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nematodes vs plum curculio

Posted by [Brian Caldwell](#)

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[Brian Caldwell](#)

[nematodes vs plum curculio](#)

January 02, 2013 06:25AM

Registered: 10 years ago

Posts: 69

Some interesting work on the topic of using beneficial nematodes against PC is going on at Geneva and other places. Check out these articles:

<http://www.news.cornell.edu/stories/Oct11/AppleGrants.html>

http://ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=273551

<http://www.nnyagdev.org/PDF/2010/2010%20Alfalfa%20Snout%20Beetle%20Manual.pdf>

A cool aspect is that Elson Shields at Cornell has got a program going for another weevil, the alfalfa snout beetle, in which farmers are culturing their own nematodes (see the 3rd article above). He is hoping to be able to use the same approach vs PC.

In 1993 I did a SARE farmer grant project using purchased nematodes, sprinkling them under trees with watering cans. They didn't seem very effective. I think these current efforts will have better luck, using different species of nematodes. We'll see!

[Hemlock Grove Farm](#)

Zone 5 in New York

Edited 1 time(s). Last edit at 01/05/2013 03:59AM by Michael Phillips.

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[Michael Phillips](#)

[Re: nematodes vs plum curculio](#)

January 05, 2013 04:49AM

Moderator

Registered: 11 years ago

Posts: 621

Well we remember Brian's work with nematodes two decades ago. [Admittedly an age reference, folks.] Ironically, we concluded at the time that nematodes must somehow boost curculio populations based on his data. *Ha. Little did we know!* The nematode species now under investigation are far more targeted as to depth of the pest pupae. Still, this requires concentrating the problem in order to make this approach cost-effective. And therein lies the use of trap trees and push-and-pull dynamics. This is a valid option for what's deemed **curculio understory management**. Lessening the returning population for the next growing season can make a world of difference with organic methods.

[Lost Nation Orchard](#)

Zone 4b in New Hampshire

Edited 1 time(s). Last edit at 06/21/2013 06:01PM by Michael Phillips.

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[Mike Biltonen](#)

[Re: nematodes vs plum curculio](#)

March 09, 2013 04:19PM

Registered: 10 years ago

Posts: 298

As it turns out, there are several entomopathogenic nematode species in addition to the one I mentioend at the meeting, including two additional Steinernerma spp. Here's the abstract from some research:

Susceptibility of the Plum Curculio, *Conotrachelus nenuphar*, to Entomopathogenic Nematodes

David I. Shapiro-Ilan, Russell F. Mizell, III, and James F. Campbell

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Abstract

The plum curculio, *Conotrachelus nenuphar*, is a major pest of pome and stone fruit. Our objective was to determine virulence and reproductive potential of six commercially available nematode species in *C. nenuphar* larvae and adults. **Nematodes tested were**

Heterorhabditis bacteriophora (Hb strain), H. marelatus (Point Reyes strains), H. megidis (UK211 strain), Steinernema riobrave (355 strain), S. carpocapsae (All strain), and S. feltiae (SN strain). Survival of *C. nenuphar* larvae treated with *S. feltiae* and *S. riobrave*, and survival of adults treated with *S. carpocapsae* and *S. riobrave*, was reduced relative to non-treated insects. Other nematode treatments were not different from the control. *Conotrachelus nenuphar* larvae were more susceptible to *S. feltiae* infection than were adults, but for other nematode species there was no significant insect-stage effect. Reproduction in *C. nenuphar* was greatest for *H. marelatus*, which produced approximately 10,000 nematodes in larvae and 5,500 in adults. Other nematodes produced approximately 1,000 to 3,700 infective juveniles per *C. nenuphar* with no significant differences among nematode species or insect stages. We conclude that *S. carpocapsae* or *S. riobrave* appears to have the most potential for controlling adults, whereas *S. feltiae* or *S. riobrave* appears to have the most potential for larval control.

Keywords: biological control, *Conotrachelus nenuphar*, entomopathogenic nematode, *Heterorhabditis*, reproduction, *Steinernema*, virulence

The company that is producing a product used to "seed" the orchard is Kopper Biologicals: [www.koppert.com]. I'll do some more research on the product, pricing, and use specifics and post n an update.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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