Cornell University
Cornell Cooperative Extension
Eastern New York Commercial Horticulture

Second Quarter Report 2016

Winter Statistics

819 Farm Visits

798 Client E-mails

594 Phone Consults

62 Newsletters/E-alerts received by **36,153** total producers

28 Field Meetings, Trainings & Workshops

887 Producers in Attendance

18 Webinars with **163** Producer Participants

High Tunnel Research Trials Underway

Amy Ivy, ENYCHP

With more and more growers putting up high tunnels for summer tomato production, questions are on the rise about how to handle brown leaf mold (*Passalora fulva* or *Fulvia fulva*), a disease commonly found in high tunnels tomatoes but rarely in the field.

We are conducting two research trials at the Cornell Willsboro Farm's high tunnel to address two aspects of growing cherry tomatoes in high tunnels. One is a variety trial comparing 3 leaf mold resistant varieties with 2 susceptible varieties. We are tracking yield and bringing samples to any gathering for simple taste-test rankings of the 5 varieties. Professor Christine Smart of vegetable pathology is working on a two-year study of this pathogen and she has sponsored a Cornell summer intern, Lauren Fessler, to help us with these projects. The varieties in the trial are Sun Gold and Sweet 100, both susceptible and Esterina, Sakura and Nature's Bites, listed as resistant to leaf mold.

We are also conducting a pruning and training trial on cherry tomatoes which involves 3 different methods on the same variety.

Funding for these trials is from the Northern NY Agriculture Development Program which is supported by the Senate and administered by the NYS Department of Ag and Markets, and by the Specialty Crop Block Grant Program at the USDA through a grant from the NY State Department of Agriculture and Markets .

Here we are tracking time spent training, pruning and harvesting the 3 different treatments as well as yield. The treatments are: trained to a single leader, trained to a double leader, and initial training to 4 leaders then letting the plants go.

Second Quarter Report 2016

2016 Apple Petal Fall/ Thinning Meetings

Anna Wallis & Dan Donahue, ENYCHP

Executive Summary
Four workshops held in early spring provided 139 apple farmers, workers, and other related industry members across eastern NY with season-specific information and recommendations on thinning, insect management, and disease management.

Issues/Needs and Audiences
Spring is a critical part of the season for management of apple orchards, during which farmers are required to make timely, season-specific decisions on thinning, insect management, and disease management. With the adoption of high density systems and precision management, these decisions have become even more complicated. The increasing cost of materials and labor required to manage these orchards make it critical that the most economic and efficient practices are used. Frequently these practices are region specific, depending on climactic, weather, and industry related factors (i.e. winter conditions, spring temperatures, market, planting systems). Growers from across the state rely on research-based recommendations from Cornell faculty, Cornell Extension, and other industry representatives and scientists to guide their decision-making.

Extension Responses
Four meetings were held across Eastern NY to communicate research-based, thinning and pest management information, specific to the 2016 season, to the apple growers in the region. Speakers included Cornell scientists, Cornell Cooperative Extension educators, and industry consultants who are intimately involved in apple production in the region. Meetings were held on commercial orchards in the 3 main production areas of Eastern NY: Hudson Valley, Capital Region, and Champlain Valley. Meetings held in Ulster, Columbia, Saratoga, and Clinton County had 60, 31, 17, and 31 participants respectively.
Prior to the meeting, farm tours were organized in each region. Speakers viewed multiple commercial farms and blocks to provide regional and farm specific recommendations.

Accomplishments and Impacts
In the few days following each of the meetings, petal fall occurred, a phenological stage of apple development that is a critical time for thinning, insect management, and disease management decisions. Information provided by speakers and discussion generated among the audience at the meetings was used in guiding decisions on 100% of the farms that were represented at the meetings, specifically in the form of thinner, insecticide, and fungicide rates and timing, specific to the 2016 season and region of the state.

Collaborators
Cornell University College of Agriculture and Life Sciences, Eve Consulting LLC, Crop Production Services, Hudson Valley Research Laboratory, Rutgers University.

