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Fruit Notes

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Cornell Cooperative Extension
Lake Ontario Fruit Program

Volume 23 Issue 7 May 11, 2023

Chemigation and Systemic vs Translaminar Insecticides

Monique Rivera, Cornell AgriTech

The following article has been adapted from the latest issue of the Scaffolds podcast. To listen to the original audio, which additionally includes a disease update from Kerik Cox and a phenology and degree day update from Anna Wallis, visit: <https://open.spotify.com/episode/2UDG9w3xMnbj0swDGNpGNf?si=4f0b1daa90c74bb1>.

One thing that was really surprising to me when I came to New York was that chemigation is not often an option and that irrigation systems were not consistent throughout the industry. So, how does chemigation work, when can it be used, and what are the advantages?

Chemigation is specifically limited to products that have chemigation on the label, so you can't just use anything in this manner.

It's important to note that insecticides that are systemic have an active ingredient that is primarily absorbed by the plant roots. Then it's transported through the plant to various locations, such as growing points, where it can impact pests that feed on the plant tissue.

The movement of systemic insecticides occurs within the vascular tissues, which can either be the xylem, which is responsible for water transport, or the phloem, which is responsible for nutrient distribution up and down the plant. It's important to note that xylem only goes in an upwards direction as the water moves up the plant, and phloem is a material that is transporting the nutrients of the plant, for example, amino acids, up and down so that the plant can grow specific foliar or floral parts, or moving amino acids to help heal and grow in response to insect feeding.

Most systemic insecticides are specifically moving upwards within the plant through the water conducted tissue - the xylem. Systemic insecticides are specifically highly effective against insects with piercing/sucking mouth parts, because those are the insects that are feeding on that vascular tissue. They're sipping on the water, and they're sipping on the nutrients and the phloem. This includes insects like whiteflies, aphids, soft scales, and mealybugs. Although spider mites feed on the green tissues, they're not actually feeding on the vascular tissue. They are removing plant chlorophyll from individual cells, so they are feeding in a much more surface level manner to the plant, and so are not tapping into that xylem tissue.

I do feel like there is a use for chemigation in the IPM program here in New York. My thought process is that this could be really promising for annual and persistent woolly apple aphid populations. Therefore, it may be worth thinking about chemigation now if you are installing or updating your irrigation system. For example, to use chemigation you are required to make sure there are proper controls in the system to limit backflow. The main concern with backflow is contamination into your primary water source, whether that be a well or city water. And this is regulated to be installed on all chemigation in the state of California, and if it's not already regulated here, I'm sure it will be soon. I'd recommend you make sure those controls are in place when you install new irrigation systems, so you don't have to retrofit in the future.



There are some limitations to chemigation. A friend of mine, a gentleman named Frank Byrne who studied pesticides for his whole career, found that in heavy clay soils, the uptake of imidacloprid can be highly limited because it binds to the clay. When water is not available to keep the imidacloprid solubilized, then you really limit the ability of the plant to uptake the water. So, if there's no water to release it from the binding sites on the soil particles, imidacloprid uptake can be severely compromised.

In the future I would like to conduct some research to determine when and how chemigation can improve pest management in New York state. Although I've not yet started that research, I do want to keep it on your radar because it is likely to be an important component of your IPM program in the future.

Translaminar vs Systemic insecticides

It is important to note the differences between a systemic and a translaminar activity of an insecticide. What is a translaminar insecticide? Translaminar movement refers to the ability of an insecticide to penetrate the leaf surface and move within the leaf tissue. This is why with products, for example, Movento, you really need that penetrant surfactant to get it into the leaf. This is different from the systemic insecticides which are moving up and down the plant in the vascular tissues.

