November 2020

The Produce Pages

Serving the fruit and vegetable growers of Eastern New York

Colorful produce and coolers stocked with local products at the hub in October. Photo: E. Hodgdon

Cornell Cooperative Extension
Eastern NY Commercial Horticulture Program

Feature Farm Story

Hub on the Hill

Dr. Elisabeth Hodgdon, CCE ENYCHP

In the past two years since I moved to the North Country, I've enjoyed driving south into the Adirondacks in Essex County to get to know the numerous diversified vegetable growers in the area. Whenever I'm traveling through, I like to stop by the Hub on the Hill self-serve store to stock up on fresh fruits and vegetables, dairy products, meat, bread, canned goods, sunflower oil, and other locally produced goods from the county's producers. In October, the shelves and coolers were full of color with the bounty of harvest season.

Because much of the North Country is sparsely populated, the hub helps growers tackle key aspects of marketing within the region and beyond. "The way I see it is that we help growers fill in marketing gaps," Jori Wekin, hub co-founder and manager, tells me. Back in early October, I sat down with Jori at the hub to learn more about the business and what they do. About a decade ago, Jori and her husband Andy moved to the Adirondacks. Jori worked at a couple of farms in the area, and had a vision of starting her own farm. Once she got settled into the area and got to know the community, she saw that there were already a number of great farms already in Essex County. She realized that her role in the agricultural community would best be served in helping the existing farmers succeed. After starting a kitchen at the local grange, Jori, Andy, and their friend Steve Blood took over a former

(Continued on page 3)

The Produce Pages

Regular contributors:

Vegetables

Chuck Bornt
Phone: 518-859-6213 Email: cdb13@cornell.edu

Ethan Grundberg
Phone: 617-455-1893 Email: eg572@cornell.edu

Elisabeth Hodgdon
Phone: 518-650-5323 Email: eh528@cornell.edu

Teresa Rusinek
Phone: 845-691-7117 Email: tr28@cornell.edu

Crystal Stewart-Courtens
Phone: 518-775-0018 Email: cls263@cornell.edu

Maire Ullrich
Phone: 845-344-1234 Email: mru2@cornell.edu

Fruit

Mike Basedow, Tree Fruit
Phone: 518-410-6823 Email: mrb254@cornell.edu

Dan Donahue, Tree Fruit
Phone: 845-691-7117 Email: djd13@cornell.edu

Laura McDermott, Small Fruit
Phone: 518-791-5038 Email: lgm4@cornell.edu

Jim Meyers, Grapes
Phone: 845-417-8005 Email:jmm533@cornell.edu

Technicians

Sarah Eve Elone
Email: ser37@cornell.edu

Natasha Field
Email: nf257@cornell.edu

Andy Galimberti
Email: ag2422@cornell.edu

Sarah Tobin
Email: st944@cornell.edu

Business Specialist

Liz Higgins
Phone: (518) 949-3722 Email: emh56@cornell.edu

Newsletter Layout: Chelsea Truehart
Content editor: Elisabeth Hodgdon

In this Issue:

The *Produce Pages* is a monthly publication of the Eastern New York Commercial Horticulture Program. For more information about the program, please visit our website at http://enych.cce.cornell.edu/.

Serving the Educational and Research Needs of the Commercial Small Fruit, Vegetable and Tree Fruit Industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties.

(Continued from cover)

hardware store and tractor repair shop building on the corner of Route 22M and 22 in Essex and built the hub into what it is today.

While I had a generally good idea of what the hub does for growers, I didn't quite know the extent of their services. The building has commercial kitchens, storage space, offices, and a small store in the front where people like me can walk in and shop. For a small fee, growers can bring in their produce and use the kitchen space for canning, pickling, drying, or other processing and packing that they need to do. They can also drop off their produce and the hub staff will do this for them, using a trade system where the hub keeps part of the product to sell at the store for the hub's own revenue, and the grower keeps the rest. The hub is also a delivery service. They maintain a small fleet of delivery vehicles to transport products all over Eastern NY, from nearly as north as the Canadian border down to New York City, to deliver produce, other farm products, and CSA shares to individual customers and businesses. At any given time, 20-25 farms work with the hub in some facet or another through the many services that the hub provides.

This past summer, I had several growers from outside the Essex community ask me about where they can use a commercial kitchen, take their excess product for processing, or source local products for their farm store. I directed all of them to the hub. You "have to do everything as a farmer," Jori tells me, and "the hub helps." Many growers are daunted by the workload and cost of installing and operating their own commercial kitchen. Having access to a nearby kitchen at a low cost when they need it is a valuable resource that the hub provides for the community. The space has also served to support startup caterers and other food businesses in the area, helping them get their financial footing before establishing their own facilities.

Not only does the hub help growers with transformation and delivery of goods, Jori also helps growers with labor needs—she runs a staffing agency for farm laborers to help growers with the upfront costs of hiring new employees. The hub itself employs 4 people full time, and 10 part time, providing jobs for those in the community.

When the COVID-19 pandemic struck, the hub continued its normal business, but also partnered with AdkAction to take on a new role in the county delivering emergency food boxes at little to no cost to help food insecure members within the community. The hub will continue to deliver food boxes (both free and at full price) to the community this winter. In the past, the hub hosted social events, including dinners, but those are on hold for now.

Jori has big plans for the future. Her next project is to start up an online marketplace for local products. Through the online marketplace, buyers will be able to see an inventory of what's available from local producers, and can place orders for pickup or delivery. Lastly, the hub plans to build a creamery for dairy processing on site. I look forward to seeing what the future holds for the hub, and the relationships built between North Country producers brought together through the hub.

Left: Jori Wekin at the wheel of one of the hub's delivery vehicles, delivering local food around the region. Photo: ZVD Photography. Middle: The Hub on the Hill was renovated from a tractor shop and storage building a few years ago. Photo: E. Hodgdon. Right: Pickles, sauces, dressings, jams, and other canned goods processed at the hub for sale in the store. Photo: E. Hodgdon.

