Cornell University
Cornell Cooperative Extension
Eastern New York Commercial Horticulture

Second Quarter Report 2017

Spring Statistics

718 Farm Visits

722 Client E-mails

483 Phone Consults

51 Newsletters/E-alerts received by 28,193 total producers

57 Field Meetings, Trainings & Workshops

1847 Producers in Attendance

7 Webinars with 93 Producer Participants

What a Difference a Year Can Make!

Chuck Bornt, ENYCHP

This time last year many of our growers were busy moving irrigation pipe trying to keep up with watering and establishing crops. That is certainly not the case this year! The Spring of 2017 is almost a complete opposite of last year when it comes to natural rainfall. Last year started out quite warm and dry with grower's sprits high as crops were planted on time and things were right on schedule if not completed earlier than usual. How different is it this year? Well, if I was to choose a farm in Eastern NY that hosts a weather station that is affiliated with Network for Environment and Weather Applications (NEWA) and look at the total amount of rainfall from April 1 to June 30th, I would see that the recorded rainfall amount in 2016 was 7.34 inches of rain. Move ahead to that very same farm in 2017 and since April 1 through June 30th, it has received 17.74 inches of rain! This weather pattern has kept the ENYCHP team members very busy this spring fielding questions from growers on all kinds of things from identifying significant crop losses due to pests like Seedcorn maggot, which has been more troublesome this year than any year that I can remember and whether or not those fields should be replanted to a crop to figuring out weed control options on crops that were planted but rain kept growers from performing their timely controls.

All is not lost however as in fact some crops have done very well this spring including the tree fruits. Minimal late spring frosts and lots of moisture have many trees and bushes laden with fruit including peaches. With that said, is certainly doesn't mean tree fruit growers haven't had their share of pests and especially difficulty in making thinning decisions this spring. Our tree fruit specialists have done an excellent job of assisting growers through the Tree Fruit E-Alerts, on farm thinning meetings, one on one farm visits with the information growers needed to make their decisions. And if there is another upside to this springs wet weather it would be that irrigation ponds and water resources growers used last year to get through the drought are fully recharged this year!

Second Quarter Report 2017

Changes abound with ENYCHP Fruit Programming

Laura McDermott, ENYCHP

This quarter saw some changes in staff distribution and focus in fruit crops for the region. The most significant and exciting change is that we now have a full time specialist that will be working with grape growers throughout the region.

Introducing Jim Meyers as the new Viticulture Specialist with the Eastern NY Commercial Horticulture Program :

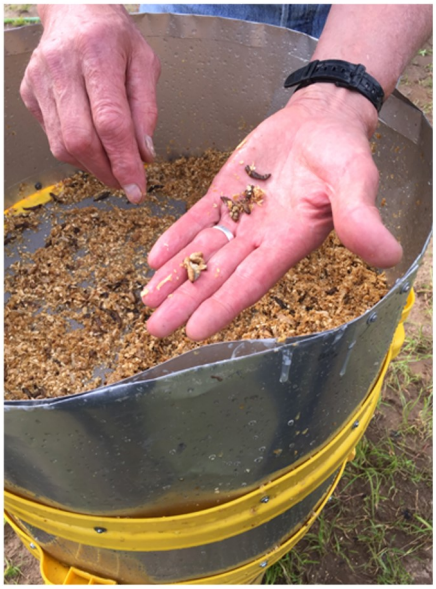
Jim has been working with wine grapes for 10 years, first as a Viticulture Ph.D. student at Cornell then as a Research Associate. Prior to coming to Cornell, Jim studied Chemistry and Biology (B.S. West Chester University of Pennsylvania), Computer Science (M.S. Brown University), and had a successful career as software technology entrepreneur. This background is reflected in his viticultural research which has focused on computational tools for mapping canopy and vineyard variability, quantifying relationships between variability and fruit chemistry, and optimizing efficiency of vineyard operations.

As an Extension Associate, Jim will continue some of these research activities while also looking for new projects that provide targeted benefits to appellations in Eastern New York. Jim will kick off his new appointment by visiting growers at their vineyards to gather first-hand knowledge of the sites and to discuss vineyard operations, goals, and challenges. Building a complete catalog of vineyards in a territory that runs 300 miles may take a little while, but Jim feels that the effort will lay a solid foundation for future program activities while also clearly differentiating the needs of each appellation.

