



## **Cornell Cooperative Extension Lake Ontario Fruit Program Quarterly Report July - September 2020**

**A partnership between  
Cornell University and the  
CCE Associations in these five  
counties:**

**Monroe, Niagara, Orleans,  
Oswego & Wayne**

**Overview:** As the pandemic continued on, our team and stakeholders continued to meet new challenges head on. The heat and drought that started in late May and continued through all of June subsided somewhat by mid-July in most of our region. The exceptions were the Newfane area in Niagara County, and the Lyndonville area in Orleans County. These areas stayed exceptionally dry into the fall. Regardless of whether or not our region received some rainfall in later summer, fruit size overall was smaller. Even some blocks with irrigation had under-sized fruit. July and August found the team continuing with field work and following COVID-19 protocols. September brought apple harvest and a shift to harvest-related activities.

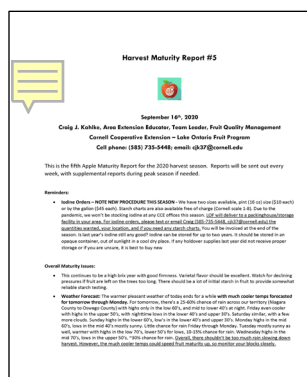
**Education:** We continued to provide virtual programming with our LOF Virtual Summer Education Series. The four Zoom webinars that LOF organized/sponsored from July 7 to August 11 were a team and Cornell effort. LOF, along with Cornell faculty Dr. Terence Robinson, Dr. Chris Watkins, Dr. Lailiang Cheng, Dr. Betsy Bihn, and Dr. Rich Stup gave valuable input to our programming ideas and all gave presentations on the webinars. Non-Cornell participants were Liz Malcoff of Empire Drip Supply, and Dr. David Bell of Genesee-Orleans Dept. of Health. Both lent their expertise with excellent presentations. Once again, I especially wish to express our gratitude to **Dr. Terence Robinson** for his willingness to present multiple programs. In addition, this extremely timely information would not have been made available to our stakeholders without the tireless number of hours spent by our technician, Liz Tee. Liz painstakingly downloaded/rendered/edited/posted and solicited the pertinent info that has turned out to be extremely professionally done. Without Liz's dedication to our efforts, none of this would be possible. As far as the reduction of potential PGR, we have continued to solicit more sponsors of our efforts, and to date have significantly offset the loss of revenue from our cancelled summer tour. In addition the virtual Summer Education series, Mario and Janet continued producing Fruit Facts publications as needed. Liz and Janet continued collecting pest population data from the traplines for Janet's reporting. Mark continued sending our stakeholders timely information on COVID-19 related issues. Growers faced significant labor challenges at harvest exacerbated by the pandemic, from delays in H-2A guest worker arrival to labor shortages due to quarantining and isolating workers. Craig had the start of the peak of the harvest maturity program with testing and data collection with Liz's help, and the production of the harvest maturity reports. The work of LOF was highlighted in 2 *Good Fruit Grower* issues. This is the major trade magazine of the commercial apple industry in the U.S. The articles are here: <https://www.goodfruit.com/how-reflective-cloth-affects-the-crop/> & <https://www.goodfruit.com/net-works-for-new-york-growers>



**The Starch Iodine Test (Cornell 1-8 scale) on a sample of Gala apples from a single orchard block. Note the range in maturity from a 1 (completely unripe) to an 8 (completely ripe and over ripe for storage), with everything in between.**

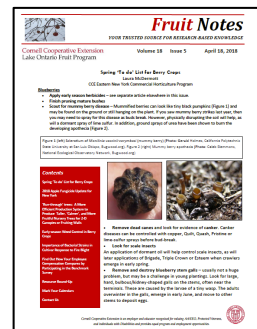
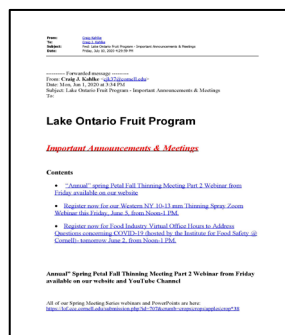
## By The Numbers:

Team Publications:	Editions
Fruit Notes	5
Email Blasts	11
Fruit Facts	8
Harvest Facts	7



Sample "Harvest Facts"

## Sample "Email Blast"



Sample "Fruit Notes"

Presentations by LOF Team	Virtual Meeting:	Presenter:
<i>Q &amp; A About Peel Sap Protocol, Bitter Pit Control, Calcium Management</i>	<i>Peel Sap Analysis for Early Prediction of Bitter Pit in Honeycrisp, July 14</i>	Miranda Sazo
<i>Demonstration (short 5 minute video)</i>	<i>How to Prepare &amp; Submit Peel Samples for Peel Sap Analysis, July 8 ("Fruit Bites")</i>	Miranda Sazo
<i>Q &amp; A About Irrigation Practices &amp; Technologies</i>	<i>Managing Irrigation in Apple Orchards this Season, July 7</i>	Miranda Sazo
<i>Q &amp; A About Sampling protocol for Passive Pit Prediction Model</i>	<i>Honeycrisp Bitter Pit Prediction Models, August 11</i>	Miranda Sazo
<i>Panelist</i>	<i>COVID Testing &amp; Isolation - Q &amp; A for Wayne County Growers, July 1</i>	Wiltberger
<i>Moderator/Host</i>	<i>Managing Irrigation in Apple Orchards this Season, July 7</i>	Wiltberger
<i>Q &amp; A Moderation, Co-Host</i>	<i>Peel Sap Analysis for Early Prediction of Bitter Pit in Honeycrisp, July 14</i>	Wiltberger
<i>Participant</i>	<i>CFAP Webinar for CCE Staff, July 17</i>	Wiltberger
<i>Q &amp; A Moderation, Co-Host</i>	<i>How Should my Business Respond to COVID-19? A Q &amp; A Zoom Session for the Produce Industry: Apple Packing Facilities, July 16</i>	Wiltberger
<i>Panelist</i>	<i>SAFE HARVEST 2020: COVID-19 Office Hours for Agricultural Producers and Packers, Aug 25 – September 29. Series of 6.</i>	Wiltberger
<i>Host, Editor, Posted</i>	<i>LOF website page on Mobile COVID-19 Farmworker testing at Teeple Farms. Grower COVID-19 farmworker mobile testing video on YouTube.</i>	Wiltberger
<i>Moderator, Co-Host</i>	<i>How Should my Business Respond to COVID-19? A Q &amp; A Zoom Session for the Produce Industry: Apple Packing Facilities, July 16</i>	Kahlke

