

Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

Grower's Corner- New to Ohio Fruit News

AUGUST 2020

Through-out the season I receive a wide range of questions from growers about diseases, insect pests, nutrition, soil fertility and much more. You are probably not surprised to hear that I can't answer them all! However, with the help of OSU Specialists as well as colleagues from across the Great Lakes and Midwest regions I do my best to find the answer or connect the grower with an expert in the area for which assistance is needed. This year, like others, there have been many great questions and I want to share some of them with you. While I post many of the diagnostic samples that I receive on my Facebook page (see Real-time Fruit Disease Updates on the OSU Fruit Pathology Facebook Page in this issue), I don't generally share responses to the questions I receive on any specific platform. As a way of sharing some of the questions I receive, along with the answers, we are adding Grower's Corner to Ohio Fruit News (OFN). Grower's Corner will be on page two of the newsletter and each edition will feature one or two grower questions from across the Midwest and Great Lakes Region. I hope you enjoy this new addition to OFN and you learn as much as I do from the answers!

Digital First Approach to Fruit Disease Diagnostics During the COVID-19 Pandemic

By Melanie Lewis Ivey- Fruit Extension Pathologist

I don't think anyone will argue that this has been a challenging year for everyone. Since mid-March OSU Extension, including the Fruit Pathology Program, has been turned upside down. Just when the fruit season began, we had to shut the lab down, delay or postpone our field trials and stop field visits and training programs. Since the beginning of the COVID-19 pandemic the way diagnostic services are provided has changed considerably. However, we are committed to providing Ohio producers with the same high-quality services that we did before the pandemic.

In April, diagnostic services for commercial producers resumed on a limited basis under an exemption granted by CFAES. With this exemption we switched to a "digital first" approach. The digital first approach allows us to make a diagnosis by viewing images or taking a virtual walk-through the planting.

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Grower's Corner

What are the benefits of intensive foliar applications of calcium on blueberry plants?

This question comes from a new blueberry grower in Minnesota who inherited a supply of calcium from the previous owner. Mark Longstroth, Extension Educator and Dr. Eric Hanson from Michigan State University Extension and members of the IPM Great Lakes Fruit Workers Group (GLFW) provided the response to this question.

Foliar applications of nutrients are common, but it is doubtful that they pay for themselves. Foliar nutrients are not generally recommended unless there is a need demonstrated by a tissue analysis or visual symptoms. Everyone knows calcium increases fruit firmness and is used in apples and tomatoes, so it **MUST** be good for blueberries-right? Calcium sprays have been studied numerous times on blueberries in different locations because of the desire for improved firmness. The results are mixed. Field trials in Michigan showed no benefit, but recent studies in Chile showed a slight but consistent increase in fruit firmness when sprays were applied early in fruit development. These results tie to those from recent work in Washington indicating that water conductance through the fruit surface is much greater early in development, which suggests calcium sprays at this time are more likely to be absorbed by fruit. There are many factors that likely affect efficacy, including the source of the calcium, rate, and spray number and timing.

The whole Ericaceous family (or acid-loving family) are known as calcifuges, meaning they don't like calcium and prefer acidic soils that are low in calcium. I figure if the soil environment is optimal and the plant gets enough water it should do fine. You need to have the engine in tune and firing on all cylinders before you start messing with the intake and exhaust!



In short, foliar applications of nutrients have not been demonstrated to consistently benefit blueberries, though with all the variables of spray source, rate, and timing, as well as variety and growing conditions, they have not been fully studied. The general rule of thumb is that nutrient sprays are unlikely to help if plants are not deficient in what is being applied (use tissue analysis to find out if there is a deficiency). It is also important I think to encourage growers to have a few plants that they don't spray (i.e. check plants) so they can at least make an educated judgement about effects.

Thank you to Annie Klodd, Extension Educator, University of Minnesota Extension and GLFW member for sharing the grower question.

FARM SCIENCE REVIEW 2020

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ONLINE

Digital Samples: Send photos or short videos that represent the problem via email to Dr. Melanie Lewis Ivey (ivey.14@osu.edu). Growers who can't access/don't use digital technology should call Dr. Lewis Ivey (330-263-3849) or their county Extension Office for further information.

Physical Samples Through the Mail: Physicals samples should only be mailed to the lab if we can't diagnose the problem via our digital first approach. Samples should be mailed Monday through Wednesday only and via next day delivery. Due to reduced staff presence on the Wooster campus samples that arrive on Friday may not be delivered to the lab until Monday.

