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Promoting Sustainable Biological Control of Soybean Aphid by Examining the Effect of Biodiversity and Releases of Parasitoid Wasps

Project Title: Promoting Sustainable Biological Control of Soybean Aphid by Examining the Effect of Biodiversity and Releases of Parasitoid Wasps

Coordinator: George Heimpel

Location: University of Minnesota

SARE Grant: \$178,558

Duration: 2013-2016

To read the full project report, go to www.sare.org/projects and search for project number LNC13-353



George Heimpel's SARE grant helped support his work to discover sustainable soybean aphid solutions. Photo by the University of Minnesota.

George Heimpel and his research group at the University of Minnesota have been working on biological control of the soybean aphid since 2001. They have used a number of methods, including releases of specialized aphid parasitoids from Asia, and promoting native biological control through plant diversification strategies.

Heimpel applied for an NCR-SARE Research and Education grant in 2013, and was awarded \$178,558 to identify favorable conditions for release and establishment of the Asian parasitoid wasp *Aphelinus glycinis*, a biological control agent approved for release by the USDA.

Heimpel released *A. glycinis* at two sites of the U of MN Agricultural Experiment Station in the summer of 2013, at two organic soybean farms during the summer of 2014, and into a buckthorn stand at the U of MN Agricultural Station in St. Paul in the Fall of 2014 (buckthorn is the overwintering host of soybean aphid).



The soybean aphid is an exotic pest of soybean with a very high reproductive potential. Photo courtesy of Jim Kausch.

The research is ongoing, but Heimpel has learned that *A. glycinis* can be released into soybean fields successfully using the methods his team developed during 2013. They have also developed a sleeve cage method for assessing overwintering success and implemented it for the first time over the 2014-2015 winter.

“We have shown that *A. glycinis* can cause significant mortality of soybean aphids in the months post-release,” said Heimpel. “However, this parasitoid will need to be able to overwinter to become established in Minnesota.”

Heimpel hopes this project will lead to improved protocols for establishment of *A. glycinis*, as well as parasitoids released in other cropping systems. He says sustainable biological control of soybean aphid would lead to increased profitability, decreased exposure to insecticides, and therefore increased quality of life for growers, “This research would also be some of the very first field-based work with *Aphelinus glycinis* in North America, representing a novel and timely contribution to efforts to control soybean aphid, a damaging pest found in all 12 states in SARE’s North Central Region.”

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