

Tree Fruit News

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Early Summer Pest Management

Art Agnello, Cornell University; edited by Monique Rivera and Mike Basedow

Now that we are getting into July, we can direct our attention to our usual summer suspects. The following is a brief rundown of some pests to keep on your radar, just to help prevent anything from getting out of hand.

Internal Lepidoptera

The first brood CM flight is tapering off and we are through the hatch period, although we should remain attentive for any signs of a renewed surge in trap numbers during this time (the often-noted "B peak" that can vex early season management efforts). With this potential "B" peak, most sites with traditionally heavy pressure from these pests should still be subject to first generation larval control needs.

To best determine if you need another protective spray, you should inspect the young fruitlets for early signs of infestation. If weekly adult trap numbers surpass five CM for trap, this is also a good indication additional sprays are needed. Altacor, Delegate, Exirel, Verdepryn, and premixes such as Besiege, Minecto Pro and Voliam Flexi are among the top-ranked options, with virus products such as Cyd-X, Madex, and Virosoft CP4 offering good supplementary activity.

We'll also be looking for increasing captures of the 2nd flight of oriental fruit moth (time management sprays for when catches exceed 10/trap/week), and should note a definite uptick in trap numbers within the next 10–14 days, especially if we have another heat wave.

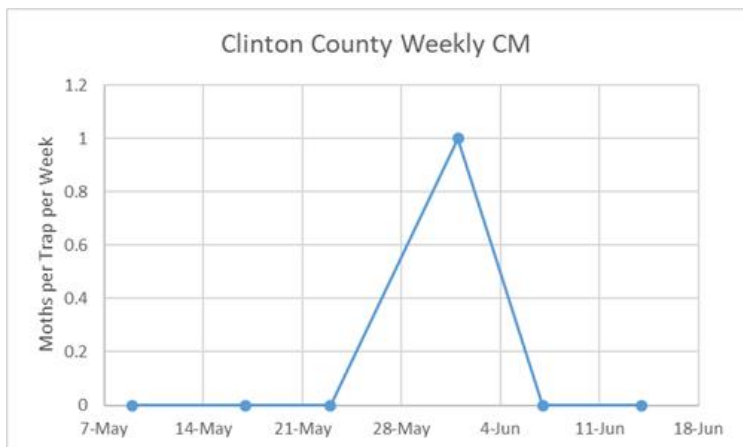
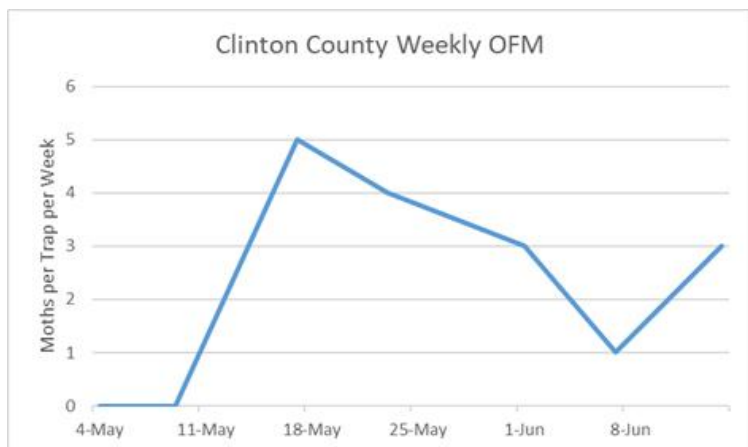
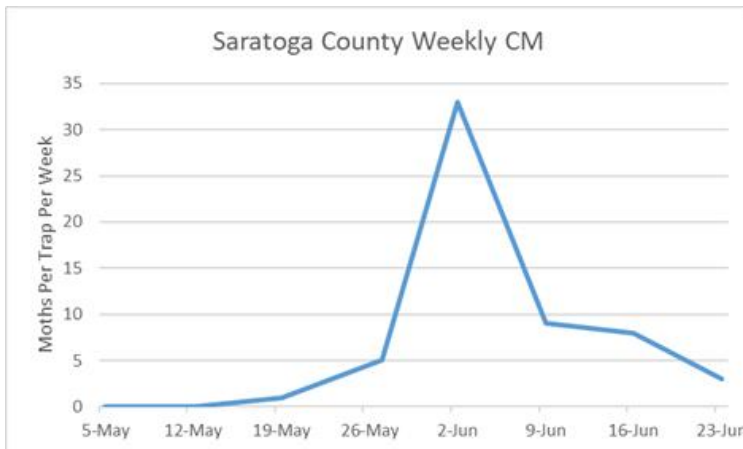
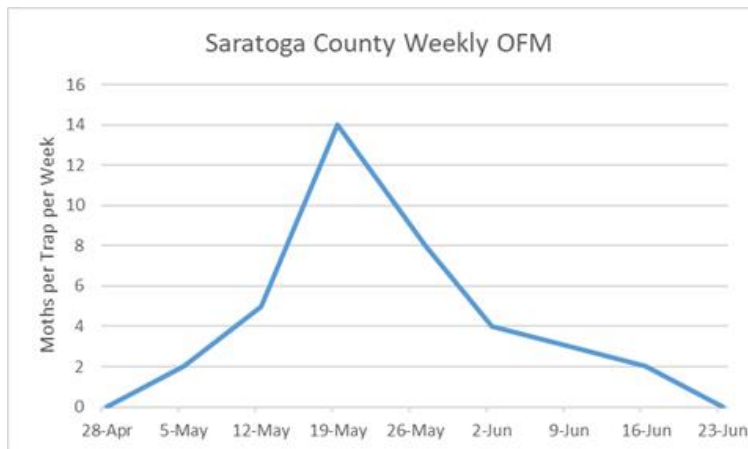
Obliquebanded Leafroller

Early instar larvae can likely now be found in Mid-Hudson Valley orchards. We usually expect emergence right around now in the Capital Region, and perhaps the first to second week of July in the Champlain Valley. Orchards with historically high OBLR pressure should normally receive an application of a suitable material during this larval emergence. To fine tune your application windows, enter your first trap catch date into the [NEWA OBLR model](#). Applications should be made at 350DD base 43°F after your first catch date. A follow up application should be made 10-14 days later. Delegate, Altacor, Verdepryn, Exirel, Rimon, and Proclaim are appropriate choices, particularly

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2022 Weekly OFM and CM trap captures for our Saratoga and Clinton county trapping sites.