Drop-Off of Physical Samples: Physicals samples should only be dropped-off if we can't diagnose the problem via our digital first approach. To drop-off a physical sample please contact Dr. Melanie Lewis Ivey to arrange a contact-free drop-off time. Samples should be put beside the front entrance of Selby Hall on the Wooster Campus (1680 Madison Avenue Wooster, OH 44691) and should be clearly marked as samples for the Fruit Pathology Lab-Dr. Melanie Lewis Ivey. Following the drop-off, please text or call Dr. Lewis Ivey confirming that the samples were dropped off. Masks that cover one's nose and mouth must be worn when dropping off a sample.

Best Practices for Sending Digital Samples

- Check your images before submitting them. If they look out of focus to you, they will not be helpful to us.
- Send multiple images per sample. The more images and views we have of the sample the less likely we will need a follow-up physical sample.
- Include a photo or video of the whole plant, close-ups of plant parts (leaves, flower, roots, fruit, seeds, etc.), and a broad view of the plant so that the surrounding environment can be seen.
- Include as much additional information as possible in the email such as: variety/cultivar, age of plant, chemicals used, number of plants affected, where found, patterns, when symptoms were first noticed, etc.

Best Practices for Sending Physical Samples Through the Mail

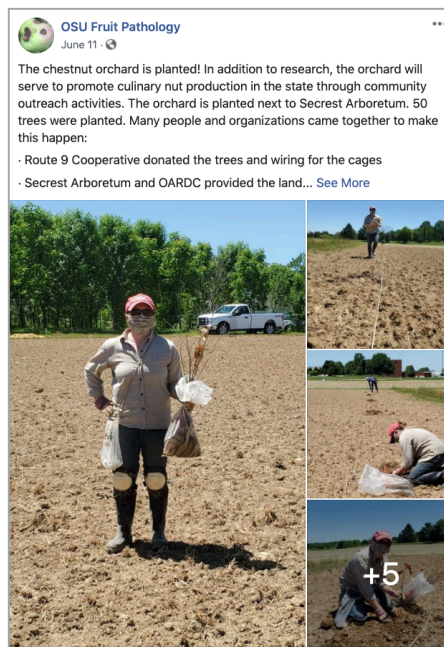
- Provide freshly collected specimens that represent the range of symptoms that you observe.
- Provide as much plant material as possible, including roots, top growth and fruit.
- Do not send dead plant material. Plants material that is already dead can't be diagnosed.
- Provide lots of information about the sample, such as plant variety, history of the problem, recent pesticide applications and the number of plants affected.
- For entire plant samples, bag (plastic) the roots and seal at the soil line with a twist tie or a rubber band. Do not cut the root ball off the above-ground plant parts. Cover the top plant growth with a second plastic bag.
- For leaf or stem tissue, place the sample in a zip-seal bag as soon as it is collected. Do not use paper bags.
- For fruit samples, separate fruit (i.e. berries, apples, peaches) samples from roots and top growth material. Fruit with tender skin (strawberries, blueberries, currants, raspberries, peaches etc.) should be placed in a paper bag as soon as it is collected. Fruit with a tough skin (grapes, apples, plums, etc.) can be placed in zip-seal bags.
- Mail sample in a sturdy container. Entire plant samples should be enclosed in boxes or other crush-proof packaging.
- Write "Plant Diagnostic Sample" on the outside of the package.

Real-time Fruit Disease Updates on the OSU Fruit Pathology Facebook Page

By Melanie Lewis Ivey- Fruit Extension Pathologist

While my 16-year old daughter is adamant that Facebook is for “old people”, it continues to be one of the best ways for me to rapidly provide real-time information on fruit diseases and management to the Ohio fruit, nut and hop industries. I also use this platform to post information about upcoming training opportunities, workshops and conferences, hot topics in the news related to fruit, nut and hop diseases, produce safety, and agriculture in general. Every now and then I also have contests to give away resources such as the Midwest Fruit Pest Management Guide or fruit disease compendiums. If you don't follow me on the Fruit Pathology page, please consider joining the page. If you are a follower, thank-you for your support!

