Cornell Cooperative Extension | Cornell Vegetable Program

QUARTERLY HIGHLIGHTS ... Q3

The Cornell Vegetable Program is a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties: Allegany, Cattaraugus, Chautauqua, Erie, Genesee, Monroe, Niagara, Ontario, Orleans, Oswego, Seneca, Steuben, Wayne and Yates in 2020.

The team of Vegetable Specialists provides educational programs and information to growers, processors and agri-business professionals, arming them with the knowledge to profitably produce and market safe and healthful vegetable crops.

Snap bean harvest, August 2020.
Photo: J. Kikkert, CCE Cornell Vegetable Program

The Weed Zapper: Evaluation of the Efficacy, Crop Safety and Economics

Weeds are a significant barrier to maximizing crop production. This can be the result of limited control options (e.g. organic systems) or through the development of herbicide resistance. To maintain or improve crop production standards, novel control technologies must be identified, evaluated, and optimized. One such technology is the Weed Zapper, an electric discharge system where a high voltage bar passes slightly above the crop canopy to electrocute any weeds that are taller than the crop. Under optimal conditions, the weeds are completely killed down to the roots. Despite reported successes, university- and extension-based research on the efficacy of electric discharge systems is lacking. The available literature is out of date; trials were conducted using prototype equipment and/or under growing conditions that are not representative of New York's current production environments.

Dead weeds in a beet field after a Weed Zapper treatment (left) vs. non-treated (right).
Photo: J. Kikkert, CCE Cornell Vegetable Program

During the summer of 2020, the CCE Cornell Vegetable Program collaborated with weed scientists from Cornell University and the NYS Integrated Pest Management Program to evaluate the Weed Zapper on four farms in Western NY. The Weed Zapper systems are owned and operated by two of the farms. Fields of table beets, cabbage, soybeans and edamame received Weed Zapper treatments multiple times throughout the season. The team worked with the farms to document weed growth before and after treatment, along with overall effectiveness and crop safety. The Weed Zapper was effective at killing multiple weed species, but varied in efficacy. Crop damage occurred in table beets at the highest setting. The overall goal of this project, funded by the New York Farm Viability Institute, is to evaluate the system for weed control, highlight optimum conditions for use, and provide growers with an economic assessment supporting the decisions to adopt new technology. Year 2 of the project will include controlled trials at the University farm. Ultimately, we intend for this project to help farmers reduce crop-weed interference, prevent weed seed production/return to the soil seedbank, while maintaining/improving farmer's abilities to achieve economic objectives.

A high voltage bar in the front of the tractor kills weeds towering above the crop. A generator is pulled behind the tractor.
Photo: J. Kikkert, CCE Cornell Vegetable Program

“Hammering” Onion Thrips in Elba Muck

Onion thrips are tiny insects whose feeding damage can reduce onion yields by 30 to 50%. Of the major muck onion producing regions in New York (including Oswego, Wayne and Yates muck), the Elba muck, by far, has the highest onion thrips pressure for a few reasons. Elba is hotter and drier, which speeds thrips population buildup. Elba is surrounded by alternate hosts of onion thrips, hay and cereal crops, which inundate the onion crops in “thrips tsunamis” when they move out of these crops during harvest. There is tremendous movement of onion thrips from early-maturing to later-maturing onion fields within the onion-centric 5000-acre Elba muck. Furthermore, Elba has residual Iris yellow spot virus, a disease vectored by onion thrips, which further stifles bulb size and yield.

The six Elba onion growers are IPM award-winning champions for their unprecedented adoption of scouting-based spray thresholds and insecticide resistance-management strategies for controlling onion thrips. The problem is that there is only one insecticide that can effectively control a “thrips tsunami”, Radiant, which is affectionately called “the hammer”. Growers are concerned that overuse of their only “hammer” will result in development of insecticide-resistance, deeming it ineffective.