Secondly we are saying goodbye to Anna Wallis as the Tree Fruit specialist in the Upper Hudson/Champlain region. In 3 short years Anna made a big impact in terms of the number and quality of educational programs offered and the amount of applied research conducted on local farms. Anna won't be too far away as she is pursuing her PhD at Cornell under the guidance of Dr. Kerik Cox. We wish her the best in her studies and her career. We anticipate having a new specialist in place by mid-September.

Wireworm Project Update

Teresa Rusinek, ENYCHP



It has been a productive quarter for the experiment on wireworm control in root crops using entomopathogenic nematodes. Wireworms have become a problem particularly in places where small grain crops or grass cover crops were grown in preceding years, and are increasingly and significantly contributing to economic losses on many crops in the Northeast. At the Hudson Valley Farm Hub in Kingston, we've established twelve plots in a location where wireworms were found in large numbers last year. In early June, sweet potato crops were planted on the twelve plots, which were treated with different nematode complexes in late May. Four control plots were not sprayed, four plots were treated with both *Steinernema carpocapsae* (Sc) and *Steinernema feltiae* (Sf) nematodes, and the final four plots were treated with Sf and *Heterorhabditis bacteriophora* (Hb) nematodes. Each strain of nematode occupies a different depth in the soil. We

Photo: The nematodes are reared in wax worm hosts and strained into a solution that is applied to the soil.

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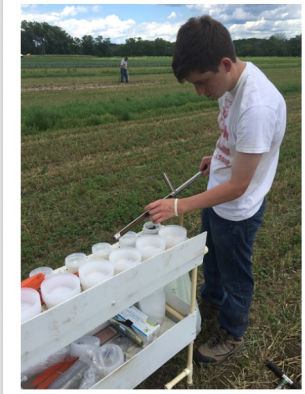
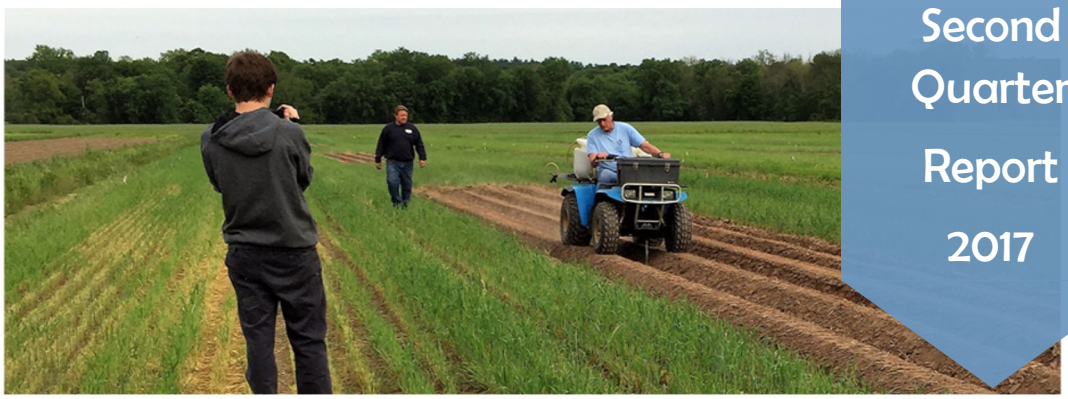




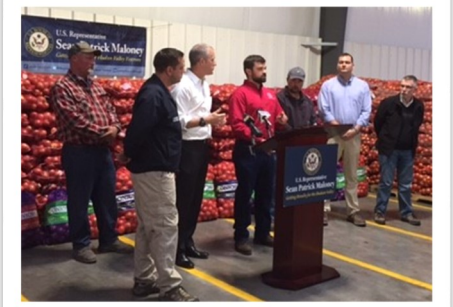
Left: Cornell intern Cameron Fuhr takes soil core samples to determine if nematodes have established in experimental plots. Right: Professor Elson Shields of Cornell University applies entompathogenic nematodes to the sweet potato plots.

