

Biocontrol Agent Takes Aim at Asian Citrus Psyllid

A recently identified fungus can help in the management of the citrus greening vector.

BY ROBIN KOESTOYO

GROWERS MAY SOON have another tool in their fight against the plague of Florida citrus — the Asian citrus psyllid, which has spread citrus greening to every grove in the state and has cut annual fruit production by as much as 70%. That tool comes in the form of a biocontrol agent — the fungus *Isaria fumosorosea*.

Fighting plant disease with jet-blast sprays is standard practice for Florida citrus growers fighting the psyllid. But, to spray a fungus



Photo by Jeffrey W. Lotz

The Asian citrus psyllid was discovered in Florida in 1998, and the first case of greening was confirmed in 2005. Since that time, the state's citrus industry has been devastated by the disease.

According to Ron Cave, Director of the UF/IFAS Indian River Research and Education Center (IRREC) near Fort Pierce, now scientists are interested in using the fungus for the good of growers because it kills and changes the feeding behavior of the citrus psyllid.

EFFICACY TRIALS SHOW PROMISE

Pasco Avery, a Biological Scientist based at IRREC, tested the fungus against the psyllid under laboratory conditions. His findings, published in *Insects, Biocontrol Science and Technology* and *Florida Entomologist*, document the fungus' promise as an effective bio-

logical control agent against the Asian citrus psyllid. According to Avery, the fungus kills the psyllid but is compatible with beneficial insects like lady beetles, lacewings, and parasitic wasps.

"The fungus is not a panacea, but it is expected to greatly reduce the problem we have in managing the psyllid populations," he says.

Bob Adair, Executive Director at the Florida Research Center for Agricultural Sustainability, heard about Avery's work with the fungus and approached him about using commercial sprayers to distribute the fungus in his groves. Adair has partnered with UF/IFAS on multiple occasions over the years to conduct agricultural research.

Avery carried out experiments in his lab to determine if the oils were compatible with the fungus. He says he found the oils sustained the fungus and helped it to grow and thrive.

Adair's next step was to determine the fungi's efficacy in field trials in citrus groves. He needed to test it in outdoor groves to establish whether it can suppress the Asian citrus psyllid population to the point where trees will be protected without the psyllid becoming resistant to the sprays.

Avery and Adair conducted the first field-spray trial in mid-June. They sprayed about 1 acre of trees on one side of the row and mixed 1% of a commercial product containing *I. fumosorosea* with stylet oil for 65 pounds of spray. The scientists applied spray to the trees at dusk with a pull air blast sprayer hitched to a tractor.

Avery said the fungus suppressed the psyllid population effectively, and that control lasted for up to 14 days after application.

"We found that the fungus was as effective as the active ingredient in the insecticide spinosad," Adair says.

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Photo by Frank Giles

Florida's citrus industry has lost nearly half of its \$1.5 billion on-tree fruit value in just 10 years due to citrus greening.

to control a single insect that carries a disease-causing pathogen is uncommon. With that, scientists from the University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS) and the Florida Research Center for Agricultural Sustainability are collaborating to test the insect-killing fungus applied with horticultural-oil sprays in a Vero Beach, FL, citrus grove.

The fungus is said to occur naturally in citrus groves. Lance Osborne, a Professor of Entomology at the UF/IFAS Mid-Florida Research and Education Center in Apopka, first discovered the fungus attacking mealybugs in a greenhouse in the mid-1980s. Ac-

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