VOLUME 7, ISSUE 6 JUNE 2019

BERRY NEWS

Berry 'To Do' List

-ALL CROPS-

Spotted Wing Drosophila has been found in many counties in eastern NY and across the state. We've had sustained catch in several areas and populations appear to be building already. Be aware that June bearing strawberries may be at risk of infestation for the first time, especially since strawberries are ripening later than normal, and so many growers have late varieties as part of the crop mix. Other early season crops that might be damaged would be Amelanchier, Haskaps and Gooseberries. Please see the management article in this issue for recommendations for spray materials and links to resources.

-STRAWBERRIES-

- Strawberry harvest is underway in all of the mid and lower Hudson Valley counties. North of Albany should see skim picks on most fields by Fathers Day, but Champlain may not pick until the following weekend. By far the latest start for those regions that most people can remember. Fruit looks excellent – size is very good as pollination occurred despite the poor conditions.
- Two spotted spider mites above threshold in several plantings. Unexpected given how wet and cool it's been, but this pest has been reported across western Mass and the Hudson Valley. Scout older fields first



Spider mite damage on strawberries makes the leaves appear chlorotic. Photo: OMAFRA

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as mites may have overwintered there. Predator releases can be very effective even in the field. Focus release on field edges and near roadways as that is where mites tend to be.

- Anthracnose lesions seen on green berries and flowers Keep on the lookout for this disease. If the weather turns warm it could take off. So far just slight evidence of infection.
- Despite perfect weather for this disease, I've not seen angular leaf spot yet this year. Look for small water-soaked spots appear on lower leaf surfaces. These enlarge to form angular spots usually bordered by small veins. The spots appear translucent when held up to the light but are dark green under reflected light. Calyxes may also become infected. The disease is favored by moderate to low day time temperatures (68°F) along with low to near freezing night time temperatures and precipitation events such as rain, overhead irrigation or heavy dews. Kocide 3000, Badge SC, and Rendition are labelled for conventional use. Cueva, Double Nickel 55 or LC and Badge X2 are labelled for organic production.
- Continue with *Botrytis Gray Mold* control especially if you are growing late varieties don't forget to keep the spray program on schedule.

-BLUEBERRIES-

- Fruit set looks very good in most locations, although there are some farms with significant winter damage in the form of tip burn and dieback. Make sure that you are not feeding blueberries after July 1 as late feedings predispose the plant to winter injury.
- A few locations have called to say that many of their *plants are* loaded with fruit but have no leaves. This can occur on plants that are somewhat stressed possibly from root damage that could be caused by voles or excess water or even nematodes. Other possible reasons might be lack of chilling. Growers



Vole traps like this one can be very helpful on blueberry fields. Photo: Laura McDermott

should attempt to bring the plant back in balance by stripping fruit or removing the entire cane. Too many berries will result in extremely small fruit and very little vegetative growth will result from those branches.

- Scout for Plum Curculio and Scale.
- Apply second Nitrogen application before July 1.
- Petal fall sprays for cranberry fruit and/or cherry fruit worm -We saw lots of damage from this pest last season in several plantings. There are many different labelled insecticides that provide protection. Two sprays are often required for adequate control; the first should be applied at petal fall and the second 10 days later, about 2 weeks before harvest.
- Tomato Spotted Wilt Virus is vectored by the dagger nematode. This disease is much more prevalent than we know. Soil tests for nematodes can help and virology testing can be done. Management varies for each virus so ID is helpful.

-BRAMBLES-

- Floricane raspberries setting fruit. Primocane varieties look • strong. You might consider removing later canes that are emerging now as these canes won't be very productive and can increase the planting density without yielding that much.
- Scout for two spotted mites especially if you have strawberries near.
- Uneven budbreak in floricanes seems to be levelling out to show just a small amount of winter damage - mostly at the tips. We might see some collapse of borderline canes if hot weather arrives.
- As leaf tissue expands, watch for *orange rust on blackberries* and black raspberries and rogue out plants where it is found. Orange rust is systemic and cannot be treated to eliminate it from an infected plant. Early summer is one of the key times for infection on new growth.
- Bloom sprays for Gray Mold and Powdery Mildew would be wise if you still have plants in bloom.
- Gooseberry and Currant set looks very strong. Gooseberries are starting to color. Be aware that SWD has been found in a gooseberry planting this season.
- Haskaps or *honeyberries* were ripe last week in Columbia county.

