Cornell University
Cornell Cooperative Extension
Eastern New York Commercial Horticulture

Berry News

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Spring Berry "To Do" List

All Berries: **Now** is the time to start thinking about tissue testing. This is best done for berry crops from now until mid-August. **See article in this newsletter for instructions.**

I've never seen **potato leafhopper** as bad as this year, which is counter intuitive because leafhopper is usually associated with hot, dry years. This pest has been found in almost all fields of strawberries and raspberries – and some plantings are stunted by them. Reports from all over New England, New York and southern Canada report that damage is widespread, and maple sugar operators and landscapers say that trees are not immune to these insects. Provado and Assail are two chemicals that will help control leafhopper. Please read the article about these pests in this newsletter – and take a look at your own plantings.

Spotted Wing Drosophila (SWD) continue to increase in population, which in turn seem to be linked to moisture – both due to rainfall, but also humidity due to weed growth, excess plant growth etc. Very difficult situation on some farms as rainfall has been almost daily resulting in sprays being washed off.

Given the number of counties throughout the state where the pest is being detected, the insect is very likely in all eastern NY counties. To check on current statewide distribution, click on the **2017 SWD Distribution Map**.

ALL ripening berry crops are at risk! If SWD is in your area and susceptible fruit is coloring, including late bearing June strawberries, blueberries, summer red, yellow and black raspberries, blackberries, elderberries, day neutral strawberries, etc., **insecticide treatments should begin**.

When weather patterns favor SWD population expansion – cloudy and high humidity – insecticides should be applied every 5-7 days. Choose the most effective insecticides

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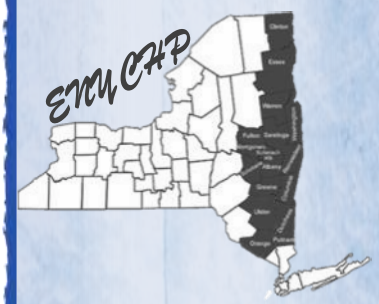

with pre harvest intervals (PHI) that work for your picking schedule. Rotate insecticides according to their modes of action to prevent the development of insecticide resistance. Insecticide sprays will kill or suppress SWD adults, thereby reducing egg laying and slowing population buildup.

For the current list of NY products for **berry crops**, click here. There is a separate page for each berry crop, and the materials and specific details are different for each one, so please read carefully.

Cultural controls for SWD

In addition to insecticides, there are cultural controls that should be taken to reduce the impact of SWD. Many of these things can be done now, including:

- Canopy reduction – make sure to prune brambles and blueberries appropriately and strip lower leaves on brambles to reduce humidity.
- Weed the planting – this helps reduce preferred SWD habitat and improves spray efficacy.
- Although this year irrigation might be a moot point – examine irrigation equipment to make sure there are no leaks.
- Clean pick and don't leave dropped fruit whenever possible. Good sanitation will reduce egg laying opportunities.
- Regularly inspect fruit in the planting for symptoms and signs of SWD. For information on techniques, click here.
- Refrigerate berry fruit immediately after picking, and keep it cooled until purchased.

Mummyberry – note the pinkish coloring and the shriveled, ribby "pumpkin" look to the berries.

Anthracnose – note the soft shriveling with orange-pink sporulation

Blueberries

- Blueberry set still looks great and mid-season varieties are sizing nicely.
- **Mummyberry** will be on the "to do" list for pest control for several farms. It's not a region wide problem, but it's something that cannot be ignored next year. I'm seeing mostly fruit strikes, very few twig strikes noticeable now. If any indication of disease you will need to spray Indar or other fungicide during blossom next year.
- **Anthracnose** is also showing up in many farms. This disease is also one to stay ahead of, because damage can be wide spread in a planting. Again – bloom sprays next season.

Cherry and/or cranberry fruit worm are a problem. This one is a bit of mistake. We have a trap up in one location, and possibly due to a problem with the lure – we hadn't caught any moths. Please see the article in this week's newsletter for more information.

