Cornell Cooperative Extension | Eastern NY Commercial Horticulture Program

BERRY NEWS

Berry 'To Do' List

-ALL CROPS-

- Spotted Wing Drosophila have been found in all regions of NY. Monitor fruit closely using the salt water flotation test (directions included in this newsletter). All soft fruit is at risk including strawberries, gooseberries, currants, cherries, blueberries and of course blackberries and raspberries. Pick cleanly and refrigerate promptly. Spray on a weekly schedule.
- Birds will begin to do more damage as the weather gets hot and dry. Put up nets in berry plantings before the berries begin to color. Try to identify birds that are primary problems. Bird control solutions vary according to species. Check out this list of suppliers of bird control equipment and technology.
- Foliar leaf analysis should be done in late July or early August.

-BLUEBERRIES-

- Blueberry harvest started last week in the Hudson Valley and just began here in the Capital District. Size looks great - a testimony to how much water is needed to really grow big bushes and big fruit.
- Look for leafrollers and leafminers.
- Blueberry aphids can affect growth, future production and can transmit viruses. Scout underside of leaves and new growth for pale green aphids - focus on lower part of the bush.
- Japanese beetle, Asiatic garden beetle and Oriental beetle can damage on leaves and fruits (adults) and grubs can damage roots.

Bird Flock deflector sold by

www.BirdBusters.com

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- Blueberry tip midge, Dasineura oxycoccana, has been seen in some areas this year. Hatching larvae (maggots of a small fly) feed in the terminals causing the foliage to curl and deform. Watch for blackened tips of unfolding leaves of the terminal growth. See photo this page.
- Blueberry maggot flies have been found in traps last week. Now is the time to spray to control that pest. Malathion, Lannate, Assail, etc. can be used to help control this pest.



Blueberry tip midge. Larvae is circled. Adult inset. Photos: Washington State University Cooperative Extension

-RASPBERRIES & BLACKBERRIES-

 Blackberry orange rust is sporulating. Remove the infected plant as this disease is systemic. Use Nova, Pristine or Cabrio to protect uninfected plants.



Orange Rust—Early symptoms on left. Sporulation on underside of leaf on right. Photos: Ohioline, Ohio State University Extension

- Scout for crown borers and cane borers, both of which may be causing cane collapse.
- Scout for twospotted mites especially if you have raspberries in tunnels, although this hot, dry weather is just what they love in all of the areas.

-STRAWBERRIES

- Renovate June bearers as soon as picking finishes. See the article in this newsletter.
- Leafhopper damage especially on new plants, can really slow a planting down. Make sure that you are monitoring this, and take special care if fields border hay fields.



Leaf hopper damage on strawberry. Note the yellow discolored areas along the leaf edges. Photo: Kathy Demchak, Penn State University

Day Neutrals planted this year are beginning to fruit. Make sure they are getting plenty of fertilizer – between 3-5# of actual N per week – moving towards 5-7# N as the fruit starts to ripen. Some ground doesn't need as much Nitrogen, but you should be watching the plants and recording yield to determine the best rate for your soil.

Use Salt Flotation to Check for SWD

Dr. Juliet Carroll, NYS IPM



Three Larval Instars 5-7 days

The three instars of SWD will emerge from fruit immersed in a salt solution. The smallest instar is about 0.5 mm long, the largest about 2 mm long. Effective use of salt flotation will help you determine if your fruit are infested with SWD and if your spray program is working. It also will give you a perspective on what your customers may find when they take the fruit home to eat fresh or to make pies, jellies, jams and preserves.

I learned that variations on the salt flotation method helped a couple NY blueberry growers decide when to close this season. After a bad 2017 SWD

season, when many NY blueberry growers suffered significant crop loss and shut down early, it was time to take action to monitor their fruit. Here are their methods.

Grower 1

We analyze a batch of berries picked off bushes and a batch gathered that have fallen to the ground. Blueberries are collected randomly across our 5-acre patch. We test batches of 20-30 berries from these two sources separately and then compare.

Mix a solution of one gallon of water to one cup of salt. Place collected blueberries in two separate, labeled bags. Slightly squeeze the berries to help release larvae. Some say to give it about an hour, but in most cases, if larvae are present, they will show up in the solution as early as 15 minutes. Of course, you will want to use a magnifying device such as a jewelers loop or magnifying glass. You will see small white larvae if infestation is present.

Grower 1 results in 2018:

Aug 08: negative, both from bushes and on the ground.

Aug 10: negative, both from bushes and on the ground.

Aug 11: positive, both from bushes and ground, but more pronounced with the latter.

In 2017, at least once, fruit tested positive for berries that were on the ground, but negative when picked from the bush.

Grower 2

The salt flotation method we use is basically the same as the method demonstrated at the SWD workshops in 2014-2015. But instead of pouring the salt solution into a low tray and visualizing larvae over a black paper with a hand lens, we pour the solution through a very fine stainless steel mesh permanent coffee filter and check for larvae under a dissecting microscope. It's faster overall, and much easier to find the hard-to-see 1st instar larvae (probably to my detriment, since in the past I could ignore what I couldn't see).

