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New Options for Soybean Aphid Host Plant Resistance

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New Options for Soybean Aphid Host Plant Resistance

Abstract

Host plant resistance for soybean aphid is the newest management tool for yield protection. In 2010, a single gene expression, called Rag1, was commercially released in the north central region. Aphids feeding on Rag1 plants do not live as long or produce as many offspring compared to when they feed on susceptible plants. In small plot evaluations of the Rag1 gene, there is a dramatic decrease in the seasonal accumulation of soybean aphid compared to aphids developing on susceptible varieties.

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New Options for Soybean Aphid Host Plant Resistance

By Michael McCarville, Erin Hodgson and Matt O'Neal, Department of Entomology

Host plant resistance for soybean aphid is the newest management tool for yield protection. In 2010, a single gene expression, called Rag1, was commercially released in the north central region. Aphids feeding on Rag1 plants do not live as long or produce as many offspring compared to when they feed on susceptible plants. In small plot evaluations of the Rag1 gene, there is a dramatic decrease in the seasonal accumulation of soybean aphid compared to aphids developing on susceptible varieties.

While soybean aphid populations were very low across much of Iowa in 2012, it is difficult to predict what we'll see in 2013. In the past, low soybean aphid populations in even years (i.e., 2004 and 2006) were followed by high populations in odd years (i.e., 2005 and 2007). There is no guarantee that this trend will continue into next year, but farmers should still consider soybean aphids a potential pest for 2013.

The Department of Entomology at Iowa State University recently updated our [Soybean aphid-resistant varieties for Iowa](#) for the 2013 growing season. The publication lists currently available soybean seed with resistance to soybean aphid. The list is intended to assist farmers looking to adopt this new management tactic and possibly reduce their need for a foliar insecticide. The listing includes varieties in late maturity group 0 and maturity groups 1, 2 and 3.

The list contains 13 varieties from four companies. It is organized by company, with varietal information provided on the relative maturity, herbicide resistance, source of aphid resistance and resistance to other pests. Three items of interest to farmers will be:

1. **One variety with resistance to both the soybean aphid and soybean cyst nematode (SCN):** The SCN is a pervasive and serious pest of soybean in Iowa. Farmers with SCN-infested fields are encouraged to select an SCN-resistant variety.
2. **Three varieties carrying two different genes for soybean aphid resistance:** Varieties containing two soybean aphid resistance genes provide significantly better aphid control than varieties containing a single resistance gene.
3. **Organic varieties with resistance to the soybean aphid:** Organic farmers are limited in the insecticides they can use for effectively managing the soybean aphid. Organic soybean aphid-resistant varieties can provide effective control and yield protection.

The listing also contains Iowa State University's recommendations for considering soybean aphid-resistant varieties. For more information on soybean aphid management, consult [Soybean Aphid Management Field Guide 2nd edition](#). To see Iowa State University's annual evaluation of insecticide efficacy against soybean aphid, visit the [soybean aphid website](#).

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