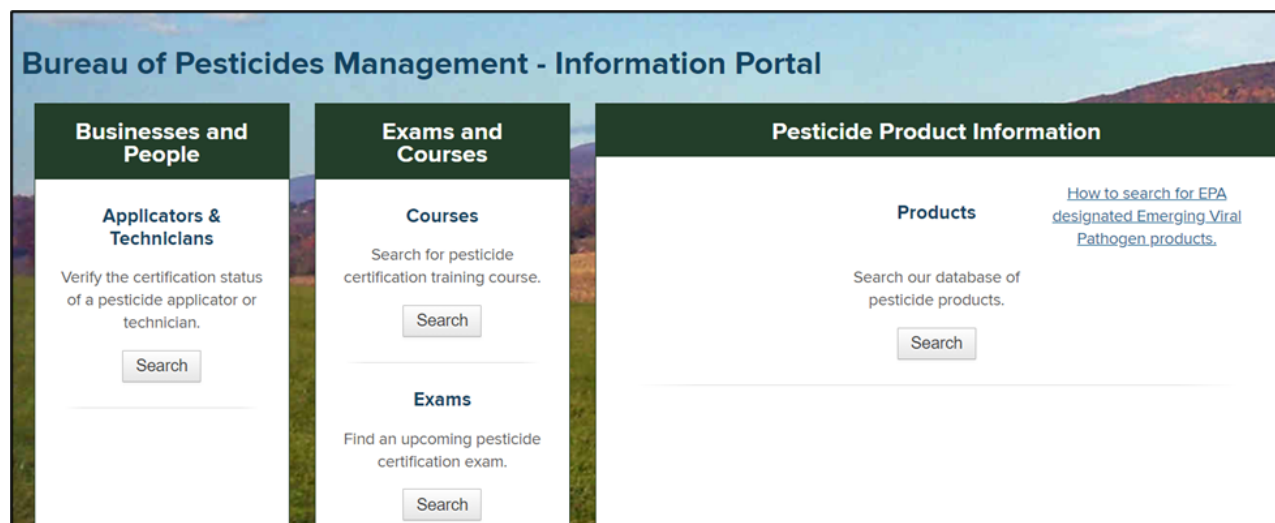
Some systemic insecticides have properties that allow them to penetrate the leaf surface and distribute within the leaf tissue, providing some translaminar activity in addition to their systemic activity. However, not all systemic insecticides can be used translaminarily, so make sure to be careful and read the label there. And the effectiveness of an insecticide used translaminarily may vary depending on the insecticide and the specific pests.

How to Look Up Pesticide Labels and DEC Licensing Information in New York

Janet van Zoeren, LOF, and Christy Hoepfing, Cornell Vegetable Program

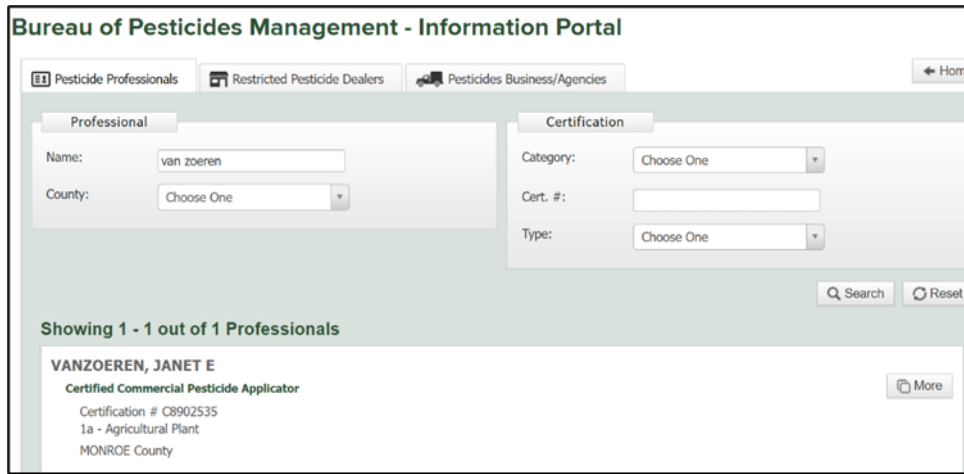
Begin at the New York State Bureau of Pesticide Management home page - <https://www.dec.ny.gov/nyspad/?0>. From here you can:

1. View your DEC license number and renewal date
2. Search for upcoming DEC licensing courses and exams
3. Search a database of all pesticides labeled for use in New York



1. License Number and Renewal Date

On the far left of the home page, you can click Search under “**Applicators & Technicians**”. That will take you to a page where you can search for your name, to find out if your license is currently active, what your license ID number is, and, if you click “more” on the right hand side, you will find the date when you will need to renew your license. NOTE – you are not able to search the data-base to find how many credits you currently have! You will need to call your DEC office to get that information; in Region 8 you would call (585) 226-5423.