Here are some snap shots of postings that recently appeared on OSU Fruit Pathology. You can see all my posts by following me at <http://www.facebook.com/FruitPathology/>



Invitation to Participate in a COVID-19 Specialty Crop Impact Survey

A group of researchers from the College of Food, Agricultural, and Environmental Sciences at Ohio State have designed a brief survey **to examine the economic effect of COVID-19 on specialty crop operations across the state**. The study intends to quantify the pandemic impact in terms of production losses and reduction in sales, and explore eventual opportunities generated in certain markets. Results from this initiative will guide future extension activities and assist growers on how to better address the imposed challenges.

The investigators are looking for volunteers to take part in the study. If you own and/or lead a specialty crop operation, you are invited to answer the survey and collaborate in this important study. The survey is available online through the link and QR code provided, or in paper format from the investigators upon request.

Requests for the paper-based survey should be made by postal mail at 2001 Fyffe Rd. (Howlett Hall Rm. 225), Columbus, OH, 43210 – Dr. Guil Signorini, or by email at signorini.2@osu.edu. Upon request, the investigators will send an envelope containing a consent form, the survey, and a prepaid return envelope. Please make sure to sign and return the consent form along with the filled survey if you decide to take part in this study.



osu.az1.qualtrics.com/jfe/form/SV_encBT7c26Ni03id

Making Horticultural Decisions to Improve Tree Health

By Diane Doud Miller - Tree Fruit Extension and Research

Orchardists are systems thinkers because you are aware that any horticultural decision made has impact all the way through your entire production and marketing business. Orchardists hold that cost/benefit/impact ratio, usually based on hard-earned experience applied to current opportunity, to decide what are the most important things to work on in the orchard. In as challenging a year as 2020, where **'health'** is the keyword in our lives, I encourage you to look at your orchard blocks and make horticultural decisions that improve tree health for the longer-term.

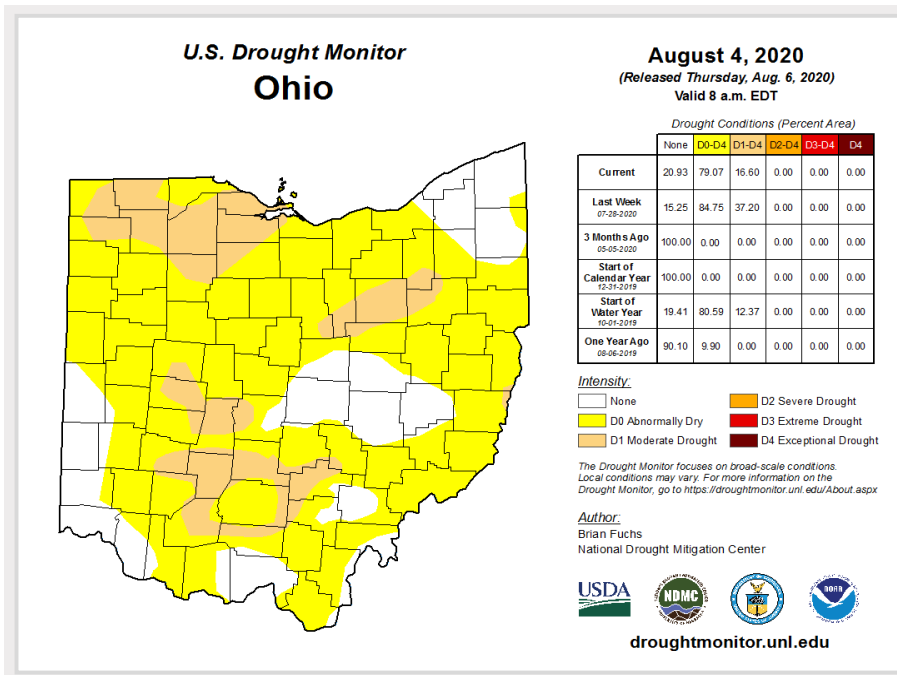
There are three cycles going on concurrently in trees every year. The first cycle is all the processes involved in producing fruit in the current year (bloom to harvest). The second cycle is making flower buds for the next season's crop. The third cycle is vegetative growth - maintenance and expansion of the tree structure. The process of balancing those cycles is what fruit growing is all about. Plant those trees in the Midwest where the weather is never the same two years in a row and, bingo, it's easy to end up making decisions from behind instead of from having any control. As near as I can tell, the way to have any control is to focus on having the healthiest trees as possible. That way the trees have the most resilience to weather (and associated insects and diseases). While site is huge factor, if you're reading this, I assume you have a site.

