



Cornell Cooperative Extension North Country Regional Ag Team

Serving Clinton, Essex, Franklin, Jefferson, Lewis, and St. Lawrence Counties

Program Highlights

January - March
2020

Cutting Edge Research Leads to New, Farmer-Friendly Application Method of Biocontrol Nematodes

Research funded by the Northern New York Agricultural Development Program has shown that biological control with entomopathogenic (insect-attacking) nematodes (EPN) is effective in reducing snout beetle populations to sub-economic levels in alfalfa fields where the native NY-adapted nematodes have been established. Ongoing research in Northern New York and New York State has indicated these same biocontrol nematodes have the potential to control corn rootworm, a significant pest of field corn in NY.

The currently recommended application method of biocontrol nematodes is to rinse the biocontrol nematodes with high volumes of water through fine mesh screens into a holding tank. The biocontrol nematode solution is then placed into a field sprayer equipped with streamer nozzles or drop tubes and applied using high volumes of water per acre. This is a vast improvement over earlier-tested application methods, yet it is still a very time-consuming process. This water-based application technique has been utilized to inoculate 25,000 acres in NNY to date.

In response to farmers asking for a simpler and more farmer-friendly method to apply biocontrol nematodes to their fields, one of the CCE NCRAT Regional Crop Specialists established a replicated, small plot field trial on a farm in Jefferson County using liquid manure as the “carrier” of biocontrol nematodes in 2016. Soil samples were taken several weeks after the manure/nematode treatments to determine if biocontrol nematode establishment was successful. While the establishment results were not as good as with a water/nematode application, this initial trial certainly showed that application via liquid manure may be a viable method of biocontrol nematode application.

In 2018 and 2019, the Crop Specialist expanded on the earlier small plot research trying to determine if large scale field applications of biocontrol nematodes applied with liquid manure was a viable option. Research conducted on 12 farms in NNY proved that biocontrol nematodes can be effectively applied to fields via liquid manure as the carrier and delivery method using EPN rates similar to the currently recommended application rates.

Authored by:

Lindsay Ferlito,
Mike Hunter,
Casey Havekes,
Kitty O’Neil,
Kelsey O’Shea

Layout/design by:

Tatum Langworthy



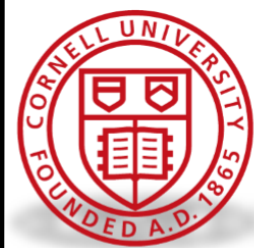
CCE NCRAT Field Crops Specialist loads biocontrol nematodes into manure tanker for field application.

Photo credit: Elson Shields, Cornell University.

The success of this multi-year research project provides farmers with a simpler, more cost effective method of applying biocontrol nematodes. It will foster greater adoption of this integrated pest management approach that will ultimately protect crops from certain insect pests of economic importance.

The Northern New York Agricultural Development Program provided necessary funding for the support of this research project.

Soil Health Testing Research Yields New Sampling Guidance



In collaboration with the County Association CCE staff and Soil and Water Conservation District offices, the North Country Regional Ag Team recently completed an important soil health research project. Soil health is a concern for farmers and has been an area of focus for CCE research and outreach efforts across NYS. Farmers and crop consultants recognize that properly functioning soil is critical for long term farm viability and have begun making management changes to both improve and protect it. Farms have started using reduced- and no-till methods for planting and incorporating cover crops to protect soil between main crops. After implementing these sorts of changes, many farms want to evaluate their impact. They often wonder: what is the overall effect of these management changes on soil health? Slow and steady improvement is expected, but which practices are making the largest or quickest impact?



*Sampling a St. Lawrence County field in October 2018 with Jevonnah Foster, St. Lawrence County Soil and Water Conservation District office.
Photo credit: K. O'Neil.*

A 2018-2019 research project, funded by the Northern NY Ag Development Program and finalized in early 2020, is helping farms answer these questions. The project made use of the Cornell Soil Health Assessment to assist farmers with monitoring soil health improvements on their farms. The Cornell Soil Health assessment is a very useful tool for assessing soil health and monitoring its improvement. This assessment is an integrated set of chemical, physical, and biological measurements and interpretations available to farmers of any scale for monitoring soil health. The project focused on the sampling procedures needed for reliable commercial farm-scale results. Appropriate sampling protocols for farm-scale fields must permit detection of small and slow changes in soil health parameters over a few years, despite potential for large variability of some of these indicators within each field. To have confidence comparing soil health test results on a field before and after a few years of management changes, this variability within a field must be overcome with sufficient subsampling to detect a small change. To figure out how variable NNY farm fields are, 9 fields were intensively sampled across 5 NNY counties. Fields ranged in size from 6 to 80 acres, and were sampled 6 to 36 times. A total of 171 samples were submitted to the Cornell Soil Health Lab for analysis.



