

# Cornell Cooperative Extension North Country Regional Ag Team

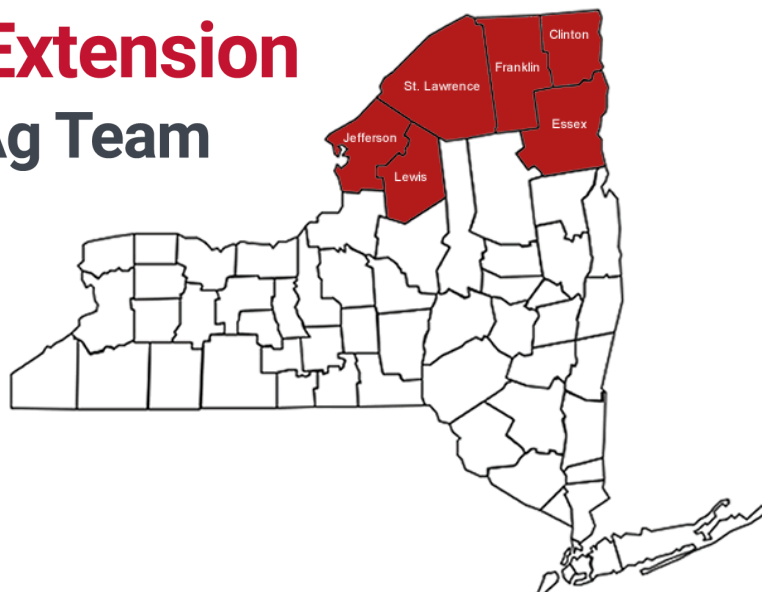
## 2022 Annual Report



# Cornell Cooperative Extension

## North Country Regional Ag Team

*“The North Country Regional Ag Team is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in Jefferson, Lewis, St. Lawrence, Franklin, Clinton, and Essex counties.”*



### **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.”

**Website:** <http://ncrat.cce.cornell.edu/>

**Facebook:** <https://www.facebook.com/CCENorthCountryRegionalAgTeam/>

**Blog:** <https://blogs.cornell.edu/northcountryregionalagteam>

**YouTube:** <https://www.youtube.com/channel/UCxb3fv12XdCA3GjuDsfkM3Q>

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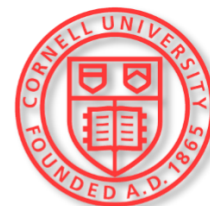
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## 2022 in Review

The view out the window reveals another rainy and wet conclusion to the 2022 growing season. Despite the gloom of the past couple of weeks, the CCE North Country Regional Ag Team (CCE NCRAT) continues to admire the resilience of local farms and ag businesses and other partners, and to be grateful for a continued role in supporting all of our ag and farmland constituents through another year of production, marketing, and problem-solving. The North Country Regional Ag Team is especially thankful to be looking ahead toward a winter of normal, face-to-face programming for the first time since 2019.

Speaking of the long hiatus from routine in-person events over the past 2+ years, during that time, the CCE system revealed itself to be strong and central to many public communication and support systems. They continue to support NYS farms and communities with research, individualized technical support upon request, and relevant educational programs to keep farms moving forward. The CCE North Country Regional Ag Team is a huge part of that system, working with county associations, collaborative partners, and statewide teams to bring discovery and innovation to Jefferson, Lewis, St. Lawrence, Franklin, Clinton, and Essex Counties to improve the productivity and viability of farms, agricultural industries, people, and communities. To remain viable and productive, farms need to seize every advantage, adapt to changing climate and markets, and become more efficient by keeping costs down and productivity up. The economic impact of North Country farms has grown in recent years. Dr. Todd Schmit from Cornell's Dyson School published a report this spring estimating that the economic impact of the public dollars brought in by Fort Drum has now been surpassed by the agricultural economy of the 4 North Country counties immediately surrounding it. Add to that Franklin, Clinton, and Essex County ag economies and it is impressive. The 2017 Census of Agriculture estimates total sales of all ag commodities in the 6-county region to be more than \$776M; well over three quarters of a billion dollars, per year. The Regional Ag Team's daily work is to support the dairy, livestock, crops, and forage production aspects of the huge North Country ag economy, by providing evidence-based information and guidance, and by contributing new discoveries. We also assist other North Country industries, government, public institutions, and agribusinesses anywhere our missions overlap.

