

Key Points

- Rulfs Orchard suffered \$30,000 in berry losses before biocontrols.
- Beneficial nematodes cut black vine and root weevil populations.
- Rulfs' success spurred interest from more than 50 farms.

BY KARA LYNN DUNN

'ROOT weevils have been a big problem here," says Bob Rulfs, "but we are starting to win the battle now."

Black vine weevil and strawberry root weevil were causing up to \$30,000 a year in strawberry crop loss and re-establishment costs at Rulfs Orchard. The duo were taking a one-two punch at berry profits at the Peru, N.Y., diversified fruit and vegetable operation. Adult weevils feed on leaves, leaving telltale notching. Larval root feeding destroys the crop.

"Soil insecticides were effective, but costly, time-consuming, didn't cure the problem and are no longer an option," Rulfs explains. "Adult control with foliar insecticide is ineffective."

That's why Rulfs Orchard was the first berry farm to test a biocontrol protocol developed by Cornell University entomologist Elson Shields. He uses native New York nematodes — microscopic worms — to infest and kill the weevil larvae. One species prefers shallow soil; another burrows deeper.

"We much prefer this biocontrol solution that's helping to restore our crop," adds the Clinton County producer. "It promises to have widespread effectiveness in time."

Weevil infestations take time to build and often go unnoticed until they begin causing serious damage, according to Shields. "We've seen success using nematodes against alfalfa snout beetle and now these berry weevils. Crop-by-crop, pest-by-pest research may support use of nematodes as an organic solution for agricultural producers of all types."

Here's the protocol

In September 2013, nematodes were sprayed on 9 acres of Rulfs' 12-acre strawberry field. With nozzle adaption, removal of screens and filters, plus a good cleaning to remove pesticide residues, Rulfs' sprayer was used. The nematodes were applied with water to assure they reached the root zone.

Soil samples taken at two depths at different intervals during the spring of 2014 showed significant root weevil population reduction over 2013 levels. While one of the two nematode species was nearly nonexistent and the other present in lower numbers than expected, the assay

Organic biocontrols bust pests



A BUG-EAT-BUG FIELD: Elson Shields (left) and Bob Rulfs found that beneficial nematodes are winning the war against weevils in Rulfs Orchard's strawberry crop.

revealed an unanticipated elevated-level presence of a third native nematode, Oswego.

While some areas still showed weevil losses, the berries produced higher yields in 2014. So the decision was made to boost populations of the flourishing nematode species.

The blueberry connection

The Shields Lab at Cornell raised 1 billion Oswego nematodes for application to the entire strawberry bed postharvest in August 2014. A nematode species mix including the native Oswego was applied to blueberry acreage adjacent to the strawberries in July 2014.

"We've had to replace blueberry bushes here and there," notes Rulfs. They discovered that declining blueberry

bushes had black vine weevil feeding on the roots — more than 50 larvae in the root zone of some bushes.

Shields suspects the blueberries were the original weevil source. They likely moved slowly into the more susceptible strawberries.

"Since applying the nematodes, we expect the blueberries to be a less attractive host. And now, the strawberries are much better at withstanding the weevils. Our 2015 season was much stronger," adds Rulfs.

Success at Rulfs Orchard has spurred interest by more than 50 other growers. New York Farm Viability Institute is now funding nematode demonstration applications on eastern New York berry farms to help growers learn biocontrol techniques. A one-time application of the persistent nematodes is \$120 to \$240 per acre. It may be enough to prompt eventual farmwide coverage.

Shields' nematode biocontrol was originally developed over three decades. It was used initially to control alfalfa snout beetles.

"This project has far-reaching potential to help growers of all types of high-value crops with a viable biocontrol solution that can be effective on a whole-farm basis," notes David Grusenmeyer, NYFVI executive director.

Black vine weevil is known to feed on more than 100 plants, trees, shrubs and flowers, and has been identified in more than 30 U.S. states and Canada.

Shields may be contacted at 607-255-8428 or by email at es28@cornell.edu.

Dunn writes from Mannsville, N.Y.

Becoming

WE now know why farms have so many ducks — clearance sales on ducklings. And Sheilah is the duck-calling leader — the commander — of the brood. Here's how it came about:

Mike: "How many do you want? Two or three?"

Sheilah: "Well, definitely more than two. Maybe six? Is that too many?"

Mike: "Six would probably be OK. Should we start thinking of names?"

Sheilah: "Hmmm. No, not until they're ours, and I can hold them."

Mike: That was the conversation the night before we bought ducks. Yes, ducks!

Sheilah had gone to Rural King and came home with the notion that our barns were empty, and we needed to fill them up — with ducks.

We weren't ready for calves yet. But



NYFVI is a farmer-led nonprofit dedicated to helping New York farms become more profitable. Its competitive grant program connects farmer-identified needs to practical research and education solutions for positive farm-level impact. Learn more at nyfvi.org.