OBLR larvae. Photo: OMAFRA.



OBLR terminal damage. Photo: OMAFRA.



OBLR summer fruit feeding damage. Photo: OMAFRA.

in cases where the larvae are a bit larger. A B.t. product such as Dipel or the insect growth regulator Intrepid are also options, but these tend to be more effective when applied against the earlier stages. If you are applying any of the diamides (Altacor, Exirel, Verdepryn, plus the various premixes containing the same active ingredients) or Delegate to control lingering first generation codling moth and oriental fruit moth, they will also be very effective against OBLR at this time. Regardless, we have found that this specific spray is the most critical for preventing fruit-feeding damage at harvest from OBLR, so put this at the top of your list of priorities if you have a history of OBLR damage.

Apple Maggot

We expect to start catching adult apple maggot shortly throughout the ENY region, traps are hopefully in place already as the heat waves could speed up AM development. Stings and larval tunneling are likely to be detected in early and favored varieties such as

Ginger Gold and Honeycrisp, particularly in the Hudson Valley. If you aren't monitoring in specific orchards and haven't yet made preparations for a protective spray against AM (and aren't using Delegate or Altacor for OBLR, both of which have some activity on AM), prudence would suggest attention to this pest. Hanging a few volatile-baited sphere traps on the edge of susceptible plantings can provide valuable insight on when (and if) immigrating flies start posing a threat. Growers on a Delegate or Altacor program for leafrollers/internal leps should get some protection against moderate AM pressure. For those not using Imidan in their cover sprays, Assail will provide excellent control of apple maggot as well as internal leps where populations are still OP-susceptible.

Woolly Apple Aphid

Individual nymphs have started to become noticeable as they make their way up into the canopies of infested trees. This pest has increased in prevalence in recent years and if you have seen an increase of WAA, this would be an advisable time to consider a preventive spray program for this pest. WAA is resistant to many commonly used broad-spectrum products, but other insecticides are effective against WAA, including Diazinon (check with your marketer before using this material) and Movento, and some additional



Apple maggot adult. Note the "W" markings on the clear wings, and the white dot near where the thorax joins the abdomen. Photo: MSU extension.



Woolly apple aphids on a shoot. Photo: G. Krawczyk.

products such as Admire, Assail, Beleaf, or Sivanto Prime may be good alternatives. For Movento and Assail, the addition of a non-ionic surfactant (e.g., LI-700 or Regulaid) or horticultural mineral oil will improve activity. (Do not use a penetrant 10 days before or after a Captan application) Good coverage to soak through the insects' woolly coverings is integral to ensuring maximum product efficacy.

San Jose Scale

Based on degree day models, the crawler stages of this perennial tiny but irksome pest have already emerged for the first generation, and are likely in the white cap stage. Second generation adults usually start flying about mid-July, with crawlers emerging shortly thereafter. To check for emergence in your orchard, consider wrapping black electrical tape around a limb of an infested tree to see when crawlers are present. Management options against the crawlers include contact insecticides or insect growth regulators that will target the emerging crawlers. Centaur 0.7WDG, an insect growth regulator (IGR; IRAC Group 16), acts to inhibit the synthesis of chitin. Esteem 35WP, also an IGR (Group 7), functions as a juvenile hormone mimic, inhibiting metamorphosis from one stage to another. Movento 240SC (lipid biosynthesis inhibitor; IRAC Group 23) is also effective when applied preventively, as its systemic activity requires some time for it to become established in the woody tissues. Sivanto Prime 1.67SL (nicotinic acetylcholine receptor



Monitoring for SJS crawler emergence by wrapping black electrical tape around the limb of an infested tree. Photo: Peter Jentsch.

agonist; IRAC Group 4D) is also systemic in the xylem, and acts by causing feeding cessation; Venerate (microbial, no IRAC group) causes enzymatic degradation of skeletal structures and interference with the molting process.

All these insecticides are most effective when directed against the first appearance of

crawlers before whitecap formation. Assail and Admire Pro (Group 4A) are both broad-spectrum neonicotinoids that can be effective when directed against emerging crawlers.

The efficacy of some of these materials (e.g., Movento, Assail, Centaur) is improved by the addition of an adjuvant with penetrating properties; however, Esteem, Sivanto Prime, Venerate and Admire Pro can be used effectively without the use of a penetrant. Remember, rotating classes of insecticides for each generation will delay the onset of resistance. Making multiple applications of the same class or same insecticide at a 14-day interval for the same generation is recommended.

European Red Mite

It would be advisable to inspect the foliage in traditional hot spots and in sensitive varieties like Delicious, Braeburn, and Gala, to be sure they don't blow up with the warm temperatures. During July, we recommend a 5 per leaf threshold of motile stages, and you can use the

appropriate presence-absence sampling chart on p. 76 of the 2022 Tree Fruit Pest Management Guidelines to assist in your decision-making. Some ERM materials include Acramite, Apollo, Banter, Envirod, Kanemite, Nealta, Onager, Portal, Savey, and Zeal. Note that Apollo, Onager, and Savey are primarily ovicides, and will have little activity on adult mites.



