Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

JANUARY 2022

Weed Control in Brambles with Quinstar

By Dr. Doug Doohan - Professor, Department of Horticulture and Crop Sciences; Allison Robinson – Research Assistant, Department of Horticulture and Crop Sciences; Amanda Douridas – Extension Educator, Champaign County

Quinstar is a synthetic auxin herbicide recently registered for use on brambles and blueberry. Quinstar controls several important perennial weeds such as field bindweed and Canada thistle; weeds that are otherwise nearly impossible to control in established plantings. With funding from the Ohio Vegetable & Small Fruit Research & Development Program, the OARDC Weed Lab and OSU Extension worked together to evaluate Quinstar's ability to control honeyvine milkweed (*Cynanchum leave*), a species that is not listed on the product label but one that is very problematic for some bramble growers. Champaign Berry Farm of Urbana and Mauer Farms near Wooster cooperated by allowing experiments to be conducted in their raspberry fields.

Honeyvine milkweed is a native perennial herb that wraps around trees, vines and bushberries, over-topping the supporting plant by late spring or early summer. It is a food source for monarch butterfly larvae, but other milkweeds are preferred. Lacking the milky sap of common milkweed, honeyvine milkweed can be mistaken for field- and hedge-bindweed, morning glories

Figure 1. Recently emerged honeyvine milkweed shoot, clusters of white flowers in the axils of opposite leaves, and mature seedpods.

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or even wild buckwheat. Leaf shape, orientation, clusters of small white flowers, and the distinctive seed pods help to differentiate it from similar looking plants. Honeyvine milkweed's deep and spreading perennial root system is the secret to its weediness. Although it spreads by seed, it is the root system that resists cultivation and hand weeding and helps propagate the species throughout fruit crop plantings. The weed's waxy leaf surface is no doubt a barrier to herbicide absorption.

Trials conducted at Champaign Berry Farm in 2020/21 confirmed that Quinstar could be used safely on brambles and had herbicidal activity on the weed when applied POST in autumn. However, control was incomplete, and it was clear that more research would be needed. The approach in 2021 was to compare an application of Quinstar to tank-mixes of the herbicide with Callisto, or Chateau, or Matrix or Sinbar. Applications at Champaign Berry Farm were in early fall before frost, and again in early spring before any crop growth had started. At Mauer Farm a single application of the treatment was made in mid-May by which time raspberry plants were in early bloom and emerged weeds were an average of 1 to 2 feet high. Honeyvine milkweed was not present at Mauer Farm but there was a heavy infestation of Canada thistle and goldenrods.

Figure 2. Honeyvine milkweed has been a challenge at Champaign Berry Farm for many years and the species has built up a large reserve of seed in the soil. The ability of Quinstar to prevent seed production, as reported by Mike Pullin, should help in time to reduce the weed problem.

Bramble tolerance to early fall and early spring applications at Champaign Berry Farm was excellent; no injury was observed. However, at Mauer Farms, the mid-spring applications to advanced stage raspberry shoots resulted in stunting, chlorosis and some tissue death when Quinstar was tank-mixed with Callisto, Chateau or Matrix.

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Grower's Corner

Should I worry about not being able to purchase fungicides this season?

As with many other commodities, there is a potential shortage of fungicides, in particular Captan, for the beginning of the 2022 fruit crop season. Since Captan is the backbone fungicide for many fruit crops growers should have a Plan B in place in case Captan does not arrive in time for the first early season sprays. For apple, peach, cherry, grape, and blueberry, Captan can be replaced with Ziram. A spreader/sticker can be added to Ziram to improve its efficacy. The rates for Ziram are not the same as Captan so growers will need to refer to the label. Remember the label is the law! For growers who have strawberries they should consult the Midwest Fruit Pest Management Guide to select an alternative to Captan. Homeowners may also have some trouble finding Captan in the stores this spring. I recently visited a few of the big box stores in my area and found that supplies were very low. This may be because it is too early for the stores to put the products on the shelves – let's hope that is the case!

