Serving the educational and research needs of the commercial small fruit, vegetable, and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren, and Washington counties.
Program Highlights

New Technology in Soil Moisture Sensing
With funding from a Specialty Crop Block Grant and an ENYCHP Challenge Grant, Ethan Grundberg and Chuck Bornt were able to purchase an Irrometer IrroMesh wireless soil moisture and temperature sensor system. Each node, mounted atop a 10-foot length of conduit, can support up to 3 soil moisture sensors, a soil temperature sensor, and a rain gauge. The nodes then communicate via radio signal to a central base station. When equipped with a cellular modem, the base station can transmit data from up to 12 nodes to the cloud every hour making the data viewable through the web portal shown below. The system is currently deployed in a reduced tillage kabocha squash trial in Orange County. More soil moisture sensing systems will be investigated in 2020 to inform growers of newer technologies for improving irrigation management on the farm.

Entomopathogenic Nematodes (EPN) Expand Bio-Control of Vegetable Pests
Perennial EPN bio-controls have provided control of alfalfa and strawberry root pests and are now being examined to suppress wireworms and Colorado Potato beetles (CPB) in vegetable crops. In collaboration with Cornell Entomologist Elson Shields, ENYCHP specialist Teresa Rusinek and Charles Bornt are using the same plots inoculated with EPNs for the wireworm study in 2017 to monitor for long-term control for Colorado Potato Beetle. EPN’s have been shown to control certain species of white grubs (in particular Japanese Beetle larvae) that have reduced the quality of sweet potatoes and Irish potatoes while a significant reduction in white grub feeding on Daikon radish was anecdotally observed. EPN’s may have the potential to control Seed Corn Maggot in organic and conventional production systems, which would continue to benefit local farmers. To date, nematodes have been applied on eight fruit and vegetable farms throughout Eastern New York. ENYCHP specialists advise growers on raising their own nematodes and on application techniques.

Food Safety Recommendations for Eastern NY Farms
This growing season marked the first official inspections for farms subject to the Produce Safety Rule under the federal Food Safety Modernization Act (FSMA), signed into law by President Obama in 2011. Farms selling fresh produce are required to meet specifications for numerous activities involving growing, harvesting, and storing produce, including worker training, soil amendment application, and irrigation water testing. ENYCHP specialists offered three trainings throughout the region this year, to help growers earn certificates for FSMA compliance on their farms. ENYCHP collaborated with University of Vermont Extension to host a post-harvest workshop, where growers worked on plans to update their wash/pack areas with food safety in mind. Several ENYCHP specialists are now trained to assist the New York State Department of Agriculture and Markets to with On-Farm Readiness Reviews (OFRRs). During OFRRs, farms receive personalized recommendations for improvements for their farm’s food safety, and are excellent opportunities to prepare for upcoming inspections.

Bitter Pit Prediction Helps Increase Producer Profitability
Bitter pit (BP) disorder of Honeycrisp (HC) is financially devastating to NYS apple producers. Estimated per acre losses can range from $1,170-$12,000/acre, a minimum 2.3 million to the NYS industry. Research has produced results with great benefits for NYS HC producers. The 1st is that a plant growth regulator, applied at pink, can reduce BP approximately 50%. 2nd is the development of a BP prediction model based on pre-harvest peel mineral analysis and other horticultural factors, that has the potential to identify blocks with a high BP risk. 3rd is the development of a non-mineral "passive" BP prediction model that is simple to implement, with only a labor commitment and no lab analysis fees. ENYCHP tree fruit educator Dan Donahue has taken a leadership role in the research. The entire state-wide team of research, extension, and industry professionals encourage producer adoption of these new BP management technologies. By reducing the incidence of bitter pit, and providing tools to assist producers and marketers in pre-harvest identification of problem BP blocks, producers will see a significant reduction in storage losses. Our project will result in a direct benefit to the NYS apple industry of at least 1 million dollars annually, perhaps more.
Apple Thinning with Computer Models and New Materials

Thinning the apple crop is one of the most difficult tasks an orchardist undertakes each year, with profound implications on profitability. If too much fruit is left on the tree, labor intensive hand thinning will be required to encourage apples to size. Too heavy a crop will also result in a smaller bloom the following spring. If thinning is too aggressive, total yield could be dramatically reduced.

Ideal crop loads for various combinations of variety, rootstock, and tree age, are difficult to achieve with chemical thinners based on plant hormones. The narrow temperature range where these thinners act predictably make it hard to know how well each application “worked”, and if continued thinning is needed. To help make thinning a more precise process, Mike Basedow worked with Champlain Valley orchards to fine tune the process using new models and thinning materials. The pollen tube growth model and the fruit growth rate model, are two predictive tools that help quantify the art of thinning decision-making. Participating growers were happy with their fruit yield and quality at harvest (see photo below), and look forward to adding more precision to their thinning.

Protected Culture Offers Options for Berry Growers

Tunnel production offers growers the opportunity to produce crops under a ‘protected’ environment. High tunnels are used by vegetable farmers to improve crop quality, lengthen the season and manage weather related risk. Now berry growers have access to low and high tunnel information due in part to work by ENYCHP staff.