This year, CCE NCRAT focused on helping farms plan and adapt to record-setting input costs, supply chain bottlenecks, and persistent, long-term labor shortages in addition to researching and communicating about important new discoveries. A handful of the achievements the team is most proud of are described in this annual report.

CCE Dairy Specialists resumed in-person programs with a series of summer events, scattered across the region. One especially impactful program offered a tour of robotic milking systems on dairies of different sizes and types. Another successful dairy program was specifically designed using survey results from smaller dairies, to help address their difficulty getting animal health assistance. A dairy vet skills program taught participants how to administer basic treatments and assist cows with calving difficulties as well as a few other routine animal health needs. During late 2021 and early 2022, the Field Crops and Soils Specialists focused their efforts on developing guidance for farms to best manage the record-high costs and shortages of some crop inputs, most notably fertilizers and herbicides. Other supply chain issues caused problems this spring too, resulting in difficulty sourcing seed and other crop needs. The team helped farms to navigate those challenges by collaborating with other CCE and Cornell colleagues to produce presentations, written articles in regional and local newsletters, blog posts, and in-person communications. Lastly, CCE NCRAT contributed to the farming communities with much-needed research findings over the past year. A preliminary study revealed a relationship between historical corn yield and severity of soil compaction, a herbicide study narrowed down the choices farms can use to effectively control glyphosate-resistant marestail, an investigation of calf barn ventilation systems and resulting calf health led to best practice recommendations, and a transition cow nutrition project pinpointed opportunities for improvement in 10 NNY dairy herds. All these projects were funded by the Northern NY Ag Development Program and all collected data on NNY commercial farms.

Like most years, 2022 brought new problems to address, new opportunities to learn, as well as new solutions to implement. The accomplishments, impacts, and research projects highlighted here are described in more detail inside this 2022 report. Please contact any of the CCE NCRAT Specialists for more information on the program or to help address a challenge on your farm.



## Automated Milking System Program Generates Large Crowd and Lots of Discussion

Following a couple of years of online or hybrid style learning to adapt to COVID-19 restrictions, the CCE NCRAT Dairy Specialists recognized the need for in-person summer programs to resume. Locally, dairy producers have also voiced that having the ability to tour another dairy facility and network with peers in a more casual setting is much preferred over online learning. As a result, the CCE NCRAT Dairy Specialists planned and organized a program on a hot topic in collaboration with CCE Jefferson County Dairy Specialist and the CCE SWNY Dairy, Livestock, and Field Crops Team. Robotic milking systems, or automated milking systems, have become more and more popular, and with the increased concerns over labor availability it was an obvious topic for an educational program.



*Photo credit: L. Ferlito.*

The event was held locally at two dairy farms in the North Country. One farm was a larger, newer build that consisted of 6 Lely milking robots. The second farm was a smaller, retrofitted facility that consisted of one Delaval robot. Both farms were strategically picked to give participants an idea of what could be possible, regardless of the scale of farm. About 40 people attended, from farmers and hoof trimmers to robotic system salespeople and technicians to financial advisors. There was good discussion amongst participants and the farm owners. The following day, one of the CCE NCRAT Specialists travelled to the Southwest NY region to attend a similar program hosted by the CCE SWNY team. That program also had great attendance and participation, and it was a nice opportunity for CCE NCRAT to meet other producers from around the state.



*Photo credit: L. Ferlito.*

Overall, the program was a success with very positive feedback from attendees. One farmer came from another county and commented how great it was to be able to attend and how they miss touring other farms to see what people are doing. From the program surveys, producers indicated the program was great, very informative and organized, they heard some new ideas, and they liked the in-person discussion with other farmers and industry members. This is a notable example of how CCE NCRAT Dairy Specialists collaborate with local CCE Associations and other Regional Ag Teams to deliver timely and important information to North Country dairy producers.



## Focusing on Supply and Pricing for 2022 Crop Inputs

As the 2021 growing and harvesting season came to a close, the CCE NCRAT Regional Crops Specialists were already beginning to look ahead to the 2022 season as forecasts for high fertilizer prices began to roll in. With the rising fertilizer prices in the news each week, reports of possible seed shortages ahead of the 2022 season began to also creep into those conversations. The CCE Regional Crops Specialists went to work collecting information, writing articles, designing recommendations, and sharing resources to guide 2022 crop planning decisions in light of these industry-wide developments.