Distinguishing Late-Season Stink Bug, Apple Maggot, and Bitter Pit Damage

Michael Basedow, CCE ENYCHP

Brown marmorated stink bug (BMSB) has been observed over the past eight seasons throughout the southern Hudson Valley. In 2020, high levels of both BMSB and green stink bug feeding were observed within the Hudson Valley by the Jentsch Lab. (A full report on the Hudson Valley Pest Complex this season can be found at Peter's blog).

While BMSB has not yet presented much of a management challenge in the northern half of the Eastern New York region up to this point, we caught BMSB adults on our clear panel traps throughout the northern regional apple trapping network in 2020. Adults were caught in Clinton, Essex, Washington, Saratoga, and Montgomery counties, showing they are now at least present at low numbers throughout the Northern New York region's orchard edges.

In addition to stink bug, 2020 also brought very high apple maggot pressure throughout the Eastern New York region. The Jentsch lab documented adult emergence on June 22nd in the Hudson Valley, while our first captures occurred on June 29th in the Champlain Valley, and July 1st in Saratoga County. We continued to capture adults above management thresholds throughout much of July and August throughout the region.

In addition to the presence of these pests in 2020, bitter pit symptoms were observed on fruit in some Honeycrisp blocks prior to harvest, and the passive prediction method had forecast some blocks to have elevated incidences of bitter pit this year. Similar to bitter pit, stink bug damage may not be present on the fruit surface at harvest if feeding occurred shortly before harvest, but will instead manifest on the fruit when being removed from storage. Unfortunately, stink bug, bitter pit, and apple maggot damage may look fairly similar on the fruit surface. With all of these seasonal conditions in mind from this challenging season, close attention should be paid to fruit coming out of storage to determine what type of injury may be present to help guide future management practices.

Stink bug damage can occur anywhere on the fruit, but is most commonly found around the fruit shoulder. It will generally manifest as discolored depressions on the fruit, with a sting site present within the depression. Upon slicing, stink bug damage will display flesh corking that will extend up to the skin surface (unlike bitter pit, which will not reach to the skin). Generally, stink bug damage is most likely to occur on orchard edges.

Apple maggot damage can sometimes lead to severe fruit tunneling, but the use of systemic materials now often leads to surface injury that can look similar to stink bug and bitter pit damage. Apple maggot (AM) sting injury will sometimes also manifest as depressions, and can be accompanied by severe dimpling of the fruit. AM will have a visible sting present, which should be more readily visible than stink bug feeding. These depressions will usually only present some slight discoloration, as opposed to stink bug feeding. When fruit are sliced, flesh will be soft and oxidized, and may show some tunneling into the fruit, as opposed to the corking found from stink bug injury.

Bitter pit damage will appear as shallow depressions, and is more often found on the calyx end of the fruit. Depressions will not contain a sting, so depressions should be closely inspected with a hand lens for the presence or absence of stings. Upon cutting, flesh will show signs of internal corking below the surface. However, unlike stink bug damage, this corking will not reach the skin surface. Bitter pit symptoms will also be scattered throughout the orchard on sensitive varieties, rather than being concentrated along the orchard edges like stink bug and apple maggot injury.

Hail damage from small to moderate size hail stones will produce subsurface corking, often indistinguishable to that of stink bug feeding injury. However, hail damage will lack the puncture wound of stink bug damage, and wind driven hail will appear on the shoulders and windward side of the fruit.

To summarize:

Stink bug injury for three different species (green, brown, and brown marmorated stink bugs):

- A discolored depression
- Always a 'sting' site in the center of the depression.
- Upon slicing, corking up to the skin surface.
- Hail injury, which is also very similar to that of BMSB feeding, is without a center depression 'puncture', found on the hail event windward side of the fruit.

Apple maggot from oviposition (egg laying) site or 'sting' in fruit surface:

- Sometimes a depression. Most often only slight discoloration.
- Always a 'sting' site in the center of the depression.
- Sting larger then stink bug feeding site, and always easy to see.
- Upon slicing, no corking BUT soft, oxidized fruit flesh, often with tunneling well into the fruit.
- Cutting directly beneath the sting will give rise to juice seeping up from the egg laying sting.

Bitter pit from calcium deficiency requiring applications throughout the season:

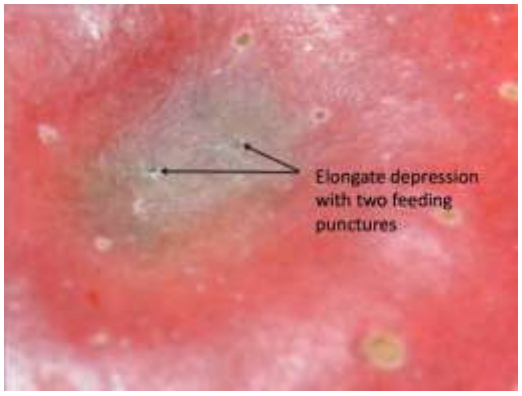
- A discolored depression.
- Never a 'sting' site in the center of the depression.
- Upon slicing, corking separated from the skin surface.

Hail

- Very similar to that of BMSB feeding, but is without a center depression 'puncture'.
- Found on the hail event windward side of the fruit.

If you see damage and are uncertain of the cause, you can get in touch with Mike Basedow, Dan Donahue, or Peter Jentsch to help in the identification process.

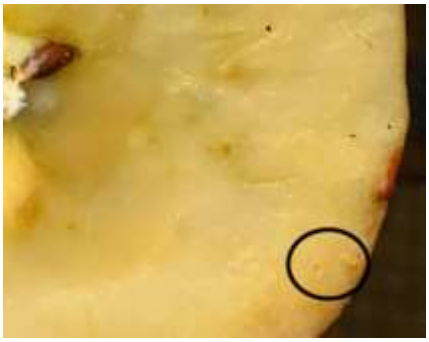
Stink Bug Damage



Left: External stink bug injury to Pink Lady. Middle: Stink bug fruit depression with feeding punctures present. Photos: Peter Jentsch. Right: Internal stink bug injury, presenting as flesh corking that reaches the skin surface. Photo: Liz Tee, CCE LOFP.