Water and drainage: Water and drainage. Water is the main tree growth regulator. The standard is that trees need roughly 1" of rain a week throughout the growing season to be healthiest. Stress occurs, and tree cycles suffer, when there is more or less than that. So being able to add or remove water from the orchard system is a major way to have some control. And of course there are all the qualifiers like rootstock (bigger trees have more roots and are more resilient to variable moisture; smaller/younger trees less), time of year, natural drainage differences within site, and so on. But, in general, it does appear that the Midwest is having wetter springs and falls, and drier summers. So having the capacity of good drainage, and being able to add some water, will contribute to tree health.

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Making Horticultural Decisions continued from page 5

A soil that sits wet in spring and fall (when roots grow) will result in less tree root volume, and those trees (with less roots) are additionally stressed during dry periods because roots are located in the dry surface area. Get soil moisture as right as possible.



Nutrition: Water While fruit trees are in general nutrient conservative and recycling, regular testing of nutrient status to make sure nutrition is balanced is valuable to tree health. Visually seeing a deficiency means you have waited too long to do leaf nutrient analyses and apply corrections. Mid-July to mid-August is the time to collect leaves for sampling. Penn State has a nice on-line overview of how to do this: extension.psu.edu/orchard-nutrition-sample-for-foliar-analysis-mid-july-to-august.

Ohio State does not specifically analyze fruit tree leaves (with resulting recommendations) anymore. But many commercial laboratories do so. Whatever lab you work with, be consistent in order to get a good baseline. I have a 25-year-old bulletin on orchard nutrition that Garth Cahoon put together at the end of his OSU career that is still an educational and pertinent overview. Send me an email (miller.87@osu.edu) if you'd like a scanned copy of it.

While it is difficult to parse out the nutrition component exactly, and over-fertilization or random guessing is not the ecological or economic solution, healthy tree nutrition is a front-line horticultural control of tree health.

Maintenance: In a low crop year, there is always the question of what horticultural practices can be skipped or delayed in order to save money. *What is no longer essential or cost-effective to do?* Just a word of caution of not skipping too much for short-term savings. You can reach the point where stressed trees are coming up with more unusual insect or disease problems that have to be solved on a piece meal basis. It appears trees under stress do produce chemicals, such as ethylene, that can attract in senescence pests/pathogens (plant chemical signaling). So stay on the orchard maintenance enough that trees aren't giving off the chemical message equivalent of 'I'm dying here.' ☺ An example is black stem borer, which is apparently attracted to ethylene gas given off by young trees under stress. The insect is not a problem to healthy trees. (Check out the article by Dr. Celeste Welty on page 8 for more information on the black stem borer).

Stay the course: Just some words of encouragement to stay the course in 2020. As your state extension horticultural specialist, I often say that Midwest fruit growers are required to be the best growers in the world because of our variable weather. In 2020 we have a low crop year, and a pandemic. It should, however, be great satisfaction to you how much people will appreciate consuming local produce this season, be willing to pay more for it, and appreciate your efforts to grow it and get it to them. The value of local will be higher than ever. Stay the course.

Brown Marmorated Stink Bug

By Celeste Welty - Extension Entomologist

This species has continued its slow but steady invasion into Ohio from Asia via Pennsylvania and West Virginia. It has a wide host range that includes peaches, apples, raspberries, and grapes. In Ohio, it is being found more abundantly in urban areas including Columbus, Cincinnati, and Youngstown, but is being found at lower density in rural areas, particularly in late summer. On farms where it has caused noticeable damage to fruit, the most common control tactic has been insecticides, but we are working on a biocontrol tactic that we hope will be more sustainable. Our biocontrol effort is focused on tiny wasps that kill the eggs of stink bugs. The parasitoid species that is a specialist on brown marmorated stink bug is *Trissolcus japonicus*, known as the samurai wasp. This parasitoid has made its way to Ohio and about 8 other States. We first detected it in Columbus in August 2017, and we now have a colony of the samurai wasp in our lab at Columbus.

In an effort to help the spread of this beneficial natural enemy, we have a research trial that is underway which involves sampling for presence or absence of the samurai wasp at 20 fruit farms in central Ohio.