A Specialty Crop Research Initiative (SCRI) brought faculty and extension staff from seven states to conduct field research and develop outreach material High Tunnel Production Guide for Raspberries and Blackberries that is now available on the Tunnelberries website. The research focused on analyzing different plastic covering treatments, different pruning and wintering treatments, the use of exclusion netting in a tunnel, and the comparison of berry crop budgets. ENYCH staff are also involved with ongoing research in low tunnel strawberry production and actively assist with research that is being conducted by the Cornell berry faculty team to protect New York state’s $20 million berry industry.

Garlic production continues to increase in New York State, and our team plays key role in making successful growth possible. We are currently involved in several grant-funded garlic projects led by Crystal Stewart-Courtens on disease management and post-harvest handling for long-term storage. The opportunity to partner with UVM Ag Engineer Chris Callahan in an attempt to optimize drying and storing of garlic and other alliums promises exciting synergy. On-farm research is paired with outreach activities including our annual presence at the Hudson Valley Garlic Festival, a bi-annual Garlic School, and intensive workshops at NOFA-NY. This year over 500 garlic growers were supported with new information that helps them improve the quality of their garlic and, by extension, farm profitability.

New Vineyard in Westport Promises to Expand Adoption of Champlain Valley Wines

A recent vineyard planting in Essex County is the largest expansion of grapevines in the Champlain Valley since the creation of the Champlain Valley American Viticultural Area (AVA). Rolling Hills Farm in Westport, NY planted 12,000 vines including six cold hardy cultivars. The new planting covers approximately 20 acres and the farm has long range plans for as many as 100 acres in total. While the creation of the Champlain Valley AVA draws attention of wine consumers, wines are not currently being produced in quantities large enough to export out of the region. Rolling Hills is seeking to change that. ENYCHP worked with Rolling Hills during the planning phase, providing guidance on site evaluation, site preparation, cultural practices, and ongoing operations, including the integration of specialized drones and aerial imagery into farm operations.
Supporting County Association Shares: $539,030.00

ENYCHP Grants & Funds
1: $446,807.00

Cornell University Federal Funds
2: $186,000.00

Harvest New York
3: $15,000.00

1 Includes funds from reserve accounts, grants, donations, program revenue, Ag & Markets, money market investment interest, Cornell Dept.
2 USDA National Institute of Food and Agriculture Smith Lever Funds
3 New York State Funds

Program Highlights Cont.

ENYCH Partners with Ag Workforce Development to Improve Farm Management Skills
Liz Higgins and Ethan Grundberg of ENYCH along with partners from Cornell’s Ag Workforce Program, Small Farms Program, the Farmworker Program and the CCE LOFT team, offered management training to over 50 farm owners and managers in NYS as part of a USDA grant. Participants learned communication skills; how to hire, train and motivate employees; and how to improve the work environment to get employees off to a good start. Farm management skill training is particularly timely given the high costs of employees and increasingly tight ag labor market. Participants recommended offering the training annually to farm managers.

Sweet Potatoes Gain Popularity with ENY Growers
CCE ENYCHP has worked with the growing number of sweet potato growers for the past decade. Numbers have increased over seven times to a 2017 Census high of just under 150 growers. This season ENYCHP specialists conducted a variety trial at two different locations with different soil types. The varieties are from across the country and the evaluation will help growers better understand the differences in performance in our colder climate. Another barrier to sweet potato production is acquisition of high-quality slips for planting. A study evaluating sweet potato root propagation using simple heat mats in greenhouses may inspire local growers to try propagation themselves to reduce dependence on southern slip growers.

2019 Collaborators
NY Apple Research and Development Program
NYS Dept of Agriculture and Markets
NE Sustainable Agriculture Research & Education
NY and NE Integrated Pest Management
University of Vermont
New York Farm Viability Institute
US Dept of Agriculture
Michigan State University
Northeast Organic Farmers Association-NY
National Institute of Food & Agriculture
NYS Dept of Environmental Conservation
New York Apple Association
Northern NY Ag Development Program
NY Center for Agricultural Medicine & Health
Cornell Farmworker Program
Hudson Valley Farm Hub
NYS Berry Growers Association
US Dept of Labor
Grow NYC
NYS Dept of Labor
New York State Vegetable Growers Association
CCE Associations and Regional programs
New World Foundation
Cornell Institute on Climate Smart Solutions
University of Maine
Louisiana State University
University of Rhode Island
Produce Safety Alliance
Hudson Valley Research Laboratory
Cornell Agricultural Workforce Development Program
Cornell Small Farms Program
Glynwood
Orange County Vegetable Growers Association
Onion Research and Development Program
Garlic Seed Foundation
Pennsylvania Dept of Agriculture
Poughkeepsie Farm Project
Northeast Center to Advance Food Safety

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2018 Operating Budget

- Supporting County Association Shares: $539,030.00
- ENYCHP Grants & Funds1: $446,807.00
- Cornell University Federal Funds2: $186,000.00
- Harvest New York3: $15,000.00

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Cornell Cooperative Extension
Eastern NY Commercial Horticulture Program