-MINOR FRUIT-



Honeyberries (Haskap) are in the honeysuckle or Lonicera family. Photo: OMAFRA

Amelanchier or Juneberries are sizing.

Pest Alert—1st SWD of 2019 Found in Eastern NY

Laura McDermott, CCE ENYCHP

On June 3rd we started catching SWD in very low numbers in many counties in eastern NY These numbers have increased slightly but more locations have reported finding SWD so it is likely that this is the true beginning of the season and that as fruit begins to color pesticide management programs should begin.

This is the earliest catch in NY since the arrival of SWD in 2011. It is very likely that wet cool conditions last fall and this spring combined with relatively mild winter temperatures resulting in the early appearance of SWD this season. As



A male SWD. Note the characteristic spot on the leading edge of each wing. Females have no spots on their wings. Photo: Elvira de Lange, Rutgers University

present and when berries have begun to color. Radiant is a very effective insecticide with a longest residual control of adult SWD. It has 1 day to harvest (DTH) and should be used with 60 gallons of water per acre. Brigade is another very effective material but may stimulate spider mites so use it sparingly in your rotation.

According to emerging research, Assail, while not rated highly at controlling adults, does do a good job of controlling eggs and larva and should be effective for 7 days. Assail should be applied with lots of water – at least 80-100 gallons per

weather conditions improve, and fruit starts to ripen, numbers will increase and we could have real pressure on all of our summer bearing small fruit – including June bearing strawberries. June strawberries have largely escaped damage because the fly hadn't arrived until the harvest was complete, but as more and more people grow later maturing varieties SWD infestation was almost inevitable. Valley Sunset and Malwina are both excellent but late varieties with relatively thin skins – and SWD are likely to cause problems this season. To keep track of infestation in fruit, conduct the salt flotation test weekly. See sidebar for instructions.

It's very important to clean pick the field as much as possible. Take mature or spoiled fruit out of the planting. Put the discarded fruit in sealed plastic bags and leave them in the full sun for at least a day to kill SWD.

When harvest is completed, mow the fields as soon as possible.

Research indicates that the best seasonal control is achieved when the most effective chemical is applied immediately when SWD is acre which will aid in translocation into the fruit, and application should be done in the evening after 7pm as Assail can be broken down by sunlight. Once absorbed it can't be washed off with rain. Topical insecticides like Radiant can be washed off the plant with heavy rain. Assail could be a good option for late varieties or Upicks. Assail has the added bonus that it can help control sap beetle.

For information regarding chemical management – both organic and conventional materials, check out the <u>Labelled Insecticide Quick</u> <u>Guides</u> posted on our website. There are different pages for blueberries, brambles and strawberries. To reduce potential resistance issues, never apply the same insecticide more than two times in a row.

If you would like to receive text alerts for SWD and other serious threats to fruit and vegetable crops, enroll with ENYCHP by visiting: <u>https://enych.cce.cornell.edu/enrollment.php</u>.

For statewide information sign up for the Cornell SWD blog: http://blogs.cornell.edu/swd1/.

Testing Fruit for SWD Infestation Using the Salt Flotation Test

- ✓ Place fruit in a gallon Ziplock bag and lightly crush the berries
- ✓ Mix up a salt water solution (1 cup salt, 1 gallon water) and add enough salt water to the bag to cover the berries.
- ✓ Optional: Add food coloring to liquid for more contrast.
- ✓ Seal bag, removing as much air from bag as possible.
- ✓ Let bag sit for at least 30 minutes.
- ✓ Place bag against a dark surface in good lighting and count the number of larvae.
- ✓ For higher accuracy, separate fruit from liquid, pour liquid through fine mesh (such as a reusable coffee filter), and look at remaining sifted contents under a microscope.

Strawberry Harvest & Storage/Shipping Considerations Craig Kahlke, Postharvest Specialist, CCE Lake Ontario Fruit Team

Strawberry harvest is underway, so now is a good time to discuss handling of the fruit associated with harvest and post-harvest activities. Strawberries are among the most perishable of all fruits, and thus it is critical that marketing channels are open before harvest starts. Strawberries are extremely susceptible to bruising, and rough handling at harvest and during any time thereafter will encourage fungal growth and decay. It is critical that personnel be trained in the careful picking and handling of fruit. In addition, fruit quality declines as the season progresses, so the highest quality fruit will be earliest in the season. With varying degrees of ripeness in single plantings, it is also extremely important that the fruit is harvested as near peak ripeness as possible.