Apple Maggot Damage






Left: Visible stings and severe dimpling of IdaRed caused by apple maggot egg laying. Photos: M. Basedow. Right: Internal apple maggot larval feeding, with flesh oxidation and slight tunneling present (circled) in IdaRed. Photos: Peter Jentsch.

Bitter Pit Damage


Severe bitter pit damage on Mutsu, with corking beneath the fruit surface that does not reach the peel. Photos: M. Basedow

Hail Damage

Hail injury will appear very similar to stink bug damage, but will lack the distinctive puncture, and will generally appear on the windward side of the tree when from when the hail event occurred. Photo: Peter Jentsch.

Are Persistent Biocontrol (Entomopathogenic) Nematodes a Fit for Your Organic Farm?

Elson Shields, Teresa Rusinek, and Tony Testa, Cornell University

What are they?

Nematodes are microscopic round worms in the soil and are broken down into three different types: 1) Plant parasitic, 2) Insect parasitic and 3) free-living (on organic matter). Insect parasitic nematodes only attack insects in the soil, they do not feed on plants and are known as entomopathogenic nematodes (EPN) or biocontrol nematodes. The infective stage of the EPN (called the infective juvenile or IJ) moves about in the soil in search of insect hosts, finding the insect using CO_2 gradients and other chemical attractants. When an insect host is located, the IJ enters the insect through a breathing opening called a spiracle and penetrates the insect body cavity. Once inside, the nematode releases a bacteria which kills the insect. The nematodes then molt to adults and produce offspring on the nutrition provided by the dead insect. When the insect resources are consumed, a new set of IJs are released into the soil to search additional insect hosts. An average sized insect larvae will produce between 100,000 and 200,000 new IJs.

What do they attack?

Biocontrol nematodes or entomopathogenic nematodes will attack most insects living in the soil. Some insect species have evolved defenses against nematodes and are difficult for the nematodes to kill. In general, the weevil larvae (black vine, strawberry root, carrot weevil) are easily killed by EPNs. Lepidoptera larvae (cutworms, sod worms, armyworms) are also easily killed by EPNs. Fly larvae (maggots) such as cabbage maggot, seed corn maggot, and onion maggot can be killed but require more nematodes to attack them before they die. Native white grub species (multiyear lifecycle) are very susceptible to attack by EPNs, but invasive annual white grubs (Japanese beetle, Asiatic garden beetle, chafers) are much more difficult to control with EPNs.

When applying persistent native nematodes, the number of nematodes applied are significantly less than the recommended rate for commercially available nematodes (41 million nematodes per acre vs 1 billion nematodes per acre). Persistent nematodes become part of the soil fauna and increase in number by recycling in available hosts. Often, it takes until the second growing season for full nematode activity by persistent strains. This delay in full activity is a result of the nematode persistence across growing seasons. The nematodes applied are composed of a genetic array of "time of activation" known as "phased infectivity" and it takes several months for full activation of the nematodes. These genetic traits allow the persistent biocontrol nematodes to persist in the soil for many years while suppressing pest insects from a single inoculation. In contrast, the commercial strains available from retailers are 100% infective at application and have lost their ability to persist across unfavorable conditions, requiring careful application timing and annual applications.

The expected level of insect control from persistent native nematodes is influenced by the intensity of the pest invasion, soil moisture conditions and the soil temperature during the timing of insect attack. For example, black vine weevil (BVW) larvae start attacking strawberry roots when soil temperatures warm to 45 ^{0}F. NY persistent nematodes become active between 45-50 ^{0}F but are most effective when soil temperatures are at least 60 ^{0}F. As a result, spring feeding by BVW larvae often gets ahead of the control by biocontrol nematodes. However, when BVW eggs first hatch in late summer-early fall, the soil temperatures are above 60 ^{0}F and the biocontrol nematodes are very effective against the young larvae before the soils cool for winter. Therefore, the strategy for the BVW pest control is to establish persistent biocontrol nematodes in mid-late summer before damage occurs and allow the nematodes to reduce the BVW larval population before winter, resulting in less spring cold soil damage. When the soil warms, the presence of persistent biocontrol nematodes in the soil profile will then attack the remaining large BVW larvae. Research has shown that it takes two growing seasons for persistent biocontrol nematodes to bring a BVW outbreak under control when the application of biocontrol nematodes is delayed until serious plant damage is observed. In contrast, if the grower knows BVW is present on the farm, a nematode application before economic damage is observed, prevents economic damage by attacking the sub-economic BVW larval population.

How are persistent biocontrol nematodes best used to manage soil insect pests?

Persistent biocontrol nematodes are best utilized as an integrated tool with good cultural practices, not to "clean up" a pest problem after poor management. Persistent biocontrol nematodes require a single application to inoculate the soil profile and work throughout the growing season to suppress soil insects as long as the soil temperature is above 50 ^{0}F. Frequently, persistent biocontrol nematodes suppress the soil insect populations below economic levels throughout the growing season.

The NY persistent EPNs come in cups filled with wax worm hosts and wood shavings. The wax worms must be broken up with a water stream to release the EPNs into the solution to be applied to the field. Photo: T. Rusinek

Charles Bornt assists grower with EPN application using gravity flow PVC boom connected to a 50-gal. tank strapped onto a pallet. Photo: T. Rusinek

Does the soil type influence the species of biocontrol nematode applied?