During the hot growing season of 2020, CCE Cornell Vegetable Program Onion Specialist, Christy Hoepting, spontaneously decided to conduct an ad-hoc onion thrips “hammer” trial in a field recently inundated by a “thrips tsumami” where the thrips pressure was 20 times higher than Cornell’s spray threshold! Fantastically, the trial yielded a “new hammer”, which is a tank mix of three insecticides. Since these insecticides all have different modes of action than Radiant, and are labeled for control of onion thrips in onion in New York, this treatment can be flawlessly incorporated into the current thrips management program. Elba onion growers are thrilled that they now have a “new hammer” as a rotation partner to preserve the useful longevity of their beloved “hammer”.

CVP Onion Specialist, Christy Hoepting (front), CVP Technician, Sarah Vande Brake (in hat), and Cornell Intern, Taran Bauer (back) count thousands of onion thrips in a trial designed to find a new insecticide that can handle heavy thrips pressure.
Photo: E. van der Heide, CCE Cornell Vegetable Program

Ridiculously high numbers of onion thrips (tiny yellow or brown slender insects) feeding on an onion plant. Feeding injury from such high thrips pressure turns the onion leaves white, which will reduce onion yield by 30 to 50%.
Photo: C. Hoepting, CCE Cornell Vegetable Program

Cornell Vegetable Program Specialist Christy Hoepting presents a talk on weed control in onions at the Wayne County Fresh Market Potato and Onion Twilight Meeting. Growers in attendance were asked to comply with COVID-19 protocols, socially distancing by farm. Photo: M. Lund, CCE Cornell Vegetable Program

Fresh Market Potato and Onion Twilight Meeting

Field Meetings in the Time of COVID-19

This September, the CCE Cornell Vegetable Program (CVP) helped organize a twilight meeting, hosted by CCE Wayne County, for potato and onion growers. Due to COVID-19, many events were moved to online platforms this summer but growers were still requesting in-person meetings, if possible. Twilight meetings are generally highly social events for growers; with a few changes to the meeting format as well as proper social distancing, following Cornell COVID-19 guidelines, and grower cooperation, the CVP and CCE Wayne County were able to hold a fun, informative, and safe in-person meeting.

Nice early September weather allowed the meeting to be held outdoors at Williams Farm. Walter De Jong, who heads Cornell's potato breeding program, shared updates about new potato varieties being tested in the fresh market potato variety trial at Williams Farm. Growers were able to see examples of tubers from different varieties taken from the trial plot before the meeting. CVP Specialist Margie Lund provided a presentation on late blight forecasting, and shared what tools are available and how to properly use them for potato disease forecasting.

The second half of the meeting focused on onions and included many engaging talks by CVP Specialist Christy Hoepting, and Technicians Emma van der Heide and Sarah Vande Brake. Onion growers had the opportunity to learn about post-emergent control of weeds, distinguishing necrotic spots on onions, fungicide trial results for Botrytis leaf blight, and insecticide trial results for onion thrips.

Fourteen potato and onion growers were able to attend, and reviews from growers in attendance were overwhelmingly positive. While in-person meetings aren't possible in every situation at the moment, holding a safe outdoor twilight meeting for growers was successful and well-received.

Farm Food Safety Guidance Continues Despite On-Farm Visit Limitations

On-Farm Readiness Reviews

Despite a reduction in overall farm visits for the quarter due to COVID, food safety assistance from the CCE Cornell Vegetable Program continued. On-Farm Readiness Reviews (OFRR) resumed in July through September. Robert Hadad, CCE Cornell Vegetable Program's food safety expert, was called upon to do 8 On-Farm Readiness Reviews, visiting mixed vegetable operations and onion growers in Niagara, Orleans, Genesee, Monroe, Oswego, and Oneida Counties. The need for an experienced Extension Specialist to professionally look at the farms' production practices was necessary to verify their assessments of potential contamination risks. Hadad's expertise in wash/pack hygienic design and cleaning helped growers see where they can make improvements not only to meet the federal regulations but also to ensure their produce is safe for consumers.