<b>Presentations by LOF Team (continued)</b>	<b>Virtual Meeting:</b>	<b>Presenter:</b>
<i>Moderator, Co-Host, Presenter</i>	<i>Honeycrisp Bitter Pit Prediction Models, August 11</i>	Kahlke
<i>Moderator, Co-Host</i>	<i>Managing Irrigation in Apple Orchards this Season, July 7</i>	Kahlke

<b>Selected Publications by LOF</b>	<b>Periodical</b>	<b>Author(s)</b>
<i>Post-emergent (Burndown) Herbicide Damage – Signs and Symptoms</i>	Fruit Notes, Volume 20, issue 12.	van Zoeren, Basedow, and Sosnoskie
<i>Brown Marmorated Stink Bug in WNY – monitoring and biological control</i>	Fruit Notes, Volume 20, Issue 14.	van Zoeren and Jentsch
<i>Pre-emergent Herbicides in the Fall – Advantages, Disadvantages, and Damage Symptoms</i>	Fruit Notes, Volume 20, Issue 15.	van Zoeren, Basedow, and Sosnoskie
<i>A sunnier, warm, and dry season in WNY: Practical implications of early- and mid-summer water stress on tree growth, cropping, and physiology</i>	Fruit Notes, Volume 20, Issue 12.	Miranda Sazo, Lakso, and Robinson
<i>New Cornell leaf sampling recommendation for ‘Honeycrisp’ in 2020</i>	Fruit Notes, Volume 20, Issue 13.	Miranda Sazo and Cheng
<i>The use of reflective materials and other technologies for improving fruit color on high value apple cultivars in WNY</i>	Fruit Notes, Volume 20, Issue 15.	Miranda Sazo, Kahlke, Wiltberger, van Zoeren, and Tee
<i>Apples Now Included in CFAP Funding: Growers Encouraged to Apply ASAP</i>	Fruit Notes, Volume 20, Issue 12.	Wiltberger
<i>Communicate Well with Employees to Reduce the Risk of Coronavirus on Your Farm: A Selection of Video and Other Communication Resources</i>	Fruit Notes, Volume 20, Issue 12.	Wiltberger
<i>Agricultural Seasonal Worker COVID-19 Testing Initiative</i>	Fruit Notes, Volume 20, Issue 15.	Wiltberger
<i>The Use of Plant Growth Regulators Near Harvest</i>	Fruit Notes, Volume 20, Issue 14.	Robinson, Miranda Sazo, and Kahlke
<i>Plan to Attend Our August 11 Webinar – Honeycrisp Bitter Pit Prediction Models</i>	Fruit Notes, Volume 20, Issue 13.	Kahlke and Miranda Sazo
<i>Harvest Maturity Date Predictions for Apples in Western NY</i>	Fruit Notes, Volume 20, Issue 14.	Kahlke

**Research:**

<b>Activity/Proposal/Grant</b>	<b>Person(s)</b>	<b>Funded (Y/N) or Unfunded/ Preliminary Research (UPR)</b>
<i>On-farm Nursery Project</i>	Robinson & Miranda Sazo	Yes-ARDP
<i>Apogee and Manganese for Bitter Pit Control on Honeycrisp</i>	Robinson, Cheng, Miranda Sazo	Yes-ARDP
<i>On-farm Rootstock/Training Systems</i>	Robinson & Miranda Sazo	Yes-ARDP
<i>Cooperative Pest Management Surveys</i>	van Zoeren, Tee et al.	Yes- NYSDAM
<i>Optimizing Herbicide Strategies for Weed Control, Tree Growth, and Soil Quality in High Density Apple Orchards</i>	Van Zoeren & Basedow (Co-PIs)	Yes- ARDP
<i>Prohexadione Calcium to Control Fire Blight</i>	Wallis, Cox, and van Zoeren	Unfunded
<i>Refinement and Implementation of Newly-Developed Technologies to Significantly Reduce Producer Losses to Bitter Pit in the Honeycrisp C.V. Apple</i>	Donahue, Kahlke, Basedow, Tee, et. al	Yes-NYFVI
<i>Reducing Risk in Fruit and Veg Production through Improved On-Boarding of New Farm Employees</i>	Higgins & Wiltberger	Yes-USDA

**Business Consultation:**

<b>Specialist</b>	<b>Site Visit*</b>	<b>Phone/Texts/Emails</b>
Kahlke	0	~100
Miranda Sazo	0	~120
Van Zoeren	20	~44
Wiltberger	1	~85

**\*COVID-19 restricted farm visits outside of project requirements**

**Selected Professional Development and Training (All Virtual):**

Activity	Team Member(s)	Comments:
CCE Regional Ag Team - Team Leader Monthly Zoom Calls	Kahlke	~ Every 2 weeks
Premier Apple Co-Op Zoom Calls - Weekly	Wiltberger	Weekly apple pricing and movement. Crop updates
U. S Apple Outlook Conference, August 20-21	Wiltberger	
Weekly listening sessions with Peter Jentsch at the Hudson Valley Research Station	van Zoeren Tee	Through late August
CCE/Cornell Weekly Berry Call-Ins	van Zoeren	Through mid-August
DEC 30 hour commercial pesticide technician course	van Zoeren	Passed exam
Attended training sessions to be able to co-teach a Tree Fruit Production course in the "Cornell Small Farms" platform	van Zoeren	