We collect 100 berries randomly from throughout the planting. These are covered with salt solution (1 cup salt in 1 gal water) in a plastic bag. I don't bother pressing on the berries to crack the skins

as they suggest, but gave them plenty of time to exit on their own (at least an hour, usually 2 or more).

Grower 2

2018 results,

percent fruit

unsprayed

with larvae, in



Small, thread-like larvae are easier to see when viewed against a dark background. Photo: OMAFRAChecking fruit for SWD larvae.

blueberry planting:

Jul 26: 1.5% Aug 3: 4% Aug 9: 16.5%

Aug 11: 30%

Aug 13: 78% - in two days, the SWD numbers rose dramatically!

In all cases, collect what appears to be sound, perfect fruit to test for SWD infestation using salt flotation. SWD entrance and exit holes in fruit are less than half a mm in diameter and practically invisible.

I hope these two growers' experiences using salt flotation will motivate you to monitor your fruit in this way to check for SWD infestation.

Strawberry Renovation 2019

Laura McDermott, CCE Eastern NY Commercial Horticulture

(Edited from the original printing in UMASS Berry Notes, Vol. 17, No.9, July 8, 2005)

Despite a relatively short season, strawberry yield and fruit quality was overall very good this year. No frost in most areas resulted in king blossoms that turned into very large fruit and the rain, while making it stressful, didn't result in abnormal rates of Gray Mold

Renovation should begin as soon as possible after harvest is finished. If temperatures are in the low 80's or below, and if we get some rain, then you should feel confident when using 2,4-D and mowing the berries. If it gets really hot and dry, make sure you put out plenty of *(Continued on page 4)*

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water so that plants regrow leaves quickly. If the plants take too long to regrow it will weaken them significantly and they'll have trouble making it through the winter.

Mowing plants will also help dry up fruit which will reduce the amount of fruit where SWD can lay eggs. This is a very real concern this year as many locations have trapped SWD for nearly a month. I would prefer to see a protectant spray on fruit that will be harvested rather than spraying it on fruit that is past market prime.

Renovation tips:

1. **Begin with weed control**. Use 2,4-D to control annual broadleaf weeds ideally right after harvest. If grasses are a problem, use Poast, but don't tank mix the two herbicides. Read the label carefully as plant injury can occur with misapplication of 2,4-D.

2. Mow strawberries just above the crowns 3-5 days after herbicide application. Be careful not to damage crown by mowing too low.

3. Fertilize the planting. The main goal is to deliver nitrogen to help re-grow the canopy. Nitrogen should be applied at 25-60 lbs/acre, depending on vigor and basic soil fertility. Split applications (one now and the rest in 4-6 weeks) are better than a single fertilizer application. This gives plants more time to take up the nutrients in the fertilizer. A leaf tissue analysis (recommended once the canopy has regrown – see article this issue) is the best way to fine-tune your fertilizer program. This will tell you what the plants are actually able to take out of the soil and what nutrients are in sufficient supply or not.

4. **Subsoil!** This will be very important this year as constant saturated soil has become compacted where tractor and picker traffic has been heavy. Subsoiling between rows will help break up compacted layers and provide better water movement. Subsoiling may be done later in the sequence if necessary.

5. Narrow rows and cultivate between rows. Reduce the width of rows to 12-18 inches at the base. More berries are produced along row edges than in row middles. Wider rows lead to lower fruit production (yield and quality) and increased disease pressure. Narrow rows also give better sunlight penetration, air circulation, spray coverage, and over-all fruit quality. Use a rototiller, multivator, or cultivator to achieve the row narrowing. Work in the straw between the rows and try to throw 1-inch of soil on top of the rows at this time to stimulate new root formation on established crowns and new runners.

7. **Post-renovation weed control**. Pre-emergence weed control should begin immediately after the plants are mowed and the soil is tilled to narrow the crop row. Apply half the annual rate of terbacil (Sinbar at 4 oz/acre). You must mow strawberry plants first to prevent plant injury. If strawberry regrowth has started, you could really damage plants if you apply Sinbar. Sinbar should not be used on soils with less than 0.5% organic matter or on reportedly sensitive varieties such as Guardian, Darrow, Tribute, Tristar, and possibly Honeoye. Devrinol at 4

Ib/acre or Dacthal at 8- 12 Ib/acre can be applied at this time instead of Sinbar . Dacthal is preferred over Devrinol if the planting is weak. If Sinbar is used, apply Devrinol at 4 Ib/acre 4 to 6 weeks later to control winter annuals. Be sure to water in the Devrinol.

During the summer, Poast can be used to control emerged grasses. Shallow cultivation is also common during the summer months. If you have a bad thistle problem you can use Stinger in September to help clean that up if renovation doesn't do the trick.

8. **Irrigate** to activate herbicides and for plant growth. The planting should receive 1 to 1-1/2 inches of water per week from either rain or irrigation.

9. **Cultivate** to sweep runners into the row until plant stand is sufficient. Runners not rooted by September will not bear fruit and should be considered weeds. Coulter wheels and/or cultivators will help remove these excess plants in the aisles.



Hillside cultivator being used to narrow rows during strawberry renovation. This isn't the only tool for this job—but it can be helpful.