Seth Forrence, Forrence Orchards, and Poliana Francescatto, Cornell University Research Associate, tour an orchard in Champlain Valley prior to the petal fall/ thinning meeting that afternoon. Photo: A. Wallis

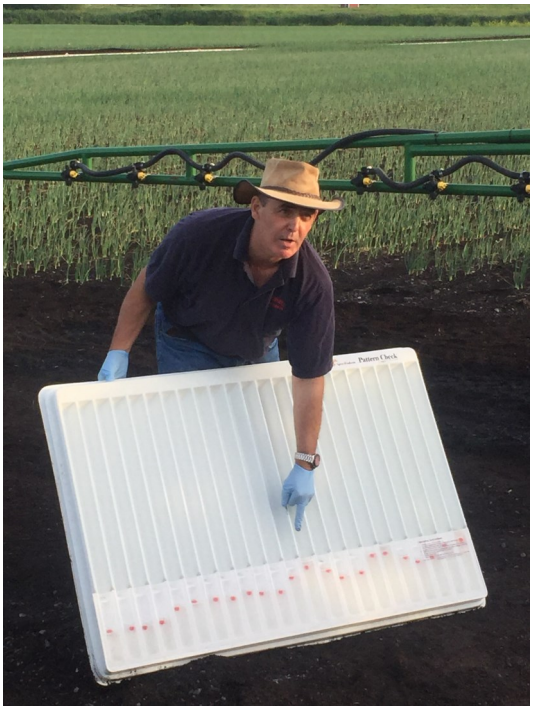
Poliana Francescatto, Cornell University Research Associate, provides 2016 thinning recommendations to growers at the Champlain Valley Petal Fall/Thinning Meeting. Photo: A. Wallis

Vegetable and Fruit Growers Get Hands on Demonstrations with Sprayer Technology

Chuck Bornt, ENYCHP

On the evenings of June 15th and 16th at the farms of Wertman Farm and Greenhouses in Rensselaer County and Cavallaro Farms in Orange County, over 60 vegetable and fruit growers joined CCE ENYCHP team members and Cornell University's Pesticide application technology specialist in the Department of Entomology, Dr. Andrew Landers to refresh and learn what is new with pesticide application technology.

As educators, much of our time is spent discussing with growers the right pesticides to choose and much of our seasonal newsletters are devoted to getting this information in the hands of our growers, but little time is spent on how these pesticides are actually applied. In today's market, not only is selecting the correct pesticide knowing when to use it important, but how to apply it in the most efficient and effective way possible. Dr. Landers spent time describing to growers that the days of "their fathers and grandfathers sprayers are long gone" and that most of the newer chemistries of pesticides are so specific that application is as important as the selection of the pesticide. He also is quick to point out that "one nozzle can't do it all". He used the host growers sprayers and demonstrated different nozzle styles and the rationale for selecting that nozzle over other nozzles. For example, a twin flat fan nozzle is ideal for spraying onions due to the architecture of the onion plant, but is not as effective on other crops like tomatoes.



Dr. Landers also spent time teaching and educating why calibration of sprayer and proper dosage was important. One of the most interesting points of this was the electronic calibration tool that he demonstrated which makes calibration much quicker and more accurate compared to how most growers do it. The tool, called the SpotOn Sprayer Calibrator, only takes about 30 seconds to give you an accurate reading. As a result of seeing this tool, we purchased one for the ENYCHP program to help educators and growers quickly and accurately calibrate their sprayers. Upon leaving that evening, one grower said to me, "You know he's [Dr. Landers] right, we can't be using our grandfathers' sprayers or nozzles anymore. Our time and costs of these pesticides is too expensive to waste. I think tomorrow I'm going to look into purchasing some new nozzles."

High Tunnel Tomatoes: From Mess to Success!

Teresa Rusinek, ENYCHP

High tunnel production has some great benefits such as season extension, higher quality and yield of crops. Many growers in the ENY region are growing various vegetable crops in High Tunnels. Tomatoes are a popular crop as they give some of the best financial returns. However, to realize those returns, growers must pay careful attention in managing the crop, soil, irrigation water and high tunnel environment. If, for example, a nutrient deficiency is not resolved in a timely manner, the grower may end up with very poor yields.

Beginning in 2014, educators from the ENYCHP along with colleagues from around the state developed a program to implement best management practices (BMPs) in high tunnels (HT) through grants from New York Farm Viability Institute and Smith Lever/HATCH. This funding allowed us to work in-depth with growers to track HT inputs, management practices, plant fertility levels, soil health and yields over several years. The knowledge we gained through this work has been extended to growers all over the state through a series of workshops held at HT operations and conferences.

Growers have seen great improvements in yield and quality as a direct result of this program. In 2015 one of the participating growers in this project had a terrible HT tomato crop (photo A). We began working with this grower about six weeks after the tomatoes had been planted.