## ***Fruit Quality Management – Craig J. Kahlke***

### **Educational Programs/Presentations:**

- LOF Virtual Summer Series
  - The Team continued organizing a series of Zoom Webinars as a “replacement” for our cancelled Summer Tour and Honeycrisp Precision Crop Load Management On-farm Education -We held 4 separate webinars during Q3
    - All are available on our YouTube channel at:  
<https://www.youtube.com/channel/UC6PXjEkx7nLDY1A81Ek5brQ>
      - Managing Irrigation in Apple Orchards this Season (original date July 7, published July 9) <https://www.youtube.com/watch?v=ucolF9YdeU8>
        - This effort included presentations by Terence Robinson and Mario, along with Liz Malcoff of Empire Drip Supply
        - Mark hosted/moderated/fielded questions
        - Mark edited and posted
        - 19 attendees live, and currently 180 views
      - Pell Sap Analysis for Early Prediction of Biter Pit in Honeycrisp (original date July 14, published July 16)  
<https://www.youtube.com/watch?v=UuF5kxJAbpA>
        - This effort included presentations by Terence, Lailiang Cheng, and Mario
        - Mark hosted/moderated/fielded questions
        - Craig fielded questions as well, and wrapped up
        - Liz edited and posted
        - 16 attendees live, currently 58 views
      - How Should my Business Respond to COVID-19? A Q & A Zoom Session for the Produce Industry: Apple Packing Facilities (original date July 16, published July 22)  
<https://www.youtube.com/watch?v=nRdlaeumRMA>
        - This effort included presentations by Rich Stup, Betsy Bihn, David Bell (Orleans-Genesee DOH) and Matt Wells (New York Apple Sales).
        - Craig hosted/moderated/fielded questions
        - Mark helped with the Q & A
        - Liz edited and posted
        - 27 attendees, currently 52 views
      - LOF Honeycrisp Bitter Pit Prediction Models (original date August 11, published July 12)  
<https://www.youtube.com/watch?v=kztJuVtY4yY>
        - This effort included presentations by Terence, Chris Watkins, Craig, and Mario
        - Craig hosted/moderated/fielded questions
        - Mark helped with the Q & A
        - Liz edited and posted
        - 27 attendees, currently 39 views
  - Began the Harvest Maturity Program (HMR) in late August. Tested maturity on apples and pears.
    - Liz and I collected maturity samples from participating farms in Niagara and Orleans Counties on

- Tested apples at the Maturity Lab at Orleans Cornell Cooperative Extension
- Emailed testing data to participants

- Worked closely with Mark Wiltberger to disseminate timely COVID-19 information via many channels
  - Email blasts to our enrollees, posts on our website, publications in our *Fruit Notes* newsletter and the *Fruit Facts*.
- On-Farm Readiness Reviews (OFRR's)
  - Prepared technical report for 2<sup>nd</sup> quarter, submitted July 21
  - Conducted 3 OFRR's on fruit farms in Chautauqua, Monroe, and Orleans Counties with NYS Dept. of Ag & Mkts inspectors on 7/1, 9/17, and 9/25.

## Publications:

## Fruit Notes

- Edited 3 newsletters in the quarter, prior to suspending the full newsletter until after harvest.
- Sorted through numerous announcements about workshops/conferences/meetings/surveys and sent along Email Blasts to Enrollees

### Applied Research Projects:

- NYFVI – “Refinement and Implementation of Newly-Developed Technologies to Significantly Reduce Producer Losses to Bitter Pit in the Honeycrisp C.V. Apple”. Donahue (PI), Kahlke, Tee, Basedow.
  - Secured 20 blocks in Niagara & Orleans Counties for 2020
  - Collected fruit for peel analysis with Liz on August 10
  - Collected fruit for passive bitter pit prediction model with Liz on Augusts 26
  - Evaluated fruit stored fruit collected August 26 for bitter pit with Liz on September 16
  - Collected fruit at harvest for passive bitter bit validation model with Dan and Liz on September 17

## Grant Submissions, Re-Submissions, Letters of Support, Proposal Meetings

- Without activity this quarter

### Other Team Duties:

- Team Leader Administrative Duties
  - Approved invoices and vouchers as needed
  - Reviewed Year-end financials and 2021 Budget projection with Peter on September 18

- Reviewed Year-end financials and 2021 Budget projection with Peter and Beth on October 14
- Attended WNY AMG Meeting Via Zoom on October 16
- Reviewed budget and monthly financials
- Approved timesheets/vacation/sick leave hours for team members as needed.
- Disseminated pertinent info to rest of team as needed from:
  - Monthly Team Leader Zoom calls
  - Group and other email lists
- Organized virtual monthly team meetings and weekly conference calls.
- Compiled, edited, and disseminated 2<sup>nd</sup> Quarter Report.
- Touched base on phone with all partner county ED's prior to AMG.

### **Other Area-wide Education & Advocating**

- Gave a presentation (Zoom) about LOF's Harvest Maturity Program for CCE Wayne BOD's on October 13

### **Professional Development:**

- Attended multiple CCE Regional Ag Team Leader Zooms
  - CU/CCC responses to COVID and re-opening rules
  - Other pertinent administrative info to pass on to the rest of LOF team

### **Stakeholder Contacts:**

- Assisted ~30 stakeholders (growers, packinghouse operators, industry, and crop consultants) via text, ~50 via phone, and ~ 20 via email.



## ***Quarterly Highlight for Fruit Quality Management – Craig Kahlke***

### **On-Farm Readiness Reviews Help Growers Prep for FSMA**

#### **Background:**

The Food Safety Modernization Act (FSMA) was signed into law by President Obama in 2011. It is the most sweeping federal food safety legislation in nearly 100 years. Inspections to ensure compliance have begun. While many commercial fruit and vegetable growers already have food safety certification through one or more 3<sup>rd</sup> party auditors, FSMA is different since many more farms fall under the rule. Farms with both food safety experience (those that have a written farm food safety plan and undergo annual audits) and farms without deserve to know the specifics of what an inspection would entail, and to know what areas they need to focus on.

#### **Target Audience:**

Commercial fruit & vegetable growers.

#### **LOFT Response:**

Trained CCE educators team up with an inspector from the New York State Department of Agriculture & Markets (NYSDAM) to perform On-Farm Readiness Reviews (OFRR's) that are voluntarily requested by the farms. These last between 2-3 ½ hours. Each food safety module is covered. A series of questions are asked to determine strengths/deficiencies in each farm's food safety program. If harvest is occurring, it is observed for several minutes. At the end, CCE and NYSDAM meet to list things the grower should work on to be into compliance. Then we inform the grower, and they receive an OFRR manual that gives them best practices in each food safety module. The OFRR follows USDA's mantra "educate before and while we regulate".

#### **Predicted Outcomes:**

The OFRR helps the grower determine what food safety issues need improvement, and receive suggestions for implementing changes. It also helps them to determine what to expect during an actual inspection, which NYSDAM informs them will likely happen in 1-2 years. Implementation of best food safety practices will reduce the likelihood of foodborne contamination and illness in consumers.



