

Cornell Cooperative Extension North Country Regional Ag Team

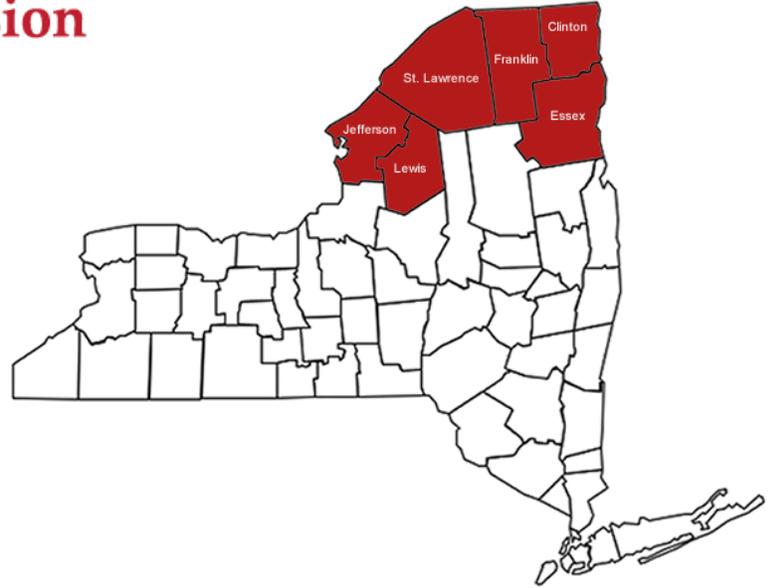
2021 Annual Report



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>

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2021 in Review

As we wind down the 2021 growing season and head into fall and winter, the North Country CCE Specialists and staff are extremely grateful for our farms and ag businesses, our other partners, and for our role in working together with all our constituents to thrive through another year. We are especially thankful for 2021's slightly better weather and economic conditions than we dealt with last year! Our CCE system revealed itself to be strong and central to many public communication and support systems over the past year and a half, and it continues to support NYS farms and communities with research, individualized technical support, and educational programs to keep us all moving forward. Our CCE North Country Regional Ag Team is a huge part of that system, working with county associations, collaborative partners, and statewide teams to improve the productivity and viability of agricultural industries, people, and communities in Jefferson, Lewis, St. Lawrence, Franklin, Clinton, and Essex Counties. To remain viable and productive, our farms need to seize every advantage to adapt to changing markets, to become more efficient, and to keep costs down and productivity up. Our daily work is to create and support those opportunities, by providing evidence-based information and guidance. We always assist our North Country industry, government, public institutions, and agribusinesses toward those same goals.

This year, we successfully used remote and distanced work practices to continue to meet our mission and deliver impact - until we were able to get safely back to in-person farm visits and classes in early 2021. A few of the achievements we are most proud of are described in this annual report. Our Dairy Specialists seized the opportunity for in-person programs with a series of summer events, scattered across the region, aimed at providing technical information on heat stress and calf barn ventilation systems. They also engaged with high school students to expose young people to farming and agricultural experiences – something best accomplished with in-person programs. Our Field Crops and Soils Specialists offered in-person programming to provide NYS DEC pesticide applicator credits specifically to those that had not been able to access online programming and could find themselves out-of-compliance with the state as a result. Our efforts this past year also addressed emerging and important topics of managing new herbicide-resistant weeds with research and communication and helping dairies transition to no-till crop production. The drought of 2020 and 2021 shaped crop management priorities too, so we adapted and designed materials and programs to address those challenges. Our team provided a number of interviews to media this year, providing observations and interpretations of complex topics to radio, television, and print media. One of our most clear impacts was serving as the main communication arm for federal and state COVID relief programs to farms and agribusinesses across the North Country and the state. We collaborated with public institutions and partners and used all of our communication methods to drive awareness and encourage large and small farms of all types to take advantage of appropriate COVID financial assistance programs. The impact of this work was huge and far-reaching and is also summarized in later pages of this report. We continued to help farms and agribusinesses optimize business decisions, advised dairy farms on strategies to enhance animal health and accommodate new regulations, responded to field crop drought and pest problems, and even had our research results shared with broad audiences through many channels.