Green apple aphids. Photo: Steve Schoff, NCSU

Green Apple Aphid

Green apple aphids are out on flush terminal shoots. Aphids should be sampled several times throughout the season. Inspect 10 rapidly growing terminals from each of 5 trees throughout a block, noting the number of infested terminals. While no economic thresholds exist, we recommend treatment if 30% of terminals or more are infested. Effective materials include Actara, Admire Pro, Asana, Assail, Aza-Direct, Beleaf, Danitol, Lannate, Movento, Pyrenone, Sivanto Prime, Vydate, and Warrior II.

Looking for Additional IPM Info?

Be sure to check out our online video resources for a quick refresher on orchard IPM. For apples, visit the [NYSIPM Apple IPM Intensive Workshop playlist](#), and for stone fruit visit the [ENYCHP Stone Fruit IPM Webinar playlist](#).

White Rot and Black Rot Biology and Management

This article appears in the New England Tree Fruit Management Guide, which was adapted from Penn State fact sheets by Dr. Kari Peter. Additional information for Eastern New York from Dr. Srdjan Acimovic

Overview

The white rot fungus, *Botryosphaeria dothidea*, often referred to as “Bot rot” or *Botryosphaeria* rot, can be a distinct canker on twigs, limbs, and trunks. The fungus produces two types of fruit rot, but leaf infections do not occur. Drought stress and winter injury have been associated with an increase in infection and canker expansion. This is a relatively weak fungal pathogen, and is only problematic when a tree is stressed, such as due to drought, winter injury, insect damage, or fire blight.

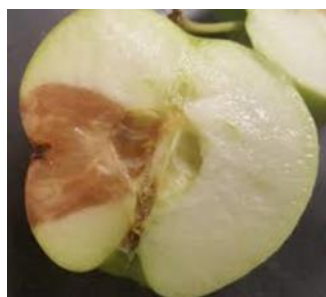
The black rot and frog-eye leaf spot fungus, *Botryosphaeria obtusa*, attacks fruit, leaves, and bark of apple trees and other pomaceous plants.

Symptoms of White Rot

New infections on twigs and limbs start to become evident by early summer, appearing as small circular spots or blisters. As the lesions



White rot tree canker. Photo: Heather Faubert.



White rot fruit rot. Photo: Srdjan Acimovic.

expand, the area becomes slightly depressed.

Cankers stop enlarging in late fall and can be indistinguishable from black rot canker, making isolation of the pathogen necessary for correct identification of the causal organism. By spring small, black pycnidia (the spore

-containing structures of the fungus), appear on the smooth surface of new cankers. On older cankers, these may be present throughout the year. Cankers exhibit a scaly, papery outer bark that is often orange and can easily be peeled off of the tree. Tissues beneath the canker surfaces are watery or slimy and brown. Most cankers are not deep, extending at most to the wood.

Fruit rot infection results in two types of symptoms, depending on the developmental stage of the fruit. One type originates from external infections and the other appears to start internally. External rot is first visible as small, slightly sunken, brown spots that may be surrounded by a red halo. As the decayed area expands, the core becomes rotten and eventually the entire fruit. Red-skinned apple

varieties may bleach during the decay process and become a light brown. Because of this characteristic, the disease may be referred to as “white rot.”

Symptoms of Black Rot

The first signs of black rot are small, purple spots appearing on the upper surfaces of leaves and enlarging into circles 1/8 to 1/4 inch in diameter. Leaf margins remain purple, while the centers turn brown, tan, or yellowish brown, giving the lesions a “frog-eye” appearance. Small, black pycnidia (pimple-like fruiting bodies of the fungus) may appear in lesion centers.



Black rot on leaves, also called frog-eye leaf spot. Photo: Heather Faubert.

Infected areas of branches and limbs are reddish brown and are sunken slightly below the level of surrounding healthy bark. These cankers may expand each year, a few eventually reaching several feet in length. The margins of older cankers are slightly raised and lobed, and the bark within their centers usually turns light-colored, loosens, and scales off raggedly. This characteristic is not confined to black rot cankers, so it is not a good diagnostic symptom. Pycnidia form on dead wood of the cankered areas.



Black rot trunk canker. Photo: Heather Faubert.

Fruit rot usually appears at the calyx end of the fruit. It can originate at any wound that penetrates the epidermis, including insect injuries. There is usually one spot per fruit, a characteristic that distinguishes black rot from bitter rot. Initially, the infected area becomes brown and may not change in color as it increases in size, or it may turn black. As the rotted area increases, often a series of concentric bands form, darker bands of mahogany brown to black alternating with brown bands. The flesh of the decayed area remains firm and leathery. Eventually, the apple completely decays, dries, and shrivels into a mummy. Pycnidia containing spores of the black rot fungus appear on the surface of rotted tissue.



Black rot fruit rot. Photo: Heather Faubert.

Disease Cycle for White Rot

White rot overwinters in fruiting bodies on dead, woody tissue.

During spring and summer rains, spores ooze from these structures and are splashed to other parts of the tree. Dead wood and fire-blighted twigs and branches are especially susceptible to invasion, but living twigs, branches, and trunks may also be attacked. Fruit infections can occur at any time from the bloom period to harvest. Infections in young apples usually are not evident until the apples are nearly mature. External rot lesions are found most commonly on the sides of fruit exposed to high temperatures. Drought, heat stress, mechanical wounding, and winter injury favor disease development. The fungus grows best under warm conditions, with the optimum temperature for infection about 86°F.

Disease Cycle for Black Rot

Black rot can infect from petal fall through harvest. The fungus overwinters in fruiting bodies (pycnidia and perithecia) on dead bark, dead twigs, and mummified fruit. It can invade almost any dead, woody tissue and is frequently found in tissue killed by fire blight. Early leaf infections often are visible as a cone-shaped area on the tree, with a dead twig or mummified fruit at the apex.