*Sampling a Jefferson County field in May 2018.
Photo credit: K. O'Neil.*

As hypothesized, the results showed tremendous variation within and among fields. Each component of the soil health analytical package had its own variable nature with some components being relatively consistent across a field, while others varied tremendously. Subsample numbers required for a farm to be able to detect a subtle 10% change in an average field for each parameter ranged from just 9 to more than 1200. Based on these results, it is now recommended that small- and medium-sized fields be subsampled at least once per acre while larger fields should be subsampled up to 40-50 locations per field. This recommendation will be shared by the CCE NCRAT Crop Specialists with farms, crop consultants, and Soil and Water District offices going forward. Using this approach, farms will be able to feel confident that any differences measured between soil health analyses on their fields over time are most likely to reflect real changes rather than inherent sampling variation.

***Salmonella* Dublin Project Raises Awareness of Challenging Disease**

Producers and other stakeholders have expressed a need for information and local research on a variety of topics. The Regional Dairy Specialists focused on *Salmonella* Dublin given it's potential to significantly negatively impact the North Country dairy industry. Traditionally, *Salmonella* Dublin has been considered a disease of the western states; however, in the last couple of decades it has crept across the country. The current strain was first detected in NY state in 2006, and the number of confirmed cases in dairy, beef, and veal operations continues to grow. Further, studies from Europe indicate in addition to increased animal morbidity and mortality, the economic losses on a dairy infected with this disease could be staggering.

To address this issue, CCE NCRAT Regional Dairy Specialists received funding through the Northern New York Agriculture Development Program to determine the prevalence of *Salmonella* Dublin on North Country dairies. Bulk tank milk samples were taken four times over a six-month period from twenty-seven dairies across five counties. One major positive of the study was that only two herds tested positive, and they have had issues with the disease before, so they have management strategies already in place.

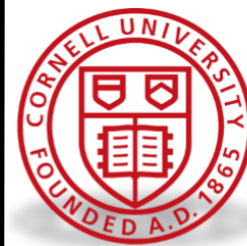
In addition to the twenty-seven participating producers, producers and industry members were reached across the North Country through outreach efforts in multiple counties. After one presentation, a farmer exclaimed *"I'm so glad you presented on Salmonella Dublin because it scares me!"* A secondary benefit of this project is that it provided more opportunities to work with producers across the North Country on calf housing and management issues. Multiple dairies participating in this project requested additional help from the Regional Dairy Specialists on topics such as milk replacer feeding amounts vs. growth requirements, colostrum management, and calf barn ventilation. This project was successful as it raised awareness locally with dairy farmers about a challenging and potentially economically devastating disease, it strengthened the relationship with individual farmers, and brought value to specific farmers that received follow-up assistance.



Photo credit: L. Ferlito.



Farm Business Management Office Hours: Providing Farms with the One-on-One Attention They Need Most Right Now



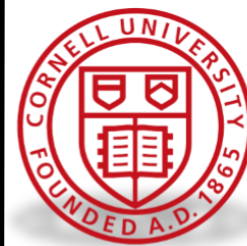
This will be the second full year that the CCE NCRAT Farm Business Management Specialist has instituted and maintained regular office hours in each of the six counties across Northern New York. In January through March alone, she met with 15 individual farms businesses across the six counties. These included mature businesses she has met with before, existing businesses looking for new assistance, and three new farm businesses. The premise of office hours is a time and/or space that farmers can come and get their business questions answered without having to have an appointment. Most farms in the January through March time frame are looking for assistance and guidance in making sure their financial records from the previous year are accurate and complete, to then begin the budgeting and planning process for the next year. These meetings usually involve taking it one step further by setting a new management or performance goal that will be evaluated and monitored throughout the year.