Through soil and foliar nutrient testing we determined that the soil pH was very high and likely caused the nutrient imbalances and very sick plants. We were able to conclude that the compost the grower used to amend the soil, a common practice in HT production, was driving the pH high. Despite efforts to reduce soil pH with citric acid injection into the irrigation lines, the tomato plants continued to decline and the fruits were unmarketable. This season, the grower was able to adjust the soil pH effectively by incorporating sulfur into the soil several weeks before the crop was planted. He also used much less of the compost. The grower used the information from the biweekly plant foliar nutrient sampling and analysis to adjust his fertility program. (Photo B.) So far, the grower has harvested 4,800 pounds of tomatoes off the 425 plants in the tunnel. That's about 11 pounds per plant. These are excellent yields, and if all goes well the grower should have about 30lb per plant by the end of the season!

Educators are continuing to develop HT BMPs through these grants and new collaborations with researchers and organizations such as NOFA NY. We will continue to developing on-line resources for growers, share what we've learned at conferences coming up this winter, and provide many one on one consultations with growers throughout Eastern NY.

Photo A.- Poor Tomato crop from 2015

Photo B. –Successful Tomato Crop 2016 at HT operation in Ulster County participating in the HATCH HT BMP grant program

Second Quarter Report 2016

2016 Special Permit Trainings

Anna Wallis & Dan Donahue, ENYCHP

Executive Summary: 210 agricultural workers with limited English language reading skills were trained to safely apply federally restricted use pesticides without direct supervision, in 36 Hudson Valley orchards and 7 Champlain Valley orchards, and additional 290+ were trained in other regions around the state.

Issues/Needs and Audiences: Many experienced, valuable and successful farm employees do not possess adequate English language reading skills to sit for the NYS pesticide certification exam with a reasonable chance of a passing grade. NYS pesticide certification exams are only available in English. Furthermore, federal and NYS environmental law requires that non-certified applicators of federal restricted use pesticides (F-RUP) be "directly" supervised by a certified applicator Direct supervision, as defined in New York State, is not possible in orchards where almost all pesticide applications are made with airblast sprayers. As a result, this group of employees are rendered less valuable, and therefore less employable in orchard businesses. To reduce this negative impact, federal environmental law allows states to implement a "Special Permit Training Program" directed at non-English readers to safely and legally allow the Permit holder to apply F-RUP's.

Extension Responses: For 16 years prior to 2016, Cornell Cooperative Extension has provided NYS DEC approved Special Permit Training to over 500 farm employees each year. For 2016, NYS DEC requested significant changes to the existing program in order to increase compliance with federal and state regulations.

Accomplishments and Impacts: Approximately 80% of the Special Permit Training curriculum was updated to reflect the new requirements. New training modules were developed for pest management and sprayer operator safety. A more robust, and individualized, testing program was implemented. As a result, the CCE Special Permit Training program was approved by the NYS DEC for 2016, allowing 500+ fruit and vegetable farm employees around New York State to continue to work in farm spray programs, increasing their value as employees.

Collaborators: New York State Department of Environmental Conservation; CCE Western New York Vegetable Program; Lake Ontario Fruit Program; Office of the Dean, Cornell University College of Agriculture and Life Sciences

Special funding sources: Participant registration fees.

Continuation of Garlic Research

Crystal Stewart, ENYCHP

Garlic continues to be an important crop for diversified vegetable growers in Eastern NY, with one of the highest gross revenues of any crop. This high revenue is contingent on producing a high yielding, healthy crop.

During the last 5 years I have been able to fund research addressing various barriers to doing this, including garlic bloat nematode work and cultural best practices. One of the final barriers was addressing an important field disease called Fusarium. This disease is incredibly common and, in disease conducive years, can kill up to 30% of the crop.

I applied for grant funding to address this issue and both Northeast SARE and the Specialty Crop Block Grant found the project worthy of funding. Therefore, I will be leading a statewide initiative to study this important disease over the next two years. The recommendations we create based on this work will impact growers throughout the Northeast, with benefit centered on NY where growers will be able to visit the trial sites and witness efficacy of various treatments for themselves.

This work will begin in October, but preparations are already being made, with samples being stockpiled and garlic being selected for trial planting. Our trials in year one will be located in Ulster County.