## Cultural Practices – Mario Miranda Sazo

### Educational Programs/Presentations/Publications:

**Fruit Notes:** Wrote/modified/summarized/requested articles including:

- “Managing irrigation in 2020” (T. Robinson and M. Miranda Sazo), pages 1-4, Vol. 20, Issue 11.
- “Announcing peel sap analysis for early prediction of bitter pit in ‘Honeycrisp’ – How to prepare and submit peel samples via CCE LOF this season” (M. Miranda Sazo, L. Cheng, T. Robinson, M. Wiltberger, and C. Kahlke), pages 4-6, Vol. 20, Issue 11.
- “A sunnier, warm, and dry season in WNY: Practical implications of early- and mid-summer water stress on tree growth, cropping, and physiology” (A. Lakso, T. Robinson and M. Miranda Sazo), pages 5-9, Vol. 20, Issue 12.
- “Planning to attend our August 11 webinar – ‘Honeycrisp’ bitter pit prediction models” (C. Kahlke and M. Miranda Sazo), page 1, Vol. 20, Issue 13.
- “New Cornell leaf sampling recommendation for ‘Honeycrisp’ in 2020” (M. Miranda Sazo and L. Cheng), pages 2-3, Vol. 20, Issue 13.
- “The use of plant growth regulators near harvest” (T. Robinson, M. Miranda Sazo, and C. Kahlke), pages 1-3, Vol. 20, Issue 14.
- “The use of reflective materials and other technologies for improving fruit color on high value apple cultivars in WNY” (M. Miranda Sazo, C. Kahlke, M. Wiltberger, J. v. Zoeren, and E. Tee), pages 3-5, Vol. 20, Issue 15.

### ***Fruit Facts (regular editions):***

- Sent weekly information related to nitrogen/potassium/calcium use, spring/summer pruning of high value cultivars, recommended irrigation and fertilization for cultivars years 1, 2, 3, and 4, recommended the use of apogee for vegetative growth control, new tree nursery management practices, introduced peel sap analysis for Honeycrisp, keep growers updated about the use of plant growth regulators, new pruning techniques, training, tree support for high density plantings, and continued introducing the use of mechanical pruning.

### ***Fruit Facts (special editions):***

- In conjunction with JvZ, brainstormed and identified an educational need for a FB summer collaboration in early July
- We collaborated with A. Wallis and K. Cox for the production of a series of articles focused on fire blight and related sound IPM/horticultural management practices
- Friday zoom calls helped us to develop frameworks for articles
- I mainly covered aspects related to tree vigor, nitrogen, irrigation, summer pruning (manual and mechanical).
- The 3 special editions were sent on July 16, 23, and 30.

### ***Presentation(s) Given – Zoom webinars (irrigation-related on July 7 and Honeycrisp-related on July 14):***

- All short, 5-10 mins presentations, introductions, Q&A about peel sap protocol, peel sap video, bitter pit control, calcium management, irrigation practices/technologies during 2 LOF zoom webinars.

### **Peer-Reviewed Research Article(s)**

- “Assessing and minimizing the development and spread of fire blight following mechanical thinning and pruning in apple orchards” (A. Wallis, M. Miranda Sazo, and K. Cox)
- Accepted by the Journal of Plant Disease and published online on August 17, 2020
- Journal <https://apsjournals.apsnet.org/doi/10.1094/PDIS-06-20-1324-RE>
- Currently in review process with minor revisions

### **Applied Research Projects:**

#### **Precision Chemical Thinning trial (ARDP/Robinson)**

- Without activity this quarter
- Main effort was allocated to pollen tube growth model during bloom period

#### **Orchard Netting Project (unfunded in 2020, Miranda Sazo)**

- This was supposed to be the third year for this project
- The fruit quality evaluation was not conducted due to an error in storage conditions
- The effort was terminated

#### **Testing the Use of Apogee and Manganese for Bitter Pit Control on Honeycrisp (ARDP/Cheng and Miranda Sazo - in collaboration with Robinson in 2019 and 2020)**

- July fruit sampling, peeling, and fruit quality analyses were conducted by Robinson’s crew
- Peels (frozen and stored at a freezer at Cornell AgriTech) have not been squeezed for SAP analysis

#### **On-farm Nursery Project (ARDP/Robinson and Miranda Sazo)**

- This is a new long-term project to be conducted in cooperation with Wayne County grower Ted Furber
- The objectives of this study are to evaluate three methods of growing apple trees in on-farm nursery conditions
- The three strategies are: (1) the standard grower strategy, (2) two year “grow-through” strategy, and (3) three year “grow-through” tree strategy
- Feathers were pruned to 4-5 fingers length during July
- Mini-trellis was installed this summer
- Soil temperature sensors were installed in the research plots early in the spring and were retrieved at the end of July.
- Sensors were reprogrammed and installed again on August 21 and will be retrieved in Nov. 13
- Digging of first finished trees and fall planting is planned for early November.

#### **Cornell AgriTech Experimental Orchard (ARDP/Fuchs, Miranda Sazo, and J. v. Zoeren)**

- Trained trees with tape guns with JvZ on July 10
- When possible irrigated trees during week days

- Mostly coordinated irrigation schedule with Spenser Howden during July and August
- Took and submitted soil sample to CALS analytical lab
- Made fall fertilizer recommendations (mainly potash)

#### **Honeycrisp project with Lake Ontario Fruit Inc., (Cheng & Miranda Sazo)**

- The effort for this project was significantly increased this quarter (for more details see highlights this Q3)
- Dr. Robinson took an important role this quarter (generated ideas, improved methods, defined new goals, served as speaker, and interpreted/sent results to collaborators)
- A HC webinar was conducted on July 14
- A HC peel sap YouTube video was produced this quarter
- In addition to the 28 Honeycrisp sites sampled in the last 4 years with LOF, there were more than 260 sites sampled for peel sap analysis (at the 50-60gr/fruit or golf ball size stage)
- Squeezed peels and got SAP for ICP analysis the weeks of July 13 and 20
- Leaf sampling for LOF sites conducted on August 21
- Peel sap results/interpretations were emailed to grower participants in the middle of August