Strawberries:

- June bearing strawberry harvest is winding except for Malwena which is susceptible to SWD infestation.
- Leafhoppers – especially in new JB plantings and DN's – are a huge problem this year.
- Day Neutral strawberries are just beginning to ripen. If the nights' stay cool we could see a banner year.
- Stay on top of scouting DN's - look for disease – especially leaf spot, but also crown anthracnose. Tarnished plant bug, thrips, leafhoppers and mites are insect pests of these berries. SWD can also be a real problem – pick clean and refrigerate berries immediately.

Ribes:

- Currants and gooseberries mostly done. From all reports it's been a good year.
- Tomato ringspot virus (ToRSV) and/or currant yellows virus has been reported in several plantings. Check last issue for photos and more information. I have not had the virus verified so am not sure if it's vectored by nematodes or another insect. If you have a There is a lot to be learned about how serious this disease is for Ribes – most people I talked with are not problem in your planting – please call.

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Brambles:

- Floricane brambles are struggling a bit this year. Harvest has started, but for the most part seems below average in quantity and quality – especially the black raspberries. Poor pollination may be part of the issue.
- LOTS of leafhopper damage!!!
- I anticipate cane blights due to the wet weather – but I haven't seen any yet.
- Plants in wet areas and/or with heavy soil are collapsing due to Phytophthora. Raspberries DO NOT like wet soil. So no mulch, raised beds when necessary, don't overwater etc. This is a tough year for them – just too much moisture.

Fruitworm in Blueberries

Laura McDermott, ENCYP

We are seeing some problems with blueberry clusters strung together with webbing or frass or both in a few blueberry plantings. It is difficult at this time to find larvae as many of them may still be in the fruit, but picker complaints may increase. The pest in question is fruit worm either cranberry (*Acrobasis vaccinia*) or cherry (*Grapholita packardi* Zeller). Both insects have very similar life cycles and the damage is similar, but the chemical control materials differ slightly – unfortunately there is little that can be done at this stage of the life cycle to control these pests.

The adult moths lay their eggs in late May and early June at the base of the newly set fruit. Larvae of both species attack green fruit. There are sex pheromones available for both pests and monitoring should begin in late April to optimize spray timing. This year there were some challenges with the pheromone, and failure to detect flies were abundant in the northeast and Michigan. Spray timing can be well determined using trap catches and then monitoring GDD's.

Usually two sprays are necessary the first at petal fall and the second 10 days later. Organically approved materials include Entrust and Dipel DF. Other materials include Azasol, or Molt-X, Sevin, Malathion, Imidan, Esteem and Delegate, among others.

Check the Cornell Guidelines for more control information and visit this site for fact sheets about fruitworms: https://blogs.cornell.edu/newfruit/files/2017/01/bbfruitworm-1kqao28.pdf

For further information about blueberry fruitworms, see this article which also talks about the possibility of lowering population of adults by using the pheromone traps as a lure – basically "trapping out".

http://nyshs.org/wp-content/uploads/2016/10/Problem-Insects-in-Blueberry-Fruit.pdf

Fruitworm frass surrounding larvae exit hole

Tissue Testing– The Best Way to Inform Fertility

Bernadine Strik, Oregon State University

Excerpted from Nutrient Management of Berry Crops, Bernadine Strik, Oregon State University, May 2013 version.

Leaf tissue analysis provides information on the nutrient content of the plant - sometimes even when soil nutrient content is adequate, the plant is not able to take up the nutrients required (e.g. soil pH is incorrect; dry or saturated soil; weather; cultural issues such as overcropping, irrigation, etc.). Tissue standards have been developed using results from research experiments and estimated from large databases that relate tissue nutrient levels to good yielding fields for each crop (OSU). Well-designed research experiments are needed in many berry crops to improve tissue standards. In all berry crops, tissue nutrient concentration changes throughout the season; for example, leaf N concentration (%N) is always highest in the early season and lowest before leaf fall in autumn. The recommended time of sampling leaves for tissue analysis is related to a period

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of time when the leaf nutrient concentration is most stable.

