

QUARTERLY HIGHLIGHTS

JULY - SEPTEMBER 2018

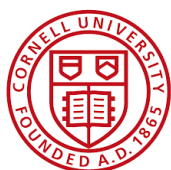
Cornell Vegetable Program

A Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in 13 counties



The Cornell Vegetable Program 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.

- Together, the Cornell Vegetable Program made more than 1,025 farm visits and phone/email consultations amounting to 540+ direct contact hours
- Cornell Vegetable Program Specialists gave presentations at 23 events hosted by the Cornell Vegetable Program, Cornell Cooperative Extension associations and other collaborative organizations this quarter
- 499 people attended meetings where presentations were made by Cornell Vegetable Program Specialists



THE "SWEET POTATO WHISPERER": LOCAL GROWER EXPLORING TRANSPLANT PRODUCTION PRACTICES

The benefit of regional agricultural teams shines through in the example of a local farm visit that has led to an opportunity for growers across the region. In September, CCE Cornell Vegetable Program Specialist Robert Hadad, together with CCE Wayne County Executive Director Beth Claypoole, visited a small, mixed vegetable farmer in Wayne County that grows sweet potatoes. He has focused production on 4 varieties that do very well for him. Many sweet potatoes grown in WNY are of one variety, Beauregard, out of NC. Beauregard generally produces one very large tuber and a number of small ones. The big tuber is usually too big for many consumers (as well as chefs) and the small tubers are not that impressive. The farmer that we visited has plants that grow consistently intermediate sized tubers that are ideal for chefs and his roadside stand customers love them!



A local grower is working with the Cornell Vegetable Program to expand transplant production in order to help supply WNY growers with sweet potato slips acclimated to our season. Photo: R. Hadad, CVP

What's so exciting about this? The demand for reasonably sized sweet potatoes has grown well beyond supply. The sources for sweet potato transplants (also called "slips") are from the south mostly NC, GA, and LA. Many times, the transplants are sent up to northern growers in April or early May. When we have an early spring that is fine. When we have a cold wet spring, the transplants can't be planted and farmers lose many of the slips before they ever hit the field. The farmer in Wayne County has developed a successful operation to produce his own transplants.

After meeting with the farmer, it was clear he enjoyed challenges. The question was poised to him about expanding transplant production in order to help supply WNY growers with sweet potato variety slips that have become acclimated to our shorter-than-the-south season and have them ready when our growers need them, mid to late May. He has agreed to work on a project to create a sweet potato slip production operation to provide locally grown transplants.

Together, with the CVP being an advisor, a NESARE farmer grant will be applied for this fall. The goals are to compare two transplant production practices to determine the best to use to ramp up the number of slips that can be grown in his greenhouse. The resulting transplants then would be made available to other growers to expand the amount of sweet potatoes grown in the region. Besides fresh market sales, there is a great interest from farm-to-school programs in having fresh sweet potatoes on the cafeterias' menus.

PARTNERSHIP WITH RIT GROWS REMOTE SENSING APPLICATIONS FOR VEGETABLE INDUSTRY

Large acreage vegetable fields lend themselves readily to remote sensing technologies. CVP Processing Vegetable Specialist Julie Kikkert and Cornell University Vegetable Pathologist, Sarah Pethybridge have continued a three-year partnership with scientists from the Rochester Institute of Technology (RIT) Center for Imaging Sciences. Initial investigations, funded by a grant from the USDA CARE Program have focused on management of white mold disease in snap beans, one of the most difficult diseases to manage. The project focuses on risk modeling and detection of crop flowering. When favorable environmental conditions exist, spores of the fungus infect bean flowers and the infection later spreads to the pods making them unmarketable. So far, the project has narrowed down the useful spectral wavelengths, which will make the technology more affordable to the industry. Additionally, the technology has been highly accurate at detecting flowering in snap beans, critical knowledge for the timing of fungicide sprays. In 2018, the group has expanded their work to table beets, where imaging of crop emergence and growth is being correlated with beet root quality and yield. This project was initially funded by Love Beets USA. The group was also recently funded by a large NSF grant to RIT (subcontract to Cornell) and will provide student training, as well as focus on disease risk modeling, harvest scheduling, and yield modeling. The project is also supported by advisory team members from Seneca Foods, Farm Fresh First, Love Beets, Agrinetix, Harris Corporation, and Headwall Photonics.



CVP Vegetable Specialist Julie Kikkert (light blue shirt) observes one of the RIT drone take-offs at Cornell AgriTech research farm in advance of a flight over a 2018 snap bean research plot.
Photo: R. J. Anderson, Cornell Cooperative Extension

NEW FRESH MARKET SPECIALIST HITS THE GROUND RUNNING

The Cornell Vegetable Program welcomed several new staff this summer, including Elizabeth Buck as a Fresh Market Vegetable Specialist. Elizabeth's main objective this summer was to conduct a listening tour of Erie, Niagara, Orleans, Cattaraugus, Chautauqua, Genesee, and Allegany counties to get to know vegetable growers. Primarily, this work was carried out as farm visits. Each meeting would include an introduction to the grower, an overview of the farm, and an open discussion about what sort of programming people have liked in the past. Visiting farms across the region also provided insight regarding research needs throughout the production region.

To date, on-farm visits have been conducted with 53% of the currently CVP-enrolled fresh market growers in the seven westernmost counties. Fall meetings are planned with several more growers. Helping out with on-going projects, and teaching at seven summer field meetings kept the summer well-rounded. Proposals for future programming and research are already underway, well-informed by the conversations and field scenarios of this summer season.



