

Inexpensive, on-farm method controls invasive beetle

November 29 2010, By Kara Dunn



Cornell intern Allyson Jones-brimmer '11 and Belleville-Henderson Future Farmers of America member Erik Shemidine separate nematodes from their on-farm growing mix at Sheland Farms, Belleville.

After 21 years of work, Cornell researchers are spreading the word about an on-farm biocontrol method to solve the problems caused by the destructive invasive species alfalfa snout beetle (ASB).

The 30-page "Rearing and Applying Nematodes to Control Alfalfa Snout Beetle" manual that condenses the Cornell research on the pest is available online free of charge.

More than 13 percent (500,000 acres) of the New York's agricultural land has been infested by ASB, which can destroy entire fields in one year. The flightless insect now infests Cayuga, Clinton, Essex, Franklin,

Jefferson, Lewis, Oswego, St. Lawrence and Wayne counties and southeastern Ontario, Canada.

Research has shown that treating fields with native insect-attacking nematodes that feed on the ASB larvae can cause alfalfa snout beetle populations to drastically diminish.

"The nematodes naturally recycle within the alfalfa snout beetle host, persist in the soil, and effectively self-disperse creating the opportunity for sweeping and perpetual control across treated fields," says Antonio Testa, a Cornell research support specialist.

In 2009-10, Cornell Cooperative Extension interns Joshua Knecht '10 and Allyson Jones-brimmer '11 engaged more than a dozen North Country farmers in raising the beetle-battling nematodes.

The treatment combines two types of northern New York-native nematodes that coexist well. One prefers shallower soil, the other burrows deeper, broadening the effectiveness of the Cornell protocol.

The farmers working with the students mass-produced the native nematodes using small fish-bait cups. Each cup inoculated with some 15,000 nematodes produced about 25 million infective juvenile nematodes for field release. Rinse water containing the nematodes was sprayed onto field surfaces.

Two starter cups per [nematode](#) species supplied by Cornell produced enough infective nematodes to produce eight additional cups, which could inoculate a 15-25 acre field at a cost of about \$75.

"Growers are able to inoculate their fields just one time to achieve long-term control. This eliminates the cost of annual applications of the more costly commercially produced nematodes that persist in the field for less

than a single growing season," Testa says.

A step-by-step rearing and application manual developed by Jones-brimmer was field-tested and finalized with farmer input.

Meanwhile, Cornell plant breeder Don Viands has developed ASB-resistant alfalfa varieties.

"Control with ASB-resistant varieties is quite possible. We have seen root damage scores consistently drop and believe we can achieve even better results with subsequent selections," Viands says. "Seed companies participating with the northern New York research project now have alfalfa with some ASB-resistance in commercial seed production for potential use."

Next, the research team will document the ability for the biocontrol nematodes to persist across crop rotation. The typical rotation is four to five years of alfalfa and four years of corn before the field is returned to alfalfa production. The question is whether the nematodes will persist at sufficiently high enough levels to protect the subsequent alfalfa crops after the corn rotation.

The team is also working on developing an easy way for farmers to find a localized source of infective nematodes to start their rearing process each spring.

More information: Farmers interested in learning more about controlling alfalfa snout beetle and FFA and other students interested in participating with ASB control outreach can contact Testa at 607-591-1493, at28(at)cornell.edu.

The manual is online in the Field Crops: Alfalfa section of the Northern New York Agricultural Development Program website at www.nnyagdev.org

Provided by Cornell University

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