



A partnership between Cornell University and the CCE Associations in these five counties: Monroe, Niagara, Orleans, Oswego & Wayne

Fruit Notes

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Cornell Cooperative Extension
Lake Ontario Fruit Program

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Volume 24 Issue 5 May 8, 2024

Western NY and Capital Region Virtual Petal Fall Thinning Meeting

Monday, May 13, 4:00 PM

Sponsored by CCE-ENYCHP & CCE-LOF

Welcome & Intros

Mike Basedow (CCE-ENYCHP) - Phenology Updates in the Saratoga area

Craig Kahlke & Mario Miranda Sazo, Phenology Updates in Western NY

Dr Terence Robinson, Cornell, Thinning Recommendations at the Petal Fall Timing for both regions

Join Zoom Meeting (no preregistration needed):

<https://cornell.zoom.us/j/98572569175?pwd=Y1hUdDUyTHdMS2hHbXQvcmxRR2hyZz09>

Meeting ID: 985 7256 9175

Passcode: 171971

Save the Date: Second Annual Bilingual Orchard IPM Training for Farm Employees

Anna Wallis, NYS IPM at Cornell, and Janet van Zoeren & Mario Miranda Sazo, CCE-LOF

Please save the date and plan to send your employees to our second annual Bilingual Orchard IPM Training for farm employees, which will be held on May 29th at Orchard Dale Fruit Farm in Orleans county from 5:30-8pm!

The event is a joint effort between LOF's Janet van Zoeren and Mario Miranda Sazo and NYS IPM's Anna Wallis. It will feature both educational IPM trainings, along with time for farm employees to socialize and learn from each other.

Educational programming will cover scouting and monitoring demonstrations, along with some theory on the basics of IPM and the importance of farm employees as on-farm scouts and to provide early-warning of potential insect pests and diseases. All programming will be given in both English and Spanish, providing an opportunity also for workers to listen and learn the other language.

Snacks and soda will be provided for 30 minutes of social time before and after the educational programming.

Everyone is welcome to attend! Registration will be required so we can provide sufficient food, but attendance will be free. **Watch for registration link in upcoming email blast.**



It's Not (Quite) Too Late for an Annual NEWA Weather Station Checkup

Dan Olmstead, Extension Associate and NEWA Coordinator, and Janet van Zoeren

In case you did not get around to a winter weather station checkup, given the short winter and early spring, there is still time to do a quick checkup now. This article was first published in February 2020, and provides a checklist of annual weather station maintenance tasks.

The following information is meant for anyone who already has an on-farm weather station. **If you do not yet have your own weather station on your farm**, but are interested in learning more about whether one will significantly benefit your operation, where to install your new weather station, or how to go about buying one and hooking it up to NEWA, please contact Janet at jev67@cornell.edu.

Check Your Surroundings

Barns, windbreaks, equipment and other objects in close physical proximity to your machine can interfere with many sensor measurements, affecting both their precision and accuracy. Shading from a tall tree or building will reduce solar radiation readings, affect ambient temperature, relative humidity, and even windspeed. Consider relocating your weather station if you think nearby structures, objects, or permaculture interfere with air flow or sunlight. A minimum distance of 100 ft is a good rule of thumb.

Clean your sensors

- **Anemometer and weather vane.** Check that your wind speed and wind direction sensors move freely. If either resists movement or is stuck, consider replacement.
- **Solar radiation.** Use a step ladder to closely inspect the sensor. Use a clean damp cloth to remove dirt and debris if necessary. If the protective lens looks opaque, contact your vendor to discuss replacement.
- **Rain gauge.** Use a step ladder to closely inspect the rain bucket interior. Carefully remove any leaves, spider webs, or other debris commonly found in clogged rain gauge sensors.
- **Temperature/relative humidity.** Inspect the solar radiation shield for insect nests or spider webs. These block free airflow to the sensors housed inside. Clear debris with a soft bristle brush if necessary.
- **(Leaf) wetness.** Check that the wetness sensor is secured at a 30° angle facing north. Clean debris using a clean damp cloth.
- **Soil sensors.** Inspect cords leading from the computer housing to the ground for mechanical or rodent damage. Contact your vendor if parts need replacement.