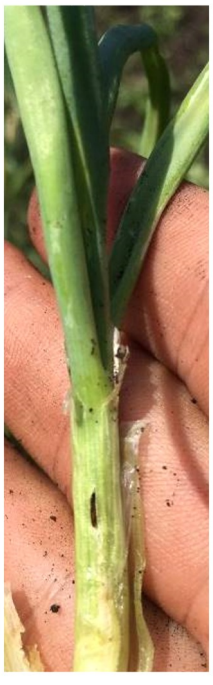
are interested in seeing which combination of strains is most effective at preventing wireworm damage in the sweet potatoes. In mid-June, we collected one hundred soil samples on each plot to assess the level of nematode establishment at both 2'' and 8'' deep. We plan on evaluating the presence of wireworms in the plots in early July.

Comprehensive Response to New Invasive Insect Pest Allium Leafminer

Ethan Grundberg, ENYCHP

Allium leafminer (*Phytomyza gymnostoma)* is an invasive fly species that originates in Poland. It was found in the United States for the first time in Lancaster County, Pennsylvania in December 2015 and identified in Ulster and Dutchess counties by ENYCHP vegetable specialist Teresa Rusinek in November 2016. In anticipation of a widespread outbreak of the invasive pest this spring, Teresa was able to secure $30,000 in funding from the NYS Department of Agriculture & Markets to support extensive scouting, monitoring, and education regarding the potential impact of allium leafminer (ALM) on farmers in the region. Both Teresa and Ethan Grundberg carefully tracked the fly's emergence in mid-April to alert growers of allium crops to take early action to protect their crops. Teresa and Ethan visited over 60 farms in Sullivan, Putnam, Dutchess, Ulster, Orange, and Columbia counties to scout for ALM damage and inform growers on management options. Furthermore, ENYCHP was able to attract local media coverage of the pest outbreak and political support from Congressman Maloney, leading to a press conference with the congressman at Minkus Family Farms in Orange County on June 6th. With the wave of political, public, and grower support, Ethan and Teresa are working with Cornell entomologist Brian Nault to try to secure additional funding to conduct applied research this fall on integrated pest management strategies to reduce damage to allium crops in the region. The remaining funds from Ag & Markets are being used to hire a technician who will support Ethan and Teresa in compiling data from observations this spring and assist with more extensive scouting, monitoring, and grower education during the fall ALM flight.

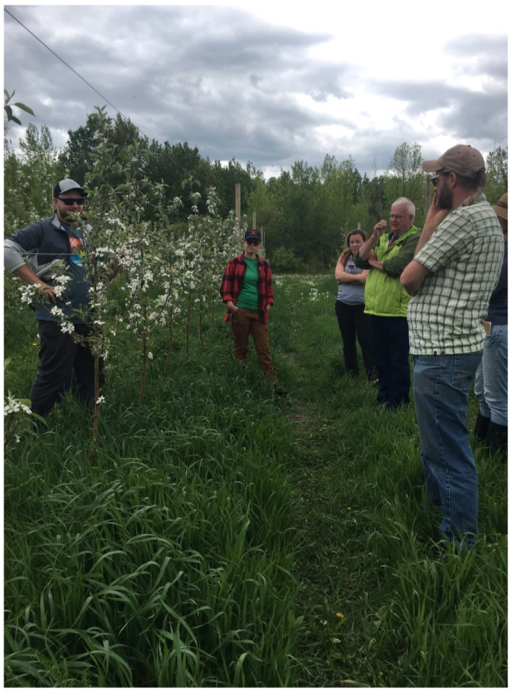




Photos: Top Left: Scouting for Allium leafminer in Port Jervis. Bottom Left: Press conference on ALM with Congressman Maloney. Right: ALM Pupa in Onion

