# **Cornell Cooperative Extension**

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Eastern NY Commercial Horticulture Program

# QUARTERLY HIGHLIGHTS

APRIL—JUNE 2021

# **Building Partnerships with Soil and Water to Increase Equipment Access**

### Crystal Stewart Courtens, Vegetable Specialist

During the spring of 2020 Crystal worked with the Fulton County Soil and Water Office to write a grant for a no-till drill and a strip till unit to allow vegetable farmers in the county to increase their use of cover crops in vegetable systems (see photo above). This grant is part of an increasingly strong effort by New York State to focus resources on improving soil health. The equipment would be used to plant approximately 120 acres of vegetable land with semi-permanent cover. This cover would help reduce erosion during extreme rain events, reduce nutrient runoff, and keep crops such as pumpkins clean until harvest.

The equipment will be used by farms enlisted in the planning and implementation of the grant for the first three years, and then will be available to rent for all vegetable farmers in the county following the grant period. The equipment was chosen specifically for use with the smaller tractors favored by small and mid-sized vegetable farms, which often could not justify the expense of such equipment without programs like this one.

## **Bloom Thinning with New Materials**

### Mike Basedow, Tree Fruit Specialist and Andy Galimberti, Technician

This spring in the Champlain Valley, we continued our work in precision bloom thinning with the pollen tube growth model. In addition to using ammonium thiosulfate as our main bloom thinning material, we also trialed lime sulfur as a thinning material. Lime sulfur is commonly used as a thinning agent in Washington State, but we have very little experience with it in Eastern NY. Lime sulfur is reported to be a more potent thinner than ammonium thiosulfate, and it's OMRI approved, making it a viable thinning material for organic growers.

In 2021 we set up three on-farm bloom thinning demonstrations, two in Peru, and one in Chazy. Blossoms were closely monitored so that we could use the pollen tube growth model as an indicator for grower applied thinning treatments at the appropriate timings. Following the bloom and petal fall thinner applications, we measured the rate of fruit growth at each site to help determine how much fruit remained on each tree. These measurements then guided our subsequent thinner applications at the 12mm and 18mm growth stages. We will harvest these blocks this September and October, and look forward to having another year's worth of data to share at our winter meeting in February.



Tree with fruit clusters tagger to run the fruit growth rate model.

In addition to our field trial sites, additional assistance with the pollen tube growth model and the fruit growth rate models were provided to growers throughout the region through site visits, phone calls, and email support. Along with our three measurement sites in Clinton county, Natasha Field also collected fruitlet growth data at a commercial orchard in Saratoga county. These models were discussed during our various virtual thinning meetings.

# **Next Generation Farmer Peer Development Program**

## Teresa Rusinek, Vegetable Specialist

ENYCHP received a grant through the Northeast Extension and Risk Management and Education program of USDA to develop programming for next-generation vegetable and small fruit farmers in Eastern NY who wish to move into a leadership or ownership position on their family's farm or a different farm. Over the next year and a half, ENYCHP will provide opportunities for next –gen growers to gain production and business skills while networking with their peers in the region. Please contact Elizabeth



Higgins or Teresa Rusinek if you know a next-gen grower who would benefit from this program. We will be happy to reach out to them if we haven't already.

- We will be holding informational meetings at field days this summer and fall where growers can learn more about this program and meet other Next-Gen farmers.
- We have developed a Slack group where next-gen growers interact directly with peers and receive direct assistance from ENYCH veg production and business specialists.
- There will be monthly training and networking programs from November March on management topics ranging from production skills to applying for loans.