Know How to Reach Your Vendor

Add your vendor's support number to Contacts in your phone. If you encounter a problem, don't put it off. Leave a message with your supplier if their support staff are busy. **Rainwise Support** is 207-801-4039. **Onset Support** is 1-800-564-4377.

Our weather station vendor partners are always ready to help. But if you aren't sure where to start, want clarification, or think there might be an issue with the NEWA site, you can reach out at any point to the NEWA Help Desk at support@newa.zendesk.com.

New Guides Available for NEWA Apple Models

Anna Wallis (NYS IPM) and Dan Olmstead (Extension Associate and NEWA Coordinator)

There are numerous models on the NEWA website available to assist with production of apples and other crops. But it can be complex to learn them or refresh your understanding. To help you find answers more quickly, we've created two new resource aides for frequently asked questions and resources.

NEWA Help Desk Frequently Asked Questions and Table of Contents. The landing page for the **NYSIPM Help Desk for NEWA:** (<https://help.nysipm.org/hc/en-us/categories/16994462926231-NEWA-Network-for-Environment-and-Weather-Applications>)

now includes a list of Frequently Asked Questions and model tutorials (3-10 minute videos) organized by crop. Resources and frequently asked questions for apple producers and orchard managers can be found on the **Apple insect, disease, and crop management forecasts page**: (<https://help.nysipm.org/hc/en-us/sections/17011505301783-Apple-Insect-Disease-and-Crop-Management-Forecasts>)

of the Help Desk. You will also find the specific tutorial linked on the corresponding page for each model (e.g., the Plum Curculio tutorial video is linked on the model page).

Quick Guide for Apple Insect Pests. In addition to the video tutorials, we created a **NEWA Quick Guide for Apple Insect Pests**: (<https://help.nysipm.org/hc/en-us/articles/23290226665751-NEWA-Quick-Guide-for-Apple-Insect-Pests>). The purpose of this guide is to provide a quick overview for using NEWA models pertaining to important insect pests of apples. On this page you will find a brief **Introduction**, definitions of **Key Terms** used in understanding models, and **Model Explanations**.

Insects included in the quick guide are plum curculio (PC), codling moth (CM), oriental fruit moth (OFM), Obliquebanded Leafroller (OBLR). For each model, there is an **Overview** including model inputs and outputs, **Key Management Timings** for the particular pest, and a **Management Guide** with the detailed pest phenology and management recommendation outputs that you can expect from the model during the corresponding times of the season.

Orchard Management Help Needed – Niagara County

There's a new grower in the Wilson area that needs help maintaining a small (< 5 acre) apple orchard consisting of lower density Empire and Cortland. He's willing to pay fair wages.

Please contact Cameron Brawn at 716-313-9469, or c.brawn@aol.com

Pesticides and The Endangered Species Act: What You Need to Know

The following description has been endorsed by the Weed Science Society of America, Entomological Society of America, and American Phytopathological Society.

1: What is the Endangered Species Act (ESA)?

The Endangered Species Act is a long-standing federal law, first passed in 1973, which requires government agencies to ensure any actions they take do not jeopardize a species that has been federally listed as endangered or threatened. When an agency has a proposed action that might affect a listed species or its habitat, they consult with one or both of the agencies that helps enforce the ESA, the U.S. Fish and Wildlife Services or the National Marine Fisheries Service (this is known as “**a consultation**” with “**the Services**”). The Services then may recommend changes to the project or action to protect listed species or habitats. \

2: How does the ESA affect pesticide use?

The Environmental Protection Agency (EPA) Office of Pesticide Programs (OPP) is the federal agency that regulates pesticide use. Because the use of pesticides can affect animals and plants (or their habitat), pesticide registrations are considered “actions” that would trigger an endangered species consultation.

3: Why am I hearing about the ESA and pesticide use now?

Due to the complex nature of the process, the EPA has not fully completed the required endangered species consultations with the services for pesticide registrations in the past, which has left many of those pesticides vulnerable to lawsuits. Courts have annulled pesticide registrations which has led to their removal from market. To make pesticide registrations more secure from litigation, ultimately all pesticide registrations will comply with the Endangered Species Act (<https://www.epa.gov/endangered-species>).

4: How will this affect the pesticide I use today?