After our initial sampling did not detect the samurai wasp on any of those 20 farms, we made a release of samurai wasps at 5 of those farms in 2018 and at another 5 farms in 2019. In June 2020, we sampled all 20 farms using sentinel egg masses that were deployed in a treeline adjacent to the fruit plantings. The results were disappointing in that we did not confirm presence of the samurai wasp at any of the 20 farms, however our sample size might have been too small to detect the parasitoid presence, so it is possible that the parasitoid has become established at some of these sites. We also deployed yellow sticky cards for two weeks at each farm and are still working our way through those samples to determine whether or not the samurai wasp was detected. We are hopeful that this natural enemy will become established and aid in the suppression of this stink bug pest.



Adult of brown marmorated stink bug on apple.



Nymph of brown marmorated stink bug.



Injury to apple by brown marmorated stink bug.

The samurai wasp laying an egg in a stink bug egg.



Image by Chris Hedstrom, Oregon Dept. of Agriculture

Black Stem Borer

By Celeste Welty - Extension Entomologist

There have been several detections of the black stem borer in Ohio over the past year or two. This borer is a tiny beetle that attacks and can kill young apple trees, often in the first year or two after planting. This species is *Xylosandrus germanus*, which has been known since the 1930s but has been reported as causing problems only recently. It is associated with young trees under stress,



Black Stem Borer

Image by Pennsylvania Department of Conservation and Natural Resources - Forestry, Bugwood.org.jpg



Black stem borer hole in a young apple tree

most likely from summer drought or extreme winter cold. This species is in the group known as ambrosia beetles, which feed on fungi that they cultivate within tunnels that they chew in the tree trunks.

A [factsheet](#) from Michigan State University, by Michael Haas, Julianna Wilson, and Larry Gut, published in 2017, is a good source of additional details and suggestions for insecticidal control by trunk applications in the spring.

ODA Asks Ohioans to Send in Unsolicited Seeds

The USDA-APHIS and ODA are asking Ohioans who have received unsolicited packages of seed not to open, plant, or throw the seed away. Instead, citizens should report receiving the seeds and then submit the packages to USDA using one of the following methods:

If possible, place the materials including the seeds, original packaging material and your contact information in a resealable plastic bag and mail them to USDA-APHIS at the following address:

Attn: USDA -SITC
8995 East Main Street, Building 23
Reynoldsburg, OH 43068

-or-

Place the materials including the seeds, original packaging material and your contact information in a resealable plastic bag and drop them off at your county's OSU Extension Office during business hours. You can find the nearest extension office here: <https://extension.osu.edu/lao>. Please note that extension facilities may have COVID-19 specific signage detailing procedures such as wearing a facial covering that must be followed.

Ohio Strawberry Season Recap-2020

By Brad Bergefurd - Extension Educator, Horticulture Specialist

Strawberry harvest of day-neutral production systems continues throughout Ohio today, August 10. Plug plants are being propagated, beds are being formed, and plastic mulch being laid for planting of plasticulture strawberries within the next two weeks. The following is a recap of the 2020 Ohio strawberry production and marketing season to date.

Overall growers have reported below average strawberry yields, especially south of I-70; however, growers north of I-70 reported at or above average harvests for the season. The main contributor to the below average season in southern Ohio was the early season warm up at the end of February and early March, which caused plants to break dormancy earlier. With the early warm-up, this set up the crop for freeze and frost damage. A series of freeze events occurred from the April 15 through May 7. Temperatures dipped into the low-to-mid 20's back-to-back on April 15 and 16. Because frost and freeze protection was put in place, including 1.25 or 1.5 ounce per square yard weight frost blankets and sprinkler irrigation, the blooms were not fully exposed at this stage so damage was less than 20% during these events. Growers who did not implement freeze protection strategies saw damage that was far more severe.

The freeze event that caused the most damage and crop loss to our southern Ohio strawberry crop occurred the weekend mornings of May 9, 10, and 11 when morning low temperatures dipped into the mid-to-low 20's. Most of the crop was in or close to 70% bloom at this time, and even with applying freeze blankets and overhead irrigation, some growers reported these back-to back freeze events severely damaged the bloom, reducing overall yields by up to 75%. The best protection was where two layers of 1.25 to 1.5 ounce per square yard row covers were applied, many of us learned this during the Easter Freeze event of 2007. You can view a video I produced on a southern Ohio strawberry farm in Highland County a couple days after the freeze event that shows the freeze protection strategies that they had in place at youtu.be/xO-rl36k6q8.