- CCE NCRAT began by setting context by sharing information reported elsewhere about historical and current fertilizer prices for materials commonly used in NNY. Price data was gleaned from reliable North American sources such as DTN/ Progressive Farmer and published in the October 2021 CCE NCRAT Ag Advisor newsletter in an article titled “Fertilizer Prices Trend Upward in Late 2021... and Into 2022?” The article also briefly introduced ideas for cost-cutting by using other resources efficiently.
- The team expanded on the idea of effective and efficient use of on-farm nutrients to minimize fertilizer expenses in a December newsletter article titled “Given the Trend in Fertilizer Prices, What’s Manure Worth?” The article focused on some of the unique opportunities that NYS and Northeast farms have that would not appear in some of the Midwestern ag-dominated media. Calculations of fertilizer-equivalent prices for different manures were listed along with best management practices to capturing the maximum value from manure.
- A brief note by Ev Thomas (Oak Point Agronomics) was published in the Miner Farm Report in their December 3<sup>rd</sup> 2021 edition, encouraging farms to “get your forage seed ordered immediately” in response to reports of seed shortages, most notably forage seeds. This article was shared via the CCE NCRAT blog the following week.
- Numerous requests for information, resources, and assistance with fertilizer and manure calculations and purchasing decisions have been fielded by CCE NCRAT Crops Specialists this fall and early winter. Calculations, spreadsheets, and recommendations are routinely provided in response.
- More emphasis on fertilizer pricing and efficient nutrient management is planned in the coming weeks and months between now and spring.
  - ⇒ CCE NCRAT Crops Specialists collaborated with Cornell faculty and PRO-DAIRY Specialists to provide written articles for the March 2022 Progressive Dairy quarterly “The Manager” insert.
  - ⇒ The 2021-2022 Winter program season will featured the topics of cost-cutting nutrient management strategies and seed shortages as appropriate.
  - ⇒ Additional newsletter articles also appeared on these topics before Spring 2022 got underway to help guide these weighty nutrient management and fertilizer purchasing decisions on North Country farms.



## Dairy Vet Skills Training Addresses Specific Need in the North Country

In some areas of the North Country, it is becoming more challenging to find a herd veterinarian that is available to do regular herd checks and for emergencies, forcing some dairies to learn more basic herd health and management skills such as giving an IV and assisting with difficult calvings. Earlier this year, a North Country dairy farmer reached out to Cornell Cooperative Extension asking for a program covering some basic vet skills for dairy farms. Over the next few months, the CCE North Country Regional Ag Team Dairy Specialists worked with the local CCE Agricultural Educator and an online survey was conducted to determine what topics local farmers wanted to focus on. The CCE Dairy Specialists compiled the responses from 18 farmers to develop a 1-day hands-on program that was offered in August 2022.

Two experienced veterinarians presented, including Dr. Rob Lynch from Cornell PRO-DAIRY and Dr. Kaitlyn Lutz, CCE Northwest NY Dairy, Livestock, and Field Crops Team. A total of 19 farmers participated in demonstrations and presentations on at least 5 topics ranging from calving assistance and challenges, vaccination protocols, down cow care, milk culture techniques, and shot administration.

The program was very successful, and feedback from participants was positive, with a survey rating of 4.4/5 (very good). After completing the program, they indicated it was comprehensive, the lessons were very thorough, and the presenters were knowledgeable and skilled. Some farms said they “feel better prepared for a slew of emergencies”, they want “to participate in herd health management more” on the farm, and they plan to “review and update farm protocols”. Additionally, one farmer stated how nice it was to have the chance to talk for so long with a qualified veterinarian and be able to ask all their questions regarding health and management. This program is a great example of a specific need being identified and CCE Dairy Specialists working with the CCE County Association and other Specialists across the state to deliver a valuable program for local farms to address this need.



*Photo credit: L. Ferlito.*



## Research Helps Farmers Understand Possible Relationship between Soil Compaction and Yield

Soil health is a priority for farmers and has been an area of focus for Cornell and 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 improve and protect it. Soil compaction is a form of soil degradation and is difficult for farms to detect and evaluate, mainly because it is a challenge to observe from above the soil surface. A 2019 soil health study funded by NNYADP discovered high and variable levels of soil compaction in nine conventionally tilled dairy farm corn fields in northern New York. Following that, CCE Field Crop Specialists proposed to investigate the link between severity of soil compaction and corn yield over multiple seasons, because severely compacted soils limit plant root development and can reduce soil function, particularly in wet seasons. The CCE North Country Regional Ag Team, in collaboration with Dr. Quirine Ketterings and the Cornell Nutrient Management Spear Program, received NNYADP funding for a 2021 project focusing on the relationship between soil compaction and corn yield on North Country dairy farms.