Assisting Apple Growers with Difficult Thinning Decisions

Dan Donahue & Anna Wallis, ENYCHP



The chemical thinning of apples during the period of fruit development between full bloom and before fruitlets reach 18 mm in diameter may be the most significant challenge a grower faces during the course of the growing season, where the manager has at least some modicum of control. We say "some" because chemical thinning is truly a marriage of art and science, with all of us in Cornell Cooperative Extension striving to increase the role of science in quantifying the decision-making process. Spray chemistries termed "Plant Growth Regulators" (PGR)'s mimic the influence of certain plant hormones, which will, depending on many factors, cause the tree to drop a percentage of its fruit. For a commercial grade crop, an apple tree only needs to pollinate and retain 3-10% of the flowers produced. We call this "fruit set". In a given year, for a specific variety/rootstock combinations, and for individual orchard blocks, the choice of thinning chemistry, the rate, and the application timing will vary widely. Making the right decision will result in the avoidance of extensive hand thinning (very expensive), or overthinning, and the loss of the entire crop for the year. Thinning season, the period from mid-May through mid-June, is an anxious time for all in the apple industry, and you can literally feel the stressful vibe when interacting with growers. Cornell researchers and extension specialists have developed tools in recent years, such as the precision thinning protocol and the NEWA carbohydrate model that help quantify the how the tree will react to the thinner (the NEWA model), and how individual fruitlets have responded to an earlier application (precision thinning), in order to replace guesswork with science.

To assist growers in making good thinning decisions, CCE-ENYCHP tree fruit specialists hold four grower meetings annually in the eastern New York region, with a total of 130+ growers and industry support professionals in attendance. Meeting dates vary by location, with the two Hudson Valley meetings held on the same day, followed by a Capital District meeting a week later, and a Champlain Valley meeting generally a week after that. The meeting agenda includes presentations from faculty and ENYCHP specialists on the topics of plant disease, insect and crop status, followed by a panel discussion of the thinning situation as we see it. Meeting length is capped at two hours maximum. After winter fruit school and special permit training, these are our next best attended meetings, and there is always a temptation to add more topics and speakers. However, the growers will have none of it. Often, they've hopped out of their spray rigs to attend, and they want to return and get on with it as quickly as possible.

Preparation for these meetings includes an organized tour of Cornell staff and industry consultants through the regions, visiting orchards and speaking with growers about their crop situation the day before, or the morning of each meeting. For example, the Hudson Valley tour starts in Valatie, and winds south through apple country reaching Walden in Orange County by the end of the day. Once again, this year, Joy and Jeff Crist of Crist Bros. Orchards hosted dinner for the tour group. Our observations from the tours are then communicated to the growers during the thinning panel discussions, along with our recommendations. Growers are always invited to add their observations, and the discussions can get lively! The performance of chemical thinners is highly weather dependent, and our weather forecasts this spring were even more unreliable than usual. Making thinning decisions was tough this season, and thinner performance was often slow or lacking entirely, requiring multiple applications in many situations. In the end, the advice provided to growers at the thinning meetings proved valuable, and surprisingly accurate, although not always for the biological reasons that we originally considered. As we said at the start, its art and science!

Maximizing High Tunnel Tomato Production

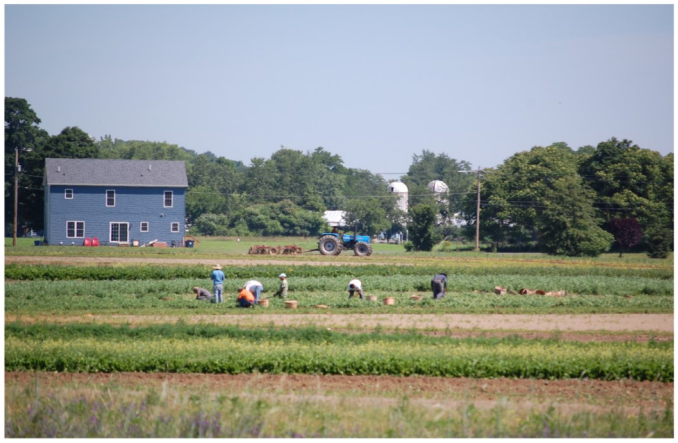
Amy Ivy, ENYCHP

One aspect of increasing tomato yield and making the most of valuable space in high tunnels is proper pruning and training. We use a variety of methods to coach growers in training systems best adapted to particular varieties and tunnel configurations. We are in our second year of research at the Cornell Willsboro Research Farm on pruning cherry tomatoes, our illustrated fact sheets are posted on the ENYCHP website https://enych.cce.cornell.edu/greenhouse_tunnels.php , and we give talks at winter meetings and work one on one coaching growers in their own tunnels. We are in our fourth year of monitoring soil and foliar fertility at several farms throughout our region.

