Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

June 2025

A Horticultural Look at the Tree Fruit Situation

By Diane Doud Miller, Associate Professor, Tree Fruit Extension Specialist, Department of Horticulture and Crop Sciences

Our 2025 Ohio growing season has so far been favorable. The adequate moisture and pleasant temperatures during spring have given trees the chance to recalibrate from the drought and high temperatures of 2024 growing season.

Root growth: New tree root growth occurs predominantly in early spring, and this year we had ideal temperatures and moisture, allowing the trees to establish strong new root systems to support the 2025 tree growth and fruit crop. Achieving adequate root growth is one of the main reasons to get new plantings in as early as possible in the spring. Having irrigation available for newly planted trees is also beneficial if conditions become dry.

Developing the largest and healthiest root system possible on young trees will provide long-term benefits. Keep weed competition, especially from grasses, to a minimum, as apple feeder roots are close to the surface and do not compete well with weeds. Early staking or trellis support of young trees will further aid root growth and establishment.

While it may be tempting to plant young trees and ignore them to focus attention on older, fruit-bearing trees, these few steps, tree support, weed control, and adequate water, will help your next profitable planting reach production sooner.

Figure 1. Newly planted apple orchard showing tree support, weed control, and trickle irrigation. Photo courtesy of Ontario Ministry of Agricultural, Food & Rural Affairs.

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Flowering and fruit set: We had a favorable and extended spring flowering season this year despite the 2024 drought. Overall, the apple crop across the state is looking good — maybe a bit light in some areas, but generally in good shape. Bloom-time weather this spring was favorable for bee activity, contributing to solid fruit set, and thinning treatments appear to have been effective where applied. While a few locations saw some frost, keep in mind that only 5–10% of blossoms are needed for a full crop, so most locations and varieties have set a decent crop.

I'll share a lesson learned from my own experience with a young, 5-year-old apple planting (600 trees) of mixed varieties at Wooster. The trees had bloomed and set a nice crop last year. Even with the drought and no irrigation in 2024, they came back with a strong bloom in 2025. However, I did not place any bee hives in the orchard this spring — despite the larger trees and heavier bloom — and I should have. The planting sits in a wide open, windy area (CFAES-Wooster, Hort Unit 2), with another apple planting nearby. Unfortunately, there simply weren't enough bees to get the job done. While native bees do a lot of pollination work, especially as we've seen during times of honeybee disease issues, their success depends heavily on habitat availability. With nearby woods and persistent winds, native bee activity was noticeably reduced. Lesson learned for future seasons.

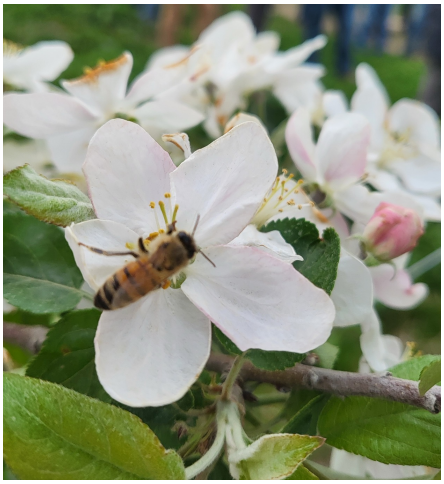

Figure 2. Lack of nearby woods, and the windy conditions, can limit the number of bees that visit an orchard. Image courtesy of M. Lewis Ivey, The Ohio State University.

The fruit crop situation is not as favorable for stone fruits as it is for apples. Low winter temperatures caused significant damage to the flower buds of some stone fruit trees. However, at affected sites, younger and healthier trees showed better flower bud survival and overall tree condition compared to older, less vigorous trees.

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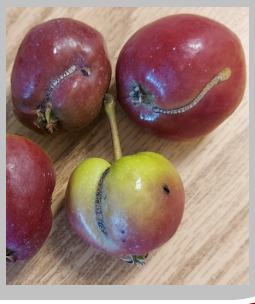
Grower's Corner

What is causing zipper-like scars on my apples?