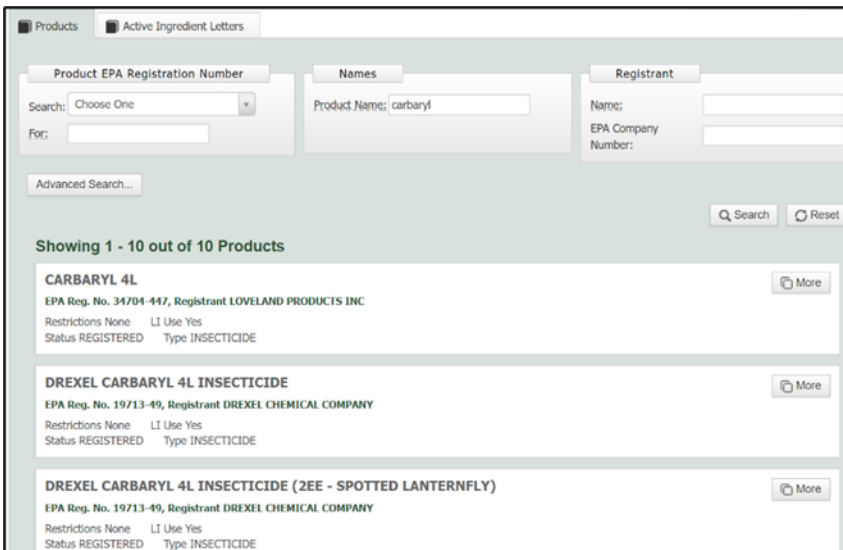


2. Courses and Exams

Back at the home page, you can click search under “**Courses**” if you need to take a the 30hr qualification course or to find recertification credits. In my opinion, the “Courses” page is not very intuitive, so I would recommend you contact me directly if you are need credits or are unsure what course material you will need to receive your license. However, underneath the courses section, you can click search under “**Exams**” if you need to take the licensing exam to receive your spray license in the first place. If you already have a license, as long as you get enough recertification credits, you won’t need to worry about the exam tab!

3. Pesticides labeled for use in New York

To look up primary and supplemental labels for products that are currently registered in New York state, you may search by product name, active ingredient or EPA number. From the product search results, click the “More” button on the right hand side for the pesticide that you are interested in. On the next page click "View" for the most recent (by date) and currently approved NYS primary or supplemental label. Any current 2(ee)s or Section 18 Emergency Exemptions approved for a pesticide will also be available via this search.



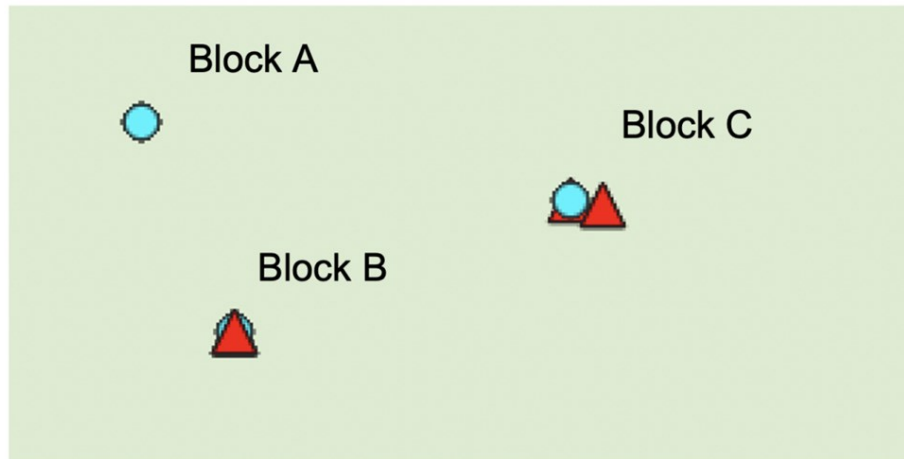
Note that when applying a pesticide you are legally required to carry the pesticide label on your person, but that a digital copy download of the label off of this website onto your phone does count as having the label on your person.

Streptomycin Resistant Fire Blight in New York – getting ready the 2023 season

Kerik Cox and Isabella Yannuzzi, Cornell AgriTech

This article has been extracted from a recent blog post on the Cox lab website; view the full article at <https://blogs.cornell.edu/coxlab/2023/04/25/streptomycin-resistant-fire-blight-in-new-york-2020-2022/>.

