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That soybean pest mite not be an aphid: Spider mites infest dry Iowa

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Abstract

With the continued hot, dry weather conditions, especially in eastern Iowa, there is growing need to scout soybeans. Reports are coming in of soybean fields suffering from spider mites as well as isolated fields with more than 250 soybean aphids per plant. Growers should be aware of the similarities and differences between these two pests, and adjust their management plans accordingly. Below I highlight some of these differences and suggest some options for managing these pests where they may occur in combination.

Keywords

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INTEGRATED CROP MANAGEMENT

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Mites and aphids--similarities and differences

Two-spotted spider mites (*Tetranychus urticae*) and soybean aphids (*Aphis glycines*) both feed on soybean leaves but have very little in common. Spider mites are not insects but eight-legged arthropods more closely related to spiders. Unlike soybean aphids, which feed on a limited number of plant species, spider mites can be found on many different plants. Both soybean aphids and spider mites feed on soybeans with piercing, sucking mouthparts. However, aphids feed deeper into the plant's vascular system. Mites are smaller with mouthparts designed to pull fluid directly from plant cells. As a result of these differences, mite damage results in the leaf turning yellow and the surface curling. During heavy spider mite infestations, leaves will drop off the plant. Aphid feeding does not result in the leaf turning yellow. Heavy aphid infestations can change the color of leaves, with leaves looking dark gray or even black. This is due to honeydew (a sugary, sticky substance excreted by aphids) being infested with sooty mold.

Although both spider mites and aphids are small, they are capable of moving great distances. Mites are readily blown by wind, so initial colonization often occurs along the direction of prevailing winds. Landscape features that disrupt air flow (tree lines, houses, or even telephone poles) can help spider mite populations establish. Cool, humid conditions promote growth of fungal diseases that prevent spider mite outbreaks. Infestations usually start on dusty edges of fields. It is thought that dust dries the leaf surface, protecting mites from disease, or perhaps that the dust provides a surface for the mites to anchor webs.

Infestations of both spider mites and aphids can begin in spotty, isolated areas of a soybean field. However, under certain conditions both pests can spread across large areas. For example, in 2003, nearly 3 million acres were treated for soybean aphids in Iowa and during the dry summer of 1988, nearly 3 million acres were treated for spider mites in Iowa. Spider mite infestations typically occur on field perimeters and can eventually spread throughout a field. Scouting for both pests will require surveying both field edges and interior. It is recommended that growers who are scouting for aphids make an extra effort to survey the

entire field, looking for symptoms of spider mite infestations. Note that yellowing of soybean leaves alone is not sufficient to confirm spider mite infestations; yellowing can be caused by nutrient deficiencies as well as some plant diseases. Growers should confirm that these symptoms are due to spider mites by collecting leaf samples and looking for the mites on the underside of leaves (see the [other article in this issue \[1\]](#) for further details).

Several insecticides are recommended for managing spider mites and soybean aphids, with some products appropriate for both pests. During dry conditions growers are warned to avoid pyrethroids when spraying for other insect pests as these active ingredients tend to flare spider mites. Given the current conditions, if a grower needs to treat a field for soybean aphids that is at risk for a spider mite outbreak, then they may want to consider an organophosphate. Two organophosphates are recommended for spider mites, Chlorpyrifos (Lorsban) and Dimethoate. Efficacy trials from [Michigan State University](#) and the [University of Minnesota \[2\]](#) suggest that *Dimethoate provides limited control of soybean aphids. Compared to other organophosphates, Dimethoate has a reduced initial kill rate and residual time, which can lead to resurgence of soybean aphids. Chlorpyrifos (Lorsban) has been shown to be effective against soybean aphids, providing very good, immediate kill. Therefore, if a grower's field is at threshold for soybean aphids (250 aphids per plant) and the conditions are favorable for spider mite outbreaks, they may want to consider chlorpyrifos for its ability to control both pests. Note that soybean fields that have received adequate rainfall will have a reduced risk for spider mites and therefore both organophosphates and pyrethroids would be appropriate for soybean aphid management.*



Soybean leaf showing the early symptoms of stippling from spider mite feeding.



Spider mite injury can be spotty, ranging from severe on the edge of the field to being unnoticeable in another section of the same field.

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[2] http://www.ipm.msu.edu/CAT01_fld/FC07-12-01dimethoate.htm