#### **On-farm Rootstock/Training Systems (ARDP/Robinson)**

- Monitored fruit maturity and coordinated the harvest evaluations with grower cooperators Danny VanAcker and Adam Peters this quarter
- Honeycrisp at VanAcker was evaluated by Luis Gonzalez (new Robinson's PostDoc) on Sept. 21
- Idared at Peters will be evaluated by L. Gonzalez on October
- Red Delicious at Kast will be evaluated by MMS on October

#### **Latino project (USDA-BF/Rangarajan)**

- There was not significant progress during Q3
- We were not able to re-engage with *Master Class* graduates before 2020 harvest
- There is a small collaboration effort with a group of Cornell students this fall semester and with two Penn State Extension colleagues for winter programming
- MMS will introduce the Master Class program to Cornell students in October
- Project got a no-cost extension until August 2021

#### **Potassium Studies with Mature Honeycrisp (ARDP- Cheng and Miranda Sazo)**

- Set up two trials with grower cooperators Furber's and VanDeWalle in Wayne
- Ground treatments (muriate potash) were applied after budbreak
- Fruit collection for peel sap was conducted in July and September
- Leaves were collected in early August
- Bitter pit evaluations were conducted at harvest

#### **Use of Apogee applied pre-harvest to suppress bitter pit on mature Honeycrisp (unfunded- Cheng and Miranda Sazo)**

- Set up one trial with grower cooperator J. Smith, Ledge Rock Fruit Farms, Medina, NY

- The main objective of this study is to determine the effect of Apogee on bitter pit incidence of Honeycrisp when applied 2-3 weeks before commercial harvest
- Apogee treatments were applied on August 28 and Sept. 4
- Harvest evaluation and bitter pit evaluation were conducted with the help of JvZ and L. Tee on Sept. 18
- Fruit samples were stored at Cornell orchards on Sept. 19

#### **Ph.D. related coursework/experimental work in Ithaca (Cheng)**

- Started fall semester and registered PLHRT 9900 class (Doctoral Dissertation Research)
- Trained trees as they developed during the week and/or weekend(s)
- Irrigated or fertigated trees with R. Gaiser (weekly) and Graham O'Donnell (weekends) this Q3
- Continued adjusting crop load of 280 experimental trees
- Submitted grad review poster and presentation in early August
- Gave virtual presentations at the 2020 SIPS graduate field review day on August 26
- Conducted manual defoliation (3-4 helpers from Cheng's lab) for 16 trees on Sept. 14
- Took leaf area measurements with Shipung's help in Ithaca on Sept. 15
- Excavated and washed 16 trees/roots with Graham's help on Sept. 16
- Conducted tree destruction evaluation (several helpers from Cheng's lab plus Shipung) on Sept. 17-18
- Placed all tree samples in a dryer at the Leland facility, Agronomy Department in Ithaca on Sept. 18
- Conducted yield data evaluation on Sept. 19
- Conducted a new dry matter protocol (for freeze drying purposes) on Sept. 22

#### **Other Team Duties:**

- Attended LOF zoom meetings and conference calls as needed
- Communicated with Greg Lang - MSU, recorded IFTA NY orchard video/interviewed growers with Liz Tee's assistance on Sept.
- Since early July, coordinated/guided the work of Graham O'Donnell (summer help funded by L. Cheng) to assist with most field research activities for the sand culture experiment in Ithaca
- Coordinated, planned, and secured Cornell faculty participation for Honeycrisp webinars (July 7 and 14)
- Wrote horticultural notes and compiled/sent Fruit Facts during 3<sup>rd</sup> quarter
- Reported fleet mileage, changed oil, windshield during third quarter
- Authored and submitted 4 newsletter articles to LOF editor
- Co-authored 3 extension articles about fire blight management in the summer
- Submitted reappointment package
- Helped with LOF zoom webinars (developed/framed ideas, main activities)
- Helped with zoom passive model prediction on August 11
- Helped with passive bitter pit evaluations on Sept. 10-11
- Submitted April-June 2020 Quarterly Report
- Communicated with Small Farm Program, IFTA Education Director, WSU/MSU/Penn State Faculties and extension colleagues, Cornell Farmworker Program, and several Cornell faculties in Geneva and Ithaca this quarter
- Took vacation days on Sept. 25 and 28

#### **Stakeholder Contacts**

- Minimized farm visits and exposure with growers and orchard workers this Q3 (due to Covid-19)
- Most of the field activities were carried out to conduct field research in WNY orchards and Ithaca campus.
- Assisted 12 growers via 20-30 emails, 50 phone communications, 40-50 texts (pics, videos, voice messages, etc.).
- Continued working strategically with 2 new growers.

### ***Quarterly Highlight for Cultural Practices – Mario Miranda Sazo***

#### **CCE LOF Team Helped to Develop and Launch a New Cornell Diagnostic Tool**

##### **Background:**

Bitter pit, a calcium related disorder in ‘Honeycrisp’ apples, can cause millions of dollars in loss per year for commercial apple growers across NY. Cornell and others have been testing several methods to try to predict bitter pit incidence prior to harvest. A new diagnostic tool (peel sap test) was launched to the entire WNY apple industry on July 2020.

##### **Target Audience:**

Commercial apple growers, crop consultants, storage operators, and packers in NY.

##### **LOFT Response:**

Our Extension team recruited several Cornell faculty (Cheng, Robinson, Watkins, Rutzke), S. Henning, C. Van Acker, and more than 40 growers from 4 counties to develop the peel sap analysis for early prediction of bitter pit on Honeycrisp.

##### **Predicted Outcomes:**

Better prediction of the risk of bitter pit, and the ability to make for informed storage/marketing decisions to maximize profitability and sustainability, and to significantly reduce losses of fruit with bitter pit.



**CCE LOF team members, WNY fruit industry partners, and Cornell faculties and their technicians partnered for the peeling of Honeycrisp fruit in July and early August 2020. More than 250 peel sap tests were submitted and analyzed by CALS analytical lab this summer.**

## ***Integrated Pest Management – Janet van Zoeren***

### **Educational Programs/Presentations/Publications:**

#### **Publications:**

##### **Tree Fruit News Articles:**

- Basedow, M., van Zoeren, J. and Sosnoskie, L. *Post-Emergent (Burndown) Herbicide Damage—Signs and Symptoms*. Tree Fruit News. Volume 8, Issue 5. Pp 8-9.
- Basedow, M., van Zoeren, J. and Sosnoskie, L. *Pre-emergent Herbicides in the Fall – Advantages, Disadvantages, and Damage Symptoms*. Tree Fruit News. Volume 8, Issue 6. Pp 6-7.