Many pesticide labels **will likely have changes that could include:**

- Requirement to check the EPA's Bulletins Live! Two website and follow current ESA restrictions for the pesticide product in the bulletin (<https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins>)
- Measures to reduce spray drift
- Measures to reduce runoff/erosion
- Other measures to reduce pesticide exposure to listed species and their habitat

In short, farmers and applicators should expect to see some new application requirements on their pesticide labels. But there is no need to panic. To date, no pesticide has ever been fully removed from the market based solely on endangered species risks, and that remains an unlikely scenario in the future.

5: Why does complying with the ESA matter?

By starting to fully comply with the ESA, **EPA anticipates that this will give farmers and applicators more stable, reliable access to the pesticides they need.** Furthermore, the ESA has been successful at bringing back some species Americans care about – such as the bald eagle or the Eggert sunflower – and restoring them to healthy populations, which has benefited the natural and cultivated ecosystems that agriculture (and society) rely on.

Genome-Wide Association Mapping: What is it and Why is it Important for the Development of Fruit Cultivars?

Hana Feulner, Richard Tegtmeier, Awais Khan (Plant-Pathology and Microbe-Biology Section, School of Integrative Plant Science, Cornell University, Geneva), and Janet van Zoeren (CCE-LOF)

Fruit breeders aim to develop tastier fruits while keeping them easy to store, a good size, resistant to diseases, and productive. Fruits' quality and quantity are controlled by many genes working together, called polygenic traits. These genes can be influenced by both other genes and the environment, making it tricky to figure out which ones affect specific traits. Plant geneticists use a method called **genome-wide association mapping** to find the genetic differences linked to the traits they care about and locate them in the plant's DNA.



In a Nutshell...

Genome-wide association study (GWAS) is a method used in genetics to understand what variations in the DNA of diverse crop plants are responsible for the differences in important horticultural traits. To achieve this, geneticists would collect data on a trait such as fruit size on a diverse set of apples and statistically associate the differences in fruit size with the variations in the DNA across the genome of each plant. By pinpointing the variants associated with the trait, plant geneticists could develop DNA markers to more efficiently select plants with the desired traits at the seedling stage in the breeding programs. This approach accelerates the breeding process, ultimately leading to the development of improved crop varieties tailored to meet various agricultural challenges and consumer demands.

What is genome-wide association mapping (GWAS)?

To understand GWAS and its implications, it is important to familiarize yourself with the key terminology, you must first understand important terms commonly used by plant geneticists described in Figure 1.

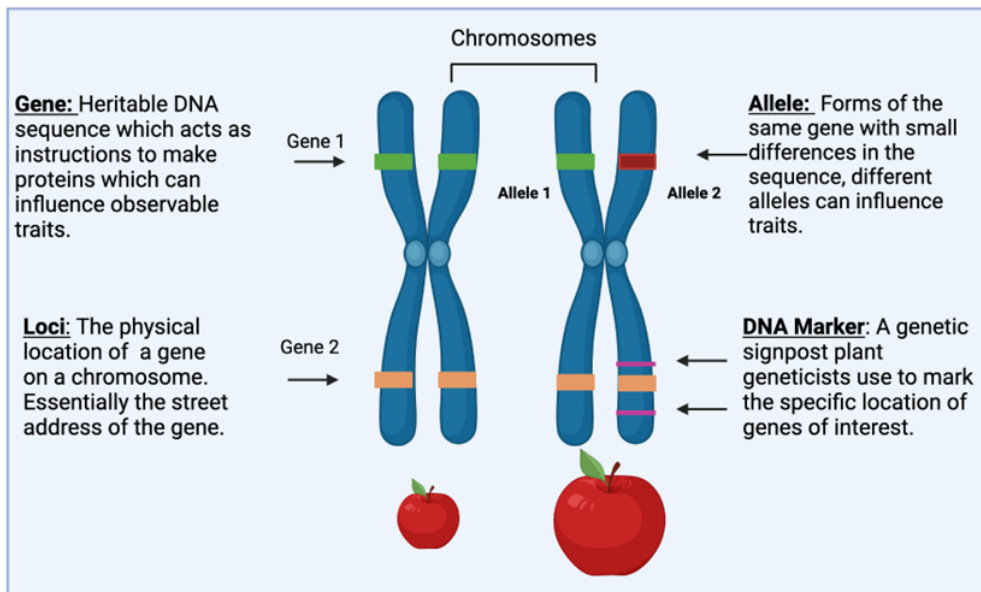


Figure 1. Terms commonly used by plant geneticists and breeders. Chromosomes carrying genetic information in the form of genes are colored blue. Green and orange boxes represent Gene 1 and 2 respectively. Red box represents allele variation in Gene 1. DNA markers are represented by pink lines.