Where freeze protection measures were implemented blooms survived temperatures into the low 20's producing a beautiful crop.
Photo courtesy of Bapst Berry Patch, Pike County OH

On a positive note, strawberry market demand continues to grow and be strong in Ohio despite the COVID-19 pandemic. Growers were trained in the early pre-season by the Ohio State Produce Safety Team on proper COVID-19 procedures and protocols to implement and follow; these can be found at producesafety.osu.edu/covid-19.

Consumer demand at local farmers markets and farm markets continues to out-pace production on all berry crops this season. Consumer interest in "pick your own" has also grown this season with most of this market demand peaking on weekends as a form of "agritainment" for families wanting to get out of the house and experience country and farm life for a few hours.

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Ohio Strawberry Season Recap continued from page 9

Demand has also been high for Ohio-grown strawberries at Ohio produce auctions, and direct marketing to Ohio wholesaler buyers for many wholesale markets have established “buy local” marketing campaigns to meet the demand for local produce. Growers who have adopted day-neutral strawberry production systems are meeting some of this summer and fall demand, but demand still outpaces supply, making this a viable option for farms to consider if they wish to expand strawberry cash flow throughout the season. Retail and wholesale prices are up in 2020, but growers report no consumer complaints.

Season Extension production techniques continue to be explored and adopted to fulfill individual farm market demands. Though matted row production continues to be the main method, plasticulture production has been widely adopted to compliment the matted row system by providing an earlier 3-to-4-week harvest. This leads into the later matted row harvest, allowing farms to capture the consumer demand and allowing for a longer season up to 12 weeks of additional cash flow. Ohio research continues and some farms are adopting greenhouse, high tunnel, and/or summer day neutral production to capture even more of the strong market demand. Growers who are harvesting and marketing day-neutral varieties through the summer and fall months are reporting great market demand and retail prices. This summer production has complimented diversified farms that also produce and market summertime fruit and vegetables. Growers who have adopted greenhouse and tunnel production for later harvest report the biggest issue being management of the Spotted Wing Drosophila and achieving economically feasible yields to cover the increased costs and management of these protected production systems. University and on-farm research is being performed to continue to refine these potential production systems for Ohio.



Harvest continued well into mid-June for our southern plasticulture growers and day neutral harvest is continuing though August.
Photo courtesy of Rhoads Farm Inc.

The 2021 season is looking good so far with high quality strawberry tips arriving from Canada and Nova Scotia at the end of July showing no major reported signs of disease or quality issues at this point. There were some 7-to-10-day delays in shipments from these northern Canadian and Nova Scotia nurseries due to cool temperatures that delayed harvest of runner tips. The weather so far in August has been great for on-farm and plug plant propagation by nurseries. There is not an overabundance of extra plug plants available for planting this fall, as most nurseries plant on a pre-order basis, which made it difficult for growers who had not pre-ordered to find the plants they needed for new or increased acreage. Plant propagation nurseries are reporting an increase in plant orders.

I'm looking forward to a great rest of the Ohio strawberry crop harvest in 2020 and an even better harvest in 2021!

Spotted-wing Drosophila Mid-season Review

By Jim Jasinski - Extension Educator
Celeste Welty - Extension Entomologist

The spotted-wing Drosophila (SWD) is an invasive pest of small fruit (blueberries, strawberries, cane berries, grapes) and peaches, first found in Ohio in September 2011. The combined efforts of cooperators and personnel from the Depts. of Extension and Entomology using funding from the IPM Program, have managed to maintain an 11-county monitoring network for this pest. The monitoring began in mid-June, with some stations finishing in mid-July, while some locations will continue trapping through September.



Female spotted-wing Drosophila with raspy ovipositor

The traps and baits used this year are the same as the past few years; Scentry SWD traps with Scentry lures and 25% apple cider vinegar drowning solution for the first month. For any continued trapping, the Scentry lure was removed and only 100% apple cider vinegar was used as both bait and drowning solution.

The traps were placed in the crop canopy this year instead of the wooded edge near the field, where SWD are known to congregate before moving into the cultivated crop.

Crops monitored in 2020 include blueberries, blackberries, grapes, strawberries and raspberries. In the first week of trap servicing, June 21-27, Butler, Champaign, Franklin, Geauga, Greene, Monroe, Union and Wayne all had positive detections of SWD flies. By mid-July when some of the locations completed their monitoring, Athens and Shelby Counties were also positive. We are still awaiting monitoring results Van Wert county.