Worker Hygiene

From a food safety standpoint, (microbial contamination with the potential to cause foodborne illness) strawberries, raspberries, and blackberries are considered high risk. One reason is because often the last person to touch the fruit prior to it being eaten by the consumer is the picker, as postharvest on-farm washing soon after harvest reduces shelf-life considerably in soft berries. Therefore, proper worker hygiene training is critical. Workers should ALWAYS wash their hands before entering the fields, and before/after eating and during breaks, prior to re-entry into fields. This should be an enforceable rule. Workers should be trained in proper handwashing techniques, and always use soap and potable water, with single-use paper towels. There should be no smoking or eating in the fields, and there should also be designated areas for breaks/ lunches (these can be on the edges of harvest fields but not between the rows). For more information and to order proper worker hygiene training materials, please go to www.gaps.cornell.edu, and click on Educational Materials.



Counter-top forced air system for small volumes of berries. More information for small farm post-harvest can be found at: UVM Extension Ag Engineering, <u>http://blog.uvm.edu/cwcallah/category/post-harvest/refrigeration-and-storage/</u> Photo: UVM Extension Ag Engineering

Strawberries Destined for Direct Markets

Since most strawberry markets in the Northeast are consumed very close to the farms where they are grown, many farmers lack the cooling methods and storage facilities used by long-distance grower/shippers in California and Florida. Direct market channels are ideal for many growers in the Northeast, as fruit loss increases during the shipping process. By bypassing wholesale shipping, fruit loss due to bruising and fungal decay is reduced by an average of 20%. For optimum quality, it's critical that direct market fruit is harvested at or very near peak ripeness. Top quality strawberries should be fully ripe, with a uniform red color, be firm, flavorful, and show no signs of decay or disease.

Temperature is the single most important factor affecting shelf life of strawberries.

If cooling down to the recommended 32 F is an issue for growers, research shows that strawberries held at 50F storage at high humidity will see greatly improved storage life as compared to room temperature storage. In addition, strawberries at 50F tend to retain their color and glossy appearance better than berries stored at 32F. Many direct-market local growers claim approximately 90% of their strawberries are consumed the day they are harvested, in these cases it's very critical that the berries be at peak ripeness. The berries are most often harvested in morning when field heat is low, then they are shipped out to markets on refrigerated trucks the same morning. They reach the retail shelves by afternoon, and are bought and consumed within a day or two.



The blower is just placed up to the cut-out hole, on a shelf. This unit has a very simple shelf and feet to add some stability. Photo: UVM Extension Ag Engineering

(Continued from page 4)

Strawberries Destined for Long-Distance Markets

For strawberries that are being transported beyond local markets, there are two factors that impact maximum shelf life potential. First, the fruit will hold up better if they are harvested at the white tip stage rather than fully ripe. Second, cooling is critical. As soon as harvest occurs, it is imperative that field heat be removed from the fruit. It is recommended that cooling is started within an hour of harvest. Ideally, 32F forced-air cooling with high humidity (90-95% RH) is recommended. Refrigeration without forced air can also be used; however, shelf-life will be shortened. Proper forced-air cooling removes field heat from fruit in 90 minutes or less, while simple refrigeration without forced air can take 7-9 hours. Proper ventilation around, below, and above the fruit is essential for removing field heat quickly. Covering containers with plastic prior to cooling, and not removing plastic until berries are at room temperature for several hours after reaching market shelves will prevent condensation buildup on the inside of the packaging and delay fungal growth. It is estimated that for each hour delayed in

cooling the fruit results in reducing shelf life of fruit by one day.

Following field heat removal, shipping on refrigerated trucks to market destinations is essential. If cold storage will be limited at market destination, as stated in the section on direct marketing, research shows 50F storage at high humidity will benefit storage life greatly as compared to room temperature storage. If all precautions are taken from harvest to cooling to storage, shelf life from harvest to market and on the consumer's table can be up to 10-14 days maximum for strawberries, but likely averages more like seven days in the Northeast.

Acknowledgments – I wish to thank the late Jim Coulter, Marvin Pritts and Chris Watkins for their help in providing information for this article.

Editors' Note - For growers interested in more information on how to set up an inexpensive forced-air cooling system for berries and many other types of perishable produce, please consider attending the August 1st workshop on Post-harvest handling to be held in Argyle, NY (time to be announced, but will likely be during the day).

Virus Spotlight—Tomato Ringspot Virus in Blueberries

Tomato ringspot is caused by tomato ringspot virus (ToRSV). It is a problem in the Northwestern blueberry-growing regions of the United States and has also been found in Michigan, New York, Canada and Chile.