In the spring, black pycnidia and perithecia release conidia and ascospores, respectively. Conidia may continue to be produced during wet periods throughout the summer and may remain viable for long periods. When wet, the pycnidium produces a gelatinous coil containing thousands of spores. Disseminated by splashing rains, wind, and insects, these spores can infect leaves, the calyxes of blossoms, tiny fruit, and wounds in twigs and limbs. Leaf infection develops during petal fall, at which time conidia attach, germinate in a film of moisture within 5 to 6 hours, and penetrate through stomata or wounds. The optimum temperature for infection is about 68°F. Infections of fruit and wood may not become visible for several weeks.

Initial fruit infections occur during the bloom period but are not usually apparent until midsummer as the apple approaches maturity. Throughout the growing season, infections occur through wounds. Harvest injuries may become infected and the fruit may decay during or after storage, especially if the fruit was harvested during a wet period. Dead fruit spurs or twigs, particularly those killed by fire blight, pruning wounds, winter injuries, and sun scald, are commonly invaded by the black rot fungus.

Management

Since stress predisposes apple trees to white rot and black rot, take measures to minimize stressors, such as water stress, winter injury, disease, and insect damage.

Management programs based on sanitation to reduce inoculum levels in the orchard are the primary means of control. Prune out cankers, dead branches, twigs, etc. which serve as inoculum sources and dispose of dead wood. This should be an important component of both current-season and long-range management. Prune and remove cankers at least 15 inches below the basal end; properly dispose of prunings by burial or burning. Remove mummified fruit of black rot if practical. Cortland apples are especially prone to forming black rot mummies. Prevent fruit bruising as much as is practical at harvest. Rots can get into bruised fruit.

In the Hudson Valley, good black and white rot fungicide applications should start no later than July 10-15th. Captan + Topsin M and fungicides containing a strobilurin (FRAC Group 11 Fungicides) as an active ingredient are effective at managing white rot and black rot on fruit. Some fungicides including a group 11 active ingredient include Flint, Sovran, Luna Sensation, Pristine, and Merivon. Merivon provides excellent control of summer diseases such as white rot, black rot, bitter rot, fly speck, and sooty blotch. Group 11's should always be applied along with a protectant material for resistance management. Note: sterol inhibitor fungicides, such as Indar, Rally, Topguard, have no activity against black rot.

Fungicides should be reapplied when more than 2 inches of rain occurs, and residues should be maintained up through harvest.

More Information

For additional information on the control of these and other summer diseases, check out the recording from the "Controlling Fruit Rots and Other Summer Diseases" webinar we held back in July 2020, along with the recordings from the other summer diseases discussed by Dr. Acimovic.

[Black Rot and White Rot Biology and Management](#)

[Bitter Rot Biology and Management](#)

[Sooty Blotch and Fly Speck Biology and Management](#)

[Marssonina Leaf and Fruit Blotch Biology and Management](#)

Multiple Trials of New Precision Agriculture Tools for Crop Load Management in NYS

Elizabeth Higgins, CCE ENYCHP

Are you concerned about crop load management on your farm? Industry has taken note and you may have more tools for making management decisions in the future. "One of the challenges expressed by growers is that there still is a lot of manual time measuring and counting blossoms, fruitlets and apples, which is not only time-consuming, but it is subject to inconsistencies and different views depending on the staff input," said Jenny Lemieux, CEO of Vivid Machines, one of three companies trialing precision mapping and remote sensing tools this summer in New York. In

addition to Vivid Machines, Farm Vision and Fruit Scout are also conducting on-farm trials.

Vivid Machines, founded in Toronto in 2020, has developed a system they call "X-Vision" which captures the quantity and quality of fruit crops from blossom to harvest. The X-Vision system has three components: a high-speed multispectral camera with a vehicle-mounted housing system, a camera control and real-time analytics app, and a cloud-based analytics platform. Mounted on a tractor or

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ATV, the camera captures images as it moves through the row, and the data can be viewed in real time via mobile device. The X-Vision system can get accurate crop counts moving at a speed of up to 7 miles per hour, according to Vivid Machines CEO Jenny Lemieux. The system can examine trees, review blossom clusters, and measure apples, Lemieux said in a company press release. “Growers can see this information and filter the data by variety, block, date, and other factors to get a very granular view of their orchards and how they may change over time.” Vivid’s first paid trials started this season, with six growers in Ontario and New York. According to *Produce News* United Apple is one of the New York growers in a beta test.

Farm Vision Technologies, founded in Minnesota in 2017, has been testing and refining a handheld crop load management tool for the past few years. It is now commercially available to growers, said CEO and co-founder Patrick Plonski in an article in *Good Fruit Grower*. The handheld Farm Vision tool contains a Samsung phone with computer vision software, attached to a more sensitive GPS sensor, he said. We view it as the simplest possible system that can get good accuracy.” For thinning decisions, the grower marks off a section of about five trees, or roughly 15 feet long. The grower then faces the canopy, pushes record and moves the camera in an up-and-down motion while walking along the row sample. It takes about a minute to get the data needed to use the fruitlet growth model. For estimating harvest yield, the grower faces the camera toward the fruiting wall at about eye level, so the whole tree is in view, pushes record and walks or drives the length of the row. If the unit is mounted on a vehicle, speeds of up to 10 miles per hour work fine, depending on the terrain and vehicle suspension. Anna Wallis of Michigan State and Craig Kahlke of the Lake Ontario Fruit Team are working with Farm Vision Technologies on on-farm trials.

The final company is FruitScout, which launched in 2021 with a handful of pilot customers and plans a wider rollout later this year and next. Like Farm Vision Technologies, Fruit Scout uses a smartphone with an app. The FruitScout app guides users as they walk down an orchard row, taking a picture of each tree. How many trees should be sampled to get a representative sample depends on variety. According to the company highly variable Honeycrisp may

need 15 percent of the block sampled, while Gala just needs 5 percent, but the company is fine-tuning these recommendations based on field trials according to an article in *Good Fruit Grower*.