Quinstar / Sinbar and Quinstar by itself caused slight, transient injury soon after application but primocane growth was unaffected. Four weeks after the application, primocanes had still not emerged in plots treated with Quinstar/Callisto or Quinstar/Matrix. Primocanes in plots treated with Quinstar/Chateau were stunted. Honeyvine milkweed control in the fall was best with the tank-mix of Quinstar/Chateau, averaging about 70% three weeks after the early fall application at Champaign Berry Farms. Quinstar by itself did not provide good suppression with either application timing. Milkweed control by early summer of 2021 was still obvious in plots treated with Quinstar/ Chateau and with the Quinstar/Sinbar tank-mixes. At Mauer Farms, Quinstar/Chateau and Quinstar/Matrix provided about 90% control of Canada thistle and 70% control of goldenrod that persisted through harvest.

Figure 3. Honeyvine milkweed 1 week after treatment with Chateau/Quinstar (A) compared to Untreated (B) at Champaign Berry Farm.

After sharing our results with Mike and Cathy Pullins of Champaign Berry Farm and receiving their input we plan to continue this research in 2022 by evaluating different application timings and application methods. Mike used a spot-spray to apply Quinstar/Princep directly to milkweed foliage and also tried a broadcast spray of Quinstar/Surflan. These treatments did not seriously harm the brambles and the Princep/Princep-treated plants didn't produce seed pods. For 2022 we plan to evaluate over-the-top broadcast applications in mid-July – early August and include Surflan and Princep in the tank-mixes with Quinstar.

Quinstar is a synthetic auxin herbicide causing symptoms like twisting and stunting of susceptible species, similar to those caused by 2,4-D. Crops in most vegetable crop categories are sensitive to drift from Quinstar. In the case of tomato, even ground contamination by Quinstar spray drift may result in injury. Quinstar also persists in soil. Only wheat or grain sorghum can be planted within 10 months of application and several vegetable crops require a 24-month waiting period before they can be safely planted.

Brambles can be sprayed with Quinstar two times in the spring at an application rate of up to 12.6 fl oz per Acre/application. Crop oil concentrate at 2 pints/acre should always be added to the spray mix. The final application should be not less than 30 days before the first harvest. Not all products with the Quinstar brand are labelled for use on brambles. Quinstar is also labelled for use on asparagus, blueberry and cranberry. The correct label can be found at the CDMS website.

This research was partially supported by the 2021 Ohio Vegetable and Small Fruit Research and Development Program.

2021 Fruit Disease Diagnostic Report

By Dr. Melanie Lewis Ivey- Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology; Dr. Francesca Rotondo – Wooster Diagnostic Coordinator

In 2021, the Fruit Pathology Program diagnosed 58 fruit samples (Figure 1) from 18 counties (Table 1, page 5) in Ohio. Most of the samples were apple (n=15) and strawberry (n=12). Fungal diseases represented 55% of the diagnoses, followed by abiotic disorders (26%) and bacterial diseases (5%). The remaining samples were insect related injuries (7%) or had injuries or symptoms that could not be identified (7%). Most samples that could not be diagnosed were either dead, rotten, or not enough tissue was provided to make an accurate diagnosis. Information on collecting, holding, and sending fruit samples to the lab for diagnosis are available at the Fruit Pathology website. You can also call or email the lab to get assistance.

Three of the more interesting diseases identified in 2021 included Neopestalotiopsis disease of strawberry, blue stain disease of pawpaw, and Diaporthe blight of hop.

- **Neopestalotiopsis disease** of strawberry, caused by *Neopestalotiopsis spp*. was identified for the first time in Ohio (see November 2021 Issue). Growers, crop consultants and Educators should be on the lookout for symptoms of Neopestalotiopsis disease beginning in early spring and throughout the entire season, including post-harvest. If a grower suspects that the disease is present in their plantings they should contact their county extension Educator or send a sample to the Vegetable and Fruit Diagnostic Laboratory in Wooster, OH.
- **Blue stain disease** in pawpaw can be caused by abiotic factors such as waterlogging or drought or by soilborne fungal or fungal-like pathogens. Symptoms include wilting and leaf drop and blue vascular discoloration (blue staining!). Two species of Pythium (*P. aphanidermatum* and *P. attrantheridium*) were found to be associated with the soil surrounding the crown and roots of the affected pawpaw trees. Studies are on-going to determine if *Pythium* is the actual cause of blue stain. Stay tuned!
- **Diaporthe blight** of hop, also called halo blight, is caused by the fungus *Diaporthe* spp. And is an emerging disease in Ohio. Symptoms occur on the leaves and cones and can cause between 50-60% yield losses due to cone shatter. Effective fungicides are still being investigated.

This research was partially supported by the 2021 Ohio Vegetable and Small Fruit Research and Development Program.

