



Northern New York Agricultural Development Program 2016 Project Report

Biological Control of Alfalfa Snout Beetle: Promoting New Farmer Adoption

Project Leaders:

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Collaborator(s):

- CCE NNY Field Crops Specialists: Mike Hunter & Kitty O'Neil
- Cornell University PRO-DAIRY: Joe Lawrence
- Lowville Farmers Co-Op: Brendan Jordan
- Alfalfa producers: Ron and Mary DeBeer*

Cooperating Producers:

- Clinton County: 1 farm
 - Jefferson County: 7 farms
 - Lewis County: 17 farms
 - *St. Lawrence County: 3 farms
 - *Franklin County: 9 farms
- *DeBeer Nematode Spray Program, a new young farmer agricultural enterprise sparked by the NNYADP-funded snout beetle biocontrol research, reared and applied nematodes to 2 farms in St. Lawrence County and 9 farms in Franklin County*

Background:

Alfalfa is a key feed component of dairy and livestock diets on Northern NY (NNY) farms. Alfalfa snout beetle (ASB) remains the key limiting factor to alfalfa stand life in the NNY region and frequently kills out entire stands or large portions of stands in a single year. Since 2007, the Shields' Lab has assisted NNY farmers in inoculating alfalfa fields using insect-attacking nematodes (bio-control nematodes) to suppress the spread of ASB with the long-term support of the farmer-driven Northern New York Agricultural Development Program (NNYADP).

It requires 3-5 years to totally inoculate a farm with nematodes and reduce snout beetle populations to a manageable level. This successful outreach program continued its efforts in 2016. Farmers interested in applying biocontrol nematodes for alfalfa snout beetle control need to realize that this project is time-limited with about a 4-year window remaining for Cornell-supplied nematodes. For 2016, the Shields' Lab continued to offer farmers the option to purchase bio-control nematodes, including working with commercial applicators, or to assist them in rearing their own nematodes on their own farm with their own labor. Farmers choosing to participate were not limited to the number of acres they wished to treat.

Methods:

Bio-Control Program Recommendations

We recommend that bio-control nematodes should be applied on alfalfa fields in the seeding year or 1st production year for the best economic impact. With application of biocontrol nematodes to more established alfalfa fields, the biocontrol nematodes will establish and attack snout beetle larvae present, but will not assist with stand retention of the alfalfa stand.

Nematodes should be applied using the “skip nozzle” method, leaving every third nozzle open and applied to 33% of the acreage covered by the application equipment (based on nozzle separation of 22-24”). Nematode applications need to be made before September 1.

Nematode Cost: Purchase from Cornell Shields' Laboratory

Farmers were advised to contact the Shields' Lab no later than 45 days prior to a planned application based on their cutting schedule. Those farms choosing to use a commercial applicator confirmed with Shields' Lab and the applicator on the estimated application date. Nematode costs using the 33% skip nozzle application method were \$26/acre when nematodes were purchased from Cornell (Shields' Lab). Discounts were made available to all farmers participating in the program:

- 10% discount for any farm that placed an order and had worms delivered for application by June 15.
- An additional 10% discount for all participants who paid upon delivery of biocontrol nematodes.
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Nematode Cost: Farmer-Reared Nematodes

Growers choosing to rear their own biocontrol nematodes on their farm using their own labor are reducing the overall cost to around \$15/acre. Interested farmers needed to contact the Shields' Lab no later than 60 days prior to a planned bio-control nematode application based on their cutting schedule to review the steps required to have a successful rearing and application process. On-farm rearing requires farmers to purchase their own wax moth larvae used to rear biocontrol nematodes; Shields Lab provided a list of reputable worm suppliers. Farms also received biocontrol nematodes from the Shields' Lab for inoculation of the worm cups and continuous dialogue on anticipated arrival date of worm delivery and the proposed application date critical for a successful rearing and application cycle. The Shields' Lab provided specific

instructions for dosing the insect larvae and temperature requirements for incubating the nematodes. Assistance for rearing your own nematodes was provided on request by the Shields' Lab, Cornell Cooperative Extension specialists, or agribusiness individuals with knowledge of the techniques involved upon request.

Results:

For the 2016 production season, 33 farms in NNY applied bio-control nematodes, including 5 farms applying nematodes for the first time. A total of 2,600 acres received nematodes throughout five NNY counties. Commercial applicators throughout the NNY alfalfa snout beetle region continued to assist farms interested in the application of the nematodes. During 2016, four NNY-based commercial applicators treated approximately 1,800 acres. DeBeer Spraying, Moira, NY, reared and applied bio-control nematodes to 1,200 acres in St. Lawrence and Franklin counties, increasing their presence as a serviceable outlet for farms interested in working with a local agribusiness in NNY.

Conclusions/Outcomes/Impacts:

In 2016 with the poor milk prices, farmers were less willing to invest in continuing with application of biocontrol nematodes onto new alfalfa plantings. A total of 2,600 acres of alfalfa infested with ASB were inoculated with biocontrol nematodes across 5 counties (Jefferson: 7 farms & 290 acres, Lewis: 17 farms & 700 acres, St. Lawrence: 1 farm & 300 acres, Clinton: 3 farms & 110 acres, Franklin: 1000 acres).