Though COVID precautions and response changed the way we work and brought new problems to address, it also brought a new robustness to the team's regional impact that will last into the future. Please read about some of our accomplishments and impacts over the past year inside this report. Please contact any of our Specialists for more information on our program.



Photo credit: L. Ferlito



CCE Outreach Delivers \$280M in COVID Relief to North Country

CCE Farm Business Management Specialists are relied upon to provide research, support, outreach, and education to NYS farms and agribusinesses on a wide range of financial and business management topics. The COVID pandemic added a new and critical dimension to the urgency of this mission. As federal and state governments rapidly developed and released COVID response programs, the statewide CCE Farm Business Management network served as the conduit through which these opportunities flowed to constituent farms and agribusinesses. Initial disaster relief programs such as the Paycheck Protection Program (PPP) and Economic Injury Disaster Loan (EIDL), were administered by the US Small Business Administration (SBA), which normally does not serve farms. One of the first hurdles for the CCE Specialists was to raise awareness that farm businesses were now eligible for PPP and EIDL through the SBA. Similarly, USDA programs typically target only specific agricultural commodity types, so CCE worked to communicate eligibility for all farms for USDA programs such as the Coronavirus Food Assistance Program (CFAP), regardless of commodity type or severity of business or personal losses. The CCE Farm Business Management network tackled these daunting communication challenges with several simultaneous strategies and collaborations. The group quickly developed webinars and factsheets for distribution through CCE Associations and educators, through social media, and conventional CCE communications. Webinars were created for the general public, and direct technical support was provided for individual farm managers as they navigated application processes and federal and state administrative systems. By early 2021, the CCE Farm Business Management Specialists, together with CCE staff and collaborators, communicated and supported two rounds of PPP applications, plus the PPP loan forgiveness application process, the EIDL grant application system, and two rounds of CFAP eligibility and applications to thousands of NYS farms. This work continues with the reopened CFAP 2, which will end in October 2021. Details of the scale of the significant positive economic impact of this work to North Country farms is listed in the table below, by county.

County	Total CFAP 1 and 2	Total PPP Loan Value	No. of Loans	EIDL Grants	No. of Grants	Total COVID Relief
Clinton	\$ 36,020,279	\$ 3,492,678	46	\$ 733,000	154	\$ 40,245,957
Essex	\$ 2,957,909	\$ 314,079	14	\$ 579,000	142	\$ 3,850,988
Franklin	\$ 38,222,420	\$ 1,810,402	29	\$ 192,000	64	\$ 40,224,822
Jefferson	\$ 75,208,175	\$ 6,136,802	110	\$ 1,045,000	241	\$ 82,389,977
Lewis	\$ 48,423,148	\$ 2,484,509	44	\$ 133,000	31	\$ 51,040,657
St. Lawrence	\$ 55,713,621	\$ 6,217,398	138	\$ 699,000	155	\$ 62,630,019
	\$ 256,545,552	\$ 20,455,868	381	\$ 3,381,000	787	\$ 280,382,420

The CCE Farm Business Management Specialists and staff network, with collaborating partners, delivered over \$280 million to North Country farms and over \$2.24 billion to NYS farms and agribusinesses. This financial value benefits the farm to which it was awarded so that it may continue to operate, but also to the farm's employees and their families and to the broader community and county systems.



Benchmarking Calf Growth and Performance on Northern New York Dairy

The pre-weaning period is a vulnerable time for dairy calves and as a result, optimizing growth and health can be a challenge for dairy producers. According to several 2019 Agricultural Needs Assessment surveys distributed by CCE across the North Country, dairy producers identified a common theme that is limiting their calves' success. That theme being "You can't manage what you can't measure." Several dairy producers across the North Country *think* that their calves are growing and performing well, but have no way of quantifying this information and have no way of comparing their performance to industry gold standards. With this information, the CCE NCRAT Dairy Specialists organized a peer-to-peer discussion group consisting of 8 farms across the North Country. The discussion group was funded through the Cornell Dairy Advancement Program, which required the group to meet on three separate occasions and to meet three specific milestone goals. Early on it was emphasized that the goal of the discussion group was not to be a competition, nor was it designed to rank the 8 participating farms, but rather to encourage discussion, and for participants to learn from one another. The more specific objectives of the group were to: 1) measure transfer of passive immunity (TPI) among newborn calves, and 2) calculate average daily gain (ADG) across the pre-weaning period. Historically, peer-to-peer discussion groups have been conducted in person, however due to COVID-19 restrictions the discussion group was hosted exclusively online. This environment proved to be effective as demonstrated by great attendance and participation by calf raisers across the region.