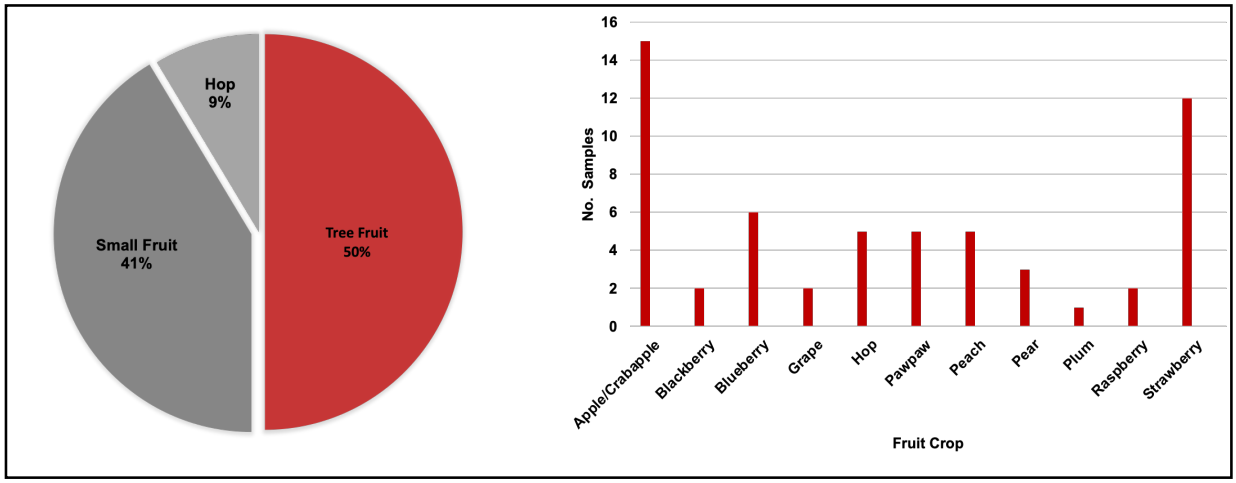

Figure 1. Number of fruit and hop samples received for disease diagnosis in 2021.

Table 1. Number of fruit and hop samples received, diagnosis, and counties from which the samples were received for disease diagnosis in 2021. Diseases in bold text are new or emerging in Ohio

Crop (No. samples)	Diagnosis	Counties
Apple (14)	Crown gall Sooty blotch and Flyspeck Apple cedar rust **Glomerella leaf spot** Bitter rot Pythium root rot Elsinoe leaf spot Fire blight Suspected root pathogen Chemical injury	Licking, Columbiana, Portage, Holmes, Greene, Tuscarawas, Wayne, Lucas
Blackberry (2)	Glyphosate injury Chemical injury	Holmes, Wayne
Blueberry (6)	Phomopsis twig blight Chemical injury Cane anthracnose Nutrient deficiency	Medina, Wayne
Crabapple (1)	Scab	Licking
Grape (2)	Powdery mildew Downy mildew	Adams, Erie
Hop (5)	**Diaporthe blight** Spider mites Nutritional deficiency	Athens, Shelby
Pawpaw (5)	Blue stain disease	Athens
Peach (5)	Scab Powdery mildew Root asphyxiation (wet feet)	Mahoning, Greene, Montgomery
Pear (3)	Plum curculio Cicada injury on twigs	Hardin
Plum (1)	Black knot	Wayne
Raspberry (2)	Chemical injury	Holmes, Jefferson
Strawberry (12)	Anthracnose Black root rot Colletotrichum crown rot Fusarium root and crown rot **Neopestalotiopsis disease** Nutrient deficiency Pythium root rot Sunscald	Columbiana, Hamilton, Hardin, Holmes, Lucas, Tuscarawas, Warren, Wayne, Washington

Spraying in Orchards and Vineyards OSU Factsheet Series

By Dr. Melanie Lewis Ivey- Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology

A new factsheet series developed by **Dr. Erdal Ozkan in the Department of Food, Agricultural and Biological Engineering (FABE)** is now available on-line. The series includes seven factsheets that cover topics such as best practices for effective spraying in orchards and vineyards (FABE-539), calibration of orchard and vineyard sprayers (FABE-537) and strategies to maximize pesticide deposit and coverage for spraying in the orchard and vineyard (FABE-536).