# Measuring the Greenhouse Gas Released in Different Squash Production Systems

#### Ethan Grundberg, Vegetable Specialist



With support from the Hudson Valley Farm Hub, specialist Ethan Grundberg is collaborating with CCE Orange County Natural Resource Educator Erik Schellenberg to measure the impact of different tillage and fertilization treatments on the total greenhouse gas released from the soil in organic squash production. The field trials began in 2020 and will run through 2022 with Grundberg leading the trial design and data analysis and Dr. Peter Groffman's lab at The Cary Institute in Millbrook completing the gas chromatography required to calculate the carbon dioxide, methane, and nitrous oxide fluxes from the field. Though results from the 2020 field season did not demonstrate any statistically significant differences in total greenhouse

gas flux in CO2 equivalents between the treatments, the data did support the conclusion that the conventionally tilled plots released 2.5 times the amount of greenhouse gas in the two-day period following pre-plant tillage in June. There were also numeric trends toward higher season-long gas release in the plots that received an additional 40 pounds of nitrogen fertilizer compared to the low nitrogen plots. The full annual report is available for view at <a href="https://cornell.box.com/s/5adlu8bgdf35vaj9vv1z9nzwx8xfnlwp">https://cornell.box.com/s/5adlu8bgdf35vaj9vv1z9nzwx8xfnlwp</a>.

## Satellite Imagery in Daily Vineyard Reports

#### James Meyers, Viticulture Specialist

In June 2021, the daily ENYCHP daily vineyard reports began including satellite imagery for a small number of vineyards. The imagery is currently being collected for three Hudson Valley Vineyards and will soon include vineyards in the Lake Erie region, Finger Lakes, and Long Island. This new feature was introduced in conjunction with a Cornell Initiative for Digital Agriculture research project (Dr. Katie Gold, PI) designed to determine the willingness of grape growers to adopt the use of satellite imagery, particularly normalized difference vegetation index (NDVI), in their day-to-day activities. NDVI provides growers with a map of growth variation within their vineyards that can be useful in directing variable rate applications and other activities.

> Google Earth Engine scripting used to retrieve Sentinel-2 satellite NDVI imagery from the European Space Agency.



# **Rootstock Trial**

#### Daniel J. Donahue, Tree Fruit Specialist and Sarah Elone, Technician



A Rootstock trial was planted in Columbia County, NY this spring which will collect 10 years of data. This trial includes 3 popular apple varieties – Gala, Snapdragon (NY-1,) and Evercrisp. The trial compares the performance of these varieties across 12 different rootstocks. The first three are popular rootstocks (B.10, B.9, and M.9) along with 9 other rootstocks developed recently in Geneva. This trial was also planted in Western NY and the Champlain Valley in order to see how these combinations perform in specific regions of NY.

The trees were cultivated via tissue culture in small pots in a greenhouse. They were planted at 3 by 11 foot spacing. Each variety/rootstock combination is planted in a group of 6 trees, and there are 5 randomly placed replications of each combination to ensure that variability in the orchard's soil does not interfere with results. A total of 1,080 trees were planted as a part of this trial.

This trial serves as a demonstration for growers to observe these combinations in the field. The results of this research will be used to help growers choose the best rootstock/variety combination for future planting in their orchards. By having the trial replicated across regions, the results are tailored specifically to their regions specific environmental pressures and climate. Choosing optimal rootstocks for each variety can help make the local apple industry more efficient and profitable for the growers by increasing yield, decreasing susceptibility to disease and insects, etc.

# Anaerobic Soil Disinfestation Investigated in Eastern NY for Use as Pre-Plant Treatment for Perennial Strawberries

#### Laura McDermott, Berry Specialist

Soilborne diseases pose severe limitations for perennial strawberry production in the northeast. Plant pathogens often exist as a disease complex (black rot), or are ubiquitous and therefore difficult to rotate crops effectively (verticillium). Anaerobic soil disinfestation (ASD) has provided effective management of these diseases in warm regions of the US.

ASD involves three major components to effectively disinfest soil:

- 1. Amend soil with a carbon source
- 2. Irrigate soil to saturation
- 3. Cover soil with plastic for several weeks

The ASD process involves providing beneficial soil microbes with a high volume of carbon food to break down. During that process, the microbes deplete soil oxygen and produce toxic byproducts that then kill damaging soilborne pathogens.

This study involves four participating farms. Two farms in eastern NY (Saratoga and Washington counties) grow June bearing strawberries on bare ground. These farms have a confirmed population of soil borne pathogens and have

used chemical fumigation in the past to reduce the impact of soil diseases on their



Tarped plot at Ariel's Farm during irrigation saturation phase of ASD.

crops. Both of these farms have limited land for rotation. The remaining two farms in Maine and Batavia, NY grow June bearing strawberries on plastic mulch.