Before fire blight season gets under way in 2023 we want to give you all an update on the presence of streptomycin resistant *Erwinia amylovora* in New York State. After reviewing our data, a reminder to please take extra care when uploading the GPS coordinates of your sample, even small changes can place your sample in a different county. Given that, our maps have updated and you can scroll below for the most up to date information on streptomycin resistance across counties. With correct GPS coordinates, we can even provide you with a geographical map of fire blight strains across your orchard. For example, for the hypothetical orchard below, Block A has **susceptible fire blight** (blue circle) and Blocks B and C have **susceptible fire blight** (blue circle) and **resistant fire blight** (red triangle).



Farm History

This year, along with Streptomycin resistance testing, we are also offering an opportunity to receive a farm history. This will give you an idea of the different samples you have sent in over the years, their resistance status, and the years they were submitted. If, after you receive them you are interested in more information (what block they came from, what variety, etc.) you can contact Isabella Magna Yannuzzi imy3@cornell.edu. Farm Histories are confidential: we will only send the information to the grower and (if they request it) to their extension educator as well. Once you have your farm history you are able to share that with whoever you like, but we will not be publicizing them.

Streptomycin Resistance Across Counties (2020-2022):

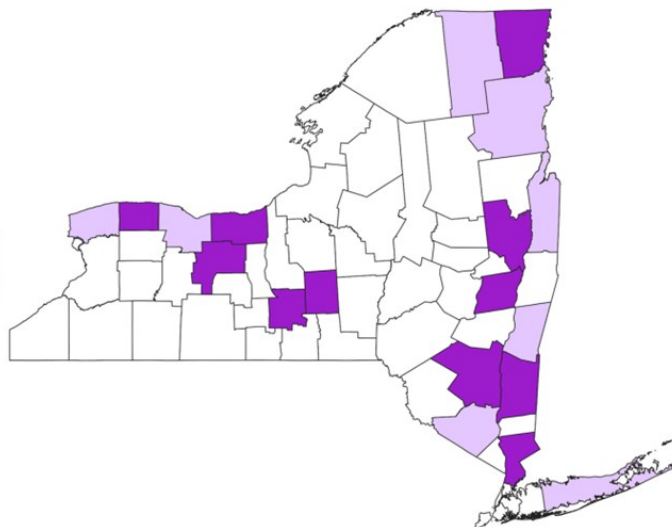
Counties highlighted in **dark purple** had both susceptible and resistant strains, those in **light purple** had only susceptible strains found, and those in **red** had only resistant strains found. Counties left white did not send in samples in that given year, or the samples received were found to not be fire blight. This is based off the samples our lab collects and receives each year and the results of fire blight confirmation and streptomycin resistance testing.

2020-2022

resistance

susceptibility

both



The Four Main Reasons that Can Explain the Successful Adoption of Geneva® Rootstocks in Recent Years.

Did you know that the Geneva® Rootstocks Accounted for about 60% of all Rootstocks Planted in the US. in 2021?

Mario Miranda Sazo

(Note: Some of the Cornell Geneva® rootstock information included in this article was recently presented by Dr. Terence Robinson during an intensive four-hour workshop that covered propagation, tree nursery production, orchard management, and commercialization aspects of Geneva® rootstocks in the USA and Europe to more than one hundred European nurserymen, fruit growers, and industry representatives at a special event conducted during the Interpoma Conference, Bolzano, Italy, on Friday November 18, 2022. Here I summarize some of his main remarks presented at the workshop. It is my hope that I will be able to write 2-3 more short articles with relevant information from this event this year).

One of the most important reasons for the adoption of the Cornell Geneva® rootstock technology has been their *resistance to fire-blight*. The problem with fireblight has been that an infection in the top of the tree on a blossom will result usually in a canker on the particular limb infected. But often that canker will stop once the hot part of the summer comes. But Cornell Professor Emeritus Herb Aldwinckle in the past showed that the bacteria can be moved within the plant probably in the xylem down towards the rootstock. When it reaches a susceptible rootstock like M.9, it begins to infect the rootstock and kill the cambium and girdle the tree. And the sign of that infection is the characteristic oozing you can see at the bud union level. Often that oozing happens for a few days and then dries up and many times growers don't notice it. But susceptible rootstocks result in the death of the tree almost always. There came a period of time particularly in Washington State a few years ago, where there were massive outbreaks of fireblight in which huge numbers of trees were lost on M.9 in one season (and many more 'sick' trees that were not removed from the block were lost the following spring). Many large WA fruit companies basically said they will never plant another apple tree on M.9 because of the fireblight risk. And because of that they have planted almost all of the new plantings (including the millions of 'WA38' or Cosmic Crisp® trees that were massively planted in WA in recent years) on one of the different Geneva® rootstocks.