In working with existing businesses, the Farm Business Management Specialist met with seven businesses that she has worked with now over the course of two years. The primary topics this year were labor management and overall evaluation of profitability. With those businesses, there are usually at least two meetings to cover the desired topic, if not more on-going meetings throughout the winter and into the next fall. The unique part of working with these businesses for the second year, was the ability to compare those farms' data against the previous year's data which is one of the most useful ways to continue to improve. For those farm industries that there is a readily available benchmark, we also employ that as a tool evaluate overall performance. The farm businesses worked with in the first part of 2020 range across four primary industries or products and also range from very small to relatively large.

One growing industry met with this spring were those newer farm businesses that are selling retail products with the marketing angle of 'farm to table'. With those businesses, the focus was primarily on diversified outlets for products in addition to strong marketing campaigns or plans. This includes evaluating more diversified outlets for sales given the lack of farmers markets due to COVID-19. Another primary focus with these younger businesses is ensuring that their record keeping systems are thorough and correct from the very beginning giving them a huge advantage when scaling and evaluating their business after the first year of operation.

Towards the middle of March, with the onset of COVID-19 and mandatory social distancing, office hours moved to a digital format. Although there were concerns that this would decrease attendance or participation, it has had the opposite effect. With the Farm Business Management Specialist able to serve a higher number of farms in one day with reduced travel time, more farms reached out to make specific appointments using Zoom or other technologies. It is helpful and crucial at times like this to touch as many farm businesses one-on-one to assist them. In addition, from the original meetings during office hours, four to five farms are now meeting weekly with the Specialist to keep on track during these uncertain times and to continue to brainstorm new ideas. Although there are many uncertain times ahead, the CCE North Country Regional Ag Team will continue to offer altered versions of offices hours throughout the summer using technology to make sure businesses can get the one-on-one attention they will need.

Transition Cow Diet Recommendation Leads to On-farm Success



The transition period (the 3 weeks before and 3 weeks after calving) is one of the most challenging times for dairy cows, and therefore one topic area that regularly generates questions from producers. In Fall 2019, one of the CCE NCRAT Regional Dairy Specialists was approached by a farm with the concern of high milk fever incidence rates. When the Dairy Specialist followed up with more detailed questions, she also learned that the farmer wasn't happy with fresh cow performance.

Given the Dairy Specialist's nutrition background, the first thing that she evaluated was the current dry cow diet. She quickly identified that dry cows were over consuming energy relative to their requirements as demonstrated by over conditioned dry cows. It has been well documented in research that over conditioned dry cows are more susceptible to developing metabolic disease (including milk fever) post-calving, so she recommended making a change to the dry cow ration and suggested implementing a "controlled energy" dry cow diet. This type of diet contains a large amount of straw (which has very low nutritive value) in an attempt to reduce the energy density so that cows can consume as much feed as they would like without running the risk of overconsuming energy. In this particular situation, the farm did not have a straw supply but rather an abundant supply of finely chopped hay. Hay can work well in these diets, provided the potassium levels aren't too high. Through several follow up discussions the Dairy Specialist recommended that the farmer reach out to his nutritionist to get the hay tested for nutrient content. Following this, the farmer worked with his nutritionist to get a diet formulated specific for the dry cows which mainly included dry hay, some corn silage, and dry cow mineral.



Photo credit: C. Havekes.

Since implementing this new dry cow diet, four cows have calved and the milk fever issue has gone away. When the Dairy Specialist followed up with the farm to discuss cow performance following the diet change the farmer responded: *"with the new dry cow diet, cows are maintaining good body condition. There have been no metabolic issues following freshening. The biggest thing I've noticed following the diet change is the improved transition – cows take off on the lactating ration right away, which is an improvement from what they were doing before. I've also noticed udder swelling is decreased following the diet change!"*

The transition period is a very vulnerable time for the dairy cow and success can be impacted by nutrition, management, and cow comfort factors. This is a good example of how the Regional Dairy Specialists are working with producers across the North Country one-on-one to improve performance on their herd.

Our Mission

"The North Country Regional Ag Team aims to improve the productivity and viability of agricultural industries, people, and communities in Jefferson, Lewis, St. Lawrence, Franklin, Clinton, and Essex Counties by promoting productive, safe, economically, and environmentally sustainable management practices and by providing assistance to industry, government, and other agencies in evaluating the impact of public policies affecting the industry."

Contact us directly through our website: <http://ncrat.cce.cornell.edu/>

Building Strong and Vibrant New York Communities

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