From the images collected, the technology counts buds, then blooms, and finally fruitlets to help growers optimize crop load management strategies. Growers set targets in the app, and FruitScout’s dashboard tells them how close they are through each step of the season. It also suggests a target fruit count based on the size of the trunk. The Lake Ontario Fruit Team is also working with FruitScout on on-farm trials and FruitScout is currently commercially available to growers.

You can learn more about both Farm Vision and FruitScout at the Lake Ontario Fruit tour on August 9, 2022 in Orleans County. For more information and a registration link, go to: lof.cce.cornell.edu/event.php?id=1669.

Company websites

- Farm Vision Technologies <https://www.farm-vision.com/>
- Fruit Scout <https://fruitscout.ai/>
- Vivid Machines <https://www.vivid-machines.com/>

Recent Articles with More Information

Produce News (May 3, 2022) “Favorable weather, new technologies open season for United Apple” <https://theproducenews.com/apples/favorable-weather-new-technologies-open-season-united-apple>

Tom Karst (May 5, 2022) “With a bigger crop expected this year, technology aids New York apple grower” *The Packer* <https://www.thepacker.com/news/packer-tech/bigger-crop-expected-year-technology-aids-new-york-apple-grower>

Mat Milkovich (March 21, 2022) “A Vision in Hand” *Good Fruit Grower* <https://www.goodfruit.com/a-vision-in-hand/>

Mat Milkovich (March 21, 2022) “Computer eyes” *Good Fruit Grower* <https://www.goodfruit.com/computer-eyes/>

Kate Pregnaman (March 21, 2022) “Phoning in Precision” *Good Fruit Grower* <https://www.goodfruit.com/phoning-in-precision/>

Cover Cropping Between Orchard Plantings

Mike Basedow, CCE ENYCHP and Mario Miranda Sazo, Cornell University

Now is the time for seeding midsummer grasses in fallow blocks that are between plantings. Growers who are planning to plant a new orchard site (or a replant site) next year can consider the use of cover crops before planting an orchard. The benefits are numerous.

When used prior to orchard planting, cover crops can:

- improve organic matter
- break up compaction layers in the soil profile
- suppress weeds
- reduce erosion
- decrease presence of plant pathogenic nematodes

We recommend the use of sudangrass or a sorghum-sudangrass hybrid. They are both midsummer grasses suitable for short, 8-10 week plantings. Seeding rates are 30 lbs/acre for biomass and nematode control, and 50 lbs/acre for weed control.

Seeding timings are June through mid-August for sudangrass, and July through mid-August for sorghum-sudangrass.

Steps to Establishing and Incorporating Sudangrass for Orchard Replant Cover Cropping

Spring following orchard removal

- Rip soil thoroughly to expose additional roots and large rocks for

removal.

- Collect soil and nematode samples
- Treat the entire site with glyphosate to eliminate perennial weeds, such as bindweed.
- Apply lime to adjust soil pH and incorporate by deep plowing. If more than 1,500 pounds of total oxides per acre are required, apply half before plowing and incorporate the remaining half after plowing by disking to add the material throughout the future rooting zone.
- Broadcast 50 pounds of actual nitrogen per acre along with the required amounts of phosphorus and potassium needed for forage crops, based on soil test results, and incorporate these materials as the killed vegetation is plowed or disked under.
- Beginning in mid-June, plant the sorghum-sudangrass. Drill at 35 to 40 lb per acre, as deep as 2 inches to reach moist soil. If surface moisture is adequate, broadcasting the seed is an option; however, increase the rate to 45 to 50 lb per acre.

Mid-July through Mid-September

- Mow sudangrass when stalks are 3 to 4 feet tall, leaving at least 6 inches of stubble. This encourages the production of side shoots and deeper root growth while continuing to suppress weeds. Deeper rooting will help to break up any compaction layers in the field. Mowing at this stage also prevents the sudangrass from getting too woody.
- Add additional nitrogen after this mowing to support regrowth.
- In mid-August through mid-September, mow sudangrass using a flail mower or use some other strategy to chop and macerate the grass as much as possible. After this mowing, incorporate the residue immediately, and follow with a cultipacker. To get the most nematicidal activity from your sudangrass, it is best not to mow down more area than can be plowed under within two hours. The soil conditions during sudangrass incorporation should be similar to those for soil fumigation, i.e., some soil moisture and soil temperatures above 50° F. Mowing injures the plants and initiates a process that releases nematicidal compounds into the soil. Failure to

incorporate and seal the chopped plant material into the soil quickly allows much of these available toxicants to escape by volatilization. A steady rain following disking will also prevent the escape of volatiles.

Much of this information came from an article by Penn State. More information on these practices can be found here: <https://extension.psu.edu/planting-sorghum-sudangrass-following-orchard-removal>

If you are already using these cover cropping practices on your orchard, or would like try it out, Mike would be interested in collecting some soil quality data before and after. Reach out to him for more info.



Mow sudangrass when 3 to 4 feet tall. Photo: Tara Baugher, Penn State.



Use a flail mower in August/September. Incorporate immediately, and then follow with a cultipacker to get the most out of the nematicidal compounds within the sudangrass. Photo: Tara Baugher, Penn State.

2022 'Honeycrisp' Fruit Collection for Peel Sap Starts in Early July

Mario Miranda Sazo, Craig Kahlke, Mike Basedow, Elizabeth Tee, Lailiang Cheng, and Terence Robinson

In early July we will begin a cooperative effort between Cornell extension, growers, consultants, and storage operators to collect Honeycrisp fruitlets statewide to analyze them for mineral nutrient concentrations. This is part of a statewide extension effort funded by ARDP to evaluate Honeycrisp orchards throughout the state for determination of fruit storage potential and the risk of bitter pit in storage.