Researchers selected four fields with mapped corn yield stability zones using multiple years of corn yield data. Soil compaction, or resistance to penetration, was measured in each yield stability zone, using a digital penetrometer, which collects and stores precise penetration-resistance data for later analysis. Over 350 penetrations were performed in each field.

Consistent with previous findings, compaction was significant in all zones, but results showed slightly less compaction in areas of fields that consistently yield higher than the farm average, and slightly more compaction in zones that consistently yield lower than the farm average. While this correlation does not mean that compaction is the cause of consistently lowered corn yields, it is a strong possibility that compaction may be at least one important factor in corn yield performance on these fields.

More research is planned to examine this relationship between soil compaction and corn yield on NNY farms. Dr. Ketterings' Nutrient Management Spear Program has worked with several NNY farms to convert corn yield monitor data over several years into maps of yield consistency. These will be used to design additional data collection to further study this important aspect of soil health and function, and continue to provide valuable information to North Country farmers.



*Photo credit: K. O'Neil.*



## Dairy Specialists Complete Successful NNYADP Funded Research Projects

Producers and industry members across the North Country have identified areas of opportunity for practical on-farm research projects. Last year, CCE Regional Dairy Specialists were successful in their efforts to secure grant funding for two on-farm research projects. Both projects were funded by the Northern NY Agricultural Development Program (NNYADP). One project focused on calf health in various ventilation systems, and the other focused on how pre-calving feeding management influences post-calving health and success.

The calf ventilation project enrolled 15 farms across the North Country region that have various ventilation systems in their calf barns. Calf health scores were taken on ~2000 calves between June 2021 – January 2022. Each participating herd also had their calf barn fogged using smoke candles twice over the course of the project – once in the summer and once in the winter. One of the biggest takeaways from this project was that not one ventilation system was superior to another. It is no surprise, but one of the biggest factors influencing calf health and performance is overall management. This became apparent when barns with similar ventilation systems had very different calf health scores. This highlights the finding that different ventilation systems can work if good management is there to support it. This project generated a lot of follow-up work on individual farms as herds recognized the value and want input as they make changes to their systems. One producer noted that his treatment rate and pneumonia rate had significantly gone down because of tweaking his current system and said the barn fogging was “very educational”.



Photo Credit: C. Havekes.



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The transition cow project enrolled 10 farms across the North Country region that were feeding high straw, negative dietary cation-anion diets (DCAD) during the dry period. This project collected pre- and post-calving blood samples from 300 cows, as well as various feeding management data including TMR particle size, feeding space, and variation across the feed bunk. The project also collected pre-calving urine pH values to identify potential sorting issues at the bunk. One of the biggest takeaways from this project is that there is still an opportunity for improving pre-calving feeding management on these North Country herds. As a result of this, the CCE NCRAT Dairy Specialists designed a follow-up project and re-visited these 10 herds in the

summer of 2022 to further identify areas of opportunity and excellence as it relates to feeding management and cow comfort across the transition period. After delivering final reports, one producer said “this is really interesting data, thank you for doing this project”. Another producer asked for follow-up assistance with identifying particle size distribution across the bunk.

These projects were successful as they helped North Country producers better understand areas of opportunity and excellence relating to their cow and calf health and performance. These projects also generated a lot of collaboration between herd veterinarians and nutritionists and further strengthened the relationships CCE NCRAT has with industry stakeholders.





## Evaluation of Soybean Herbicides for the Control of Marestalk Continues in NNY

Glyphosate resistant (GR) soybeans made postemergence weed control relatively easy with a single application. The use of postemergence glyphosate in GR soybeans has been the primary weed control program used by many Northern New York soybean growers. While this system seemed to simplify weed management, relying on total postemergence programs can be difficult to manage if not properly implemented. Since 2019, the spread of multiple resistant marestalk has been rapidly moving across Northern New York. Marestalk is becoming one of the more troublesome weeds in soybeans and causes significant yield losses when left uncontrolled. This has forced many growers to change their current herbicide programs to improve control of resistant marestalk using both preemergence and postemergence herbicides.