Photo credit: L. Ferlito.

For the first objective, the Dairy Specialists took blood samples from a subset of newborn calves on each participating farm to test for TPI. Once the blood was sampled, the values were categorized according to industry gold standards which states that more than 40% of calves within a herd should achieve excellent TPI, ~30% should achieve good TPI, ~20% should achieve fair TPI, and less than 10% should achieve poor TPI. As a result of collecting this information, individual participating farms have continued to work with the CCE NCRAT Dairy Specialists to improve their colostrum management protocols. For example, one farm made changes to their colostrum management protocols and asked that TPI levels continue to be monitored for new calves entering the herd under the new management strategies. Following these changes, this farm is now achieving 100% of sampled calves in the "Excellent" category.

For the second objective, the Dairy Specialists weighed calves within 3 days of birth and again at weaning to calculate ADG. The results from this objective were very eye opening for the participating farms. One farm made changes to their nutrition plan halfway through the discussion group after learning their calves were not growing adequately, and they have continued to work with the Dairy Specialists to promote the growth and success of their calves. Additionally, despite having good results, another farm has asked to keep tracking their calves' growth as they transition from feeding milk replacer to whole milk.

The results from this discussion group sparked great discussion amongst the participants, with one calf manager saying, "the info is really rich, and we can use it to make improvements on our farm. I'm interested in what the other farmers are doing and this feedback from them is helpful". Additionally, this project motivated some farms to implement changes to their feeding and management strategies to achieve better calf growth and performance. Continued follow-up with these farms has demonstrated huge improvements in both passive transfer and ADG. This is a great example of how CCE NCRAT Dairy Specialists work one-on-one, as well as in a group setting, with producers across the North Country on calf management. Lastly, this is a good example of how peer-to-peer discussion groups and benchmarking can be beneficial for dairy farmers.



On-Farm Summer Dairy Programs Provide Producers with Valuable In-Person Learning Opportunity

Since February 2020, almost all programs offered by CCE NCRAT have shifted to virtual settings due to COVID-19 restrictions. While this transition to virtual learning was a success overall, and a lot of resources and materials have been shared with producers and the industry through webinars, podcasts, and virtual discussion groups, many producers voiced that they still prefer in-person meetings. The ability to tour another dairy facility and network with peers in a more casual setting is a major advantage to in-person programming, so as soon as COVID-19 restrictions eased this summer, the CCE NCRAT Dairy Specialists scheduled multiple on-farm programs on timely topics.

Over the course of the summer, the CCE NCRAT Dairy Specialists offered three programs at five locations across the North Country region. The first program, “Heat Stress Management” featured speakers from the Miner Institute, and was offered in two locations. The second program, “Calf Barn Ventilation”, was also offered in two locations, and featured Tim Terry, Cornell PRO-DAIRY. The last program, “Calf Management On-Farm Tour”, was offered in one location and was part of an outreach component of an ongoing NYFVI research grant. These programs provided attendees with the latest research and data in these topic areas, as well as hands-on demonstrations, such as fogging of a calf barn and measuring barn temperature, humidity, and air speed.



Photo credit: C. Havekes.



Photo credit: L. Ferlito.

Overall, these programs were a success, with about 50 people in attendance over the summer, including farmers, veterinarians, nutritionists, and other allied industry members. Due to industry sponsorship and grant outreach funds, these programs were offered free of charge to attendees. These programs received some positive feedback, coverage on a local news station, and farms indicated it was nice to get together in person again. Lastly, follow-up work has been generated with some farms asking for one-on-one visits to troubleshoot calf barn ventilation or other management issues, which will increase the impact of these programs across the North Country. This is a great example of how CCE NCRAT Dairy Specialists collaborate with industry and PRO-DAIRY to deliver timely and important information to North Country dairy producers.