For the last several years we have evaluated peel SAP analysis to predict bitter pit early in the growing season to allow better decisions on mitigation efforts during the rest of the season and storage potential. **Peel SAP analysis is being offered statewide for a 2nd year**, with the support from NY Apple Research and Development Program. In 2021 we evaluated over 250 blocks across New York State and will offer this opportunity to growers again this year.

We would like to encourage all Honeycrisp growers to start thinking about which Honeycrisp blocks (or ideally all blocks at your farm) you would like to collect fruit for peel SAP analysis this July. We are specially inviting all packinghouses and their Honeycrisp fruit growers to submit peel samples to CCE this season.

If you participate, you will first need to sign up and pay for all samples using the registration at the following link: https://lof.cce.cornell.edu/event/preregistration_new.php?id=1673. You will then follow the link provided in your registration confirmation email to complete the Qualtrics form with the necessary details for each sample. Then, in July at the date announced by your local CCE specialist, collect a 30-fruit sample from each of your Honeycrisp blocks. Then weigh the sample to get the average fruit weight in grams (see note below), peel the fruits, freeze the peel sample, and then contact your local fruit extension specialist for submitting the sample. We will then analyze the peel sap for nutrient concentrations and send you a report on nutrient ratios and recommendations for mitigation actions and storage recommendations by late July. We believe that this new and early predictive tool will allow for more effective management of Honeycrisp fruit nutrition to reduce bitter pit incidence.

There will be a nominal fee of \$5 for each sample submitted but most of the analysis cost will be covered by the ARDP grant we were awarded.

Fruit Sampling Protocol

- First, watch the following 5 minute video on how to sample and peel your fruit: <https://www.youtube.com/watch?v=hYCqE0FwANI>
- Collect a 30-fruit sample from each of your Honeycrisp blocks. Select 30 trees that represent all the trees in your block and sample one exposed fruit per tree from the south part of the tree canopy at the height of 5 to 7 feet from the ground. Put all fruits in a clean plastic bag. Keep the stems attached as you pick.

- Weigh each sample to get the average fruit weight in grams BEFORE peeling the fruits. This measurement is extremely important, as this weight data will be used to correct and standardize the nutrient ratios by factoring in the effect of fruit size. We encourage all growers to use their digital kitchen balances (if working properly) or buy a cheap balance on Amazon at \$9.99. Please check the following link: [low cost scale](#)
- Remove the stems, and clean the surface of the sampled fruits with a wet paper towel with either purified or distilled water (tap water contains minerals that will skew your results).
- Dry the fruits with a dry, clean paper towel.
- Use a kitchen peeler to remove two pieces of peel on two opposite sides of each fruit from the stem end to the calyx end. (60 pieces total, 2 from each fruit)
- Place peels in a well labeled Ziploc bag and zip it tightly. With a permanent marker, write down the farm/grower name, block name, cell phone #, email, sampling date, and average fruit weight in grams.
- Place the bags in a freezer immediately.
- Email Mike mrb254@cornell.edu and Terence tlr1@cornell.edu that your samples have been prepared and are ready for pickup.

To facilitate the collection of samples we ask that you now complete the ***Register for the number of blocks you will be testing and complete the Qualtrics Form linked in your registration confirmation email.*** After the samples are collected the frozen sample(s) will be transported for peel SAP analysis at Cornell Nutrient Analysis Lab in Ithaca.

We hope all Honeycrisp growers in cooperation with their packing and marketing company, will submit a sample from **each** Honeycrisp block in NY for peel SAP analysis via CCE this season!



Bitter pit on Honeycrisp. Photo: Chris Watkins, Cornell

New York Tax Incentives for Farm Employers: Overtime, Investment, and Employee Retention

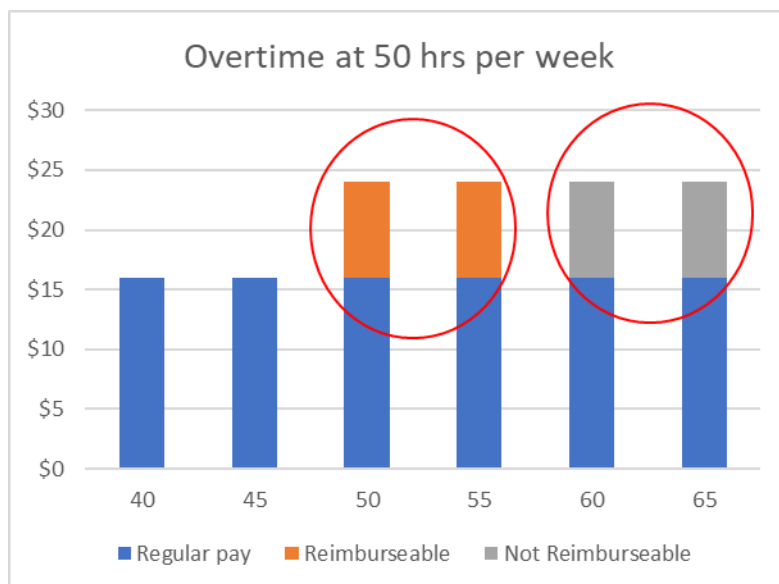
Elizabeth Higgins, CCE ENYCHP

In the 2022 State of the State and State Budget, Governor Hochul announced three significant tax credits that are applicable to many farmers in New York:

- The Farm Worker Overtime Tax Credit – reimburses farms for overtime expenses if the threshold is reduced below 60 hours per week
- The Investment Tax Credit – provides a tax credit when farm assets are purchased and placed into service
- The Employee Retention Credit – provides a tax credit based on the number of farm employees working over 500 hours (per year)

These tax credits are all new or expanded, and can bring significant benefits to farms across the state. You can learn more about these credits on a webinar (recorded) that was presented on June 21st in collaboration with Farm Credit East, NYS Department of Agriculture & Markets, NYS Department of Taxation & Finance, and Cornell Agricultural Workforce Development. https://www.youtube.com/watch?v=s0LzH2TvgJM&feature=emb_logo. Some of these programs are still in development, so the webinar covered what is known, and what is yet to be determined.