Tissue nutrient levels will also change with location or age of the leaf and what type of leaf it is. For example, in caneberries results from floricane leaves will be different than primocane leaves; in strawberry, results from leaves during fruiting will be different than leaves after renovation; in blueberry, leaves from whips will have different nutrient levels than those from lateral shoots.

Always sample the recommended tissue at the recommended time (Table 2).

Table 2. Recommended tissue and time of sampling for berry crops.

Crop	Sample time	Tissue to sample	Comments
Strawberry	After renovation (~ mid- to late-Aug.)	Most recent fully-expanded leaves	More frequent leaf sampling may be needed for DN's
Floricane-fruiting blackberry	late-July to early-August	Primocane leaves ~1 ft from tip	
Primocane-fruiting raspberry leaf	late-July	Most recent fully expanded primocane	
Blueberry	late-July to early-August	Most recent fully-expanded leaves	Avoid whips (sample from laterals)

When collecting tissue samples:

- Sample at the correct time for the crop; published tissue standards are NOT correct if sampled at any other time of the season.
- If you are seeing problem plants at any time of the year, collect leaves from affected and "normal" looking plants and compare tissue analysis results for clues as to the cause.
- Collect the right tissue; for example, there are no standards for fruiting lateral leaves in caneberries.
- Do not wash leaves as some nutrients can be leached with washing. Note that any micronutrients in fungicide applications, foliar nutrient applications, and dust on leaves can lead to "higher" than typical nutrient results (keep records).
- Sample cultivars separately. While there is little data on cultivar specific standards, we do know that cultivars differ - one reason may be fruiting season. Research is underway to try to address this.
- Keep excellent records on crops and blocks sampled, time of year sampled and any associated yield or fruiting season information. It will be important to look for trends over time.
- In perennial crops, tissue analysis and observations of plant growth are best used to plan for and adjust nutrient management programs for the following year.
- Do not use just tissue N concentration to adjust N fertilizer programs. Use recommended fertilizer application rates as a starting point and adjust programs based on observations of plant growth and tissue N.
- Be aware that tissue nutrient concentrations that are below or above the recommended levels may indicate a soil problem (e.g. high tissue Mn may mean soil pH is too low).

Agro One is affiliated with Cornell University researchers. To access the submission form, visit: http://dairyone.com/analytical-services/agronomy-services/about-agro-one/

Potato Leafhopper and Berry Crops

Kathy Demchak, Penn State

Posted: July 1, 2016 in the Vegetable, Small Fruit and Mushroom Production Gazette, Penn State

Damage from potato leafhoppers is showing up in strawberry and raspberry fields, and by some accounts, seemingly came out of nowhere. This pest moves up from the South in the spring, and by early summer is established in a wide range of crops in the Mid-Atlantic region.

When fields are mowed or even just weeded, leafhoppers that had been present in them may quickly find a home in a different location. Often this is a strawberry or raspberry planting. Usually the first noticed symptom of potato leafhopper presence is a downward curling of the strawberry or raspberry leaves with yellow discolored areas along the leaf edges. This symptom is caused by feeding injury, as the leafhoppers inject a toxin into the plants' leaves. With raspberries, primocane elongation may slow enough that plants appear to stop growing. Injured leaves

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Potato leafhopper early-instar nymph. Photo: K. Demchak

may appear to be more closely spaced along the cane than usual.

Even though a high proportion of the leaves might be affected, it is often surprisingly difficult to find the leafhoppers themselves, which are tiny light green or yellowish-green wedge-shaped insects. The adults fly quickly when disturbed, so sometimes you can brush the foliage to see whether small light-green insects fly out that you can then try to track and identify. The nymphs however, cannot fly, and so are often more easily found. Adults or nymphs are found on the leaf undersides rather than the top, and will usually move sideways when disturbed.