Biocontrol nematodes for 1,400 acres were purchased from Cornell (Shields Lab) and nematodes for 1,200 acres were reared and applied by Ron & Mary DeBeer in Franklin County. Of these totals, 1,800 acres were applied by commercial applicators and 800 acres were farmer- applied. We estimate after 2016 a total of between 14,000 and 16,000 acres of alfalfa ground have been inoculated in NNY since 2007, when the first field application plots were established.

It has never been the intention of the Shields' Lab to be the source of biocontrol nematodes for the NNY Alfalfa Snout Beetle Biological Control Program. We are filling the void to move the project forward. In fact, Cornell administrators have been critical of our efforts to provide biocontrol nematodes at cost to the farmers of NNY. We had to assure them that this effort was time-limited to receive permission for a continued effort. The Shields' Lab only intends to be rearing biocontrol nematodes through the summer of 2020.

We are constantly on the lookout for potential commercial nematode suppliers and have developed the rearing protocol for interested parties to use. In the past, several growers have reared their own nematodes but have decided that purchasing them is more efficient during busy times of the year. DeBeer Spraying has shown that income can be generated by a locally-owned and operated service applying the biocontrol.

Outreach:

- Grower Meeting: DeBeer Seeds & Spraying; Charlie's Seed & Spray, March 31, 2016, Brushton-Moira American Legion, Moira, NY

- Commercial Applicator Meeting: April 6, 2016, Watertown, NY
- Corn Conference: January 22-26, 2017, Wichita, KS
- NNY Crop Congress East: February 1, 2017, Miner Institute, Chazy, NY
- NNY Crop Congress West: February 2, 2017, CCE, Canton, NY
- NNY Winter Forage Forum: February 7, 2017, Lowville Farmers CO-OP, Lowville, NY

Next Steps

For 2017, the Shields’ Lab will continue to offer farmers the option to purchase bio-control nematodes or will assist farmers interested in rearing their own nematodes on their own farm with their own labor. The Shields’ Lab will continue to work closely with the DeBeer Spraying nematode business in NNY, and will encourage the development of similar enterprise in the region. The Shields’ Lab is very interested in assisting individuals interested in rearing biocontrol nematodes as a business so this biocontrol agent remains available to NNY farmers after 2021 since alfalfa snout beetle will remain a potential threat as long as alfalfa is raised in the region.

Acknowledgments:

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Reports and/or articles in which results of this project have been published:

Dec2016	Morning Ag Clips	Research Aids Young NNY Ag Entrepreneur
03-02-16	Empire State Farming Blog	NNYADP Nematodes
03-02-16	Morning Ag Clips	NNYADP Nematodes
03-02-16	Farming Online	NNYADP Nematodes
03-02-16	CCE Jefferson Newsletter	NNYADP Nematodes
03-03-16	New York Ag Connection	NNYADP Nematodes
03-03-16	Cornell Field Crops Blog	NNYADP Nematodes
03-04-16	Holstein World	NNYADP Nematodes
03-04-16	Dairy Business	NNYADP Nematodes
03-05-16	Ogdensburg Journal	NNYADP Nematodes
03-05-16	Malone Telegram	NNYADP Nematodes
03-05-16	Carthage Republican Tribune	NNYADP Nematodes
03-05-16	Massena-Potsdam Courier	NNYADP Nematodes
03-05-16	Lowville Journal	NNYADP Nematodes
03-05-16	Watertown Daily Times	NNYADP Nematodes
05-11-16	Cornell Field Crops Blog	NNYADP Projects include ASB
05-13-16	Lancaster Farming	NNYADP Projects include ASB
12-13-16	Holstein World	NNYADP ASB Entrepreneur
12-13-16	Dairy Business	NNYADP ASB Entrepreneur
12-13-16	Pinterest	NNYADP ASB Entrepreneur
12-14-16	Morning Ag Clips	NNYADP ASB Entrepreneur
12-15-16	Cornell Field Crops Blog	NNYADP ASB Entrepreneur
12-19-16	Focus on Farming	NNYADP ASB Entrepreneur

12-19-16	Time Warner Cable News	NNYADP ASB Entrepreneur
12-22-16	New York Ag Connection	NNYADP ASB Entrepreneur
12-22-16	US Ag Network	NNYADP ASB Entrepreneur
12-29-16	Facebook: Progressive Forage	NNYADP ASB Entrepreneur
12-29-16	Progressive Forage	NNYADP ASB Entrepreneur
12-29-16	agnewsfeed.com	NNYADP ASB Entrepreneur
Jan 2017	Empire Farm and Dairy	NNYADP ASB Entrepreneur
02-10-17	Ogdensburg Journal	NNYADP ASB Update
02-10-17	Massena Potsdam Courier	NNYADP ASB Update
02-10-17	Carthage Republican Tribune	NNYADP ASB Update
02-10-17	Malone Telegram	NNYADP ASB Update
02-10-17	Batavia Daily News	NNYADP ASB Update
02-10-17	Oswego News	NNYADP ASB Update
02-10-17	Watertown Daily Times	NNYADP ASB Update
02-10-17	Lowville Journal	NNYADP ASB Update