Dairy Specialists Engage with High School Students

Through conversations with local farmers and the CCE North Country Regional Ag Team Advisory Committee, it is clear that farmers see a need in getting the next generation interested in and exposed to opportunities in the dairy industry. Along with many in-person events and programs, COVID-19 put a damper on the traditional CCE Dairy Prospects program that is offered to local high schools every second year. Historically, Dairy Prospects has been offered to students in 9th to 12th grade in Lewis and Jefferson Counties who are interested in discovering the variety of exciting opportunities that lie within the dairy industry. Students are exposed to leaders in the industry, have the opportunity to learn about careers in the industry and tour local farms, and are able to develop friendships and relationships with peers that have similar interests. This program is highly rated amongst those who participate and something that students look forward to, so the Dairy Specialists wanted to make sure the opportunity was still presented to the students in a way that provided a similar experience, but more importantly in a way that ensured the safety of all those involved. With a little bit of adaptation and a lot of creativity, the Dairy Specialists were able to pull off a virtual, revamped version of the program called “Digital Dairy Prospects”. Due to the virtual world being much more accessible, the program was opened up to students in St. Lawrence and Franklin County, as well as Jefferson and Lewis. The program featured guest speakers, touched on the importance of a good social media presence, provided the tools to have difficult conversations with the public, and encouraged the students to be strong agricultural advocates.

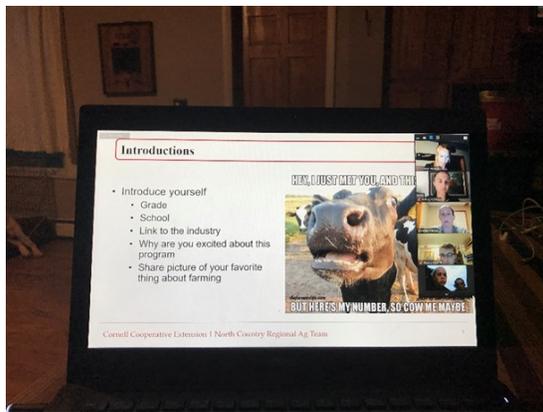


Photo credit: L. Ferlito.

In addition to these focus areas, the tradition was kept of offering one of the most favored parts of the program: farm tours. This year, the Dairy Specialists worked hard to recruit three unique dairy farms to participate in virtual farm tours. The Dairy Specialists filmed as many aspects of the dairy as possible to mimic an in-person farm tour and interviewed the farmer and put the voiceover in the video so that the students could get the full experience. For three consecutive weeks during the 9-week program, the virtual farm tours were played live via Zoom and the owners of each respective farm got on the Zoom call to answer questions from the students.

There was a total of 5 students that completed the program. When asked what the most enjoyable part of the program was, some students said, “learning new things and meeting new people”, and “talking about hot topics in the dairy industry”. When asked what the

least enjoyable part of the program was, students said “that it had to be offered online”, but they also applauded the energy and enthusiasm the instructors maintained throughout the course.

Additionally, right before COVID-19 restrictions came into effect in March of 2020, the Dairy Specialists had another opportunity to engage with high school students at the Lowville Academy Career Day. The Dairy Specialists presented to students in grades 10-12 on career opportunities, and provided hands-on activities to illustrate some of the day-to-day tasks they could experience if they chose a career in the industry.

These two examples of interacting with high school students across the North Country are great examples of how the CCE NCRAT team is working with the broader community to educate and promote agriculture. These are also strong example of how the CCE North Country Regional Ag Team is targeting the next generation to get excited about the opportunities in the dairy industry.



Photo credit: C. Havekes.



Demonstrating the Importance of Managing Weed Seed Movement

Tall waterhemp and Palmer amaranth are two glyphosate resistant weeds found in New York. These are relatively new weeds that are slowly spreading across the state. Weed seed movement is the primary way weeds will spread across the field, farm, county, and state. Weed seeds can be spread by wildlife, soil movement (i.e. erosion), wind dispersal, and equipment (i.e. tillage, planting and harvest).

Possible ways tall waterhemp and Palmer amaranth came to NYS include waterfowl, whole cottonseed used in dairy rations, seed mixes (pollinator and landscape seed), and harvest equipment (combines). Purchasing used combines from other states is one of the more likely methods of introducing resistant tall waterhemp and Palmer amaranth on the farm.

Sound integrated weed management practices include mechanical, cultural, chemical, biological, and prevention. Prevention is the most overlooked weed management strategy. The easiest way to control weeds is to not let them get established on your farm or in your field. Cleaning equipment to prevent the spread of weed seeds is an important weed control strategy. Both tall waterhemp and Palmer amaranth can produce over 1 million seeds per plant. It does not take very many plants to become a major problem in a field.