The central objective of a genome-wide association mapping study is to statistically assess the relationship between a DNA marker and an observable trait (called the phenotype). There are many types of DNA markers. One DNA marker type called SNP (single nucleotide polymorphism), is a single change in the DNA code which themselves might not affect anything, their location can be close to genes that do influence a trait. Genome sequencing techniques are used to identify thousands of SNPs across the whole genome of an organism. GWAS relies on detecting linkage disequilibrium (LD). Linkage disequilibrium is when genetic traits are close together on a chromosome and are inherited together more frequently than you would expect with random chance. In GWAS oftentimes you are not detecting the SNP responsible, or causal variant, for a trait but instead a nearby SNP that is in linkage disequilibrium with the trait of interest (Figure 2).

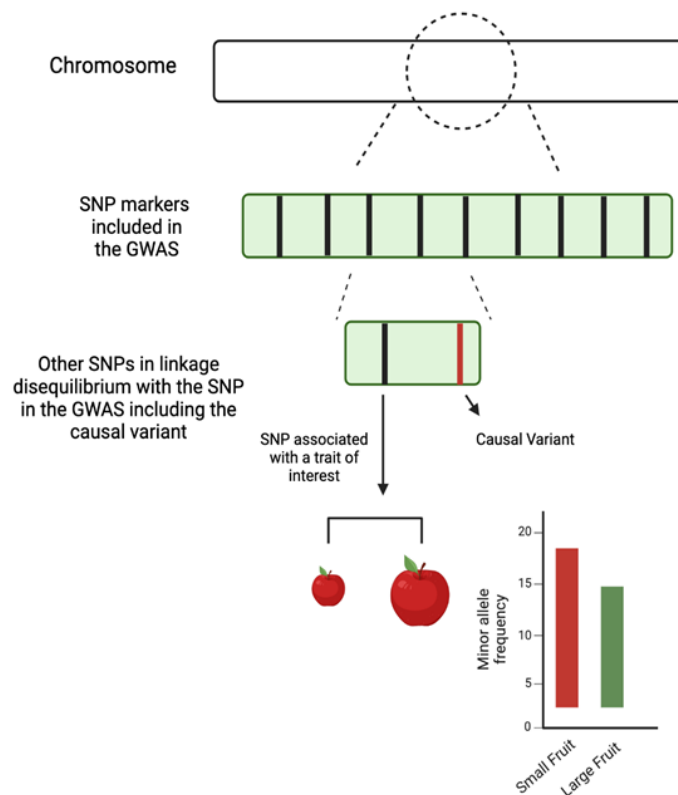


Figure 2. Identification of SNP associated with a trait of interest. Black lines represent SNP markers, red line indicates the causal SNP in linkage disequilibrium with a SNP found to be associated with a trait of interest.

A successful GWAS study requires four steps:

1. Development of a large population of genetically diverse plants (Figure 3A).
2. Testing inexpensive and genome-wide DNA markers on the entire population to distinguish different alleles (Figure 3B).
3. Reliable and good quality trait data (phenotype data) collected from multiple years, replicates, and locations for the population (Figure 3C).
4. Utilizing the appropriate statistical method to identify the genetic associations (Figure 3D).