In early May we held a grower meeting in Fort Plain attended by 32 growers. The timing was ideal to demonstrate early training and pruning methods and growers were able to see firsthand how to establish a strong framework on young tomatoes. The host grower allowed the group to practice on a row of unpruned plants which allowed us to reinforce the principles we were promoting. Growers who adopt our recommended system should experience less disease pressure due to improved air circulation around and under the plants, more efficient harvest labor and optimum yield.

ENYCHP Team has Received Funding to help Address HR Management Needs on Farms

Liz Higgins, ENYCHP



Labor shortages, worker turnover and poor workplace communications are critical concerns for farm employers. Like many small businesses, farm owners are expected to be masters of production, marketing, business management and human resources, often with little training or support. Although there is a lot of support for production assistance from Cornell, there has been less support for human resource management on farms. We have felt that this is a significant gap because labor is often the highest cost resource input on fruit and vegetable farms. Farmers at the CCE ENYCH advisory meetings, and local surveys of growers identified "enhancing skills for farmworkers" and "addressing challenges in managing and training new workers" as high needs. Recently 40 beginning farmers in the Cornell Small Farms Program "profit team" identified recruiting, training and managing workers as an area where they needed support.

To help meet this need, this summer the CCE ENYCH team applied for and received two grants. The first *Good to Great: Improving labor management on fruit and vegetable farms in New York State* is an 18 month project to offer 4 workshops on HR topics: (1) Developing clear communications with your employees around workplace goals and expectations, using employee handbooks effectively (2) Developing clear job descriptions, training new staff and effective feedback and performance appraisal techniques; (3) Com-

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pensation and motivation strategies on the farm beyond pay, based on research, to help attract and retain good employees. Techniques to deal with conflict (4) Risk management and legal compliance issues including workplace safety. We will also be offering workshops to help farmers effectively manage and work with a non-english speaking (latino) workforce. Workshops will be held across the state, including two sites in the ENYCH region from October 2017– April 2018. Liz Higgins (emh56@cornell.edu) is the ENYCH lead on this project.

The second grant is a 3 year project, led by the Cornell Small Farms Program, *Labor Readiness: Pathways for Farmworkers to Start Up and Advanced Beginners to Scale Up New Farm Businesses* to specifically work with beginning farmers (less than 10 years' experience) on similar issues. The role of the ENYCH team for this project is to work on developing trainings, outreach tools and resources on labor management for beginning farmers. One component of this grant is the opportunity for participating farmers to receive technical assistance grants to help implement a labor management improvement practice on their farm. This grant will officially start in August with trainings commencing Winter 2018. Liz Higgins (**emh56@cornell.edu**) and Ethan Grunberg (eg572@cornell.edu) are the ENYCH leads for this project.

We hope that the resources developed through these projects are helpful to growers who are looking for tools to more effectively attract, train and retain a quality workforce.

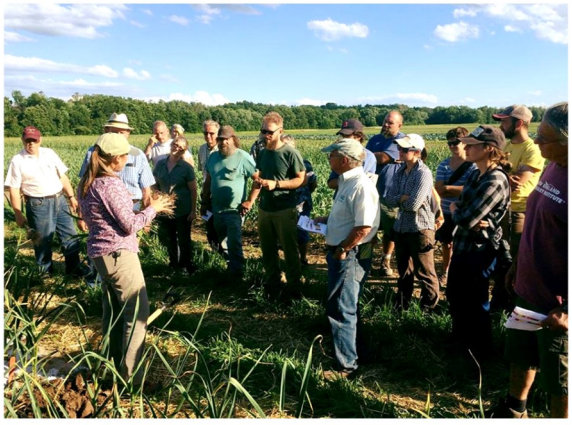
Garlic Project Yields Promise for Improving Industry

Crystal Stewart, ENYCHP

Garlic work this year has focused on Fusarium management through cultural practices and organic controls. Fusarium diseases are the most common problem garlic growers across the country face, with nearly ever grower experiencing issues at one point.

Through the support of SARE and the Specialty Crop Block Grant funds, a research project examining ways to manage this disease started in the fall of 2016. This season Crystal is managing trial sites in the Hudson Valley, on Long Island, and in Western New York.