Sprayers for Effective Pesticide Application in Orchards and Vineyards (FABE-533) provides details about the different sprayers that are used to spray fruit crops and is the first factsheet of its kind in the United States. Information on hydraulic, air-assisted, sprayers with adjustable spouts, multi-row adjustable sprayers, tower type airblast sprayers (Figure 1), air-assisted sprayers with multi-head fans, tunnel sprayers, and pneumatic air shear sprayers are included in the factsheet. A list of all seven factsheets with links is provided below.

Dr. Ozkan is currently working on designing user friendly print versions of the factsheets. These factsheet will be available on-line sometime in February. For more information of the factsheet series please contact Dr. Ozkan (ozkan.2@osu.edu; 614-292-3006).

Figure 1. Examples of a tower-type airblast sprayer as shown in the factsheet *Sprayers for Effective Pesticide Application in Orchards and Vineyards* (FABE-533) by E. Ozkan and E. Gil.

FABE-533 Sprayers for Effective Pesticide Application in Orchards and Vineyards link here

FABE-534 Selecting the Right Type and Size of Nozzles for Effective Spraying in Orchards and Vineyards link here

FABE-535 Strategies to Minimize Spray Drift for Effective Spraying in Orchards and Vineyards link here

FABE-536 Strategies to Maximize Pesticide Deposit and Coverage for Effective Spraying in Orchards and Vineyards link here

FABE-537 Calibration of Orchard and Vineyard Sprayers link here

FABE-538 Advancements in Technology for Effective Spraying in Orchards and Vineyards link here

FABE-539 Best Practices for Effective Spraying in Orchards and Vineyards link here

CFAES

Ohio State University Extension - Belmont and Monroe Counties

Fruit Tree Management Workshop

Working with Apple, Pear, and Peach Trees

FRIDAY, MARCH 4TH, 12:00 P.M. – 2:00 P.M.

OSU Extension and Lory Shelton Orchard is proud to offer a fruit tree care workshop. Learn how to manage fruit trees at this hands-on workshop with local orchardist, Lory Shelton and hear from OSU professors:

- Dr. Melanie Ivey, Extension Specialist of Plant Diseases
- Dr. Ashley Leach, Extension Specialist of Plant Insects

Location: 35601 Chestnut Ridge Rd., Barnesville, OH 43713

Cost: $10 for public, free for Master Gardener Volunteers [Cash & Checks Only]

(Make Checks to OSU Extension Belmont County)

Questions Contact:

Belmont: Dan Lima, Educator: 740-695-1455, lima.19@osu.edu

Monroe: Catelyn Turner, Educator: 740-472-0810, turner.1630@osu.edu

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We Sustain Life

Early Detection of Blackberry Downy Mildew

By Dr. Melanie Lewis Ivey- Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology

Downy mildew, caused by *Peronospora sparsa*, is a systemic disease of blackberry (*Rubus* sp.) that was first observed in Ohio in 2017. Symptoms first appear on the dense foliage near the base of the plants during cool, wet conditions (Figure 1). The primary source of the pathogen is transplants or cuttings. Since the disease does not develop until conditions are cool and humid, plants that appear to be healthy could be systemically infected. Currently there is no clean plant certification for blackberry downy mildew. With support from the Ohio Vegetable and Small Fruit Research and Development Program and Ohio Department of Agricultural Specialty Crop Boack Program a study was conducted to determine best practices for sampling and detecting *P. sparsa* in asymptomatic nursery plants.

Figure 1. Downy mildew symptoms on blackberry (cv. Ouachita). Plants are stunted and leaves have angular reddish-brown spots.

Nursery plants of three varieties (cvs. Caddo', 'Natchez', and 'Ouachita') with no visible symptoms of downy mildew were purchased in winter 2021 and tested for *P. sparsa* using a molecular assay. Roots, stems (cane), and mature and immature leaves were collected three times (January-early vegetative, March- vegetative, and August-flowering/fruit set) (Figure 2).

At the time the plants arrived in the lab from the nursery in January, 90%, 40%, and 100% of the 'Caddo', 'Natchez', and 'Ouachita' plants tested positive for *P. sparsa,* respectively. *P. sparsa* was detected most frequently in new or immature leaves, followed by mature leaves, roots, and stems. Independent of variety and tissue type, *P. sparsa* was detected more frequently in January, when plants were breaking dormancy and new leaves were emerging, than in March or August (Figure 3).