Symptoms

Infected leaves are often malformed with numerous circular, chlorotic or necrotic spots that range from 2 to 5 millimeters (~1/16 to 3/16 inch) in diameter (Fig 1A). These spots can also occur on canes. Other symptoms are shoot dieback, stunting and a slow decline leading to plant death (Fig 1B). Flower clusters may develop abnormally (Fig 2).

This disease spreads slowly, about 1 meter (3 feet) per year. Disease cycle ToRSV is transmitted by dagger nematodes (*Xiphinema americanum*), which feed on blueberry roots in the soil. The virus has a wide host range, including apples, grapes and raspberries. Weeds (e.g., dandelion, chickweed and narrow leaved plantain) can act as reservoir hosts for the virus. The virus can also be seed-borne.

Management

If ToRSV has been confirmed, remove infected bushes. Before replanting, test soil for the presence of dagger nematodes, and fumigate if the test is positive. Buy certified virus-tested planting stock. Other important control approaches include maintaining good weed control and planting resistant cultivars (e.g., Bluecrop).

Source: Virus and Virus-like Diseases of Blueberries, Annemiek C. Schilder and Timothy D. Miles, Michigan State University

Virus submission information on the next page.



Figure 4. A) Foliar symptoms of tomato ringspot virus showing necrotic spots and leaf distortion on blueberry cv. Berkeley; B) dying plant (foreground) because of infection with tomato ringspot virus



Figure 2. Symptoms caused by blueberry shoestring virus: A) red streaking on stems of blueberries; B) red-tinged flowers (photo by Mark Longstroth; C) red-tinted berries that do not ripen normally

Diagnostic Tests for Plant Virus and Nematodes

<u>Cornell University's Plant Disease Diagnostic Clinic</u> offers a wide array of specialized tests for plant virus and for the nematodes that often vector the virus.

Basic diagnostic tests cost NYS residents \$35. Additional tests are available which may improve the accuracy of the diagnosis. The "Test, Don't Guess" policy allows for the appropriate selection and efficient use of control methods.

The sample to be submitted should contain all parts of the plant when possible. Wrap the sample loosely in an unsealed plastic bag and package it in a sturdy shipping container. Pack roots separate from branches, shoots, or foliage. Collect the sample prior to any pesticide applications - once pesticides have been applied it may be difficult to obtain an accurate diagnosis. The sample should be taken from an area that has early symptoms of the problem or is on the edge of an infected area. Dead plants are not useful. Pack sample in a sturdy container.

The procedure for collecting samples for nematode analysis varies slightly: Sample for nematodes during the active growing season. A minimum of 6 soil sub-samples, approximately 1" in diameter and 4" in depth, should be collected from an area that is approximately one acre in size. If sampling from an individual specimen, collect the soil subsamples from within the dripline of the tree's canopy. Mix the soil thoroughly and submit about 1 pint of the soil mixture.

If a foliar nematode is suspected, it is best to send in the whole plant

in-state (out o	f state): basic \$35 (\$50); turf \$50 (\$70); or see	Clinic, 334 Plant Science Building, Ithaca, NY 14853 ull list of fees at: plantclinic.cornell.edu/fees.html
	Location Where Sample Was Taken	Referring Agent (i.e. CCE Agent, Consultant, Arborist)
Home Owner Business name (if any): Person to contact: Address: Phone: Fax: Email: County: Describe the nature	Commercial Grower	Business:
Scientific	Name: meteors Affected Parts: willing: Affected Parts: willing: Barcher/Willig: gall Barcher/Willig: gall <td>Common Name: Madematic Millionano 900: Summy Summy Summy Sume Summy</td>	Common Name: Madematic Millionano 900: Summy Summy Summy Sume Summy
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Sample Submission: Please use and include the Submission Form whenever submitting samples and make sure the form is filled out completely with plenty of information.

Include your fax number or email address and indicate your preferred contact method.

Sample Shipment: Mail the sample as quickly as possible. If the sample cannot be mailed immediately, keep it refrigerated or out of direct sunlight. There is no mail delivery at Cornell on weekends or holidays. To make sure your sample will get processed as soon as it arrives, collect and ship so that we receive it no later than Friday morning during a regular week. During weeks with a major holiday, please call ahead to find out the best time to ship.