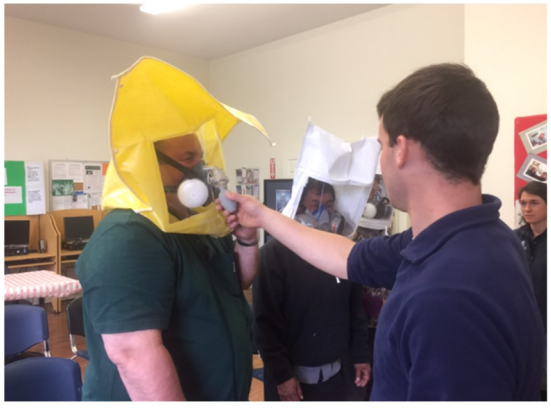
Each of the trial sites hosted meetings in June so that growers could see first-hand how garlic responds to the various treatments being applied to it. The meeting in the Hudson Valley attracted over 30 growers. The meetings are now being followed by harvest and data collection. When the data is analyzed, results will be shared with growers throughout the Northeast in newsletters and at conferences.



Regulation Compliance

Maire Ullrich, ENYCHP

On May 3&4 CCE collaborated with NYCAMH (NY Center for Agricultural Health & Medicine) and Hudson River Health at the Alamo Farmworkers Community Center to host a Worker Protection Standard and Respirator Fit Test and Training. Sixty-four workers and farmers from 23 farms were represented those days to help farmers comply with regulations. Medical evaluations and training re required for anyone who uses a respirator at work. Farmowners are now included in these regulations when they had not been previously. All agencies worked together for an efficient day to help businesses meet their regulatory requirements.



2017 Special Permit and Pesticide Applicator Pre-Exam Trainings

Dan Donahue & Anna Wallis, ENYCHP

Apple orchards by nature are high-input, technical operations in terms of pesticide applications, particularly with respect to restricted use materials. Training farmworkers to be able to use these materials safely and effectively is imperative to worker health, environmental stewardship, and successful pest control. In light of this, multiple training opportunities were offered by the ENYCHP Tree Fruit team for pesticide applicators of apple orchards in Eastern NY in Spring 2017.

2017 Special Permit Trainings

Special Permit Trainings were held for the fourth season in a row in ENY to provide training for handlers of select Federally Restricted Use Pesticides. Three trainings were held across the region in Highland, Peru, and Chazy, with a total of 29 farms and 194 individual participants, plus 29 supervisors. The Kingston training was offered in both English and Spanish language (in the Champlain Valley, migrant workforce is predominantly Jamaican and programming does not require translation).

These events provide training for farm workers that do not have a pesticide applicator license, so that they may use these materials without direct on-site supervision. This affords large, often non-contiguous farms with the manpower to protect their crop at critical times during the growing season with the workforce available.

2017 Pre-Exam Trainings

For several reasons, it is becoming necessary for more farm workers to get their certified pesticide applicator license. On many farms, a new generation or new farm workers are beginning to take on spraying responsibilities. In addition, new EPA and NYS DEC regulations are expected to remove the regulatory language allowing for Special Permit Training.

The pesticide applicator exam is a challenging exam, covering an enormous amount of information. It is usually perceived as difficult by farmworkers, who have often had minimal formal classroom education and are not typically strong test takers. Even for individuals who would be considered good traditional students, the exam is far enough removed from normal farm responsibilities to cause concern.

In light of this a pre-exam training was held to review CORE and Category material for the NYS DEC pesticide applicator exam. The training, which was modeled after a training held in WNY annually, was similar in format to an SAT training course. Trainings were offered as two 3-hour sessions (6 hour total), and the exam was offered the following week in the same locations and time frame, to mitigate test anxiety. The trainings were offered in two locations, Peru and Highland and had a total of 28 participants from 15 farms.

Pass rate following the training was almost 100%, with only one student from the Champlain Valley training that passed the CORE exam but not the category exam. Students were extremely appreciative of the review session and felt that it immensely improved their capability of taking the exam. They better understood what to expect on the exam, the format of the test, and had the opportunity to practice questions ahead of time. In addition, they were grateful for the help navigating the NYS DEC and the process of acquiring a pesticide applicator license, which is notoriously confusing. In the future, they suggested that more time be spent on the Category material if the training were offered again.