NY research data indicates a mix of biocontrol nematode species gives better control of soil insects than a single species alone. Each nematode species has a preferred section of the soil profile where it is the most effective and mixing species provides better protection across the soil profile occupied by soil insects. For example, *Steinernema carpocapsae* prefers the top 2-3" of the soil profile and becomes the dominate species in this region. If *S. carpocapsae* is the only nematode used, insect larvae below the 2" level escape attack from *S. carpocapsae*. A second nematode species which prefers the low portions of the soil profile complements the presence of *S. carpocapsae* and gives more complete control of soil insects located below 2". In the lighter soils, the top 2" often become too dry for a biocontrol nematode to move and attack insect larvae. In these soils, a nematode species mix which include *S. carpocapsae* would be ineffective.

Our recommendations for biocontrol nematode species mixes for soil types:

- Clay loam – silt loam soils: *S. carpocapsae* + *S. feltiae*
- Sandy loams – sand soils: *S. feltiae* + *Heterorhabditis bacteriophora*.

What are the differences between the commercially available entomopathogenic (biocontrol) nematodes purchased on the web from the persistent NY strains?

Biocontrol nematodes purchased from commercial sources have lost the ability to persist in the soil for any significant length of time after application. Many commercial strains persist in the soil for only 7-30 days and require application timing to be closely matched with the presence of their target host and an annual reapplication is required. In contrast, the NY persistent strains of biocontrol nematodes are carefully cultured to maintain their evolutionary ability to persist across hostile conditions such as the lack of available hosts, temperature extremes (e.g. winter, dry soil conditions) and drought. NY persistent strains are applied a single time and persist in the field for many years following application; not surprising because they were isolated from NY soils where they have evolved for a few million years. If the NY persistent strains are cultured carelessly, they also quickly lose their ability to persist and are no better than the commercial strains purchased off the web.

How are biocontrol nematodes applied?

Biocontrol nematodes are usually applied suspended in water and applied at a minimum of 50 gallons of water per acre. This can be accomplished in numerous ways but several factors need to be remembered: 1) Nematode-water solution needs to be applied within a few minutes if the water solution cannot be aeriated in some fashion. High concentrations of nematodes suspended in water quickly deplete the dissolved oxygen and suffocate. In addition, there needs to be some level of mixing or agitation because nematodes will settle in the water solution, resulting in an uneven application. 2) Mixing nematodes in with fertilizer solutions for application is not viable because interactions between the fertilizer and the nematodes cause nematode death. 3) Biocontrol nematodes are ultra violet (UV) sensitive so applications need to be made under conditions to protect them from UV. Applications should be made late in the day or on cloudy/rainy days or into fields where sufficient plant growth is present to give the soil surface adequate shading to protect the nematodes from UV until they have entered the soil.

Biocontrol nematodes can be applied with a wide array of equipment depending on the size of the area to be treated. If a commercial pesticide sprayer is used, all screens and filters need to be removed and the nozzles changed to a "stream type" nozzle to apply the nematodes in a concentrated stream. On smaller areas, a backpack sprayer or watering can will work. Several farmers have used a water tank on an ATV with a boom made from PVC pipe. Holes were drilled in the pipe for water streams and gravity flow was used. Whatever the application equipment, it needs to be calibrated so the applicator knows the water volume per acre and can adjust the nematode solution concentration for the appropriate application of 41 million nematodes per acre.

Application timing:

Biocontrol nematodes, which are persistent, can be applied anytime during the growing season when soil temperatures are above 50 ^{0}F. Ideally, nematodes should be applied when there are hosts in the soil so they can immediately go to work and reproduce. However, the NY persistent strains have the ability to sit and wait for months before needing to attack hosts and reproduce. We request that no nematode applications be made after October 1st. Applications are made to the soil surface under conditions of low UV exposure (late in the day, rainy/overcast days, in cover crops where there is adequate ground shading). Field tillage has no impact on biocontrol nematodes. In addition, if nematodes are applied before field tillage, the movement of soil during tillage helps the nematodes redistribute throughout the field and help them fill in the gaps which may occur during application.

(Continued on page 8)

(Continued from page 7)

Where can I get Biocontrol Nematodes that are adapted to persist in NY soils across growing seasons?

Currently, there are two sources to purchase biocontrol nematodes adapted to NY growing conditions with their persistent genes intact to persist across growing seasons (and winter) in NY. If there is a member of the organic community who is interested in starting a business to provide these NY persistent nematodes to organic growers in our region, the Shields' lab at Cornell can assist with the requirement to successfully rear and produce the biocontrol nematodes for resale:

1. Mary DeBeer, Moira, NY. cell: (518) 812-8565 email: md12957@aol.com
2. Shields' Lab, Cornell University: Tony Testa email: at28@cornell.edu cell: (607) 591-1493

For additional assistance please contact Teresa Rusinek tr28@cornell.edu or Charles Bornt cdb13@cornell.edu, CCE Eastern NY Commercial Horticulture team

Results of CFAP1 in ENYCHP Counties—Who Got Payments?