Elizabeth Buck discusses powdery and downy mildew management in cucumbers at the Vegetable Pest Management Field Day in Portland, NY.
Photo: Amara Dunn, NYS IPM Program, Cornell AgriTech at NYSAES

NEW COVER CROP GRANT FOR HIGH TUNNEL RESEARCH

In a 2016 survey by the NY Farm Viability Institute of 41 vegetable farms, respondents were asked to prioritize issues. When asked *"if an ag educator or researcher could help you solve 3 problems..."* both soil health and high tunnel production ranked in the top 5 common responses. High tunnels (soil-based greenhouses) have been one of our top research topics recently.

In fact, Cornell Vegetable Program research on over 40 farms has documented that many high tunnels have less than 4% soil organic matter and 94% of soils contained excessive phosphorus levels. The intensive nature of cropping without precipitation or rotation can drive soils out of balance in a hurry. In this quarter, Judson Reid and Caitlin Vore were awarded \$30,000 in Federal Capacity Funds to examine the potential of cover crops to improve soil health in high tunnels over a 3-year period.

Our hypothesis is the integration of winter cover crops into warm season high tunnels will decrease nitrogen demand of the summer crop, leading farmers to apply less fertilizers and compost. Decreasing applications of nitrogen will decrease phosphorus, magnesium and calcium levels as these are part of most nitrogen applications. This will lead to increased fruit yield and quality, profitability and soil quality. To research this we will grow winter cover crops at a cooperating farm with 3 high tunnels. The objective is to research and document best management practices on winter cover crops in tunnels where tomatoes are grown.

In the previous round of Federal Capacity Funds, our education efforts:

- Engaged over 1,500 farmers at 54 meetings
- 13 project related articles were featured in regional and national publications with combined circulation of over 70,000
- Project staff made over 500 visits to cooperating high tunnel growers, who demonstrated increased tunnel economic performance via decreased inputs, and/or increased yields, with net income gains as high as 46%.

For this recent award, our goal is for 35 farms to implement winter cover cropping and/or Best Management Practices by providing data that reveals input reduction, or yield/profitability increase to the project team. These impacts are particularly relevant to New York as high tunnel production has doubled over the last two Ag Census and will continue to grow, as NRCS provides funding for adoption and urban farms enter the industry.



Buckwheat cover crop in a Seneca County high tunnel. Photo: Judson Reid, CCE Cornell Vegetable Program

AD HOC ON-FARM FUNGICIDE TRIAL RENEWS HOPE FOR BROCCOLI PRODUCTION

The hot and humid weather with heavy rainfall from remnants of hurricanes during August was the perfect storm for *Alternaria* leaf spot (ALS) to rage out of control in brassica crops across the CVP region in 2018. CVP fresh market specialists received several complaints about a disease that caused unsightly lesions on both leaves and marketable portions of brassica plants. When ALS attacks the head of broccoli or cauliflower, it renders them unmarketable. Hoepting visited with a grower who was planning to cut broccoli production by one-third, because he had just lost over 85% of his most recent 5-acre planting to ALS head rot, a loss of \$7500. She immediately set up an ad hoc small-plot replicated trial on his farm in hopes of finding a fungicide(s) that could control this devastating disease.

By the time the broccoli was ready to harvest, differences among treatments in side-by-side plots were striking. In the untreated check, 98% of the heads were unmarketable due to severe ALS, while the best fungicide in the trial, Merivon had only 5% unmarketable heads. The fungicides that the grower had been using, Bravo and Quadris, resulted in 98% and 49% unmarketable heads, respectively. Commercially available fungicides, Switch, Quadris Top and Endura had significantly lower unmarketable heads than Quadris with only 10 to 33%. If the grower were to adopt a 4-week fungicide program with top performing fungicides, he could expect to get at least 75% marketable heads. Compared to his Bravo/Quadris program, which only yielded 1470 pounds and net \$1323 per acre, the new program could increase both yield and net profit 5-fold by 5881 pounds and \$5562 per acre, despite a 5-fold increase in cost of fungicides from \$44 to \$223 per acre. After viewing the fungicide trial on his farm, the grower immediately adjusted his fungicide program to include the most effective fungicides in all of his remaining brassica plantings. He is planning to resume full broccoli production next year with new fungicide program, which has potential to increase profit by \$166,860 in his 30 acres of broccoli. Trial results will be shared with CVP growers over the winter, so all conventional growers can benefit from improved ALS control in their brassicas.



Differences among treatments were striking. Effective fungicide resulted in nice clean heads (front) compared to rotten heads in the untreated in the back.
Photo: Christy Hoepting, CCE Cornell Vegetable Program



Sniff test for early detection of rot. You may not be able to see it, but you can smell it!
Photo: CCE Cornell Vegetable Program

NEWLY FUNDED GRANTS

Each year, the Cornell Vegetable Program is tasked with generating a certain percentage of our operating funds, or Program Grants and Funds (PGF), through research grants, sponsorships, and meeting registration revenue. This quarter, we are pleased to have received the following grant funds:

- **Fostering Agricultural Remote Sensing (FARMS) Alliance**, NSF PFI (subcontract with Rochester Institute of Technology), 9/1/18 - 8/31/21, \$119,441 (Pethybridge, Kikkert)
- **Breaking Down the Barriers to Organic No-Till Soybean and Dry Bean Production Through Improved White Mold Management**, USDA NIFA Organic Transitions Program, 9/1/18 - 8/31/21, \$500,000 (Pethybridge, Ryan, Kikkert, Stanyard)
- **BMP and Winter Cover Crop Integration in High Tunnel and Urban Vegetable Systems**, Federal Capacity Funds, 9/1/18 - 8/31/21, \$10,000 (Reid)

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