A second important reason why the Geneva® rootstocks have done so well in the U.S is their *general tolerance to apple replant disease*. In the past several years, plantings on B.9 and M.9T337 have shown a dramatic response to fumigation treatments. Meaning that in unfumigated or unpasteurized soil they grow poorly. These two rootstocks along with M.26 are very susceptible to replant disease. Whereas other rootstocks such as G.41 and G.11 show almost the same growth whether the soil is pasteurized or not. G.214 has shown very great tolerance to replant disease. But also G.30 and several other Geneva® rootstocks have shown this same tolerance. The apple replant disease is more serious in the Western part of the United States than in the Eastern part and as a consequence many growers in the Western part of the U.S have relied heavily on Geneva® rootstocks when they replant orchards to achieve the desired growth level from the new orchard.

A third reason why the Geneva® rootstocks have been popular is that rootstock trials have generally shown *greater yield than M.9 or*

M.26 rootstocks. Rootstock trials with Honeycrisp and economic analysis of tree density based upon the size of the trunk and the use of projected cumulative yield have shown that Honeycrisp on M.9 would have had a yield somewhere around 180 tons over the first five years. But G.11 and G.41 would have exceeded that in the same 5-year period. G.11 in particular would have had somewhere around 240 tons cumulative yield. With Honeycrisp, which is a very high priced variety, this difference in yield is worth almost a hundred thousand dollars per hectare. Another good example is with Fuji showing slightly different results with the same two Geneva® rootstocks. In this analysis with Fuji, G.935 did extremely well when compared to M.9 which would have had about 230 tons per hectare while that with G.935 it would have had 240 ton/ha. So again, a substantially greater yield based upon rootstock. Dr. Robinson in the last few years has analyzed many of the results from nationwide rootstock trials (NC-140) into economics. In a rootstock trial planted by NC-140 in many locations in the U.S., his analysis showed that the most profitable planting was with G.11, followed by G.41, followed by B.10, followed by G.969, and then G.30. In this particular trial, M.9 came in 13th place with much lower net crop value, and this is thousands of dollars per hectare. In this particular trial, the difference between G.11 and M.9 was about seventy thousand dollars per hectare over the first eight years. This huge economic impact on profitability has been one of the driving factors for the Geneva® rootstock adoption in the U.S.

A fourth and last driving factor for recent adoption has been their *relative cold hardiness*. Recent Cornell research conducted by Professor Jason Londo at Cornell AgriTech has shown how rootstocks rank in cold hardiness at four different timings in December, January, February, and March. With the hardiest rootstocks being tested until -40.7°C (-41.3°F) in December, -46.1°C (-51°F) in January, -49°C (-56°F) in February, and -39°C (-38.2°F) in March. Some rootstocks like Geneva 6589 stay relatively the same all winter and in the spring. In this case they are relatively vulnerable to cold damage. Other rootstocks have shown to be very hardy in December and January but then lose hardiness as time goes on as shown for example by Geneva 8189. Other rootstocks like G.41 start out very hardy and then become even more hardy midwinter and do not lose its hardiness in March so quickly. The new Cornell cold hardiness research has shown that the M.9 is vulnerable to cold damage, but also several others like G.11, CG.484, B.9, and G.222. The hardiest are G.41, G.213, G.210, G.890, G.202, G.214, and G.935. As growers look at where to plant these new rootstocks in the more northern parts of Washington, Minnesota, Wisconsin, Michigan, New York, Maine, and Vermont, and those located in the Canadian provinces of British Columbia, Ontario, and Quebec, they should probably focus on the adoption of the hardiest group of Geneva® rootstocks listed in this article.

USDA-RMA Listening Sessions – Summer 2023 Apple Grower Meetings

Tracey Keene, USDA-RMA, tracey.keene@usda.gov

The Risk Management Agency (RMA) is inviting interested parties to participate in a listening session to discuss the proposed changes to the apple crop insurance program. These proposed changes were published in a Proposed Rule with request for comments on December 16, 2021.

RMA invited public comments on this rule through April 15, 2022. RMA received comments to the Proposed Rule from approximately 200 interested parties. RMA is taking this opportunity to engage with interested parties to clarify the intent of the Proposed Rule before finalizing changes.