One key message from the webinar is that the new overtime tax credit will only come into play if the threshold is lowered below 60



hours per week. It would reimburse a farm for overtime paid from the new threshold up to 60 hours. It would not reimburse for overtime paid over 60 hours. So in the chart below, you pay \$16/hr, and overtime is now set at 50 hours per week. Your employee works 65 hours that week. The overtime you pay from 50 hours to 60 hours is reimbursable (orange bars). But the overtime you pay from 60 to 65 hours is not reimbursable (grey bars).

Herbicide Resistant Horseweed in New York and Possible Implications for Perennial Crop Systems

Lynn M. Sosnoskie, Cornell University

Horticulture Section—School of Integrative Plant Sciences, Cornell Agri-Tech, 630 W. North Street, Geneva, NY 14456

Horseweed (also called maretail) is a frequently occurring species in New York. It can be found growing in a variety of habitats, including along roadsides, in field crop and vegetable operations, and in berries, grapes, and tree fruit. Often considered a winter annual, horseweed has a wide germination window and seedlings can emerge in the spring, summer, and fall. Herbicide resistance, particularly to glyphosate, is widespread in the US and has recently been identified in New York (see the 2022 summer issue of Fruit Quarterly <https://nyshs.org/fruit-quarterly/>). Many of these populations were collected from soybean systems where glyphosate is frequently used for managing unwanted vegetation. Two New York populations, collected from a vineyard and an apple orchard in the Finger Lakes Region, were found to be susceptible to glyphosate but resistant to labeled rates of paraquat. Paraquat resistance in horseweed has been formally confirmed previously in Belgium (nurseries), Canada (peaches), Japan (orchards, grapes, roadsides, railways), California (almonds), Delaware (soybeans) and Mississippi (soybeans) (<https://weedscience.org/Home.aspx>).



Left: Horseweed seedlings growing in the greenhouse. Right: Horseweed rosette with long and linear, irregularly toothed leaves.

(Continued on page 10)

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Because of this finding, the Specialty Crop Weed Science lab at Cornell AgriTech in Geneva is interested in collecting seed, this summer and fall, from horseweed plants that escape weed control in tree fruit, berry, grape, and Christmas tree systems to better understand the distribution and degree of herbicide resistance in perennial crop production environments. Horseweed seed is wind-dispersed and resistance traits can be easily disseminated across the landscape. Growers should contact their local CCE specialist or Lynn Sosnoskie in Geneva (lms438@cornell.edu) for assistance if they believe they have resistant horseweed on their farms. For more information about horseweed identification, please see: <https://blogs.cornell.edu/weedid/field-crops/horseweed/>.

This research was supported by Federal Capacity Funds awarded by the National Institute of Food and Agriculture, U.S. Department of Agriculture and managed by the New York State Agricultural Experiment Station (NYSAES), Cornell University, Geneva, New York, USA.



Left: Bolting horseweed plant.

Right: Suspected paraquat-resistant horseweed in apples.

New USDA Grant Program—Food Safety Certification for Specialty Crops

Elizabeth Higgins, CCE ENYCHP

The Food Safety Certification for Specialty Crops (FSCSC) Program helps specialty crop operations that paid eligible on-farm food safety program expenses in 2022 and 2023. To be eligible for FSCSC applicants must meet the following:

1. Be a specialty crop operation.
2. Obtain or renew a:
 - 2022 food safety certification that was issued between June 21, 2022 and December 31, 2022; or
 - 2023 food safety certification issued during calendar year 2023; and
3. Have paid eligible expenses.
4. Meet the definition of a small business or very small business. A small business means an applicant that had an average annual monetary value of specialty crops the applicant sold during the 3-year period preceding the program year of more than \$250,000 but not more than \$500,000.

Eligible Expenses and Maximum Payment Rates

Eligible Expense	Historically Underserved Farmer or Rancher	All Other Applicants
Development of a food safety plan for first-time certification	75 percent (no maximum)	50 percent (no maximum)
Maintaining or updating a food safety plan	75 percent, up to a maximum of \$375	50 percent, up to a maximum of \$250
Food safety certification	75 percent, up to a maximum of \$2,000	50 percent, up to a maximum of \$2,000
Certification upload fees	75 percent, up to a maximum of \$375	50 percent, up to a maximum of \$250
Microbiological testing – products	75 percent, up to 5 tests	50 percent, up to 5 tests
Microbiological testing – soil amendments	75 percent, up to 5 tests	50 percent, up to 5 tests
Microbiological testing – water	75 percent, up to 5 tests	50 percent, up to 5 tests
Training	100 percent, up to a maximum of \$300	100 percent, up to a maximum of \$200

To apply: A complete application may be downloaded at farmers.gov/food-safety. The website also contains more detailed information about the program. You can also contact your local USDA FSA office. To find your local FSA office, visit farmers.gov/service-locator.

Hard Cider Summer Tour 2022



AGENDA

10:00 AM: Stop one: Star Cidery (Canandaigua Location)
3365 East Lake Road, Canandaigua, New York 14424

Visit with cidemaker and co-owner, Cortni Stahl to learn about their cidemaking process. From juice to packaged cider she will walk you through their apple selection and downstream processes as you tour their production and tasting room facilities.

Travel time: 30 minutes

11:30 PM: Stop two: USDA Germplasm Collection
630 West North Street, Geneva, NY 14456

Ben Gutierrez (USDA-ARS) describes the mission of the USDA's apple germplasm collection. Greg Peck shares an update on his lab's work to assess accessions within the germplasm collection for their potential use for the cider industry.