##### **Fruit Notes Articles Written:**

- Van Zoeren, J, Carroll, J. and Agnello, A. *Update on European Cherry Fruit Fly, and SWD Management Webinar Recap*. Fruit Notes, Volume 20, Issue 10. Pp 9-11.
- Van Zoeren, J, Basedow, M and Sosnoskie, L. *Post-emergent (Burndown) Herbicide Damage – Signs and Symptoms*. Fruit Notes, Volume 20, Issue 12. Pp 9-11.
- Van Zoeren, J. and Jentsch, J. *Brown Marmorated Stink Bug in WNY – monitoring and biological control*. Fruit Notes, Volume 20, Issue 14. Pp 10-11.
- Van Zoeren, J. and Guédot, C. *Brown Marmorated Stink Bug and Other Late-Season Apple Damage*. Fruit Notes, Volume 20, Issue 15. Pp 6-7.
- Van Zoeren, J., Basedow, M and Sosnoskie, L. *Pre-emergent Herbicides in the Fall – Advantages, Disadvantages, and Damage Symptoms*. Fruit Notes, Volume 20, Issue 15. Pp 7-9.

##### **Fruit Facts Articles Written:**

- X8 issues
- Special Fire Blight series: 3 special issues with in-depth information regarding fire blight management. Collaboration with Mario Miranda Sazo and Anna Wallis.

##### **Wisconsin Fruit News Articles:**

- Guédot C., van Zoeren, J. and Sosnoskie, L. *Brown Marmorated Stink Bug and Other Late-Season Apple Damage*. Wisconsin Fruit Notes, Volume 5, Issue 10. Available online: <https://fruit.wisc.edu/2020/09/03/brown-marmorated-stink-bug-and-late-season-apple-damage/>

### **Applied Research Projects:**

#### **Weed Management (ARDP; PI-Mike Basedow):**

- Every other week weed evaluations from May through present
- Put up “Tyvek” trunk guards around ½ of each replicate, to test whether these guards prevent trunk injury from herbicide contact
- Use of water sensitive paper during spray application to measure spray droplets reaching the trunk in trunk guard vs. no trunk guard treatments
- Foliar herbicide-damage assessments and soil health samples collected

#### **Ambrosia beetle (black stem borer) management (ARDP; PI-Agnello):**

- Weekly trap monitoring at two sites in Orleans County



- Participated in Ambrosia beetle multi-state working group meeting, with follow up efforts to contribute to a proposal for grant funding
- Coordinated on-site visits for USDA research scientist Lindsey Milbrath, to further BSB research in the region

**Brown marmorated stink bug monitoring (ARDP; PI-Agnello):**

- Weekly trap monitoring at seven sites, located in Niagara, Orleans, Monroe and Wayne Counties
- Release of BMSB natural enemy (*Trissolcus japonicus* wasp) at five sites in Orleans and Wayne Counties

**Virus (ARDP; PI-Fuchs):**

- Tree training (July 8)

**Prohexadione Calcium to control fire blight:**

- “Mid-season” shoot growth and yield measurements taken in July
- “End of season” shoot growth and yield measurements taken in September

## Grant Submissions, Re-Submissions, Letters of Support, Proposal Meetings

- Working with Maria van Dyke and Bryan Danforth, to support a NE SARE grant application to develop wild pollinator educational materials
- Working with Lynn Sosnoskie, to provide grower connections and support for a NE SARE grant application on using vision-guided equipment to protect trees from herbicide damage

## Other Team Duties:

- Worked together with team to coordinate and facilitate the virtual summer fruit meeting series
- Helped collect peel sap analysis samples and assess for bitter pit, for bitter pit prediction projects

## Committee & Board Meetings:

- Served on planning committee for the 2021 Ag Extension Retreat

## Other Area-wide Education & Advocating

- Ran an insect monitoring trapline across Orleans, Monroe and Wayne counties. Particular effort spent during cherry and berry harvest seasons to keep growers informed of spotted wing drosophila populations
- Communicated closely with Juliet Carroll, the USDA, and the NY DAM groups, to keep cherry growers up to date with recommendations about European cherry fruit fly management and restrictions
- Communicated closely with Anna Wallis and Kerik Cox to develop a coordinated Streptomycin Resistance fire blight management and communication program, including collecting fire blight samples at three sites (Orleans, Monroe and Niagara counties) to test for Streptomycin resistant fire blight
- Collaborated with the Motts facility to help identify internal Lepidoptera and stink bug problems in incoming processing fruit
- Contacts with DropCopter and Black White Robotics regarding growers/industry collaborations



### **Professional Development:**

- Attended weekly regional berry phone calls (through mid-August, learned what other colleagues are seeing, concerns they are addressing, and staying up to date with berry research projects)
- Attended weekly listening sessions with Peter Jentsch at the Hudson Valley Research Station (through late August, learned about pest management priorities in the HV, which tends to be several weeks “ahead” of phenology here)
- Attended webinar on the advantages and risks associated with Neonicotinoid use in New York
- Attended training sessions to be able to co-teach a Tree Fruit Production course in the “Cornell Small Farms” platform
- Passed Dec Commercial Pesticide Technician examination

### **Stakeholder Contacts:**

- On farm visits – 20 total (3 Niagara Co., 4 Orleans Co, 2 Monroe Co, 11 Wayne Co)
- Conversations via text, phone calls or email – 44

### **Consultant contacts:**

- Conversations – 4

### **Faculty Collaborations/Consultations:**

- Conversations – 19

## **Quarterly Highlight for Fruit Pest Management– Janet van Zoeren**

### **Fire Blight – Outbreak, Mitigation, and Strep Resistance Management**

#### **Background:**

Fire blight, caused by the bacteria *Erwinia amylovora*, is one of the key diseases apple growers must control for on an annual basis. Most years, NY growers are able to keep fire blight predominantly under control with the use of the antibiotic Streptomycin, along with other fungicide products and cultural practices. In 2019, there were two isolated incidences of Streptomycin resistant *E. amylovora* (SmR Ea) – this was discussed early this spring in a Fruit Notes article, to encourage growers to rely on a range of control methods and take the pressure off of Streptomycin.