Payment: Please include a check for the appropriate fee made out to Cornell University. We can not process samples until we have received full payment

Please feel free to call the clinic with any questions prior to your sample submission. The clinic staff works hard to provide you with fast, accurate results. Providing answers to your important questions prior to sample submission may enable us to get you the answers you need on a timely basis. You can contact the clinic by: telephone (607-255-7850), fax (607-255-4471), or by email <u>kls13@cornell.edu</u> or <u>slj2@cornell.edu</u>

To submit an on-line submission form using a fillable PDF, visit this link: <u>http://plantclinic.cornell.edu/</u>pddcforms/submissionform.pdf

For Your Information:

• UVM AG ENGINEERING BLOG POST: BACKFLOW PREVENTION - The intentional, directional, and reliable flow of water is important to ensure agricultural water is "safe and of adequate sanitary quality." This post provides information on the importance of backflow prevention and some common practices that help mitigate the risk of backflow. Check this out at: http://blog.uvm.edu/cwcallah/2019/05/20/backflow-prevention-for-produce-farms/

New York State has chosen Cornell to launch one of the biggest food and agriculture startup competitions in the world.

Grow-NY is a food and ag business competition that will bring together the best business plans and the brightest entrepreneurs from across the globe to compete for prize money—including a top prize of \$1 million, two \$500,000 prizes and four \$250,000 prizes. The competition will run for three rounds.

In each round of the competition, \$3 million will be awarded and up to 20 startup finalists will receive:

- ✓ Dedicated mentorship from a hand-selected business advisor
- ✓ Additional pitch training to hone the finalists' live pitches for the judges
- ✓ An expenses-paid, three-day business development trip to the region for up to two finalists per team
- ✓ Networking introductions and business tours with potential partners

Grow-NY applications are now open through July 15. Visit Grow-NY.com for more information.

New York is fertile ground. Winners of the competition will be expected to make an economic impact in the Grow-NY region comprising the Finger Lakes, Central NY and Southern Tier areas of Upstate New York. The region offers an abundance of leadingedge academic and commercial resources in food and agriculture and is one of the world's best places for startups to put down roots.

My IPM Smartphone App Series – includes information for blueberries, strawberries and blackberries as well as apples, pears, cherries, and cranberries.

"With the app, growers can reference high-resolution images to help diagnose disease or identify pests," Schnabel said. "Audio files with university scientists outline treatment and prevention options. Interactive tables outline effective chemical or organic control options, with research-based efficacy and toxicity profiles on dozens of commercial products. Information on the causal organisms, disease cycles, symptoms, biology and pesticide-resistance management are also covered."

The three MyIPM (Integrated Pest Management) apps are available at the Apple Store and Google Play. The MyIPM series of apps are available for Android and IOS devices.



Calendar of Events

June 24 - Last Monday Grant Webinar for Fruit and Vegetable Growers

The webinar will be limited to grants that are relevant to fruit and vegetable farmers in Eastern New York. More information and register at <u>https://enych.cce.cornell.edu/events.php</u>.

July 15 – FSMA/PSA Grower Food Safety Training Course CCE Warren County office, Schroon River Road, Warrensburg, NY

A grower training course developed by the Produce Safety Alliance (PSA) that meets the regulatory requirements of the Food Safety Modernization Act (FSMA) Produce Safety Rule. This one-day training is a requirement for farms growing more than \$25,000 worth of fruits and vegetables. Cost: \$35/person. For more information, contact Elisabeth Hodgdon at https://bit.ly/JulyFSMA

July 29 - Last Monday Grant Webinar for Fruit and Vegetable Growers

The webinar will be limited to grants that are relevant to fruit and vegetable farmers in Eastern New York. More information and register at <u>https://enych.cce.cornell.edu/events.php</u>.

August 1 - Post-Harvest Washing and Cooling Workshop 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.

August 8 – VT Berry Growers Workshop 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/



Photo courtesy of Rob Meadows of Sunshine Valley Berry Farm

meetings/2019VegandBerryFarmWorkshops4-16-19.pdf

August 27 – Willsboro Farm Trial Field Day Cornell Willsboro Farm, 48 Sayward Ln, Willsboro, NY—5pm-7pm

Jud Reid (Cornell Vegetable Program, Harvest NY) and Elisabeth Hodgdon (ENYCHP) will lead a tour of high tunnel research projects, including insect exclusion netting demonstrations and variety trials for trellised cucumbers and new trellising systems and varieties of ground cherries and goldenberries. Participants will have the opportunity to taste test and provide feedback on ground cherry and goldenberry varieties. Registration information to follow.



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