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Survey: Are insecticide/herbicide tank mixes commonly used?

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Abstract
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Insects and Mites

Survey: Are insecticide/herbicide tank mixes commonly used?

by Matt O’Neal and Kevin Johnson, Department of Entomology

Last week, Carol Pilcher, Marlin Rice, and Todd Vagts reported results from several surveys conducted in 2003 illustrating the economic impact of the soybean aphid. This article presents a followup from a survey given to commercial pesticide applicators attending the Iowa State University Commercial Agriculture Videoconference during February 2005. A similar survey was given to growers throughout Iowa by Marlin Rice during winter 2004 and is part of a larger multi-state project that includes Wisconsin, Minnesota, and Michigan. We will review the results of the multi-state grower survey later in the summer.

In total, 596 responses were received from individuals representing 76 Iowa counties. Compared to 2003, we estimate that a significant reduction in insecticide use occurred in 2004. Soybean aphid populations were dramatically lower in 2004. Although soybean aphids were found in Iowa as early as June 8, few locations reported populations above 250 aphids per plant. Although not an exhaustive survey of all pesticide applicators, given that Iowa experienced lower soybean aphid populations in 2004, it is reasonable to infer from the answers to questions 1 and 2 that less than 2.9 million acres of soybeans were treated with insecticide in 2004 (see chart).

Question 3 was multi-part and asked how an insecticide targeting soybean aphid was used. More than half of those responding had treated for soybean aphids before 2004 (Question 3a), and very few needed to make more than one application. However, something of concern is the answer to the subsequent question.

Tank mixing an insecticide with Roundup was not uncommon (43%). There is interest in the potential of an insecticide applied with a postemergence herbicide to provide protection against soybean aphids. Potentially convenient, this practice has several drawbacks and is not currently recommended for managing soybean aphids. Insecticide residual activity may not be sufficient to provide adequate protection against soybean aphids that arrive in late July. This is a concern that many of you share (Question 3d) because 85 percent answered that soybean aphids could repopulate a field after a soybean field had been treated.

To date, there is little research addressing whether tank mixing an insecticide with a postemergence herbicide can control soybean aphids. In 2004, preliminary data showed that insecticide activity is affected by poor coverage. Coverage is an issue when insecticides are tank mixed with herbicides. To reduce the potential for drift, herbicides are often applied with lower pressure and larger droplet size than insecticides. Specifically, we were interested in how applying an insecticide as one would a herbicide (herbicide best practice = HBP) affects aphid control versus applications as one would an insecticide (insecticide best practice = IBP). For HBP, we applied Warrior (3.2 oz/acre) with 10 gallons of water/acre as carrier using TeeJet 8001 XR on 20 in. spacing at 20 psi. For the IBP, we again used Warrior (3.2 oz/acre) with TeeJet 11002 twin jet nozzles on 20 in. spacing at 40 psi (IBP). We compared these two treatments plus an untreated control to four replicated plots in a field that had a soybean aphid population above 250 aphids per plant. Six days after treatment, both the HBP and IBP had fewer aphids per plant than the control (738 aphids/plant), but the HBP had more aphids per plant (209 aphids/plant) than the IBP (23 aphids/plant). Although preliminary, these data
suggest that suboptimal coverage can significantly reduce the efficacy of an insecticide. Given this and the possibility that soybean aphid populations may not reach threshold (250 aphids/plant), tank mixing insecticides with a herbicide are not currently recommended for managing soybean aphids.

A little more than half of the respondents identified 250 aphids per plants (see Figure 1) as the lowest soybean aphid density for profitable spraying. This continues to be the 2005 recommendation for managing soybean aphids (regular scouting followed by an insecticide treatment if aphid populations reach an increasing average of 250 aphids/plant; visit www.soybeanaphid.info for more details). Also, nearly 20 percent responded that the threshold for treating soybean aphids depends upon several factors. This was not intended to be a “trick question,” but one could argue that this also could be considered an appropriate response. Preliminary data suggests that soybean aphid populations in later R-stage soybeans (greater than R5) may need to be higher than 250 per plant to cause economic injury. In subsequent weeks, we will explore further the prophylactic treatments, like seed treatments and herbicide/insecticide tank mixes, and the appropriate timing of an insecticide treatment for soybean aphid management.

percent responding 100
75
50
25
0

a             e                no response  b             d                         a              c and e
Answers selected

Answers:
a. 3 aphids per plant
b. 100 aphids per plant
c. 250 aphids per plant
d. >1,000 aphids per plant
e. Depends on several factors

**Figure 1. Responses to the question, “What is the lowest aphid density for profitable spraying?”**

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**General tips for submitting plant samples* to the Plant Disease Clinic**

- Provide plenty of plant material. When possible send the entire plant, including roots and top growth.
- Provide lots of information, such as a description of the soil, nearby plants, cropping history, pattern of symptoms in the field, and a history of the problem. Remember to include information about chemicals used.
- Include photos when possible.
- Provide freshly collected specimens.
- Be sure the specimen represents the problem.
- Include enough plant material to show all stages of the disease from healthy to very sick.
- Wrap specimens in paper towels or clean newspapers. Do not add moisture. Pack loosely in a plastic bag to reduce drying. Mail in a sturdy container.
- A $10 fee is charged for plant samples. Soil samples (to check for soybean cyst nematode or complete nematode counts, including corn nematodes) cost $15 for Iowa residents and $20 for out-of-state residents. Checks should be made payable to Iowa State University.

*When herbicide injury is suspected, the samples should go to the extension weed specialists (see www.extension.iastate.edu/Publications/AG146.pdf).

**Corn smut galls on corn. (Paula Flynn)**

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