Elizabeth Higgins, CCE ENYCHP

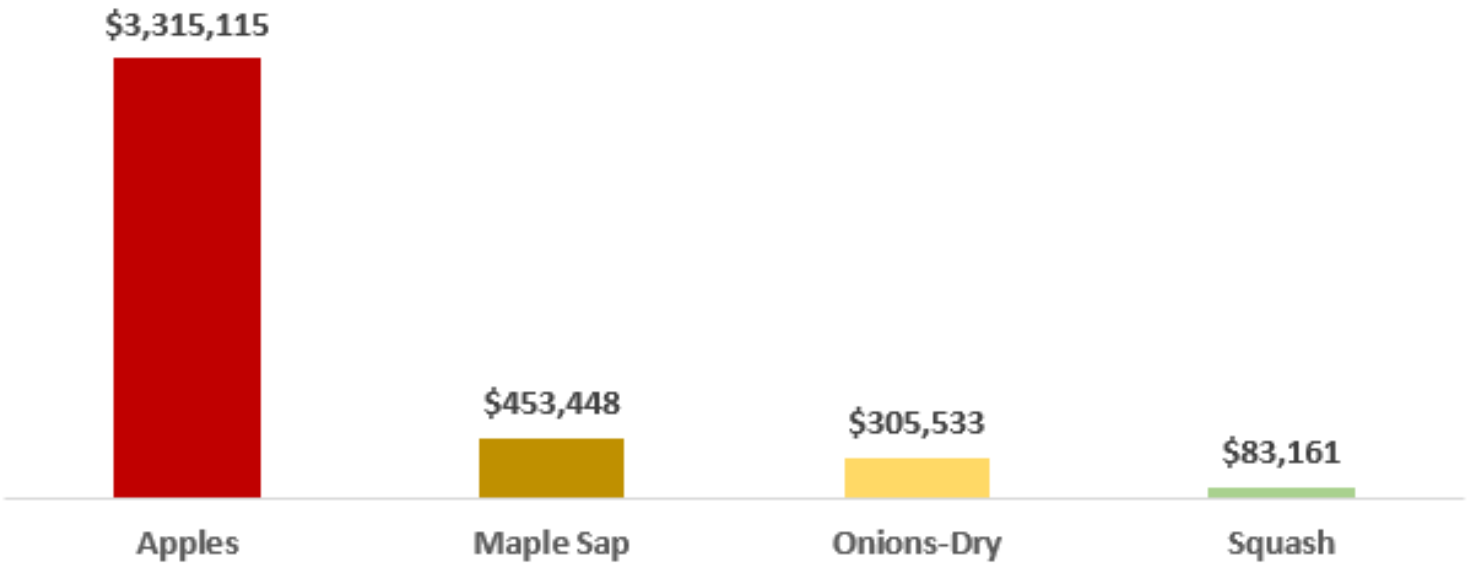
The Coronavirus Food Assistance Program 1 (CFAP1), which ended in September, provided payments to farmers who sold crops between Jan 15, 2020 and April 15, 2020 that USDA determined had a price decline at the national level. They also provided payments to growers who sold crops and did not receive payment or who were unable to sell crops because they lost their market. The program became much more attractive to fruit and vegetable growers after USDA made revisions, based on feedback.

Ultimately, NYS farmers received $13,910,151 in CFAP1 funding for specialty crops, which includes fruits, vegetables, maple syrup, herbs, and mushrooms. Specialty crop farms in the 17 county ENYCHP region received $4,217,681 or about 30% of the NYS funding for specialty crops. Farmers who participated in the program reported that the application process was reasonable and that they received payment very quickly.

If you missed out on CFAP1 – don't despair. CFAP2 is now available and is even easier to qualify for than CFAP1. USDA seems to be determined to make sure all farmers get some money this winter. Payments for specialty crops are a percentage of your 2019 sales (or 2020 sales for new farms). You can learn more about CFAP2 at http://farmers.gov/cfap. If you received a CFAP1 payment you are eligible for CFAP2. USDA considers these to be separate programs; they just recycled the name.

The crops with the highest payments in the ENYCH region were apples, maple sap, dry onions and squash (Figure 1).

Figure 1 Top-4 Specialty Crops for CFAP1 Payments in the 17 County ENYCH Region



Apples: NYS growers received $8,119,009 in CFAP1 payments for apples. The top county in NYS was Wayne, with $2,234,867 in CFAP1 payments, followed by Orleans with $1,832,373. In our region, Clinton County received the most CFAP1 funding for apples at $1,381,799 followed by Ulster at $779,418.

(Continued from page 8)

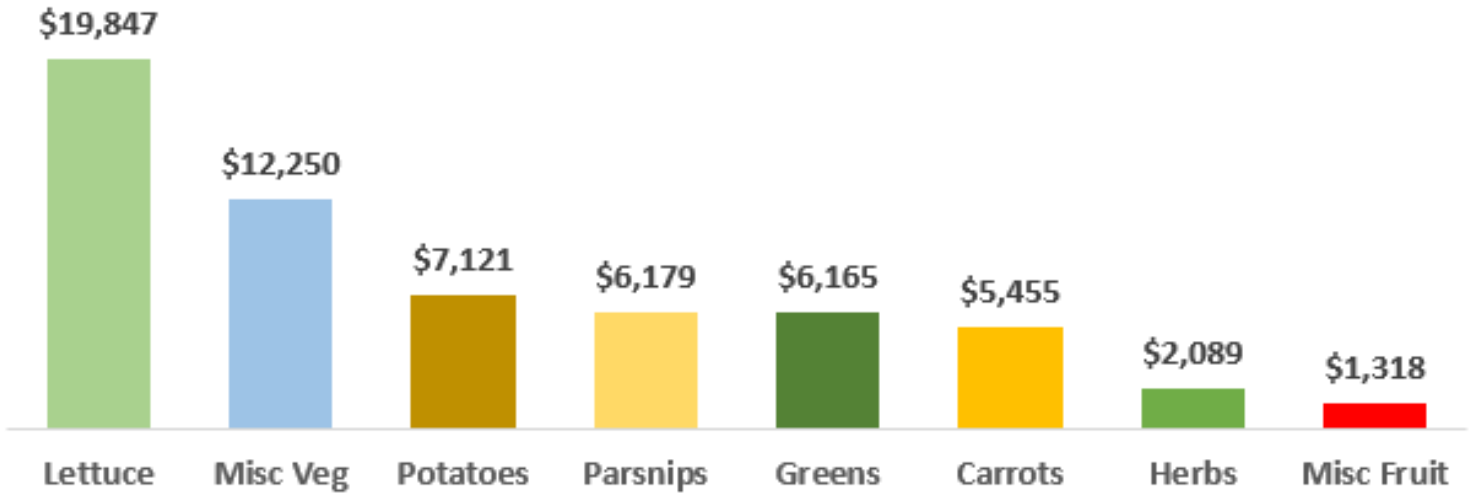
Maple Sap: Maple sap was a late addition to the CFAP1 program, but apparently maple producers were organized and ready to apply. It is also likely that many maple producers applied to CFAP1 for other commodities. NYS received $873,368 in CFAP1 payments for maple sap. The top county in NYS and in the ENYCH region was Clinton with **$**363,997 in maple sap CFAP1 payments.

