



Soybean aphid control using insecticides

Chris DiFonzo, PhD, MSU Department of Entomology

If soybean aphids are a problem this season, what can you do? Scouting for aphids is the first step. Optimal aphid control, and yield return, depends not only on insecticide application, but on the timing and method of application.

Insecticide Efficacy: Certain insecticides do have greater efficacy (kill) than others. Lorsban 4E, an organophosphate, exhibits a 'fumig' action, especially under high temperatures. This greatly improves coverage under a tall canopy, or in drilled beans. Furadan, a carbamate, is systemic. Aphids are exposed to the insecticide not only through contact, but as they feed on plant sap. Warrior has provided the most consistent control of all of the pyrethroid insecticides, across many university efficacy trials.

Efficacy vs. yield: Differences in insecticide efficacy do not necessarily translate into yield differences. Significant yield differences often occur between sprayed and unsprayed plots, but not necessarily between individual insecticides. One exception to this is Dimethoate, an organophosphate with some systemic activity. Although it performed adequately in some trials, it often has significantly lower yield than other insecticides.

Other insecticide issues: Besides efficacy, insecticides used for soybean aphid control differ in other ways.

As far as human safety, organophosphates [Dimate, Lorsban, Penncap] and carbamates [Furadan] are generally more hazardous than pyrethroids [Asana, Baythroid, Mustang, Warrior]. However, any insecticide can cause health problems if mis-used, and applicators can reduce exposure by following PPE guidelines on the pesticide label.

If spraying in August, check labels for pre-harvest intervals. PHIs for commonly used products range from 21 (Mustang) to 28 (Lorsban) to 45 (Warrior) days. However, if sprays are properly timed (see below), the chance of running into the PHI is less.

All of the insecticides mentioned in this article are restricted use, with the exception of dimethoate, and require the applicator to be certified.

All of the conventional insecticides kill beneficial insects that are present in the field.

Therefore insecticide should be chosen based on a combinations of factors - not only efficacy, but also safety, price, availability, and pre-harvest interval. Once a choice is made, spray timing and coverage are the most critical factors in SBA control and yield response.

Making insecticides work harder for you

Spray timing: Applications which are properly timed lead to greater and more consistent yield gains than sprays made later in the season. On-farm strip-tail data from Iowa, Minnesota, and Michigan show that fields sprayed later in August tend to have a smaller gain in bushels per acre compared to fields sprayed in late July or early August.

The chance of no yield advantage in sprayed fields also increases later in the season. Optimum timing by calendar date is related to plant stage. We know that heavy aphid feeding causes flowers and small pods to abort (reducing the number of pods per plant), and competes with the plant for nutrients (reducing the number and size of beans per pod). Therefore, protecting flowers (stages R1-R2) and developing pods (stage R3-R4) increases yield. These soybean stages usually occur from mid-July into early August.

Spray methods: When spraying for aphids, keep three goals in mind - Coverage, Coverage, and Coverage! Applications that are optimized for coverage use increased pressure, more gallons per acre, and smaller droplets. There are also specific nozzle types designed for insecticide applications that improve spray coverage. Poor coverage may explain some of the problems with certain applications in 2003. Remember, unless a product is systemic, conventional insecticides kill aphids by contact. Remember too that soybean aphids are found on the undersides of leaves, and they are all females producing quickly without mating. If coverage is poor, aphids left behind after the application can rapidly reproduce and recolonize the plant.

Tank mixing: There is a lot of interest in tank mixing glyphosate with insecticide to save trips across the field. While there are no crop injury or compatibility problems I foresee from such a practice, the optimal timing and method of application probably differs between the herbicide and the insecticide.

The optimal timing for aphid control usually occurs between mid-July and early August, after the optimal timing for glyphosate in soybean at a 4-inch weed height.

Insecticide applications should maximize coverage (see above), while glyphosate applications should maximize drift control (lower pressure, larger droplet size, drift control agents, and different nozzles).

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