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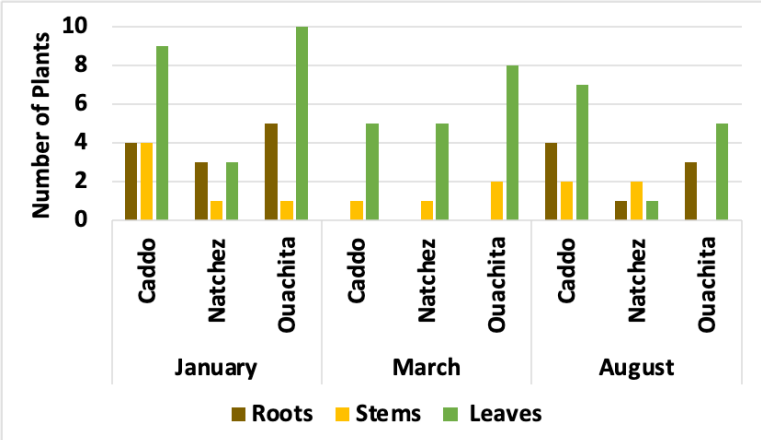

Figure 2. Frequency (number of plants, X-axis) of *Peronospora sparsa* detected by polymerase chain reaction (PCR) in blackberry roots, stems (canes), and leaves over a production season. Ten plants per variety were tested. Root samples were not collected in March.

OSU EXTENSION & HORTICULTURE AND CROP SCIENCES

SPOTTED LANTERNFLY MANAGEMENT WORKSHOPS

Join us to learn more about identifying, monitoring, and managing the newly invasive Spotted Lanternfly. Two sessions each day will be provided to cater towards commercial growers and homeowners. Please select your preferred session and location in the registration link. Commercial growers will receive Pest Ed recertification credits for attendance.

NOVEMBER 8 | NOVEMBER 15 | MARCH 3 | APRIL 11

COMMERCIAL GROWERS 2:30 - 4:30 PM | GENERAL PUBLIC 5 - 7 PM

Location: OSU Extenion Operations Caldwell Office (Nov 8) | Butler County Extension Center (Nov 15) | TBD (Geneva Mar 3, Findlay Apr 11)

Cost: Free to attend

Details: Register at https://osu.az1.qualtrics.com/jfe/form/SV_0vV5sP8K1oQI8jY

Contact information: Maria Smith (smith.12720@osu.edu) or Amy Stone (stone.91@osu.edu)

—We Sustain Life—

u.osu.edu/spottedlanternfly

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Blackberry downy mildew from page 8

The nursery plants tested in this study were systemically infected with *P. sparsa*. Based on these findings growers should assume that downy mildew susceptible varieties such as 'Caddo' and 'Ouachita' nursery plants are infected with *P. sparsa* at the time of purchase. However, past research has shown that field outbreaks of downy mildew in Ohio are rare and that outbreaks require prolonged periods of cool wet weather. Preventative spray programs should only be implemented when the first symptoms of the disease are observed. For confirmation of downy mildew on blackberry samples can be sent to the Vegetable and Fruit Diagnostic laboratory in Wooster, OH.

This research was partially supported by the 2021 Ohio Vegetable and Small Fruit Research and Development Program.

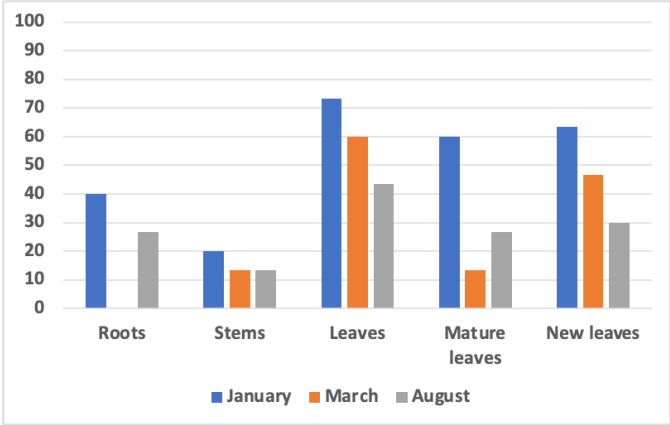

Figure 3. Percent of plants (X-axis) of *Peronospora sparsa* detected by polymerase chain reaction (PCR) in blackberry roots, stems (canes), and immature and mature leaves over a production season. Thirty plants (n=30) per tissue type. Roots were not collected in March.