**12:30 PM: LUNCH at Jordan Hall and Tours of
Cornell Agritech Craft Beverage Lab**
630 W North St, Geneva, NY 14456

Following lunch at the Jordan Hall pavilion, Chris Gerling, Cortni Stahl and the Cornell Craft Beverage Institute will walk participants through the Craft Beverage Analysis Lab, the Vinification & Brewing Lab and the Fruit & Vegetable Processing Pilot Plant.

Travel time: 10 minutes

2:15pm PM: Stop three: Red Jacket Orchards
957 Canandaigua Road, Geneva, NY 14456

Visit with Brian Nicholson who will give a tour of the juice facility and discuss their production processes and then Matt Murphy will give a tour of the nursery and orchards.

Travel time: 10 minutes

**4:00pm Final Stop: Cider Pub Crawl with
Lake Drum Brewing and Star Cidery**
Lake Drum Brewing 16 E Castle Street, Geneva, NY 14456
Star Cider Tasting Room 495 Exchange Street, Geneva, NY 14456

<https://vegetableipm.securepayments.cardpointe.com/pay?total=5.00>

Participants will use their personal vehicles to get from location to location and can join us for whichever stops they are interested in seeing.

Suggested registration fee to offset administrative costs: \$5 per person. We greatly appreciate your contribution to this event.

If you have any questions, please contact
Greg Peck at gmp32@cornell.edu or Scott Ramsey at scott@scottramsey.net.

Friday, July 22, 2022 10:00am EST

*Designed for commercial apple and
cider producers, all are welcome.*

- Lunch will be included at Jordan Hall.
(Catered by Lake Drum Brewing. Bring your own cider to share as you wish. Cups will be provided.)
- Complimentary educational cider tasting will take place at Lake Drum and Star Cider Tasting Room.
- Register by July 15 to be guaranteed lunch and cider tasting.

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Peru Weed Management and Soil Health Field Day

July 20, 2022 1:00pm-4:00pm EDT

The 'Don G' Orchard Block

333 Route 22B, Peru, NY

Join us in Peru on July 20th as we discuss orchard weed and soil management!

Speakers will be joining us from across Cornell's research and extension teams. Topics will include the results of our preemergent herbicide timing trials, new vision-guided technologies for orchard weed spraying, organic weed management options, soil health demonstrations, and a discussion on our statewide orchard soil health survey. **1.5 DEC credits are available in categories 1A, 10, and 22 for this event.** Please contact Mike with any questions: mrb254@cornell.edu or 518-410-6823

Agenda

- 1:00 – 1:10 pm Welcome & Introductions
- 1:10 – 1:40 pm Peru herbicide trials - efficacy, tree damage, soil health (Mike Basedow, CCE ENYCHP)
- 1:40 – 2:10 pm Vision guided herbicide spraying and weed management technologies (Dr. Lynn Sosnoskie, Cornell University)
- 2:10 – 2:40 pm Organic orchard management trial results (Dr. Greg Peck, Cornell University)
- 2:40 – 3:10pm Soil health demos and CASH test (Dr. Deborah Aller, Cornell Soil Health Program)
- 3:10 – 4:00pm Statewide soil health survey result discussion (Mike, Greg, Deborah)

Register Here: <https://bit.ly/PeruWeedManagement>



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In Case You Missed It: New Recordings, Online Courses, and Online Materials

Michael Basedow, CCE ENYCHP

If you haven't been on the [ENYCHP YouTube page](#) in a while, I recommend giving it a look through. We've added all the recordings from our thinning meetings, including the Rescue Thinning meeting we held for the Capital Region on June 1st. In which Terence discussed options for rescue thinning, along with his new return bloom spray program with Ethrel.

We also have recordings from our "What's new in crop load management?" webinar available at the following link. In which, Dr. Polianna Francescatto and Dr. Anna Wallis discuss Accede, a new thinner out from Valent that can be used for rescue thinning. While this product is now registered in New York, it is not yet for sale commercially, but should be within the next year or two. More info available here: <https://www.youtube.com/watch?v=UDxEaQDKU04&list=PLk2Q-bw9Aiu6PXq-obah0nVqh8h8J3CcV>

We've also got the recording of Dr. Kerik Cox's talk on biological materials for fire blight management here: <https://www.youtube.com/watch?v=N0PrdYyShok&t=137s>

We cohosted a number of webinars in association with the Northeast Fruit Consortium this winter. Those recordings are available on the UMass Extension Fruit Team YouTube channel here: https://www.youtube.com/watch?v=hBjdq_luvbc&list=PLr5-TRBPOxrGKlXCGCr2ZQujmtZPQRE

The Northeast Cider Apple Project webinar can be viewed here: <https://www.youtube.com/watch?v=9TnRk-kN1VI>

The "Pruning Guide for Precision Crop Load Management" video is available on the LOFP YouTube channel in both [English](#) and with [Spanish](#) subtitles.

If you have employees that are interested in getting their private pesticide applicator certification, but aren't sure where to start the process, they might want to enroll in our online certification training course. This course includes recorded lectures and practice exams, and walks through what you need to do to sign up for the exam, some of the core material, and strategies for the category exam. It is available for \$5 for ENYCHP enrolled farms at the following link: <https://cce-enychp.teachable.com/p/pesticide-certification-exam-prep-course>

Finally, we are also in the process of updating the Cornell Tree Fruit Resources website. The link to that is available here: <https://blogs.cornell.edu/treefruit/>. If you have any recommendations on how we can improve this page, or any of our other online programming, please reach out to me at mrb254@cornell.edu or at 518 410 6823.

ENYCHP Office

Chelsea Truehart

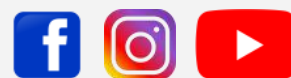
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The Eastern New York Commercial Horticulture Program is a Cornell Cooperative Extension partnership between Cornell University and the CCE Associations in these seventeen counties: Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Orange, Montgomery, Putnam, Rensselaer, Saratoga, Schoenectady, Schoharie, Ulster, Warren & Washington.