Dry Onions: NYS growers received $995,155 for CFAP1 payments for dry onions. The top county in NYS was Oswego with $324,684 in CFAP1 payments, but they were followed closely by the top county in the ENYCH region, Orange County, whose growers received $305,087.

Squash: NYS farmers received $2,055,284 in CFAP1 payments for squash. Western NY dominated in this category. The top county for CFAP1 payments was Monroe with $1,232,504. In our region, farmers in Columbia County received $40,549 in CFAP1 payments, distantly followed by Essex, Orange and Rensselaer, all with less than $20,000 in payments.

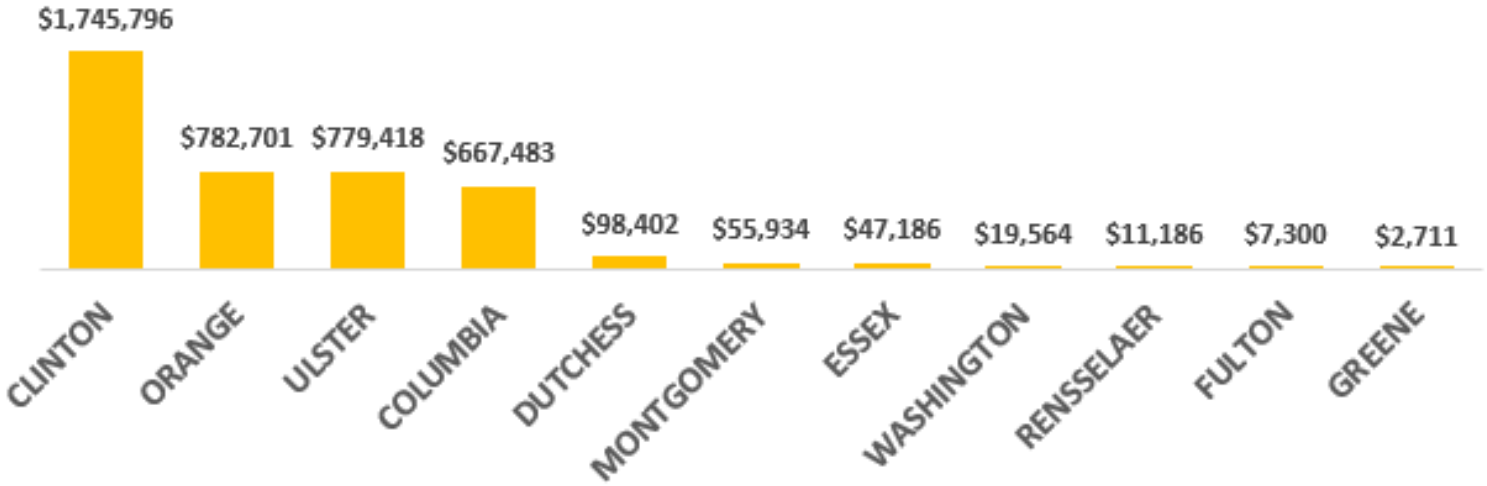
Farms in the 17 county ENYCH region received CFAP1 payments for a wide variety of other crops (Figure 2). The payments for other specialty crops tended to be small. Lettuce, which was widely grown and available in the early spring, received the most CFAP1 funding of the other crops, followed by potatoes and parsnips, all types of greens, and carrots. All other vegetables together accounted for $12,250 in CFAP1 payments in the 17 counties. Herbs brought in an additional $2,089. The only other fruit, besides apples, to receive CFAP1 payments in our region were pears and strawberries, and the payments were low.

Figure 2 CFAP1 Payments for Other Specialty Crops in the 17 County ENYCH Region



Finally, this analysis would not be complete without a county-by-county comparison of CFAP1 funding for specialty crops (Figure 3). Clinton County was the winner in our region, largely due to the number of growers who received CFAP1 funding for apples and maple sap. Based on these numbers though, there are likely to be growers who did not apply for CFAP1 funds but who were eligible.

Figure 3 CFAP1 Payments by ENYCH County (for Specialty Crops)



[1] Spinach, Dandelion Greens, Collard Greens, Swiss Chard, Kale, Greens-Others not listed

[2] Pumpkins, Bell Peppers, Beans, Bok Choy, Leeks, Beets, Brussels Sprouts, Cabbage, Rutabagas, Daikon, Beets, Garlic, Cabbage, Green Onions, Microgreens

[3] Cilantro, Parsley, Savory, Basil, Sorrel, Oregano, Sage, Dill

(Continued on page 10)

(Continued from page 9)

I would have expected to see higher CFAP1 payments in Ulster, Orange, and Dutchess Counties, for example. Relatively few growers in the Capital District seemed to have received CFAP1 funding. The timing of the program (summer) and the changing eligibility criteria – many crops were added late or had the payment levels change during the program – may have decreased the number of applicants.

What's Next? CFAP2!

CFAP2 is available until December. This is a program that is **EVEN MORE** accessible than CFAP1. Pretty much every specialty crop is eligible, and your payment is a percentage of your 2019 sales. From all accounts, producers who are applying are receiving their funding right away. USDA FSA has made the application process about as easy as it can be. Even if your payment will be small – how hard do you have to work to earn $1000? Look at the application and see if your effort to reward ratio is sufficient. If you have a relationship with USDA already, it should be a piece of cake. If you don't, now is a good time to develop one.

Strategies for Dealing with Pesky Perennial Weeds

Mike Basedow, CCE ENYCHP and Dr. Lynn Sosnoskie, Cornell School of Integrated Plant Science
Edited for Berry Audience by Laura McDermott - Source: ENYCH Tree Fruit News, April 2020

Perennial weeds can be particularly difficult to manage in perennial fruit plantings. Perennial weeds can live for multiple years because of their large root systems or other underground storage structures, such as bulbs, tubers, and rhizomes. These structures facilitate the spread of perennials in orchards, although many species also produce seed that support dispersal.