Wash/Pack Facility Design and Operation

Remote assistance was provided to a Western NY farm that was looking to purchase new produce wash equipment, with the intention to improve their food safety footprint, but they did not know what to look for. Hadad conducted an analysis of what they grow, what their markets are demanding for packing/distribution, storage space, and future expansion plans. Hadad's guidance inspired the farm to reexamine their future goals and market potential, deciding to scale-up and move towards a larger operation. Through aggressive marketing, they are going to move part of their production to wholesale, increasing the benefit of larger and better wash equipment.

The CCE Cornell Vegetable Program also worked with a produce farm that wanted to expand production and markets. To meet the changes, they wanted to renovate an old milking parlor dairy barn space into their wash/pack facility. This required the farm to make critical upgrades to the structure like drains, floors, walls, and ceilings. Using pictures they emailed and a "virtual" walk-through tour conducted using FaceTime on smart phones, Hadad gathered information about the facility and created a design layout. Additionally, the farm was provided with options for renovation materials. The project is expected to be completed before the 2021 growing season.

Food Safety Grower Contacts

33 phone consultations

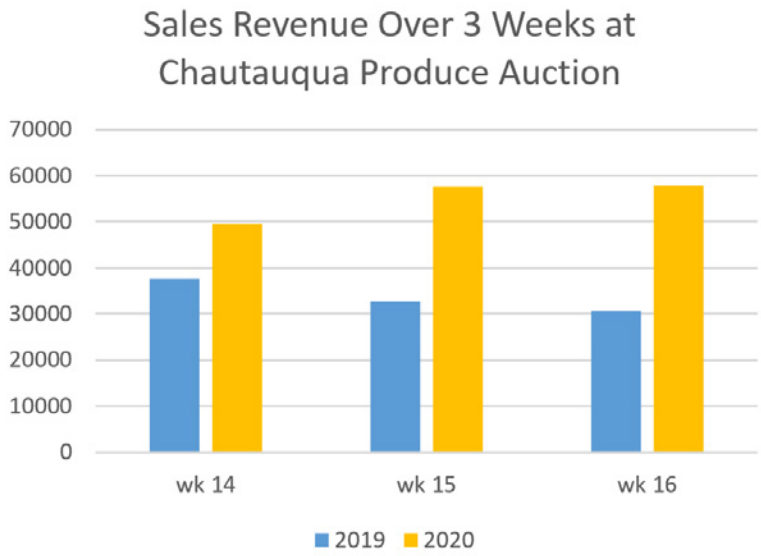
21 email exchanges

7 on-farm visits

Photo: R. J. Anderson, Cornell Cooperative Extension

Supporting Vegetable Farmers During COVID-19

Unexpected Impacts on the Food System Spurs Greater Grower Reliance on Cornell Cooperative Extension Agriculture Specialists



The COVID-19 pandemic has had many unforeseen impacts on society and our food system. Some sectors, such as dairy, experienced severe loss due to the disruption of dining and food service. Local fresh fruits and vegetables, on the other hand, saw record demand. Anecdotally, farmers shared with us that they sold out of bedding plants in the spring and experienced all-time high wholesale prices for crops such as tomatoes (nearly ($5/lb) and strawberries (12/qt). The six auctions in the CCE Cornell Vegetable Program region all reported record demand for local fruits and vegetables. At one produce auction in the Southern Tier, week-to-week revenue was up $27,000, compared to the same week in 2019, an 89% increase!

With the interruption of group meetings, the CCE Cornell Vegetable Program (CVP) fresh market team made a commitment to support farmers with individual visits to the farms who were growing to respond to the market demand. Farmers were challenged with a very dry summer, as well as high insect pressure. CVP Specialists tailored recommendations based on observations at each farm to keep yields bumping. These interactions also fueled our written materials for VegEdge. To quote one produce auction Board of Directors, ***"Thanks for everything you've done to keep the [produce] auctions going this spring."***

Staying healthy on a Seneca County farm visit.