Winter Update for Tree Fruit

By Dr. Diane Doud Miller - Associate Professor, Department of Horticulture and Crop Sciences

Temperature-wise, the winter is progressing just fine for tree fruit crops, so far. In this update, I will include some information from University colleagues which you will likely find valuable as either new information or as review. Thanks to these colleagues for agreeing to share their information here.

Video on pruning and training apple trees: https://extension.psu.edu/pruning-and-training-apple-trees 15 min video. The information in this video is put together by Drs. Tara Baugher, Jim Schupp and Rob Crassweller at Penn State University. You will find it to be a good review for what the goals of pruning/training are in different orchard systems. You will also find it to be a good employee training video.

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Figure 1. Apple trees in late winter at Horticulture Unit 2 research field in Wooster, Ohio.

Temperature and moisture in 2021, as compared to 2020-, and 30-year average: OSU colleagues who work with grapes, Dr. Imed Dami and Diane Kinney, put together these data. Please see visit the Buckeye Appellation Blog for an explanation related to grapes. I will include some of their charts in this article, with some explanation toward tree fruit.

The higher-than-normal temperatures in January 2021 (Figure 2) resulted in chilling requirements met sooner than normal for tree fruits, meaning loss of winter hardiness. Then the higher--than-normal temperatures in March and April meant we spent more time worrying about the stage of tree development and low temperatures, i.e., frost damage. There were a lot of nights when the temperature hovered in the danger zone for stage of tree development. **But Ohio apple growers came through with a good crop in 2021.** Please note that we did have considerably warmer-than-normal temperatures in December 2021, continuing the warmer winter trends from previous years.

Summer growing degree days (GDD) in 2021 (Figure 3) were in the normal range, and like the 30-year average, but cumulatively above the average.

Monthly distribution of precipitation was quite variable, especially during the growing season, although final amounts were like 30-year average (Figure 4, page 11). There were some dry summer periods, and young dwarf plantings are more susceptible to moisture stress.

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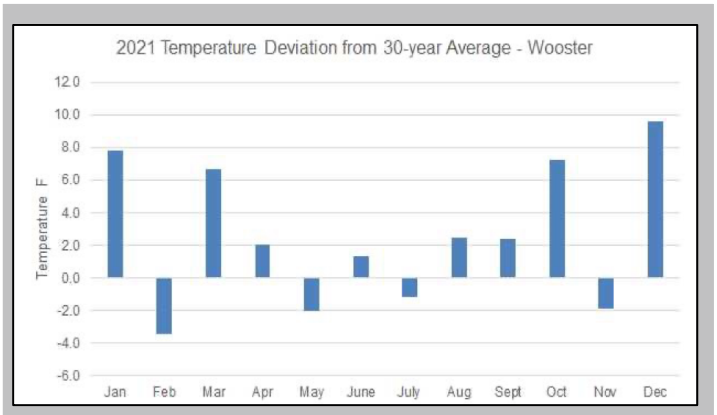


Figure 2. 2021 monthly temperature deviation in Wooster, Ohio from the 30-year average.