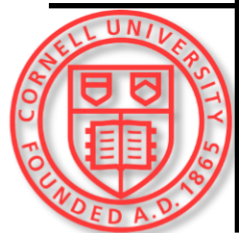
In New York, prior to 2020, there were no known soybean herbicide trials that evaluated the control of multiple resistant marestalk. It was determined that on farm research trials that evaluate herbicide programs for the control of multiple resistant marestalk would provide timely, research-based information for growers, agribusinesses, and crop consultants. To address this need, Cornell Cooperative Extension Regional Field Crop Specialists began evaluating different herbicides that could be effective at providing control of multiple resistant marestalk in soybeans.



*Photo credit: M. Hunter.*

During the last three years, replicated soybean herbicide trials were conducted on three farms in Jefferson County (2020 and 2022) and a farm in St. Lawrence County (2021). Three of the on-farm research trials included several different herbicide programs consisting of preemergence herbicides. One of the on-farm research trials in 2022 evaluated the use of Enlist One and Enlist Duo herbicide for postemergence control of marestalk in Enlist E3 soybeans. The marestalk populations at each of these sites were confirmed to be resistant to both Group 9 (i.e. glyphosate, Roundup) and Group 2 (i.e. Classic, FirstRate) herbicides. The on-farm trials in 2021 and 2022 were funded by the Northern New York Agricultural Development Program.

Since 2020, the results of the trials have been presented at twenty two Extension and industry hosted crop meetings and field days in Franklin, St. Lawrence, Lewis, Jefferson, Oneida, Cayuga, and Genesee Counties, reaching over 1260 people. CCE Crop Specialists will continue to apply the valuable information gained from these on farm studies to help North Country farmers adopt new best management practices for weed control.



## Herbicide Shortages - Helping Farmers Plan for the 2022 Growing Season

Last fall, there was a lot of speculation that growers would be facing shortages of some widely used herbicides in field crop production, most notably, glyphosate or Roundup. Going into the 2022 growing season, inventories were very tight and significant price increases occurred. In situations like these, growers need to be prepared to make alternative decisions based on availability of certain herbicides in spring. A positive outcome was that it started conversations about weed management strategies that have been forgotten about lately. Having these discussions this past winter with growers better prepared them for weed management this spring. Glyphosate-resistant corn and soybeans have made post emergence weed control relatively easy with a single application of glyphosate or Roundup. Without glyphosate or limited inventories of glyphosate, plus the continuing spread of herbicide resistant weeds, many growers went back to using conventional herbicide programs to control weeds.

The renewed interest in conventional herbicide programs created a need for more information about selecting the most effective herbicide program, especially the older herbicide products. In 2022, many growers reverted back to conventional herbicide programs that were used prior to the introduction of glyphosate resistant (Roundup Ready) corn and soybeans in the mid 90's. Basically, what's old is new again.

Fortunately, the CCE NRAT was in a great position to help growers, crop consultants, agribusinesses, and chemical company representatives make informed, research-based decisions. In 2019, the Northern New York Agricultural Development Program (NNYADP) funded a soybean weed control trial that evaluated more than 20 different conventional herbicide programs. The NNAYDP also provided support for a soybean herbicide trial in 2021 and another soybean herbicide trial in 2022. These two trials compared 12 different soil residual, conventional herbicide programs for the control of glyphosate resistant horseweed (marestalk).

In addition, the CCE Crop Specialists have either led or served as co-leader on ten other on-farm research weed control trials, both in NNY and across the state, that evaluated the efficacy of conventional herbicide programs in corn and soybean. In the last four years CCE NCRAT Crop Specialists have delivered over 25 conventional weed control talks at grower meetings, agribusiness trainings, and field days in 10 counties across the state, including 10 virtual programs. Since January 2022, the Crop Specialists have given 13 talks addressing the herbicide shortages, both virtual and in person, at crop grower and agribusiness meetings in St. Lawrence, Lewis, Jefferson, Oneida, Cayuga, and Genesee Counties, reaching over 800 people.



*Photo credit: M. Hunter.*



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### *Building Strong and Vibrant New York Communities*

Cornell Cooperative Extension provides equal program and employment opportunities. NYS College of Agriculture and Life Sciences, NYS College of Human Ecology, and NYS College of Veterinary Medicine at Cornell University, Cooperative Extension associates, county governing bodies, and U.S.D.A. cooperating.