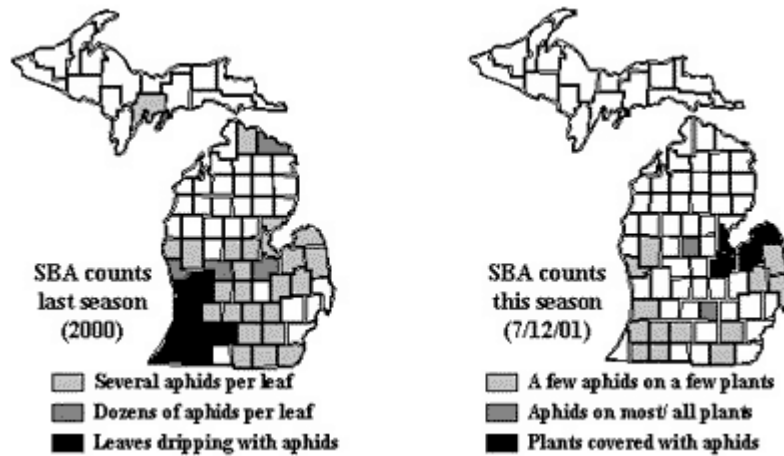


Soybean aphid sampling, control recommendations

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It has already been an interesting summer sampling for soybean aphid in certain parts of the state. Accompanying this article are Michigan maps (see Figure 1 and Figure 2 below) showing SBA numbers in soybeans last year in August (2000) and what I currently know about SBA numbers this season. Darker shading on the map indicates a higher population of aphids, as found by my lab or reported by extension agents, agribusiness, etc.



In 2000, the "hot spot" for SBA was the southwest part of the state. In those counties, fields had plants covered with aphids, honeydew, sooty mold and many beneficial insects. Plant damage was evident, including leaf curling, stunting, poor pod fill, and virus infection. Recall that in 2000, I did not see SBA until August, so I am not sure what went on in the early part of the season.

This year, the heaviest infestations of SBA are reported from **the Thumb**. Scouts and agents are already seeing aphids covering plants from top to bottom and leaves covered with sticky honeydew. This week I had the first report of noticeable foliar symptoms; entomologists in Ontario, Canada also report symptoms. Herbicide injury, which can also produce crinkling, cupping and yellowing of leaves, confounds symptom identification. Before you assume aphids are the cause of leaf symptoms, it is a good idea to find out the herbicide history of the field.

The real difficulty in the SBA situation lies in making **control recommendations**. The mere presence of SBA is not a reason to treat – aphids can probably be found in any soybean field in the state with enough scouting. Soybean, like most other field crops, appears to tolerate considerable aphid numbers. Soybean fields with even 100 percent of the plants infested are not showing damage symptoms, and in most cases, are rapidly being colonized by numerous natural enemies plus a pathogenic fungus (see Fox/ Landis article). For example, Mark Hanson, extension agent

in Ingham County, found fields in the Mason area infested with 25 to 100 aphids per plant. Five to ten days later, the ladybird larvae population had increased, numbers of aphids seemed to go down, and it was harder to find leaflets dripping with aphids. The field was not sprayed. The message for most of the state is "**do not spray, let natural enemies stay.**"

The **exception** to this policy is the Thumb region. Aphid infestation is tremendous in some fields with every plant covered with aphids. Natural enemies are present but do not appear to be keeping up with aphid population growth. A fungal pathogen is also present but is not widespread enough to decrease the aphids significantly. And most important, it is very dry – plants are starting to be water stressed, and other sucking pests, such as mites, are increasing and causing problems. It is difficult to believe that water-stressed plants covered from top to bottom with sucking aphids are not sustaining damage. If it rained, plants would not be as stressed and may tolerate more aphids, and a fungal outbreak might wipe out a large number of aphids. However, we can't say for sure when or if this will happen. In this particular situation, spraying may be justified.

Any insecticide registered for use on soybean against foliar pests can be used for soybean aphid. Several products are being used in the Thumb against SBA, including dimethoate, Asana, and Warrior. These insecticides reduced aphid numbers in a strip trial in 2000. However, this trial was not replicated, it was conducted late in the year, and the applications were made just as a fungal outbreak started (hence treatment was not justified).

Some important things to remember if you choose to spray

Coverage is critical: SBAs are on the undersides of leaves and in the hairy tips of plants. Thus, coverage must be good to deliver insecticide to the insect.

Application: A ground rig probably will get better coverage than an aircraft. Increasing spray pressure will move the canopy around and get more product on undersides of leaves.

Beneficials will DIE: All OPs, carbamates, and pyrethroids registered for use on soybean will **kill** natural enemies such as ladybugs, pirate bugs, and wasps.

Spraying may INCREASE aphids in the long run: Eighty percent control may be good enough for pests like corn borer, but that is not good enough for aphids. SBAs currently infesting fields are all **female**. They give **live birth** to nymphs that will begin to feed almost immediately. Nymphs **mature in a matter of days** and produce more babies. Females produce up to **ten nymphs per day**, maybe more. Therefore, killing 80 percent of the aphids

isn't good enough because the population can increase again very rapidly. Couple poor control with the killing of beneficials, and you have the makings of an **aphid outbreak** with populations higher than when you originally sprayed. Essentially, the aphids left after spraying are "released" from biological control. For example, for my research project in graduate school, I achieved super-high numbers of aphids in potato by treating plots weekly with insecticide. I do not know for sure if soybean aphid will respond this way to insecticide spraying, but a potential increase is something to be aware of.

One final recommendation if you choose to treat – leave **unsprayed check strips** throughout the field. These strips can be harvested using a yield monitor at the end of the season, providing data on the efficacy of the insecticide. More importantly, the unsprayed strip (if it is wide enough to avoid drift) may act as a refuge for beneficial insects. Hopefully, beneficials from these strips can better recolonize treated areas of the field and reduce the chance of aphid increases after spraying.

A strip trial using dimethoate was sprayed on July 10 at the Bean and Beet Farm. We will be evaluating the trial on July 13 and will post the results at: http://www.msue.msu.edu/ipm/CAT01_field/FC07-12-01.htm