The goal of the monitoring network is to establish when the SWD flies become active in an area so that growers may be alerted to enact management decisions to protect the fruit from infestation. Early detection is absolutely critical as the threshold is only one fly!



Male spotted-wing Drosophila with spots on the wing



Scentry SWD traps



CFAES

OHIO STATE UNIVERSITY EXTENSION

OSU Good Agricultural Practices (GAPs) Training

August 13th and 27th
6:00 PM to 9:00 PM

OSU GAPs Training Webinar
FREE
Registration Required

Topics Include:

- General Produce Safety Concepts
- Water Quality
- Worker Training, Health & Hygiene
- Manure and Compost handling
- Domestic and Wild Animals
- Storage and Transport

Instructors:

- **Melanie Lewis Ivey**, OSU Extension Specialist
- **Jaqueline Kowalski**, OSU Extension Educator-Summit County
- **Suzanne Mills-Wasniak**, OSU Extension Educator-Montgomery County
- **Beth Scheckelhoff**, OSU Extension Educator-Putnam County

Register at: producesafety.osu.edu/events

This is a 3-hour educational course that covers good agricultural practices or GAPs. GAPs trainings provide growers with the knowledge and tools needed to implement on farm best management practices to reduce on-farm microbial food safety hazards. *Participants will receive a certificate of completion at the end of the training.*

OSU Upcoming Events-2020

August 19 – New Pesticide Applicator Training, Ohio Department of Agriculture; [Link here](#)

August 22 – Secrest Arboretum Tour, Secrest Welcome & Education Center; [Link here](#)

August 27 – GAPs Training Webinar; [Link here](#)

September 9 – Fall Fruit Research Updates and Live Q&A; [Link here](#)

September 10 – Gardening with Dr. Timothy McDermott (presented by The CFAES Alumni Society Board); [Link here](#)

September 22 – Foodpreneur School Coaching Session II; [Link here](#)

September 22-24 – Farm Science Review; [Link here](#)

September 29 – Foodpreneur School Coaching Session III; [Link here](#)

October 15 – Welcome to Co-ops Online Training; [Link here](#)

For a list of all CFAES events and schedule changes go to the [CFAE Events Page](#)

Grower Resources:

- 2019-2020 Midwest Fruit Pest Management Guide
- 2020 Grape Disease Management Guide (u.osu.edu/fruitpathology/spray-guides/)
- 2020 Hop Disease Management Guide (u.osu.edu/fruitpathology/spray-guides/)
- OSU Fruit Pathology website (u.osu.edu/fruitpathology)
- OSU Fruit and Vegetable Safety website (<https://producesafety.osu.edu>)
- OSU Fruit and Vegetable Pest Management website (entomology.osu.edu)
- OSU Fruit and Vegetable Diagnostic Laboratory (u.osu.edu/vegetablediseasefacts/)
- OSU Bramble: Production Management and Marketing Guide (Bulletin 782) (extensionpubs.osu.edu)



Phomopsis leaf blight on strawberry is caused by the fungus *Phomopsis obscurans*. Symptoms include brown lesions with purple halos. Lesions form along leaf veins and at the margins of leaves as V-shaped necrotic areas. For information on chemical control options refer to the 2019-2020 Midwest Fruit Pest Management Guide, page 119.

Contributors:

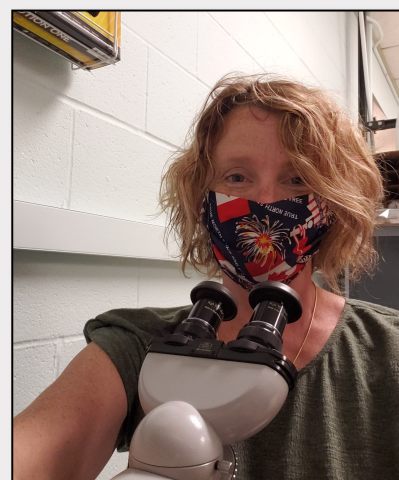
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Dr. Melanie Lewis Ivey
Checking on diagnostic
samples during COVID-19!



Dr. Diane
Doud Miller



Dr. Celeste
Welty



Brad
Bergefurd



James (Jim)
Jasinski