

# Tiny Wasps Make ‘Mummies’ Out of Soybean Aphids

*These aerial attackers could add \$15/acre to your bottom line.*

**W**hy pay \$15 or more per acre to spray an insecticide that stops soybean aphid feeding when a pin-head-sized wasp could do the job for free? That’s the question researchers are attempting to answer with checkoff dollars from the Iowa Soybean Association (ISA) and North Central Soybean Research Program (NCSRP).

First discovered in Wisconsin in 2000, soybean aphids have been putting a sting in farmers’ pocketbooks with intense feeding that has reduced yields throughout the Midwest for several years. Now soybean farmers have an opportunity to sting back, in a project that relies on a beneficial parasitic wasp, called *Binodoxys communis*, which lays its egg inside soybean aphids. The wasp egg is a useful parasite; it hatches into a larva and feeds on the aphid from the inside out – leaving behind the dried-out aphid body shell, called a “mummy.”

“The release of this single species of parasitic wasp is just one part of a broader project designed to exploit the natural enemies that attack the soybean aphid,” explains Matt O’Neal, an Iowa State University entomologist. “In China, there are many more reports of soybean aphid parasitism by natural enemies in fields (40 percent) than in North America (less than 1 percent). Adding this type of natural enemy to the insect community in the Midwest can help reduce the need for insecticides to manage soybean aphids.”

*Binodoxys communis* is a wasp species that has been shown in the lab to attack a limited number of aphids other than the soybean aphid. “Wasps of this small size are incapable of stinging people and are no threat to us,” points out O’Neal. Earlier this year, the USDA’s Animal and Plant Health Inspection Service (APHIS) and seven Midwestern states gave permission to release this species of wasps in soybean fields, which are Iowa, Illinois, Indiana, Michigan, Minnesota, South Dakota and Wisconsin.

“Until now we have had inconsistent control of aphids from insect predators like ladybeetles in soybean fields,” says O’Neal. “Wasps are the missing natural enemy. We hope to provide more consistent control with the wasps so we won’t have to use insecticides as frequently as we do now.”

However, initial field tests for these wasps in Iowa have proven inconclusive, due partly to the limited number of wasps available for release, says O’Neal.

Successful control of soybean aphids with natural predators like *B. communis* wasps, rather than using insecticides, would be helpful for both farmers and the environment, says Sheila Hebenstreit, an ISA district director and crop consultant from Jefferson, in west central Iowa.

“As a farmer, landowner and agronomist, I’m strongly in favor of this project,” says Hebenstreit. “Any time



Photo: South Dakota State University

*A tiny, stingless wasp called *Binodoxys communis* is a new weapon in the arsenal designed to fight soybean aphids. Aphids can cause devastating yield loss if not controlled.*

you can keep from having to spray an insecticide, it’s a good thing. Not having to scout would be an additional cost savings to

the farmer.”

The soybean aphid is somewhat unpredictable, and it requires intensive scouting for timely insecticide applications, says Hebenstreit. “Getting the airplane or the ground equipment to the field at the optimal time is a common problem,” she says. “If you spray too late, you either won’t maximize control or you’ll waste much of the \$15/acre it costs to spray.”

Like other research programs funded by soybean checkoff dollars, this particular project’s goal is ultimately to provide a timely return to the farmer, says A.J. Blair, an ISA and former NCSRP director from Dayton, in central Iowa.

“Biological controls like this wasp are safer and easier for the farmer and could save us a lot of time, money and the liability of having to spray insecticide,” says Blair. “New pests continue to develop that threaten our crop, and this money helps farmers find ways to control them. It’s also farmer-owned research. The farmer doesn’t have to pay anything extra to have this wasp released – it’s made available by the soybean checkoff.”