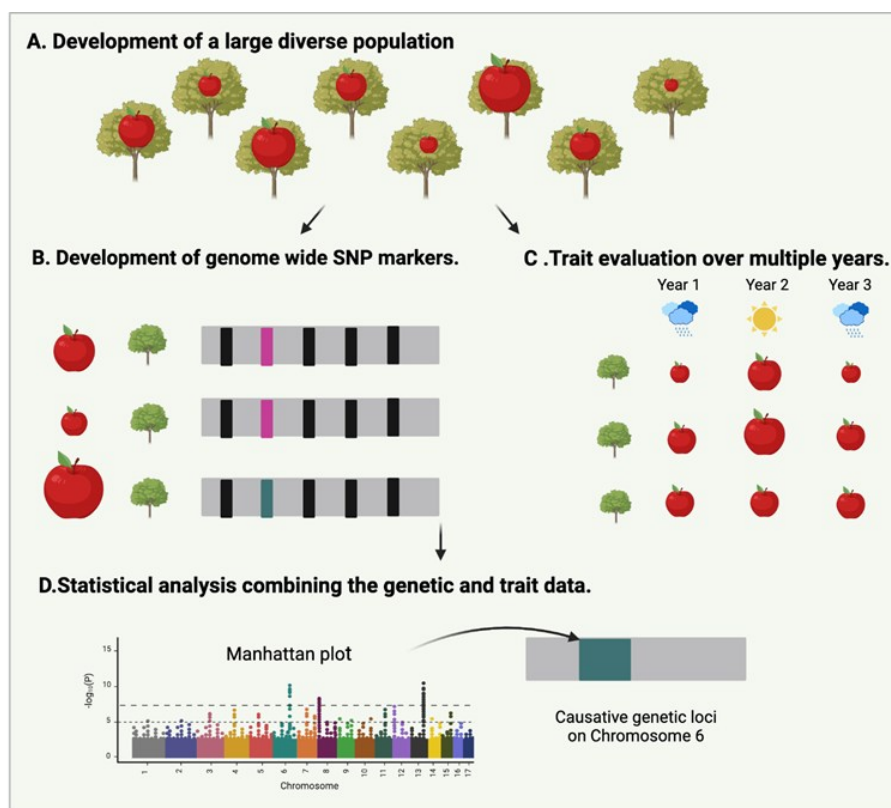


Figure 3. The four steps to perform a successful GWAS. Black lines represent SNP markers used on the population. Pink and blue lines represent allele variations. Manhattan plot shows the 17 chromosomes on the x-axis and statistical value on the y-axis, dots represent individual SNP markers. Dots above the dotted line show SNP markers associated with the trait of interest.

How has it influenced our knowledge about genetic control of traits in fruit crops, fruit breeding, and production?

GWAS is a widely used approach in genetics research to learn more about the genetics of countless plants, animals, and microorganisms. GWAS has been employed to determine the genomic locations associated with important traits in many specialty crop plants including apples, pears, and cherries. In apples, traits of interest that have been mapped using genetic association include flowering time, ripening periods, phytochemical profiles responsible for antioxidant activity, and disease resistance.

The identification of causative loci and the development of DNA markers associated with these traits can allow breeders to develop markers to screen future apple populations. The use of DNA markers can speed up the breeding process by allowing for the selection of individuals with the specific trait of interest before the trait is observable. This is especially helpful for breeding apples as it may take 4-6 years to be able to evaluate breeding traits such as fruit color or flavor. It is important to note that genetic association studies often do not have enough resolution to identify the specific gene responsible for a trait, and instead focus on a genomic region that is most likely to contain the gene or genes controlling the trait. Follow-up studies are required to functionally validate the candidate genes.

GWAS is an important tool in a plant geneticist's repertoire and has identified numerous loci responsible for important traits. With technological advances in genome sequencing our understanding of trait diversity and the underlying genetic basis will continue to be improved.

Extension Help Available to Great Lakes Shoreline Property Owners with Erosion

New York Sea Grant: Roy Widrig: 315-312-3042, rlw294@cornell.edu
Notice issued by Kara Lynn Dunn, karalynn@gisco.net, office: 315-465-7578

Landowners along New York's Great Lakes shoreline with erosion or damage caused by flooding, storm surge, water pooling, or wind-wave action can have their property evaluated without cost by New York Sea Grant Extension. The evaluation is offered both virtually and in-person. The NY Sea Grant Virtual Site Visit portal online at: <https://www.nyseagrant.org/glcoastal/> allows landowners to enter a description of their problem and locate the property on a map. New York Sea Grant Coastal Processes and Hazards Specialist Roy Widrig evaluates the options for addressing the issue and contacts the property owner. If needed, an in-person visit is scheduled. For more information, contact New York Sea Grant at 315-312-3042, rlw294@cornell.edu.

Widrig applies his expertise to identifying nature-based or structural ways to address the erosion of shoreline and waterfront habitats as well as any need to restore the structural integrity of existing coastal structures. He can provide information on state and local shoreline project permitting requirements.