Leafhopper damage on raspberry. Photo by K. Demchak

Damage is often most serious in new strawberry plantings, where the plants have few leaves yet and are dependent on a small amount of foliage. If the plantings are drought-stressed, growth slows even more. Damage then accrues on leaves which become marginally able to translocate needed photosynthates. This is just one reason why it is important to make sure that sufficient water and nutrients are available to the plants, and that leafhoppers are controlled with an insecticide if necessary.
Be sure to minimize toxicity to beneficials by choosing safer materials and apply them at times when bee exposure will be minimized. A number of insecticides are available that are effective.

Potato leafhopper damage in first year strawberries. Note the distortion and yellow discolored areas along the leaf edges.

Photo: L. McDermott

What is Your Farm Strategy?

Elizabeth Higgins, ENYCHP

How do you make decisions about what to grow, what services to offer your customers, or what new markets to enter? Do you have a strategy?

A farm business strategy matches the farm's capabilities with the opportunities in the marketplace. It determines how a farm will compete with other farms for business and should inform the decisions that you make for investments and adding new products and services.

Most farm business strategies will fall into one of these broad categories

Cost differentiated/cost leadership – Your farm provides a high-quality product or services (compared to competitors) at a low or competitive price. Most farms fall in this category. Farms in this category are successful by carefully managing costs and making very strategic decisions about what products and services they add. This strategy recognizes that what you produce on your farm is produced by many other farms, and how you distinguish your farm to a buyer is the quality, and service you offer at a reasonable price point – given what you are offering.

Product differentiated – You offer unique products or services that appeal to your customers, and that they cannot get from other farms. These

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farms can often charge higher costs but they need to be able to keep customers who perceive that they offer a different product. Successful farms in this category take advantage of some barrier to entry that helps to keep competitors out. Examples are offering Halal or kosher certified local meat, raw milk, or organic production of crops where there are not a lot of organic producers. The various certification and legal barriers help to reduce competition to those farms who can meet the requirements.

Knowing your strategy can help you make better management decisions.

Who are our most important customers, and how can we be competitive and deliver value to them? Even within price differentiated farms some farms excel in quality of their produce, some excel in the service they provide and some excel in price. What do your customers value?

What substitute products exist in the marketplace, and how do they differ from our product in terms of features, price, cost, and quality? For product differentiated farms, this will help you see when you may need to switch your overall strategy to being cost differentiated. You see this in organic production, where as more and more growers become organic certified, their products are less differentiated to consumers.

What is our farm's most critical capability? Is it reputation/brand, production capacity, or marketing? How can we leverage it for new strategic initiatives? Does your capacity match the needs of your market?

Adapted from Horngren, Charles T. (2015) Cost accounting: a managerial emphasis Charles T. Horngren, Stanford University, Srikant M. Datar, Harvard University, Madhav V. Rajan, Stanford University. Fifteenth edition. Pearson 938p.

2017 Weather Table—The weather information contained in this chart is compiled using the data collected by Network for Environment and Weather Applications (NEWA) weather stations and is available for free for all to use. For more information about NEWA and a list of sites, please visit http://newa.cornell.edu/ This site has information not only on weather, but insect and disease forecasting tools that are free to use.

	2017 GDD Weekly Total 7/11-7/18	2017 GDD Season Total 3/1-7/18	2016 GDD Season Total 3/1-7/18	2017 Weekly Rainfall(inches) 7/11-7/18	2017 Total Rainfall (inches) 3/1-7/18	2016 Total Rainfall (inches) 3/1-7/18
Albany	162.5	1370.5	1399.0	1.63	20.59	13.46
Amsterdam	151.6	1168.6	NA*	1.13	26.58	19.51*
Castleton	142.3	1337.2	1369.1	1.58	19.99	15.54
Eagle Bridge	153.7	1237.1	NA*	1.93	22.34	NA*
Glens Falls	134	1174.5	1242.0	1.56	20.54	13.67
Griffiss	148	1125.5	1146.0	2.6	25.83	20.32
Highland	167.4	1422.1	1479.4	2.27	18.86	14.72
Hudson	164.9	1422.6	1465.6	2.43	20.83	23.73
Marlboro	NA*	NA*	1405.7	1.55	15.91	16.67
Montgomery	177.5	1399.5	1401.0	1.14	14.92	15.87
Peru	121.6	1080.9	1142.4	0.85	16.42	9.18
Red Hook	164.4	1340.7	1393.0	1.26	16.09	12.83
Willsboro	127.4	1088.1	1123.6	0.01	11.47	12.53
N. Adams, MA	140.5	1086.0	1107.5	1.79	19.5	14.83