Plant health, production and weed populations will be monitored over three growing seasons, 2021-23. Cost of treatments will be examined and compared to normal production practices. Information will be shared with growers throughout the three years of the study.

This work is being supported by NE SARE. Maine Organic Farmers & Gardeners Association (MOFGA) is a collaborating organization.

# High Tunnel Sprouting Broccoli and Mini Cabbage Trial Yields an Early Harvest at the Cornell Willsboro Research Farm

#### Elisabeth Hodgdon, Vegetable Specialist

Early spring presents a challenge for many vegetable growers aiming to provide a year round supply of diverse produce offerings to customers. Storage crops are typically running low, and offerings often consist of greens from tunnels. In a variety and planting date trial at the Willsboro Research Farm, Elisabeth Hodgdon, Andy Galimberti, and Mike Davis trialed sprouting broccoli and mini cabbages for early spring yield potential. The crops were seeded on February 15 and March 1 and transplanted into an unheated high tunnel in mid March. Two sprouting broccoli varieties were trialed, one green ('Montebello') and one purple variety ('Burgundy'). Sprouting broccoli, a more common crop in Europe, produces one small to medium sized crown and many subsequent smaller "sprouts." Sprouts are cooked similarly to asparagus, and leaves, tender stems, and heads are edible. We also trialed three varieties of mini cabbages, three green ('Tiara,' 'Katerina,' and 'Caraflex')



and one red variety ('Omero'). The green varieties are known for their tender leaves and exceptional eating quality for fresh salads. Farms report hearing from customers that they prefer smaller cabbage for ease of preparation.

We began harvesting the broccoli on May 21, well before field broccoli is ready in the North Country. The broccoli continued to produce sprouts into July, when the plants begun to bolt. Cabbage harvest followed shortly after the first broccoli harvest and is ongoing. An analysis of yield and potential gross revenue from each crop will be calculated after harvest is complete. Given the timing of the broccoli crop, a grower may be able to fit this crop into their rotation between winter spinach and a late planting of summer cucumbers or tomatoes. Early high tunnel brassicas present an enticing opportunity to expand fresh spring vegetable offerings beyond greens and asparagus.

# Sweet Potato Research—Developing a New Market

### Chuck Bornt, Vegetable Specialist



Since 2006, CCE ENYCHP Extension Specialist Chuck Bornt has been involved in many different aspects of sweet potato research in the region. The number of farms and acreage of sweet potatoes grown in NY has nearly tripled since 2007 and has become a staple crop for many growers due to its long term storage potential and consumer appeal. For the last several years, Bornt has been focused on producing the slips locally instead of relying on plants being produced in North Carolina and shipped north in early June. Slips are vegetatively propagated transplants of the sweet potatoes . Locally grown slips would give growers more control of the varieties, timing of planting and most importantly, the availability of plants in the spring. In certain years, flooding or cold weather impacts the southern sweet potato production regions. This results in slip orders for other regions being delayed or cancelled—this has happened at least 3 times in the last 8 years.

This year, Bornt was able to secure funding from the Hudson Valley Farm Hub to evaluate scale appropriate production strategies for locally grown sweet potato slips. Roots purchased from southern sources and roots grown by local producers last year were planted in late March for slip cuttings in late May, early June. The number and quality of the slips produced was recorded and slips were planted out in the field at the Farm Hub in early June for evaluation of overall yield and root quality when they are dug this fall.

April—June 2021 534 Phone Consults 440 E-mail Consults 473 Farm Visits 32 Webinars/Distance Learning 923 Participants in Distance Learning Daily, personalized, farm-specific vineyard report addressing weather and pests delivered to 192 growers for a total of

15,630 unique reports



The Eastern NY Commercial Horticulture Program is a Cornell Cooperative Extension partnership between Cornell University and the CCE associations in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Orange, Montgomery, Putnam, Rensselaer, Saratoga, Schenectady, Schoharie, Ulster, Warren, & Washington.

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