Widrig is the author of informational guides, including Working with Nature: A Guide to Native Plants for New York's Great Lakes Shorelines, and Erosion Management for New York's Great Lakes Shorelines, and is co-author of Erosion and Recession of New York's Coastal Bluffs. The bluffs guide includes an insert for tracking erosion on a property and is freely downloadable at <http://www.nyseagrant.org/theblufflet>.

Funding for this work comes in part from the New York State Environmental Protection Fund and Article 14 of Environmental Conservation Law.

New York Sea Grant is a cooperative program of Cornell University and the State University of New York and one of 34 university-based programs under the National Sea Grant College Program. Its statewide network integrates research, education, and extension services focused on coastal community economic vitality, environmental sustainability, and citizen awareness and understanding about New York's marine and Great Lakes resources. Learn more at www.nyseagrant.org.

Photos available by request - specify choice or both:

Erosion adjacent to rip-rap installed for shoreline stabilization along Lake Ontario. Photo: Roy Widrig/NY Sea Grant
Bluff erosion along NY's Lake Erie shoreline with seasonal campground. Photo: Roy Widrig/NY Sea Grant

Mark Your Calendars

Meeting Title	WNY & Capital District Petal Pall Thinning Meeting
Date	Monday, May 13th
Location	Zoom Webinar
Cost	Free, no pre-registration required
Brief Description of Meeting/Registration	See Agenda on page 1 of this newsletter. Join Zoom Meeting (no preregistration needed): https://cornell.zoom.us/j/98572569175?pwd=Y1hUdDUyTHdMS2hHbXQvcmxRR2hyZz09 Meeting ID: 985 7256 9175 Passcode: 171971
Meeting Title	Seso's Self-Filer Virtual Roundtable
Dates	Wednesday, May 15, 1 PM
Locations	Virtual Webinar
Cost	Free, but please pre-register here
Brief Description of Meeting/Registration	We wanted to let you know of a new upcoming H-2A program webinar tailored for self-filers. Join us for a collaborative roundtable in which Seso's case experts will draw on combined decades of experience to share key insights on audit preparedness. This free session will cover best practices for self-filers: <ul style="list-style-type: none">• Including timelines and being aware of deadlines Keeping up with your audit file Where to turn when you don't know what to do.

Meeting Title	New York State Institutional Food Purchase Programs Virtual Vendor Meeting
Date	Wednesday, May 15, 12-1:30 PM
Location	Zoom Webinar
Cost	Free, but pre-registration required at: https://meetny.webex.com/weblink/register/r8f6058ca41b968ca46fb9d0fa30f8409
Brief Description of Meeting/Registration	<p>In 2023, as part of her State of the State address, Governor Kathy Hochul announced Executive Order (EO) 32, an initiative to direct New York State (NYS) agencies to increase the percentage of food they source from New York (NY) producers, with a target of 30 percent by the end of 2027.</p> <p>The meeting will cover:</p> <ul style="list-style-type: none"> Rules and definitions included in EO 32 How EO 32 differs from other New York State procurement programs Which New York State agencies are subject to EO 32 How New York State agencies must comply with and account for EO 32 purchases Opportunities for vendors to supply EO 32 compliant products to New York State agencies <p>The meeting is open to existing and potential distributors, food hubs, manufacturers, farmers, or anyone interested in learning about EO 32.</p> <p>Sponsored by The NYS Dept. of Ag & Mkts, CCE Harvest NY, and the NYS Office of General Services. <u>The meeting will be recorded.</u></p>

Meeting Title	2nd Annual Bilingual Orchard IPM Training for Farm Employees
Date	Wednesday, May 29 th , 5:30-8 PM
Location	Orchard Dale Fruit Farm, Waterport, NY (Orleans County)
Cost	Free
Brief Description of Meeting/Registration	<p>See description in the small article in this newsletter.</p> <p>Everyone is welcome to attend! Registration will be required so we can provide sufficient food, but attendance will be free. Watch for registration link in an upcoming email blast.</p>

