Introduction

We investigated the importance of insecticide coverage as it relates to tank mixes of insecticides with postemergent herbicides. Glyophosate is applied to reduce drift, with low pressure and large droplet size. We refer to this as a herbicide best practice (HBP), which is different from how insecticides should be applied for maximum aphid control. An insecticide best practice (IBP) would be an application with high pressure and small droplet size. We also compared insecticides of different classes alone and in combination. Pyrethroids have a longer residual activity, while organophosphates tend to kill more quickly. Combining these may improve efficacy.

Materials and Methods

We used a completely randomized block design with four replications of five treatments. Plots measured 150 ft long by 15 ft wide. Soybeans (FS 3616 RR) were planted on May 21 using a no-till planter in15 in. rows at 190,000 seeds/acre.

The five treatments included: 1) untreated control, and the following applied using our IBP; 2) 24 oz Lorsban (chlorpyrifos); 3) 2 oz Baythroid (cyfluthrin) and 4 oz Lorsban (chlorpyrifos); and 4) 3.2 oz Warrior **(**lambda-cyhalothrin). A final treatment of Warrior (3.2 oz) was applied using HBP. We applied treatments 2, 3, and 4 using 20 gallons of water/acre as carrier. Nozzles used were TeeJet 11002 twin jet on 20 in. spacing at 40 PSI (IBP). Treatment 5 was applied using 10 gallons of water/acre as carrier using TeeJet 8001 XR on 20 in. spacing at 20 PSI (HBP).

Initial aphid counts were taken on August 6, 2004, the day treatments were applied. All treatments were applied using a 15 ft three-point mounted sprayer. The boom height was set at 6 in. above the canopy, and the ground speed was about 3.2 miles/hour. Subsequent aphid counts were taken 6, 14, and 21 days after treatment.

The average number of aphids/plant was calculated at each visit by counting all the aphids on five randomly selected plants from each plot. This average was added to the previous week's average and divided by the number of days between samples to calculate aphid days.

Plots were harvested mechanically with a combine on November 9 and yields are reported in kg seed/acre (Table 1).

Results and Discussions

Accumulated aphid days between the treatments postinsecticide were significantly different (Figure 1). The organophosphate insecticide Lorsban provided a similar level of protection when applied alone or with a pyrethroid Baythroid. In comparison, a second variety of pyrethroid (lambda-cyhalothrin, Warrior) provided equivalent protection but was compromised when applied with suboptimal protection (Figure 1). These results suggest the type of insecticide used may not be as important as how it is applied. Although there were no yield differences between treated and untreated plots in 2004 (Table 1), we did observe the lowest seed weights in the untreated control and HBP applied insecticide.

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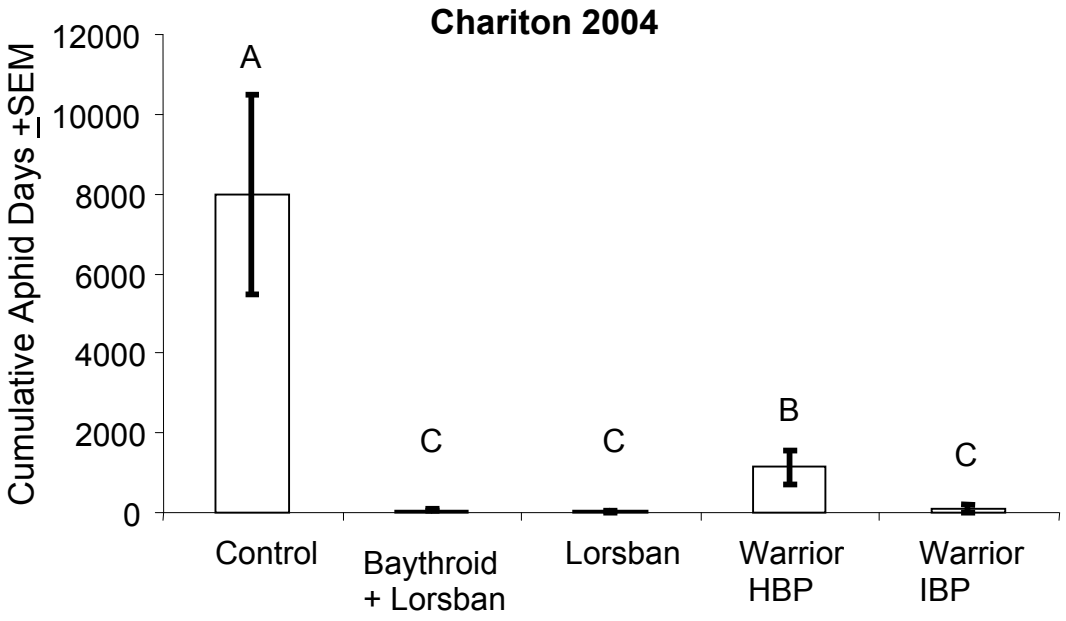

Figure 1. The effect of insecticide application techniques on cumulative aphid days. Means labeled with a unique letter were significantly different (P=0.05).

Table 1. Yield effect of insecticide application techniques. Row one reports the average yield in kg seeds/acre. There is no difference in the yield. Row two reports the average seed weight in grams/100 seeds. Means labeled with a unique letter were significantly different (P=0.05).

	Control	Baythroid + Lorsban	Lorsban	Warrior HBP	Warrior IBP
Kg seed / acre	1,025 kg ± 53 C	1,027 kg ± 43 AB	1,069 kg ± 49 A	978 kg ± 36 BC	1,031 kg ± 40 ABC
Average 100 Seed weight	14.53 g ± 0.42	15.85 g ± 0.43	16.15 g ± 0.53	15.01 g ± 0.34	15.39 g ± 0.37