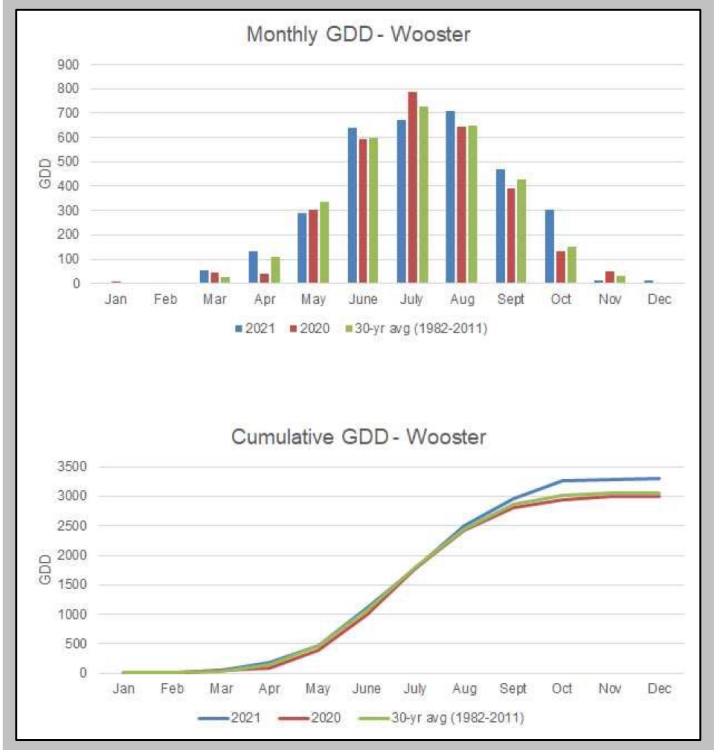


Figure 3. 2021 monthly and cumulative growing degree days (GGD) in Wooster, Ohio.

NEWA 3.0 Tutorial – FREE
February 7, 2022
9 am – 12:30 pm

The NEWA 3.0 system is now on-line and 2022 will be the first year when you will not be able to use the old version. The NEWA 3.0 on-line tutorial will include training on how to use the site and make the most out of apple disease and insect pest warning systems. Register Here

Peach tree flower bud hardiness: Bill Shane at Michigan State University has taken on the task of figuring out peach flower bud winter and spring hardiness, which can be puzzling. There are some general things he has learned such general tree health matters, variety makes a difference, rootstock makes a difference, and of course, stage of flower bud development matters. And maybe more flowers are better. The article *"How to decipher cold weather effects on peaches"* provides a nice overview article of Bill's work. And for those of you interested in the details of Bill's work, a copy of the presentation "*What we have learned about peach variety hardiness*" can be downloaded here.

Table 1. Fruit bud hardiness of peach varieties. Table reproduced from the article "How to decipher cold weather effects on peaches" by William Shane, Extension tree fruit specialist at Michigan State University's Southwest Michigan Research and Extension Center

	Temperature Range (First to last fruit bud death)	
Variety	Celsius (C)	Fahrenheit (F)
PF9A-007	-16 to -24	3 to -11
Brightstar	-14 to -25	7 to -13
Desiree	-19 to -24, -17	-2 to -11
Coralstar	-15 to -19, -23	5 to -2
PF Early 8 Ball	-16 to -23	3 to -9
Nectafest	-17 to -23	1 to -11
Messina	-17 to -23	1 to -9
Gloria	-19 to -24	-2 to -11
TangOs	-18 to -24	0 to -11
PF Legendary	-16 to -24	3 to -11
Glowingstar	-16 to -23	3 to -9
Victoria	-17 to -24	1 to -11
Blushingstar	-17 to -24	1 to -11
Autumnstar	-18 to -22, -24	0 to -8
BuenOs II	-19 to -25	-2 to -13
Easternglo	-19 to -24	-2 to -11
Flameprince	-17 to -24	1 to -11
Sweet Breeze	-15 to -24	5 to -11
Ambre	-20 to -23	-4 to -9
Zephyr	-17 to -24	1 to -11
Cresthaven	-18 to -25	0 to -13
July Rose	-14 to -24	7 to -11
PF35	-13 to -21	9 to -6

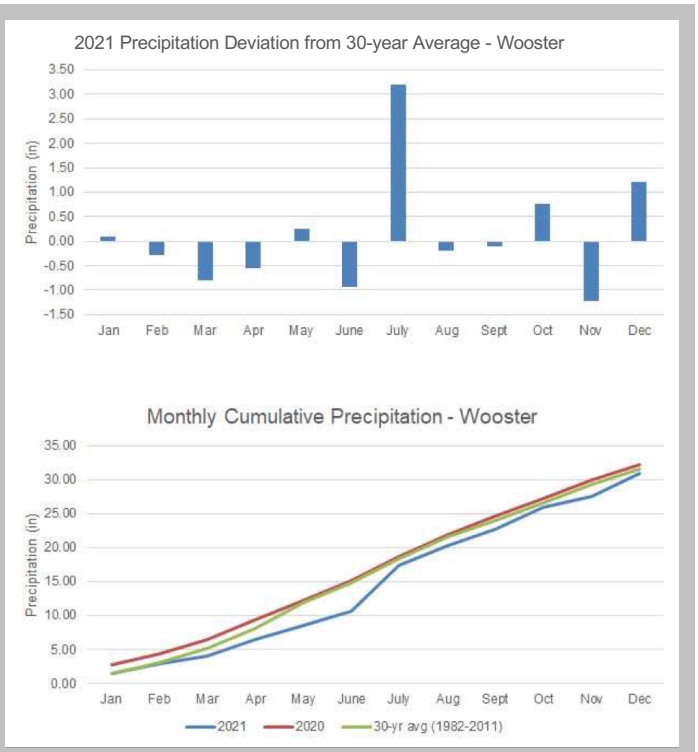


Figure 4. 2021 monthly precipitation deviation in Wooster, Ohio from the 30-year average and monthly cumulative precipitation.