Meeting Title	Tree Fruit & Small Fruit Twilight Meetings
Date	May 30, June 27, July 25
Location	May 30 is at Coulter Farms in Lockport (Niagara County), see link below for more info
Cost	Free, Sponsored by Valent! DEC Credits offered! 1.5 DEC credits will be offered in categories 1a, 10, and 22.
Brief Description of Meeting/Registration	<p>Join specialists Janet Van Zoeren, Anya Osatuke, and Anna Wallis for a conversation about fruit and berry phenology and pest management, at a new location each month. Please arrive at 6:45pm for pizza and soda provided by Valent. Program runs from 7-8:30 PM on the last Thursday of the month from April through July.</p> <p>For all dates, go to: https://lof.cce.cornell.edu/event.php?id=1913</p> <p><u>No pre-registration required.</u></p>

Meeting Title	Guiding Resilience: A Legal Workshop for Ag Service Providers, Summer 2024
Date	5 week webinar series runs 12-2 PM on Tuesday from June 4 – July 2.
Location	Virtual
Cost	Free to members. Membership info here: https://farmcommons.org/product/
Brief Description of Meeting/Registration	<p>Join us in learning the 10 best practices of farm legal risk management over 5 weeks.</p> <ul style="list-style-type: none"> • Session 1: Farm Law as Creative Power • Session 2: Organizing Farm Businesses for Legal Success • Session 3: Growing a Legally Resilient Workforce • Session 4: Accessing Farmland with Legal Confidence <p>Session 5: Diversifying Farm Enterprises Without Adding Legal Risk</p> <p>Each week contains video learning, activities and reading selections. You'll meet on Thursdays listed above with your instructor to learn more about the law and develop your practical skills. https://farmcommons.org/product/guiding-resilience-a-legal-workshop-for-ag-service-providers-summer-2024/</p>

Meeting Title	IFTA California Summer Study Tour
Date	July 16-18
Location	Sacramento-San Joaquin Valley
Cost	\$1,500 includes 3 hotel nights (Lodi one night and Fresno 2 nights).
Brief Description of Meeting/Registration	<p>Click here for flyer: https://mcusercontent.com/34dccd218d49da8d536fe3c54/files/1b676ef8-7edb-3b3e-3f53-d010dfc1f2b3/IFTA_Summer_Study_Tour_Schedule_Highlights_sn.pdf</p>

Meeting Title	2nd Annual Western NY Fruit Grower Tour
Date	Tuesday, August 13th
Location	Centered in Orleans County
Cost	Minimal thanks to sponsor support!
Brief Description of Meeting/Registration	<p>Save the Date! This is the second annual tour that we are co-hosting with Lake Ontario Ag Consulting, Inc. Stay tuned here, and in our email communications for more details as we get closer. Sponsors – stay tuned we'll be reaching out to you in June.</p>

Meeting Title	IFTA South Africa Study Tour
Date	December 2-11, 2024
Location	Multiple regions in the Western Cape of South Africa
Cost	\$3000 Double Occupancy, \$3400 Single Occupancy, not including airfare. They are main tour add-on options. Go to: https://drive.google.com/file/d/1-
Brief Description of Meeting/Registration	<p>Get all the details here: https://www.iftatravel.com/</p> <p>Enhance your trip to Africa with multiple safari add-on options before and after the tour or come early for a Cape Winelands immersion.</p>

Cornell Cooperative Extension

Lake Ontario Fruit Program

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Mark Your Calendar

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Fruit Notes

Fruit Specialists



Craig Kahlke | 585-735-5448 | cjk37@cornell.edu
Team Leader, Fruit Quality Management

Areas of Interest: Fruit Quality and factors that affect fruit quality before, during, and after storage.

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Cherries, Nectarines, Peaches, Pears, Plums



Mario Miranda Sazo | 315-719-1318 | mrm67@cornell.edu
Cultural Practices

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Asian Pears, Cherries, Currants, Gooseberries, Nectarines, Peaches, Pears, Plums



Janet van Zoeren | 585-797-8368 | jev67@cornell.edu
Integrated Pest Management (IPM)

Areas of Interest: IPM of tree fruit and berry pests, biological control, pollinators.

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Asian Pears, Cherries, Currants, Nectarines,



Bonalyn Nelsen | 315-980-9926 | bjn2@cornell.edu
Business Management

Areas of Interest: Fruit Farm Business Management, Farm Labor & Regulations, and Evaluation of ROI of New Technologies

Crops: Blueberries, Raspberries / Blackberries, Strawberries, Apples, Apricots, Cherries, Nectarines, Peaches, Pears, Plums

For more information about our program visit us at lof.cce.cornell.edu