Image: Garlic being harvested for garlic trials to be planted this fall

Grower Bus Trip to Southern Quebec

Amy Ivy, ENYCHP

We organized a day-long bus trip on June 28, for 32 growers from New York and Vermont and 21 Extension Educators from across the state to visit a region of southern Quebec between the border and Montreal favored by muck soils and large scale vegetable growing. Cornell Professor Emeritus Chris Wien made the initial connection for us with two large scale growers who then connected us with other growers to make a full day of visits to growers and equipment dealers.

Growers commented that even though the scale was larger than anything we might do in eastern NY, they still faced similar challenges including pest monitoring and management, complying with food safety regulations, weed management, weather extremes and labor.

Above: At Veg Pro International they cover their field lettuce with low hoops and rowcover 12 days before harvest to protect the crop from wind and hail. Here we are watching the hoops being set with the tractor on the left and then the cover will be rolled over the hoops with the tractor on the right.

Crop Insurance Movement of Snap-Dragon and RubyFrost Apples

Jesse Strzok, ENYCHP

In the first and second quarter of 2016, work was done for the USDA/RMA to try and move Cornell University's NY1 and NY2 apples (SnapDragon and RubyFrost, respectively) into new crop insurance Varietal Groups. First brought to my attention by an ENYCH farmer this spring, having SnapDragon and RubyFrost in groups not representative of their cost of production, or prices received at market, has been challenging to farmers when crop insurance needed to be used.

Apple crop insurance Varietal Groups are defined as:

· **Varietal Group A** - Honeycrisp;

· **Varietal Group B** - Cortland, Empire, Fuji, Gala, Jonagold, Macoun, McIntosh, Ozark Gold, Paula Red, Cripps Pink (Pink Lady), and Red Rome

· **Varietal Group C** - All other apple varieties not specified in Varietal Group A or Varietal Group B.

SnapDragon and RubyFrost were first planted commercially in 2011, so we have finally reached a point where the necessary data on yield, cost of production, and prices at market, are available. The major push to gather the data this spring, from over 140 orchards, was necessary because of the timelines at the USDA/RMA. Although we will not know if the two varieties are moved until next year, everything possible was done to help move these uniquely New York apples to help our farmers better manage their risk.

Second Quarter Report 2016

Adding Value to Berry Crops- Berry Processing Workshop

Laura McDermott, ENYCHP

On April 1st, recently retired team member Bob Weybright worked with former CCE berry specialist Steve McKay and current ENYCHP berry specialist Laura McDermott to help growers understand the potential benefits of processing their berry crops. The workshop was held at Micosta Enterprises commercial kitchen in Hudson, NY. Steve and Bob gave a lecture and then the group of 16 producers toured the commercial kitchen and watched as a batch of berries were transformed into juice. The shelf stable product adds value to a very perishable but profitable and nutritional product. Growers were also informed of the resources available to them through Cornell's Food Venture Center, CAL's Dept of Food Science and the NYS Ag and Markets Food Lab. Several of the attending growers had commercial kitchens that were being used primarily for jams, but juice production was of great interest to many who attended.

The discussion from the group helped CCE educators understand that another area of need was post-harvest care and handling of berries. A small study of post-harvest storage bags and forced air cooling will be conducted in the summer of 2016.

Micosta Kitchen Manager discusses small batch preparation of berry juice with group of growers at the Micosta commerical kitchen.

Pot Luck Dinners with Grape Growers

Jim O'Connell, ENYCHP

Jim O'Connell held three pot luck dinners in the off season. The last of these was held on April 7, 2106 at Clearview Vineyard in Warwick, NY. The goal of these dinners was to engage growers in a less formal setting (i.e. outside fruit schools and farm visits) to discuss current research or concerns (e.g. winter damage, early season start), as well as to meet and introduce myself to new contacts.

The topic of discussion at the April pot luck dinner was the use of frost blankets in the vineyard. Frost blankets are comprised of a non-woven polyester fabric designed to trap heat in the winter months, thereby protecting sensitive grape vines from low temperature injury. Even though these blankets failed to perform as expected, growers at the pot luck dinner were interested to hear about the results of the trial. One grower in particular was especially interested as he plans to start a new vineyard in 2017 and intends to grow some of the grape vines under protected covers (e.g. plastic hoop houses, or row covers).

As an educator, these meetings helped me connect with growers and wine makers with whom I hadn't previously had much contact or whom I met for the first time at one of these pot luck dinners. Feedback from the growers was positive; they enjoyed being able to listen and discuss a single topic. They also commented they would like more (similar) grower meetings (e.g. events, field days, etc.).