Which Post-Harvest Garlic Handling Practices Yield the Highest Quality Garlic?

There seems to be 101 different ways of handling garlic post-harvest during curing and storage. The objective of this project was to determine which practices result in the best quality garlic. Grower cooperator, Mike Mele (Orleans Co.) kicked off the project by growing about 2600 garlic plants for the CCE Cornell Vegetable Program (CVP). Then, Christy Hoepting and her Techs harvested the garlic, sorted it by size, and divided it evenly into 5 sets of 20 for a total of 100-bulb samples per curing location. The 20-bulb samples were put into mesh onion bags and included a temperature and relative humidity sensor in one of the bags, and then the samples were distributed, in July, to 13 garlic growers across the CVP region (and slightly beyond) for a total of 24 unique curing/storage scenarios. Each grower included our samples along with their garlic as it was cured and stored. Samples are being collected now; we're gathering a lot of data from each bulb, then we'll run vigorous statistical analyses to see which practices yield the highest quality garlic...and determine who is the winner! Stay tuned!

Project funded by NYS Farm Viability Institute, and Northeast Sustainable Agricultural Research and Education

Below, left to right: McAllister (Orleans Co.) cures their garlic with tops on in layers on a wagon in a high tunnel. Tomion's (Yates Co.) top their garlic and align the tops through mesh table tops as the garlic cures in a barn with a lot of air. Ed Fraser (Monroe Co.) cures his garlic topped in single layers on shelves with fans in a high tunnel. Greg Wilson (Cayuga Co.) believes that curing garlic with the tops on in direct sunlight will result in the highest quality garlic. At Torrey's (Genesee Co.), garlic is cured on a commercial-scale onion drying wall. Photos: CCE Cornell Vegetable Program

Newly Funded Grants & Projects

Your Trusted Source for Research-Based Knowledge

Working together, CCE Harvest NY (HNY) and the Cornell Vegetable Program (CVP) successfully developed a 3-year proposal titled **'Best Management Strategies for High Organic Matter Soils in Urban and Rural Vegetable Production'** as an NRCS Conservation Innovation Grant for $246,456. We thank NRCS for their support!

Prolonged, intensive use of soils in imported urban soils and high tunnel production restricts yield and profitability while compromising soil and microbial health and other environmental parameters. CVP and HNY, in collaboration with the Cary Institute for Ecosystem Studies, and 10 urban and rural producers, will investigate three management approaches for vegetable farmers with high organic matter soils: pH adjustment, cover cropping, and calibrating soil test results to account for bulk density. Soil microbial activity and diversity associated with the adoption of these techniques will be researched and, if possible, correlated with crop health. Similar soils have been identified in New York City, Buffalo, and rural high tunnels in the CVP region, where the project team will carry out research and outreach efforts. This research will contribute to:

- Improved farm economics through improved crop health, increased yields and quality, reduced nutrient application, and decreased farm labor;
- Enhanced ecosystem services through healthier soil for filtering rainwater, improved pollinator habitat, and improved soil microbial health;
- Improved community wellbeing through increased capacity of urban farms to provide culturally appropriate food for marginalized populations and the linkage of rural and urban growers across cultural bridges in finding solutions to similar production issues.

Impact will be quantified through an Evaluation Plan with measures to document the implementation of BMPs: pH management, bulk density interpretation and/or cover cropping, lab data on microbial communities; crop health as measured by foliar nutrient status and yield; and farmers' knowledge on how to manage high organic matter soils in both urban and rural settings.

An urban farm in Buffalo. Research will help farmers manage the unique nature of these soils for plant and human health.

High tunnels and urban soils are similar in their high organic matter and calcium content. Research from this project benefits urban and rural growers manage these soils profitably.

An Urban Ag advisory group meets with Yolanda Gonzalez and Sam Anderson of HNY and CCE Director Chris Watkins.

Photos: J. Reid, CCE Cornell Vegetable Program

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