Perennial weed control begins well before planting, while the field is still fallow. This timing allows farmers to use deep, frequent cultivation and herbicides to deplete nutrient reserves stored in the weed's underground structures. Farmers should follow cultivation with establishment of a strong, between-row sod that will prevent weed break-through.

Cultural tactics, such as making sure to plant in well drained soils, and using organic or plastic mulch and/or landscape weed barrier will also help deter weed encroachment. Still, weeds do find their way, and because it's so hard to use cultivation in a perennial planting, we often rely on herbicides for ongoing weed control. Let's review plans for a few of these perennial weed pests.

Yellow nutsedge (*Cyperus esculentus*) can be differentiated from grasses by its triangular stems. It has three small leaves at the base of each flower, which are yellow/gold in color (Figure 1A). Yellow nutsedge produces tubers, which are its underground food storage systems, at the end of rhizomes (Figure 1B). These tubers can persist in the soil for up to five years. Multiple daughter tubers can develop from a single parent plant. Nutsedge is difficult to control because it has large energy reserves as well as a prolonged sprouting period.

Figure 1. Yellow nutsedge has triangular stems and yellow/gold flowers (A). Nutsedge produces tubers that aid in its dispersal (B). Photos: Dr. Lynn Sosnoskie.

Once the planting is established, control programs will need to rely on well-timed herbicide applications. If nutsedge exists, you might consider using pre-emergence applications of dichlobenil (Casoron, WSSA Group 20) or multiple applications of halosulfuron (Sandea, WSSA Group 2).*

Casoron CS is a microencapsulated liquid product that should be applied to the soil surface from late fall through early spring. It can suppress yellow nutsedge (and other perennial species) and control many annual weeds. The soil should be moist at the time of treatment or else the application should be followed by a rain event so the product is activated. Germinating or emerging species at/below the treated zone will be affected; small (< 2" tall), existing weeds with roots in the herbicidal barrier may also be injured or killed. Casoron 4G is a granular product and can be applied as a soil treatment only between November 15 and February 15 because of volatility loss. Note that Casoron 4G can only be used for nutsedge control in non-crop areas of the orchard.

Sandea can be applied as a single broadcast application to the orchard floor on either side of the row when nutsedge is fully emerged in early to midsummer. Alternatively, two, sequential applications can be made; the first treatment should occur when the initial nutsedge flush has reached the 3-5 leaf stage while the follow-up application would be made during secondary emergence. Pre-emergence applications of halosulfuron will likely only suppress nutsedge. Because nutsedge is not a grass, it will not be managed using WSSA Group 1 herbicides.

Canada thistle (*Cirsium arvense*) is a broadleaf perennial. Canada thistle's root system is extensive; its roots can reach up to 17 feet across and 20 feet deep. Canada thistle forms a rosette of spiny, lobed leaves (Figure 2A), which will emerge from its roots during both a spring and fall growth flush. Canada thistle also spreads through seed dispersal. Seeds germinate about the same time as the spring flush. A single large seed head can produce up to 5000 seeds (Figure 2B), and a new plant can sprout from as little as a single inch of root segment.

(Continued on page 11)

(Continued from page 10)

Figure 2. Canada thistle rosette of spiny lobed leaves (A), flowers, and seed head (B). Photos: Dr. James Altland, Oregon State University.

Clopyralid (Stinger, WSSA Group 4) is an excellent post-emergent material for control of mature thistle.** Stinger should be applied to Canada thistle from rosette to bud stage although it cannot be applied during apple bloom. Clopyralid should also be applied to thistle postharvest, but prior to the first frost while the plant is still actively growing and healthy.

Mowing while the plant is flowering will keep Canada thistle from setting new seeds, but no mowing should be done for at least ten days following a systemic herbicide application to ensure chemical movement out of the treated tissues.

Field bindweed (*Convolvulus arvensis*) is a perennial broadleaf that spreads by both seed and through its large, creeping root system (Figure 3A). Bindweed's tap roots, which can grow upwards of 30 feet below ground, facilitates its persistence and tolerance of environmental stress and most weed control tactics. Bindweed has arrowhead-shaped leaves that are simple and alternate with a flattened base and a rounded tip (Figure 3B). It has white or pink, funnel-shaped flowers that are one to two inches across (Figure 3C). The species can be confused with another perennial bindweed, Calystegia sepium (hedge bindweed), which produces larger leaves (with a deeply lobed base and pointed tips) and flowers.

Figure 3. Field bindweed has a creeping root system (A), produces arrowhead-shaped leaves that are simple and alternate (B) and has white or pink, funnel shaped flowers (C). Photos by Dr. Lynn Sosnoskie.

Bindweed is best controlled prior to planting through frequent cultivations and systemic herbicide applications. Once the orchard is planted, spring applications of dichlobenil (Casoron, WSSA Group 20) can provide pre-emergence and post emergent seedling control when seedlings are small. Again, be mindful of the timing limitations associated with these products, as spring applications must be made between Nov 15 and Feb 15 for the 4G formulation, and when air temperatures are less than 70°F and before seedlings are two inches tall for the CS formulation. Pre-emergence applications should be followed up with frequent, additional spot treatments of a systemic product. Mowing is rarely an effective strategy for controlling field bindweed as the prostrate vines often grow under the height of a mower deck.

Dandelions (*Taraxacum officianale*) propagate by seed and through shoots that grow from the thick, fleshy roots. Dandelions form a rosette of lobed, irregularly toothed leaves close to the ground (Figure 4A), and produce large, yellow flowers (Figure 4B). Dandelions are characterized by their globe-like, white seed heads; individual seeds possess a feathery pappus that allows for wind-dispersal (Figure 4C).

Figure 4. Dandelions form a rosette of lobed, irregularly toothed leaves (A), produce large yellow flowers (B), and have globe-like, white seed heads (C). Photos: Dr. Lynn Sosnoskie.