Point being that there are variety differences in peach flower bud hardiness, and Ohio growers should consider that in variety selection criteria. Specific tolerances of varieties (Table 1) that Bill Shane has determined are recently published in the article *"Arctic air with coldest temperatures in two years poses threat to Michigan fruit".*

Best wishes as we head toward the 2022 season: We are set up for a good crop season in 2022, and certainly a good marketing season as these recent pandemic years have reminded consumers to appreciate local production and marketing!

Ohio Grape Grower Survey Coming Soon!

The Ohio grape industry produces grapes for wine, juice, and table grape use. Over the last decade, the industry has grown rapidly in our state. Unfortunately, the USDA ceased conducting a regular Ohio grape census five years ago, making it difficult to track this growth or collect accurate information about the number of acres and production by grape variety. To fill this gap, the Ohio Grape Industries Committee has commissioned researchers at The Ohio State University to conduct an independent survey of all Ohio grape growers.

G. Twining, TheWineBuzz

Dr. Douglas Jackson-Smith, a professor in the College of Food, Agricultural, and Environmental Sciences at Ohio State, is leading the survey effort which is designed to reach all Ohio producers who grew wine, juice, or table grapes in 2021. Beginning the third week of January, researchers will send the survey to a comprehensive list of grape growers in the state, with an opportunity to respond through the mail or online.

The survey is voluntary and all responses will be treated as confidential. To get an accurate picture of the size and scope of the current Ohio grape industry, it will be critical to hear back from all producers. Aggregated results will be shared in a report that will be available to farmers, wineries, juice processors, and others to inform their decisions.

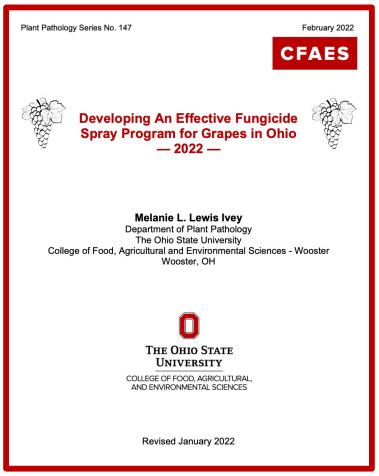
If you are a grape grower and do not receive a copy of the survey or if you have questions about the project, please reach out to **Dr. Jackson-Smith at Jackson-smith.1@osu.edu or 330-202-3540.**

Diaporthe blight (also called Halo blight) on hop is a new disease in Ohio caused by the fungus *Diaporthe* sp. Symptoms include necrosis and blighting of leaves and cone shattering. Cone discoloration can reduce hop quality, which may impact beer quality. Currently fungicides recommended for Alternaria cone blight are suggested, although fungicide efficacy studies are needed to confirm effective fungicides for controlling this new disease.

Photo courtesy of Doug Higgins, Michigan State University

Grower Resources:

- 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)
- OSU Extension Publications Store (https://extensionpubs.osu.edu/)
- Ohio Grape, hop and blueberry spray guides (u.osu.edu/fruitpathology/spray-guides/)



The 2022 Ohio spray guide for grapes is now available on-line. Hard copies will be available at the 2022 Grape and Wine Conference, or by contacting Melanie Lewis Ivey (ivey.14@osu.edu; 300-263-3849)

OSU Upcoming Events-2022

NEWA 3.0 Tutorial – February 7 link here
2022 Ohio Commercial Pesticide Recertification Conferences
- Akron, January 27 link here
- Columbus, February 10 link here
- Dayton, February 23 link here

2021-2022 Spotted lantern fly management workshops – March 3; April 11 link here
Fruit Tree Management Workshop – March 4 Contact Dan Lima (740-695-1455)
2022 Ohio Grape and Wine Conference – February 21-22 link here
2022 From Bines to Steins, Annual Ohio Hop Conference – February 26-27 link here

For a list of CFAES events and schedule changes go to the CFAE Events Page

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