#### **Need/Opportunity:**

There was a “perfect storm” of weather conditions for fire blight this spring, with the NEWA model showing extreme risk for 3-4 days during the tail end of bloom. The timing and intensity of the risk meant that, even growers who re-applied as often as possible, were unable to keep blooms completely covered. The first report of extreme fire blight strikes came to me from a small-scale cider orchard in Monroe County on June 7<sup>th</sup>. Soon there were reports from across New York State of growers with most trees in many blocks showing fire blight strikes.

#### **LOF Response:**

During the summer (June-August), I visited twelve farms to collect fire blight samples to send to Geneva, and gave on-site recommendations (3 in Niagara, 2 Orleans, 2 Monroe, and 5 Wayne). I have spoken on the phone or corresponded by email with many other concerned growers, from all five counties, to give advice on how to mitigate fire blight strikes (in both apple and pear) this summer and how best to control the risk for next spring. To reach a broader audience, I have worked with Kerik Cox and his graduate student Anna Wallis to write articles for Fruit Notes, the ENY Tree Fruit News, Scaffolds, and several issues of Fruit Facts, including a three-part “Fruit Facts Special” put together as a collaboration between myself, Anna Wallis, and Mario Miranda-Sazo.

From the samples collected and sent to Geneva, several were found to show Streptomycin resistance. This led to a further concern – and an emphasis on helping growers develop their spray programs to try to mitigate or eliminate SmR Ea in the state. Working together with Anna Wallis and Kerik Cox, we have already published a Fruit Facts article reminding growers to be on guard against SmR Ea. However, we have not wanted to raise too much alarm until all the facts are known.

We are not finished yet. The next steps will be to present on the findings more thoroughly at our Tree Fruit Conference in February, and then to be sure in the spring to keep ahead of the growers and continually advise them of risks and benefits of Streptomycin applications, give suggestions of alternative management strategies, and to continue to remind growers that there will be extra inoculum their orchards after the high levels of fire blight this summer.

## ***Production Economics & Business Management – Mark Wiltberger***

### **Main Focus of the Quarter:**

The main focus of the quarter was to continue to quickly respond to ever-changing COVID-19 stakeholder needs for information about COVID-19 and also to continue to provide business management support.

A major effort this quarter was to provide COVID-19 information to growers in anticipation of apple harvest. The articles and webinars listed below reflect the new information provided to growers about COVID-19 financial relief, best practices for managing U-Picks and farm markets, and how to navigate the management of the huge influx of H-2A harvest workers, including the option of using the state mobile testing initiative for farmworkers, launched after harvest had begun.

### **Major Issues this Quarter:**

- CFAP – CFAP 1, CFAP 2
- COVID-19 Practices for Harvest
- H-2A workers
- Practices for Agritourism, U-Pick
- Mobile Testing Farmworkers
- Changes in New York Farm Labor Laws
- COVID-19 Sick Leave, Federal CARES Act & NY Sick Leave Law
- Apple Crop Estimate – U.S. Apple, Premier
- Effect of COVID-19 on Apple Market, other Fruit Markets
- Honeycrisp Bitter Pit study – putting on webinars before harvest and team analysis of passive bitter pit
- COVID-19 Safe Harvest Office Hours

### **Educational Programs/Presentations/Publications:**

#### **Publications**

#### **Fruit Notes, Author:**

*Premier Apple Coop 2020 National Crop Estimate Lower than 2019 Production*, Fruit Notes, Volume 20 Issue 11 July 1, 2020

*Q & A Sessions on Managing Your Farm or Fruit Facility during COVID-19: Webinar Series Continues – Recordings Available on YouTube*, Fruit Notes, Volume 20 Issue 11 July 1, 2020

*July 9th Listening Session Will be Held for New York State Apple Producers Changes Proposed for Apple Crop Insurance Program*, Fruit Notes, Volume 20 Issue 11 July 1, 2020

*Apples Now Included in CFAP Funding: Growers Encouraged to Apply ASAP*, Mark Wiltberger, Fruit Notes,

Volume 20 Issue 12 July 15, 2020

*Communicate Well with Employees to Reduce the Risk of Coronavirus on Your Farm: A Selection of Video and Other Communication Resources*, Mark Wiltberger, Fruit Notes, Volume 20 Issue 12 July 15, 2020

*Start Checking Off Your Checklist Now for COVID-19 Harvest Preparation*, Mark Wiltberger

*Apple Growers Strongly Encouraged to Apply for CFAP Funding*, Mark Wiltberger, Fruit Notes, Volume 20 Issue 13 July 30, 2020

*Preparing for Onboarding Harvest Employees in the Context of COVID-19*, Mark Wiltberger, Fruit Notes, Volume 20 Issue 13 July 30, 2020

*Local Health Clinics Provide On-Farm COVID-19 Testing, COVID-19 Education, and Other Health Services to Farm Owners and Agricultural Workers*, Mark Wiltberger, Fruit Notes, Volume 20 Issue 13 July 30, 2020

*Outlook for U.S. and New York State 2020 Apple Crop and Implications for Harvest*, Mark Wiltberger, Fruit Notes, Volume 20 Issue 15 August 28, 2020

*Agricultural Seasonal Worker COVID-19 Testing Initiative*, Mark Wiltberger, Fruit Notes, Volume 20 Issue 15 August 28, 2020

*The Use of Reflective Materials and Other Technologies for Improving Fruit Color on High Value Apple Cultivars in WNY*, Mario Miranda Sazo, Craig Kahlke, Mark Wiltberger, Janet van Zoeren, and Elizabeth Tee, Fruit Notes, Volume 20 Issue 15 August 28, 2020

#### **Fruit Notes, Edited:**

*When do you need to Quarantine Workers? Guidance for Essential Workers Arriving in NY from U.S. States with Significant Community Spread*, Richard Stup, Cornell Ag Workforce Development, Fruit Notes, Volume 20 Issue 11 July 1, 2020

Tuesday, July 28 – Two COVID-19 Webinars in English and Spanish by Dr. Canario, Fruit Notes, Volume 20 Issue 12 July 15, 2020

*Food Industry Virtual Office Hours are Now Offered Every Other Week*, Fruit Notes, Volume 20 Issue 13 July 30, 2020