Thursday, June 29, 2023: Rochester, New York

Irondequoit Public Library (Room #115) 1290 Titus Ave. Rochester, NY 14617

No RSVP Required.

Rescheduled from March to June due to inclement weather.

Registration Open for Staffing and Organizing Your Team Online Course - Course applicable to All Agricultural Commodities

Rich Stup, Cornell Ag Workforce Development

Cornell Agricultural Workforce Development has opened registration for **Staffing and Organizing Your Team**, a six-week course in the Supervisory Leadership Certificate program. Staffing and Organizing Your Team materials release June 16, 2023 and live weekly Zoom discussions will be held from 3 to 4 PM ET each Thursday from June 22 through July 27, 2023. Participation in the live sessions is highly encouraged and provides a valued opportunity for peer-to-peer learning and networking. Registration is \$275 and closes June 16. Continuing education credits are now available for this course and the Supervisory Leadership Certificate program. Course topics include: becoming a preferred employer, personnel planning, job descriptions, recruiting and interviewing, hiring and onboarding.

Register Here: <https://cvent.me/ZPGynL>

Who should attend?

This course, and the whole certificate series, is appropriate for both new and experienced farm supervisors and managers, and those preparing to become supervisors. All participants will learn leadership concepts and practice skills that will improve their ability to build a positive workplace and get results through leading others. Past course participant management experience ranges from a few years to over 20 years. All participants say the course content made them more effective at their job.

From the comfort of your home or office, watch prerecorded presentations on your own schedule, and engage with classmates and instructors during weekly, live discussion sessions. Corresponding assignments are due each week. To get the most out of the experience, expect to spend approximately two hours per

week on lessons and assignments.

Direct questions to Rachel McCarthy, Agricultural Supervisory Leadership Coordinator, at rachel.mccarthy@cornell.edu.

Learn more about the program here: <https://agworkforce.cals.cornell.edu/agricultural-supervisory-leadership-certificate-program/>

Supervisors are critical to the success of farm businesses. They have a major impact both on employees' daily work experiences and on the production performance of the business. The Agricultural Supervisory Leadership certificate helps farm supervisors and managers learn and apply human resource management practices and leadership skills that foster rewarding workplaces and drive business results. Confident managers who thoughtfully apply leadership and management skills improve employee performance, develop teams, reduce employee turnover, and increase employee engagement. The courses within the certificate program will offer extensive practice and engagement activities to build confidence and skill sets.

Each course includes up to six weeks of instruction on topics that will build your leadership and management skills. Instruction includes a combination of pre-recorded lectures, reading assignments, written exercises, live discussion sessions and quizzes. For those looking to learn more on a particular topic, supplemental videos and articles may be recommended by the instructor.

To get the most out of the course, students should plan to spend two to four hours each week on combined course activities.

Courses in the Agricultural Supervisory Leadership certificate include:

- **Transitioning to Supervisor:** Develop essential communication skills and manage conflict. Lead a multi-cultural team. Build an effective workplace culture.
 - **Organizing Work for High Quality Results:** Develop clear expectations and standard operating procedures. Delegate effectively. Diagnose and correct performance problems.
 - **Managing Performance:** Understand motivation. Harness the power of performance feedback and coaching. Build clear and effective workplace communications. Set safety expectations. Conduct effective performance improvements.
 - **Staffing and Organizing Your Team:** Develop job descriptions. Learn how to find potential employees, interview and select the right people. Implement new hire documentation, employment authorization, and onboarding: bringing new employees into the business successfully and productively.
 - **Employee Development and Training:** Identify training needs. Understand learning styles. Design and plan learning experiences that accommodate learner needs. Develop effective training skills and techniques. Evaluate learning results and training effectiveness.
- Ethics and Employment Regulations for Supervisors:** Implement responsible and ethical labor practices and understand why this matters for agriculture. Recognize and prevent sexual harassment. Understand and follow minimum wage and overtime laws. Implement Equal Employment Opportunity laws to prevent discrimination and harassment. Use an employee handbook. Handle employee discipline and termination.

