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## Recent study brings "good news" about the soybean aphid

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## Recent study brings "good news" about the soybean aphid

### **Abstract**

Increased activity of bean leaf beetles and soybean aphids in Iowa soybean fields has challenged many of us over the last five years. Not just because of the sap feeding and leaf defoliation that can cause significant yield loss but also because we are dealing with another yield robber that we often can't see. Iowa soybean fields can be infected with bean pod mottle and soybean mosaic viruses that are transmitted by bean leaf beetles and soybean aphids, respectively. The challenge that we are dealing with is, first of all, we can't always see that we have a virus in soybean, and yield loss caused by viruses can occur even when symptoms are not apparent!

### **Keywords**

Plant Pathology, Agronomy

### **Disciplines**

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Entomology | Plant Pathology

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## Recent study brings "good news" about the soybean aphid

*by John H. Hill, Department of Plant Pathology, and Palle Pedersen, Department of Agronomy, Iowa State University; and Craig R. Grau, Department of Plant Pathology, and Eileen Cullen, Department of Entomology, University of Wisconsin-Madison*

Increased activity of bean leaf beetles and soybean aphids in Iowa soybean fields has challenged many of us over the last five years. Not just because of the sap feeding and leaf defoliation that can cause significant yield loss but also because we are dealing with another yield robber that we often can't see. Iowa soybean fields can be infected with bean pod mottle and soybean mosaic viruses that are transmitted by bean leaf beetles and soybean aphids, respectively. The challenge that we are dealing with is, first of all, we can't always see that we have a virus in soybean, and yield loss caused by viruses can occur even when symptoms are not apparent! Previously, virus in soybean was often associated with leaf symptoms and hilum bleeding (seed coat mottling) that can be caused by both viruses, and whose symptoms are not distinguishable from each other in the field. Because of checkoff-funded research, we have moved forward to a point today where we can confirm if a virus is present without unreliable phenotypic/visual symptoms. Only a laboratory test can determine if, or which, virus is present. The two viruses are very different; however, bean pod mottle is primarily transmitted by the bean leaf beetle, and soybean mosaic is transmitted by approximately 32 different species of aphids, including the soybean aphid.

In Iowa, bean pod mottle has been the major problem, but there is concern about soybean mosaic virus because of the increase in soybean aphid activity in the state. Both viruses can be significant yield robbers. If plants are infected by both viruses at once, loss can be very significant because of a synergistic effect. Further, because the soybean aphid is the first aphid that can colonize soybean in North America and, as a result, reach very high populations, speculation has focused on potential for significant increase in disease caused by this virus.

A recent cooperative study, funded by checkoff dollars, had experimental locations situated in both Iowa and Wisconsin. It was conducted to determine if foliar application of insecticide recommended to suppress aphid populations would also reduce disease caused by soybean mosaic virus. Data showed that disease control cannot be obtained, even though aphid populations were suppressed well. The reason is that the insecticide does not eliminate potential impact of the numerous aphid species immigrating into the soybean field, including spring migrants of the soybean aphid, from transmitting the virus.

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Since previous studies conducted in Iowa before the introduction of the soybean aphid showed rapid spread of soybean mosaic virus by an array of diverse migratory aphid species, the migratory form of the soybean aphid is just added to the menagerie of aphids moving through the fields to transmit the virus.

The study also found that the colonizing form of the soybean aphid had little additional impact on disease spread, so--good news! Another way we can look at this is that it doesn't take a lot of migratory aphids to generate a problem. Introduction of the soybean aphid into Iowa is not expected to make the problem worse; however, disease management cannot be obtained through attempts to control the aphids that transmit the virus. The solution? Disease resistance. Growers are encouraged to ask their seed dealers about resistance to virus disease. Oh, yes--since we do not work in a vacuum, the study also looked at bean pod mottle virus. No control was obtained for disease caused by this virus, and data suggested that application of foliar insecticide to suppress aphids may result in enhancement of disease caused by bean pod mottle virus! Everything is interrelated. The bottom line is that you shouldn't spray an insecticide below the soybean threshold since using an insecticide will only suppress the vector but not the disease and may make the virus problem worse.

For more information about soybean aphids, bean leaf beetles, and soybean virus diseases, visit [www.soybeanmanagement.info](http://www.soybeanmanagement.info) or [www.planthealth.info](http://www.planthealth.info).

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