To demonstrate how weed seeds can be moved via combines, CCE Field Crop Specialists worked with a grower that had recently purchased a used combine from Illinois. It has been previously documented that combines can contain approximately 150 pounds of biomaterial (chaff, grain, weed seed). Prior to its use on the farm, the combine that the grower had purchased from out of state was thoroughly cleaned. All the biomaterial was retained so the Specialists could look for weed seeds. After cleaning the combine, the biomaterial was screened multiple times and weed seeds were sorted out individually by hand. Approximately 97 percent of the weed seeds collected from the combine were tall waterhemp, a weed currently not found on this grower's farm.

CCE Field Crop Specialists sent the collected weed seeds to Cornell AgriTech in Geneva. Dr. Bryan Brown, New York State IPM Program, and Dr. Lynn Sosnoskie, assistant professor in the School of Integrative Plant Science at Cornell AgriTech, planted the weed seeds in the greenhouse and screened this population of tall waterhemp for herbicide resistance. They sprayed herbicides from six different classes and found that this population of tall waterhemp was resistant to four of the six herbicide classes used.

The results of this project showed how troublesome weeds, such as tall waterhemp, can be brought to farms via harvest equipment purchased from other areas of the country. If growers spend the time to prevent the movement of seeds by cleaning combines prior to using them it will reduce the likelihood of these resistant weeds becoming a problem in the future. Growers must be cautious with any purchase of used harvest equipment from areas containing herbicide resistant weeds. Once tall waterhemp and Palmer amaranth become established on a farm weed control costs will be increased.



Photo credit: M. Hunter.



On-Farm Research Herbicide Trials Help Soybean Growers Manage Resistant Marestalk

Glyphosate resistant (GR) soybeans made postemergence weed control relatively easy with a single application. The use of postemergence (POST) glyphosate in GR soybeans has been the primary weed control program used by many Northern NY soybean growers. While this system seemed to simplify weed management, relying on total postemergence programs can be difficult to manage if not properly implemented.



Photo credit: M. Hunter.

In recent years, multiple resistant horseweed (a.k.a marestalk) has been found in New York State and has quickly become a troublesome weed for many growers, including those in NNY. The first confirmed populations of resistant marestalk in NNY were found during the 2019 growing season.

The spread of multiple resistant marestalk moving across the state, including NNY, is forcing many growers to change their current herbicide programs. This has led to a renewed interest and need to use soil residual herbicides for improved soybean weed control. 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. In New York, prior to 2020, there were no known soybean herbicide trials that evaluated the control of multiple resistant marestalk. To address this need, CCE Regional Field Crop Specialists began evaluating different herbicides that could be effective at providing control of multiple resistant marestalk in soybeans.

In 2020 and 2021, replicated soybean herbicide trials were conducted on a farm near Watertown, NY, in Jefferson County (2020), and a farm near Heuvelton, NY, in St. Lawrence County (2021). Both on-farm research trials included 13 different herbicide programs consisting of preemergence (PRE) herbicide used alone and in tank mixes. 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.

This research was very impactful to North Country farmers as it suggests that many traditional herbicide programs are not effective for the control of multiple resistant marestalk. Soybean growers will need to use preemergence herbicide programs for the control of multiple resistant marestalk in glyphosate tolerant (Roundup Ready) or conventional soybeans. Growers could also consider planting Xtend, XtendFlex, Enlist, or Liberty Link soybeans to allow for effective postemergence control options if necessary. The results of the trials have been shared in newsletter articles, blogs, and social media, as well as presented at Extension and industry hosted crop meetings throughout the year. The on-farm trial in 2021 was funded by the Northern New York Agricultural Development Program.