Course instructors include:

Richard Stup, Cornell Agricultural Workforce Development Specialist

Elizabeth Higgins, Ag Business Management/Production Economics Extension Specialist with the Eastern New York Commercial Horticulture team

Libby Eiholzer, Dairy Technical Specialist, Cargill

Bob Milligan, Cornell University Professor Emeritus

Kaitlyn Lutz, Bilingual Dairy Management Specialist

Transitioning to Supervisor students say:

All modules had great value. It got me to rethink some things. The elements fit together pretty well, building upon each other. The breakout rooms were good. I liked the variety of learning. I found the country differences extremely valuable to better understand our multicultural workforce. Communication lessons gave perspective on different ways to communicate effectively with your team. The lesson with power distances was helpful to teach different ways people of other countries view topics. I really enjoyed the videos during the course and being able to ask questions to instructors and getting a quick response. The self-evaluation to find out what kind of a supervisor you are was helpful.

Organizing Work for High Quality Results students say:

All the aspects of the course were good. The weekly zoom meetings I think are important. The break-out sessions were very useful. It allowed us to discuss similar issues with peers. I thought the course was great. I liked being able to ask questions to instructors and getting a quick response.

Cornell Agricultural Workforce Development's mission is to help farms and agribusinesses build committed and effective teams who will carry out the important work of feeding the world. We believe that agricultural work can, and should be, engaging and rewarding for everyone involved. Managers can build committed teams by applying the best human resource management practices for the agricultural setting. Key program goals include:

- Provide leadership and management development education focused on farm supervisors, middle managers, and owners
- Clarify workforce regulations that apply to farms and increasing levels of compliance
- Build consistent channels of communication and learning opportunities about agricultural workforce issues
- Conduct research into workforce problems and challenges that confront agriculture

Mark Your Calendar

Meeting Title	Tree Fruit and Small Fruit Twilight Meeting (4 scheduled)
Date	Thursday, May 25 (second one)
Time	7-8:30 PM, please arrive at 6:45 PM to sign in for DEC credits
Location	Coulter's (3871 N Ridge Rd, Lockport NY)
Cost	Free
Contact for Info/Registration	Please bring pictures or descriptions of pests you are concerned about on your farm. 1.5 DEC credits will be offered in categories 1a, 10, and 22. Please arrive at 6:45PM to
Brief Description of Meeting	Join specialists Janet Van Zoeren, Anya Osatuke, and Anna Wallis for a conversation about fruit and berry phenology and pest management

Meeting Title	2022 Tree Fruit IPM Schools (simultaneously in English & Spanish)
Date	June 14 (Wayne County) and June 21 (Hudson Valley)
Time	8:30 AM – 3 PM
Location	TBA
Cost	TBA
Contact for Info/Registration	Stay tuned for registration information
Brief Description of Meeting	Stay tuned for more information.

Meeting Title	USDA-RMA Listening Sessions – 2023 Apple Grower Meetings
Date	Thursday, June 29
Time	10:30 AM – 12:30 PM
Location	Irondequoit Public Library (Room #115) 1290 Titus Avenue Rochester, NY 14617
Cost	Free, No RSVP needed.
Contact for Info	Tracey Keene, USDA-RMA, tracey.keene@usda.gov
Brief Description of Meeting	See article in this newsletter.

Meeting Title	IFTA 2023 Summer Study Tour
Date	July 23-25
Time	All Day
Location	Nova Scotia
Cost	\$550
Contact for Info/Registration	Registration info: https://ifruittree.org/event/ifta-2023-summer-study-tour/
Brief Description of Meeting	See IFTA website for detailed itinerary.

Meeting Title	2023 Western NY Summer Fruit Tour
Date	Friday, July 28
Time	All day
Location	Wayne County
Cost	Free
Contact for Info/Registration	Stay tuned.
Brief Description of Meeting	This year's tour will be co-hosted by CCE-LOF, Lake Ontario Consulting, and Reality Research!

Meeting Title	2023 LOF Spanish Summer Tour
Date	Wednesday, August 16
Time	All day
Location	TBA
Cost	TBA
Contact for Info/Registration	Stay tuned.
Brief Description of Meeting	Stay tuned for more information.

Meeting Title	2023 Cornell Storage Workshop
Date	Wednesday, August 16
Time	All day
Location	Cornell Campus
Cost	TBA
Contact for Info/Registration	Stay tuned.
Brief Description of Meeting	Stay tuned for more information.

Cornell Cooperative Extension

Lake Ontario Fruit Program

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Registration Open for Staffing and Organizing Your Team Online Course -

Course applicable to All Agricultural Commodities

Mark Your Calendar

Contact Us

Fruit Notes

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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,

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