Make sure to supply adequate moisture and fertility during August and September. This will increase fruit bud formation and improve

fruit yield for the coming year. Continue irrigation through September if needed. An additional 20- 30 pounds of N per acre is strongly encouraged unless plants seem to be overly vigorous.

Foliar Tissue Testing—The Best Way to Inform **Berry Fertility**

Excerpted from Nutrient Management of Berry Crops, Bernadine Strik, Oregon State University

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 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 1).

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.



Choose most recent full enlarged tri-foliate and a minimum of 30 leaves. The more the better honestly!

- \checkmark Rinse leaves very quickly using distilled water. Don't scrub leaves together as some nutrients can be leached during aggressive washing. 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 \checkmark specific standards, we do know that cultivars differ - one reason may be fruiting season. Research is underway to try to address this.
- \checkmark 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.
- \checkmark 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.
- \checkmark 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.
- 1 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).

fruiting lateral leaves in caneberries.				✓ Agro One is affiliated with
Сгор	Sample Time	Tissue to Sample	Comments	Cornell University researchers. To access the submission form, visit: <u>http://dairyone.com/analytical-</u> <u>services/agronomy-services/about-</u> <u>agro-one/</u>
Strawberry	After Renovation (~Mid- Late Aug)	Most recent, fully- expended leaves	Soil sampling best for short-term field plantings	
Floricane-fruiting blackberry	Late July—Early August	Primocane leaves ~1 ft from tip		
Primocane-fruiting raspberry	Late July	Most recent fully expanded Primocane leaf		
Blueberry	Late July—Early August	Most recent fully- expanded leaves. Avoid whips (sample from laterals)		

Table 1: Recommended tissue and time of sampling for berry crops. BERRY NEWS—VOLUME 7 ISSUE 7

Calendar of Events

Post-Harvest Washing and Cooling Workshop

August 1, 2019 - Pleasant Valley Farm, Argyle, NY

Workshop will feature FSMA compliant workstations that you can use on your small vegetable and berry farms. There will also be a forced-air cooling demonstration—all things that you can easily (and affordably!) build yourself. Chris Callahan from UVM Extension Ag Engineering program will be leading the workshop. More information soon.

VT Berry Growers Workshop

August 8, 2019 - Sunshine Valley Berry Farm, 129 Ranger Rd, Rochester, VT—4pm-7pm

Rob Meadows and Patricia Rydle invite you to a tour of their 6-acre PYO organic blueberry and raspberry farm. Come see, and possibly try out, their new Easy Harvester for blueberries. Rob will explain his laser and distress call systems for bird control, and we will see their farm store and cool room setup. The farm is open until 6 pm so please park so as not to compete with customers. Attendance is free for members of the Vermont Vegetable and Berry Growers Association. The cost is \$10 per-person for non-members, payable on-site. Refreshments will be served. For more information: www.uvm.edu/vtvegandberry/meetings/2019VegandBerryFarmWorkshops4-16-19.pdf

IPM in Tomato Production

August 19, 2019 - Davenport Farms, 3072 US Route 209, Stone Ridge, NY 12401

Dr. Margaret McGrath and ENYCHP Vegetable production Specialist Teresa Rusinek will lead a onehour workshop for growers to discuss and learn how to integrate techniques in managing tomato diseases. The meeting is taking place in the field at Davenport Farms where a disease resistant tomato variety trial is hosted. Growers will have an opportunity to tour the trial, taste fruit, and provide feedback for plant breeders. 1 DEC recertification credit in categories 10, 1a, and 23 will be available to those who attend for the entire duration of the meeting.

Biocontrol Trial and IPM Field Meeting

August 20, 2019 - Eli Martin's Farm, 388 Brookman Corners Rd, Fort Plain, NY 13339

4-5 pm: Dr's Amara Dunn and Meg McGrath will discuss powdery mildew control using biocontrols and organic and conventional fungicides. Crystal Stewart from the ENYCHP will provide a tour of the biocontrol trial and additional squash and pumpkin mini-variety trial.

5-6pm: Walk the farm fields with Dr's Dunn and McGrath and with CVP specialist Elizabeth Buck to talk about integrated strategies to control pests, diseases, and weeds on the vegetables farm. Bring samples and questions! 2 DEC credits have been applied for in categories 1a and 23.

Willsboro Farm High Tunnel Twilight Meeting

August 27, 2019 - 5:00pm-7:00pm Cornell Willsboro Research Farm, 48 Sayward Lane, Willsboro

Join vegetable specialists Elisabeth Hodgdon, Jud Reid, and farm manager Mike Davis for a high tunnel and field tour at Cornell's Willsboro Research Farm, where they will share research results for the following projects:

- Striped cucumber beetle management using netting and row cover
- Varietal differences in cucumber susceptibility to striped cucumber beetle
- Ground cherry and goldenberry production in field and high tunnel environments
- Overwintered high tunnel spinach nitrogen fertility

Depending on availability, a taste-testing of the different cucumber, ground cherry, and goldenberry varieties will be held. This free program is made possible through funding by the Northern NY Agricultural Development Program.

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