Expanding No-Till Crop Production in NNY with Farmer-to-Farmer Insights

No-till crop production can provide growers with a more resilient production system in an increasingly variable weather environment, and it also leads to lowered cost of production. While no-tillage planting methods are most popular in the Midwest US and Upper Great Plains, very few Northeast dairy farms have adapted these techniques to their farming systems. Here in the Northeast there are a few additional challenges to navigate. Dairies must implement no-till methods while still addressing challenges of manure applications, soil compaction, and occasional ruts from heavy field traffic and perennial forage sods and seedings. Despite these concerns, some Northeast and NNY farms have successfully made this transition and remain fully committed to no-till methods, while other farms are eagerly seeking guidance to use these strategies on their farms. This scenario compels the CCE North Country Regional Ag Team specialists to strive to equip growers with needed information to promote the adoption of these practices that can improve farm profitability and reduce environmental impact to natural resources. The team has identified farmer-to-farmer knowledge sharing as a powerful tool and set out to facilitate this knowledge transfer whenever opportunities appear.

During a 2019 Soil Health for Dairy Farms Field Day in St. Lawrence County, CCE NCRAT facilitated “nuts-and-bolts” conversations among a couple of highly experienced no-till farmers and a dozen farms motivated to adopt these practices on their own farms, but they desired some specific guidance. The effort was expanded this Fall and Winter 2020, by conducting interviews with a few of these highly experienced farmers - specifically about their own corn planter modifications and strategies for planting row crops without any tillage whatsoever. These farmers included commercial dairy and cash crop farms who have not used tillage in more than 10-15 years. Interviews were conducted, transcribed, and captured in an article shared in the CCE North Country Ag Advisor newsletter in January 2021.

Simultaneously with this effort, the Clinton County Soil and Water Conservation District Director, Pete Hagar, was awarded a small grant from NEIWPCCC’s Lake Champlain Basin Program to subsidize conventional corn planter conversions across several counties in the Lake Champlain watershed in an effort to reduce soil erosion and improve water quality. CCE NCRAT was invited to work with Pete and Aaron Gabriel, CCE Field Crops Specialist in the Capitol Region, on 7 farms across 3 counties to assess their existing corn planters and recommend appropriate modifications and additions to permit no-till planting. Specialists met with these motivated farmers, talked, and shared written materials with them, and with



Pete and Aaron, and did some additional research on no-till planter equipment and parts and made recommendations for these 7 farms. Pete delivered recommendations and is working to order parts. The plan is to continue to build on this important work toward more productive and environmentally sound practices by facilitating future meetings, and by writing and speaking on the topic with all interested farms.

Photo credit: K. O’Neil.



CCE NCRAT Specialists Successfully Secure Northern New York Agricultural Development Program Funding for 2021

The CCE NCRAT specialists were very successful in securing significant grant funding through the Northern New York Agricultural Development Program (NNYADP) for the 2021 research year. The CCE NCRAT Dairy Specialists were successful in being awarded funds for two research projects. The first project is focused on calves, with a specific focus on calf barn ventilation. One objective of this project is to assess and troubleshoot ventilation systems (mechanical and/or natural) and calf health in pre-weaned calf barns in Northern NY. The second objective is to follow calves through weaning and troubleshoot problem areas as they relate to ventilation and respiratory disease. This will help NNY producers better understand the importance of investing in and properly managing calf barn ventilation systems. The second dairy related project is focused on transition cow nutrition, metabolic health, and feeding management practices. A specific objective of this research is to evaluate relationships of productivity, reproduction, and health on various dairy farms in NNY using the existing Metabolite Health Index. A second specific objective of this research is to evaluate how feeding management practices, feed sorting, and variation in TMR composition during the dry period, influences metabolic health and performance post-calving. The Crop Specialists also had success in their application efforts. One of the awarded projects will evaluate several different herbicide programs for the control of glyphosate resistant horseweed and other important annual weeds in soybeans. This trial will include soil applied and postemergence herbicides to determine the most effective means of controlling resistant horseweed. The development and evaluation of several herbicide programs will help NNY soybean growers make informed decisions about their weed control systems. The other awarded crops project will examine the relationship between corn yield and soil compaction severity in conventionally managed fields on commercial NNY farms. Historical yield data collected over multiple seasons will be used to map yield zones and, within each yield zone, soil hardness will be measured using a penetrometer at 50-100 georeferenced locations. Soil hardness data will be used to examine the relationship of soil compaction with corn yield and with stability of corn yield over time. The team's success with securing grant funding to organize and execute these important research projects is an example of how the CCE NCRAT Specialists help to bring hands-on, practical, and relevant research findings to North Country agricultural producers.



Photo Credit: C. Havekes.



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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.