*NA = data not available
*Amsterdam 2017 rainfall is from 4/1/2017 - 7/18/2017

Dinner and a Credit

Efficient Use of Adjuvants and other Spray

Thursday, August 3, 2017
6:00 pm – 8:00 pm

DeStefanos Old Erie
7 West Main St. #11, Middletown, NY 10940
Full buffet dinner & dessert included

Dinner will begin promptly at 6:00 pm
and Program at 7:00 pm
The presentation will focus on the selection and use of spray aids that improve spread, stick, efficacy and efficiency of pesticides.

Speaker:
Brooks Barefoot is a Product Manager for Helena Chemical Company and works directly with the proprietary product line which includes: Adjuvants, Bio-Science, Proprietary Fertilizer, Nutritionals, Seed Treatment, CRN, and VAP. After graduating North Carolina State University in 2009, with a degree in Agriculture Business Management, Brooks began his career working in sales as a Territory Sales Manager. Since April 2015, he has worked in his current role with Helena covering the northeastern territory.

1.0 Core NYSDEC Recertification Credits approved

Fee: Received by July 24: $40/person
Received after July 24/at the door $55/person
Sorry, no refunds. If you cannot attend, please send someone in your place.

Questions?
Call 845-344-1234 or email mru2@cornell.edu

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Efficient Use of Adjuvants and other Spray Aids

Received by July 24: $40/person
Received after July 24 /at the door $55/person
Sorry, no refunds.

Enclosed is a check for $_____

_____
Name of attendee(s)

_____
Business Name

_____
E-mail address

_____
Address

_____
City State Zip

_____
Daytime Phone

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Register online at cceorangecounty.org or call 845-3441234 to pay with credit card.

Return form and fee to:
Cornell Cooperative Extension Orange County
18 Seward Ave., Ste. 300, Middletown, 10940

Calendar of Events

One last chance for Ag Business Tuesdays this Summer – free farm business technical assistance.

The Cornell Cooperative Extension Eastern NY Commercial Hort Team, in collaboration with CCE County offices, is offering free farm business technical assistance appointments this summer on Tuesdays at various locations in our service region.

Topics for consultations can include: labor regulations and management, risk management (insurance and best practices), land use regulations and zoning, other food-regulations (labels, processing), personal finance and farm transition planning, tax and other grant and incentive programs, bookkeeping and recordkeeping, pricing products and market channel assessment, contract terms and negotiation, and loan programs and financing decisions. At your appointment we can either help to answer your questions or help direct you to the right resources.

- July 25 CCE Warren County, Warrensburg NY

Appointments are in 1.5-hour increments starting at 9:00 am. In some cases, early morning or early evening appointments may be available. Pre-registration in advance is required - we cannot accommodate walk-ins. If you can't physically come to the office, we can also schedule an appointment by phone or a video conference.

To register go to: http://bit.ly/2oyaGpM or call (518) 949-3722 and leave your name, preferred date and preferred time and the best way to reach you. Liz will also be doing farm visits in the counties on the following Wednesday. If you would like a farm visit, contact her directly at emh56@cornell.edu.

August 29th, 5-7 pm – Using weather and climate information and protected culture to perfect berry crop production

The Berry Patch, 15589 NY-22, Stephentown, NY 12168.

Join Cornell, NEWA and MESONET specialists to learn first-hand how berry crop production can be enhanced with protected culture equipment, weather apps and localized information. Look at exclusion netting and insecticidal lures used in research. Observe non-chemical weed control options for day neutral production.

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