8-6-2007

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Abstract
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Keywords
Entomology

Disciplines
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Whiteflies in Iowa soybeans

by Marlin E. Rice, Department of Entomology

I fielded a dozen calls regarding whiteflies in Iowa soybeans during the week of July 30-August 3. This insect is probably the sweetpotato whitefly, *Bemisia tabaci*, but its identification has yet to be confirmed. The primary concern expressed by the callers seems to be whether this insect can cause yield loss in soybeans, either by themselves or in concert with soybean aphids. Almost nothing is known about them in Midwestern soybeans, but Mike Gray, University of Illinois, did report them from soybeans in 1999 in that state. I reported them from Iowa soybeans last year in this newsletter.

Whiteflies, which are somewhat similar to aphids, have a high reproductive potential and are notorious for quickly developing resistance to insecticides. For these two reasons, whiteflies have historically been major pests of greenhouse plants, commercial vegetables, and cotton. They have caused economic damage to soybeans in southeastern Australia, where 25 percent yield losses have been documented. In the United States, whiteflies have infested soybeans in Florida and Georgia where their populations also have caused yield reductions. Yield loss comes from sap removal, extensive sooty mold on the leaves, honeydew produced by the insects, and incomplete soybean pod filling. Whiteflies in Midwestern soybeans are not considered to be serious pests, but their abundant populations this year have captured the attention of many crop scouts. Whiteflies have been recorded from more than 500 plant species. If you've never seen whiteflies, one of the easiest places to observe them during August is on the underside of velvetleaf (buttonweed) leaves.

Top: Adult whiteflies (right) next to soybean aphid nymphs. Bottom: Adult whiteflies on soybean. (Marlin E. Rice)

Whitefly nymphs, which are called crawlers, and adults have piercing and sucking mouthparts. They can be found on the undersurface of leaves in soybean fields. Once the first-stage crawler has found a place to settle down and feed, it becomes immobile (i.e., it stops crawling!) through the remaining three nymphal stages. The crawlers and adults remove sap from the plant and will produce honeydew where sooty mold may then develop. Whiteflies inject saliva and/or enzymes into soybean plants and large populations may result in the development of chlorotic leaf spots, wilted leaves, and stunted plants. However, none of these symptoms in soybeans has been reported to me this year.

Whitefly crawlers may resemble soybean aphids, but they lack visible antennae, long legs, cornicles (tailpipes), and are powdery white in color. (Marlin E. Rice)

There are no economic thresholds for whiteflies in Midwestern soybeans. The combination of two-spotted spider mites and soybean aphids may complicate treatment decisions in soybeans if these other two pests are below their respective economic thresholds. Obviously, there are no guidelines for considering all three pests in the same field, but, until we have a better understanding of whitefly damage potential in Iowa soybeans, my recommendation is to not spray solely for this insect. Insecticides applied to this insect have caused chemical resistance in other regions, which has led to whitefly "flare ups," similar to what we sometimes witness with two-spotted spider mites in Iowa. It could be after spraying millions of soybean acres for soybean aphid control during the last six years, along with the resident populations of velvetleaf where whiteflies also reside, that we have either created resistant populations or enhanced the resistance that already existed in the population. This may be a partial reason why the insect is so abundant this year.

If you believe you have plant damage from this insect, you can send digital images to me (merice@iastate.edu) for an opinion. The difficulty in assessing whitefly damage, however, is that plant stunting and honeydew from soybean aphids will complicate, if not completely obscure, whitefly injury.

Marlin E. Rice is a professor of entomology with research and extension responsibilities in field and forage crops.

This article originally appeared on page 249 of the IC-498(22) -- August 6, 2007 issue.

Updated 08/10/2007 - 1:43pm