*CFAP for NYS Fruit and Vegetable Farms (as of July 2020)* Elizabeth Higgins, ENYCHP Ag Business Extension Specialist, Fruit Notes, Volume 20 Issue 13 July 30, 2020

*USDA Extends CFAP Deadline to September 11*, Fruit Notes, Volume 20 Issue 15 August 28, 2020

*Safe Harvest 2020: COVID-19 Office Hours*, Fruit Notes, Volume 20 Issue 15 August 28, 2020

*Wage Board Hearings: Make Your Voice Heard!*, Richard Stup, Cornell Ag Workforce Development, Fruit Notes, Volume 20 Issue 15 August 28, 2020

## **LOF Announcements – email bulletin with timely articles and announcements**

*LOF - Fw: Live CFAP Webinar for Apples by USDA on Wednesday / Apples Now Included in CFAP Funding, July 14, 2020*

*LOF - Apple Growers Should Apply for CFAP Funding, July 23, 2020*

*LOF - Fw: Important NY Farm Labor Law Update: Don't Miss This Webinar!, August 14, 2020*

*LOF - Agricultural Seasonal Worker COVID-19 Testing Initiative, August 21, 2020*

*LOF - Tuesday 4PM -- Safe Harvest 2020: COVID-19 Office Hours, August 24, 2020*

*LOF - Wage Board Hearings Begin Tomorrow: Make Your Voice Heard!, August 25, 2020*

*LOF Announcements - COVID-19 On-Farm Testing Begins in Wayne County, Agritourism Best Practices webinar, September 3, 2020*

*12:30PM Today - NYS Ag & Markets to Give Update on Mobile On-Farm COVID-19 Testing Program at Safe Harvest Office Hours, September 8, 2020*

*LOF Announcement - NYS Ag & Markets Commissioner Will Give Farmworker Testing Initiative Update Tue Sep 14 & Thu Sep 17 6:30PM, September 11, 2020*

*LOF Announcements - The ins & outs of COVID-19 testing for farms and farm workers; USDA Announces CFAP 2; COVID-19 Sick Leave; Safe Harvest, September 21, 2020*

*LOF Announcements - CFAP 2 is Different from CFAP 1 – Most Fruit and Vegetable Crops are Eligible; Safe Harvest COVID Office Hours, Tue Sep 29 12:30PM, September 28, 2020*

## **Presentations and Webinars:**

Participant or Panelist:

*COVID Testing and Isolation - Q and A for Wayne County Growers, July 1.*

*Apple Irrigation Management in 2020, July 7.*

*Peel Sap Analysis for Early Prediction of Bitter Pit in 'Honeycrisp', July 14*

*How Should my Business Respond to COVID-19? A Q & A Zoom Session for the Produce Industry: Apple Packing Facilities, July 16*

*CFAP Webinar for CCE Staff, July 17*

*Virtual Harvest PGR and Storage Meeting, August 4*

*LOF Honeycrisp Bitter Pit Prediction Models - Storage Testing Webinar, August 11*

*SAFE HARVEST 2020: COVID-19 Office Hours for Agricultural Producers and Packers, Aug 25 – September*

29. Series of 6, . Panelist.

LOF website page on Mobile COVID-19 Farmworker testing at Teeple Farms. Grower COVID-19 farmworker mobile testing video on YouTube.

### **Professional Development:**

#### **Conferences:**

US Apple Outlook Conference, Aug 20 – 21

#### **LOF Team Duties:**

- Set up enrollee and Fruit Facts email lists on Lyris listserv and cleaned and uploaded email addresses to four lists for enrollees and comp users.
- Edited Irrigation webinar video recording and uploaded to YouTube
- Edit Fruit Notes volumes 13, 14, & 15
- Attended weekly and monthly planning meetings
- Wrote 2<sup>nd</sup> Quarter Report for Business Management

#### **Industry/Cornell Meetings:**

- Weekly Premier Apple Coop calls
- Phone Calls with NY State, County Health Departments, and health clinics related to state COVID-19 mobile testing initiative.
- Cornell Fruit PWT meeting, August 6.
- Webinars on CFAP programming
- Webinars on Apple Insurance programs

#### **Funded Projects:**

- Co-Director on Project: “Reducing Risk in Fruit and Veg Production through Improved On-Boarding of New Farm Employees”, USDA. \$29,631. Elizabeth Higgins, Director.

#### **Stakeholder Contacts:**

- Telephone calls: Approximately 70 phone calls/Zoom calls on a wide range of topics from CFAP financial relief eligibility, mobile farm testing, safe harvest practices, land lease arrangements, and U-Pick and Farm Market COVID-19 best practices.
- Texts: Approximately 3 text conversations
- Emails: Approximately 12 email conversations
- In-person Visits: in-person visit at Teeple farms to document COVID-19 mobile testing of farmworkers.

## ***Quarterly Highlight for Production Economics and Business Management – Mark Wiltberger***

### **Spreading the Word about COVID-19 CFAP Financial Relief for Farms**

#### **Need/Opportunity:**

A flood of information came out this year about government programs for financial relief for farms. CFAP (Coronavirus Financial Assistance Program, part of the federal CARES Act) was the first program that was released that would be of direct benefit with a simple application process for apple farms. However, the program was being implemented through USDA Farm Service Agency offices, a route that is not commonly used by specialty crops producers. Additionally, earlier programs in the pandemic, EIDL and PPP, were more complicated applications and of less benefit to producers. As a result, producers were not aware of the CFAP program during the middle of their busy growing season.

#### **LOF Response:**

I attended the USDA informational webinars and the Cornell specialist meetings about the CFAP program. I wrote a series of articles in July and August Fruit Notes about the importance of applying to the CFAP program, along with explanation of how the program worked. The articles went out in the Fruit Notes and also the ENYCHP Tree Fruit E-Alerts. I contacted many individuals and received many phone calls and emails from producers, packers, and processors from across the state for further explanation about the application process. Once word started to get around the industry, many producers applied for the program. Approximately \$8 million was distributed to apple producers in NYS for the first round of funding. In September, the second round of CFAP was announced. This program applies to even more producers with a substantial value of approximately 10% of a producer's 2019 sales revenue. I am continuing to publish information about the second round, so producers can apply after they finish up their apple harvest.



***NYS Mobile Farmworker Testing Initiative at Teeple Farms, September 2, 2020.***