Dandelions are best managed through the use of herbicides, as their low growth and large root systems make mowing ineffective. Pre-emergence products for dandelion seedling control include: dichlobenil (Casoron, WSSA Group 20), flumioxazin (Chateau, WSSA Group 14)**, and terbacil (Sinbar, WSSA Group 5). Some of these products will also provide some partial post-emergence suppression of seedlings, including dichlobenil (Casoron). Systemic auxinic products like 2,4-D and clopyralid (Stinger) may provide partial control of the perennial dandelion plants when used following harvest, prior to the first frost.

Always read the label before choosing a product and making an application. Each product has specific product use and tree age restrictions that are pertinent to your operation. Many herbicides can cause damage to trees if they come into contact with sensitive tissues; check labels regarding safe spraying requirements. While some pre-emergence herbicides can control small, emerged, annual weeds, a burn- down herbicide may be required to achieve complete vegetation control. Active ingredients vary with respect to their spectrums of control; reference product labels regarding tank-mixing recommendations. While we make every effort to provide up to date information, remember that ultimately the label is the law.

* Casuron and Sandea are labelled for blueberries in NYS. Only Casuron is labelled for bramble crops and neither are labelled for strawberries.

** Stinger and Chateau are labelled for blueberries and strawberries but not bramble crops in NY.

Important Information

Attention, Strawberry Growers!

We Need Your Help!

As part of a new Northeast SARE project "Advancing Strawberry Production in the Northeast", we want to learn more about the practices you use and the challenges you face in strawberry production on your farm.

Your responses will help us better understand the diversity of practices used in the Northeastern U.S. and Canada, and will help us design our research & outreach programs to provide the best resources for improving strawberry production on your farm! It should take approximately 15 min. of your time. To thank you for your time, you can be entered into a drawing to win fabulous prizes.

The survey is available here: https://unh.az1.qualtrics.com/jfe/form/SV_2nlFpEZhejOE0Pr

Food Safety & Wash/Pack Facilities

Monday, November 16, 2020 from 8:45am-1:15pm via Zoom

A well-thought out wash/pack facility can go a long way in improving produce quality, worker health and safety, and overall efficiency. But how can intentional design impact food safety? This virtual training will help farmers and workers understand the food safety risks present in wash/pack facilities and outline ways in which risks can be minimized. Topics that will be covered include:

- Common foodborne pathogens and routes of contamination on the farm
- Personal health and hygiene practices
- Key aspects of facility design including ergonomics, hygienic design, and layout
- Postharvest water management and sanitizer use
- Cleaning and sanitizing common wash/pack equipment

Register: https://cornell.zoom.us/meeting/register/tJ0pdeitpzopHddDRSBpt_dWf2eptEhenK0h or contact Robert Hadad, rgh26@cornell.edu, 585-739-4065.

Upcoming events from our collaborators at the University of New Hampshire:

Managing Stone Fruit Bacterial Disease Problems

Wednesday, Nov. 11, 2020 from 6-8 pm via Zoom

Meeting Agenda:

6 pm: Welcoming remarks—Jeremy Delisle & Olivia Saunders, UNHCE

6:10 pm: Peach crop insurance—Tom Smiarowski, UMass Extension

6:30 pm: Orchardists panel– Giff Burnap, Butternut Farm / Carl Hills, Kimble Fruit Farm / Kitt Plummer, Hazelton Orchard

7 pm: Dealing with stone fruit bacterial disease problems– Dr. Kari Peter, Penn State University

This program has been approved for 1.5 DEC recertification credits. To receive credits, additional webinar protocols are required, including 2-way video capability during the webinar. Contact Mike Basedow (mrb254@cornell.edu or 518-410-6823) prior to Nov. 6th if you are seeking DEC credits

To register: https://extension.unh.edu/events/managing-stone-fruit-bacterial-disease-problems-webinar

High Tunnels After Dark

Tuesdays, Dec 1, 8, and 15 from 5-7pm via Zoom

Join University of New Hampshire Extension for their virtual high tunnel conference on Tuesday evenings in December. Cost: $25 for the entire series, or FREE if you would like to present one slide during their grower innovation "lightning round." Pesticide recertification credits will be available for New England growers who attend live (NY DEC credits TBD; check back for updates).

Tues, Dec. 1. 5-7 PM. Keynote and Kickoff: Dave Chapman, from Long Wind Farm in East Thetford VT, will present: "Low tech tunnels to high tech greenhouses: choosing technologies that work for you", and "Important business considerations for tunnel producers".

Tues, Dec. 8. 5-7 PM. Diseases & Insects in High Tunnels: Cheryl Smith (UNH) presents "Diagnosing problems in high tunnels", and Anna Wallingford (UNH) and Cheryl Sullivan (UVM) present "Common and uncommon insect pests of tunnels and best practices to manage them".

Tues, Dec. 15. 5-7 PM. Soil, Pest and Crop Management in Tunnels: Jonathan Ebba and George Hamilton (UNH) present "5 tips to getting good spray coverage in tunnels", Becky Maden (UVM) and Bruce Hoskins (UME) present "Adjusted high tunnel fertility guidelines: how are they working in practice?", and "Varieties for high tunnels" will be presented by seed company representatives.

In the **Lightning Round**, presenters have one photo or slide, and present an idea in just three minutes. Maybe you have a favorite tool, and interesting technique for pruning, or a new crop or technology that you tried. To pitch your idea, please email becky.sideman@unh.edu.

To register: https://extension.unh.edu/events/webinar-high-tunnel-conference-session-1

The Label is the Law. Cornell Cooperative Extension and the staff assume no liability for the effectiveness of results of any chemicals for pesticide use. No endorsement of any product is made or implied. Every effort has been made to provide correct, complete, and current pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly and human errors are still possible. These recommendations are not substitutes for pesticide labeling. Please read the label before applying any pesticide. Where trade names are used, no discrimination is intended and no endorsement is implied by Cornell Cooperative Extension.

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.