According to Dr. Ashley Leach, OSU Extension Specialty Crop Entomologist, the damage is from the European apple sawfly. Early larvae (first instar) tunnel just under the fruit skin, resulting in the zipper-like (or ribbon-like) scars. Second instar larvae bore into the fruit causing fruit to abort. Insecticides at petal fall for plum curculio normally manage apple sawfly as well. Dr. Leach mentioned that she doesn't see sawfly injury often and when she does it occurs mostly in organic orchards. Injury is also more frequently observed when bloom time is extended (as occurred this year in Ohio orchards) and petal fall insecticide applications are delayed.



Tree fruit situation continued from page 2

This serves as a good reminder to regularly rotate stone fruit plantings. If you are holding on to older, declining trees in hopes of getting one more crop, sometimes it works, but often it does not. Healthy, vigorous young trees give us the best chance for a successful stone fruit crop in Ohio. That said, the stone fruit crop in Ohio is larger this year than many expected!

Tree Vegetative Growth: There are three key cycles occurring simultaneously in fruit trees: vegetative growth for the current season, fruit production for the current season, and flower bud formation for the following year's crop. In years when stress factors like limited water availability occur, as we experienced in 2024, one or more of these cycles are often negatively affected.

Apple trees are generally more tolerant of drier soil conditions but perform best in well-drained soils that receive consistent water recharge, whether from rainfall or irrigation, allowing moisture to move through the soil profile. The spring root growth that has occurred this season is now supporting healthy shoot growth. This shoot growth is important not only for producing quality fruit this year (2025), but also for setting adequate flower buds for next year's crop (2026).

Overall, we are having a good season so far. Let's hope for continued favorable weather, economic conditions, and market opportunities.

Systems Perspective: Apple trees function as biological systems, and when one part of the system is stressed or compromised, the effects can be seen throughout the tree. The orchard itself is also a system, with some areas likely performing better than others due to site variability. As orchard managers, our responsibility is to maintain the health and performance of each tree, as well as the orchard, to operate as efficiently and productively as possible. Tree health remains paramount. As the season progresses, continue to focus on keeping your fruit trees as healthy and vigorous as possible.

Figure 3. Even with cold temperatures during the winter some farms expect a good crop this year. Image courtesy of M. Lewis Ivey, The Ohio State University.

DATE:
August 12, 2025

TIME:
9:00 a.m.-5:00 p.m.

LOCATION:
Quarry Hill Winery & Orchard
8403 Mason Rd #2
Berlin Heights, OH 44814

REGISTRATION COST:
Early Registration: $45 per person until July 1

Late Registration: $60 per person July 2 until August 1

New Sprayer Technologies and Best Practices: Vineyards and Orchards

This workshop will feature presentations on best spraying practices using conventional sprayers and new sprayer technology, including spray drones and Intelligent sprayer units. The afternoon will provide field demonstrations showing adjustments to improve effectiveness of conventional sprayers as well as sprayer operation and calibration demonstration. This workshop is being developed by OSU, MSU, and PSU Extension Specialists and the USDA-ARS Application Technology Research Unit. Registration is required. Please see the agenda for program details. Lunch and workshop materials are included with registration.

Pesticide Recertification credits will be offered with this program

REGISTER AT GO.OSU.EDU/SPRAY2025

PennState Extension

The Ohio State University
College of Food, Agricultural, and Environmental Sciences

Michigan State University Extension

How to Submit Fruit Samples for Diagnostic Analysis

By Dr. Francesca Rotondo – OSU Plant and Pest Diagnostic Clinic, Director

Proper sample submission is essential for accurate disease diagnosis and management recommendations. Whether dealing with tree fruits, small fruits, soft fruits, pome fruits, or berries, following specific guidelines ensures high-quality samples and thorough evaluations.

General Guidelines

For the best results, collect plant tissue showing all stages of the problem. If possible, submit the entire plant by carefully digging it up rather than pulling it out to avoid damaging the roots. Wrap the root ball securely to prevent drying. If submitting the entire plant is not feasible, send a handful of root material in a separate plastic bag with moist soil. Place all plant material in a plastic bag to retain moisture during transit. See below for specific instructions for packaging soft fruit.

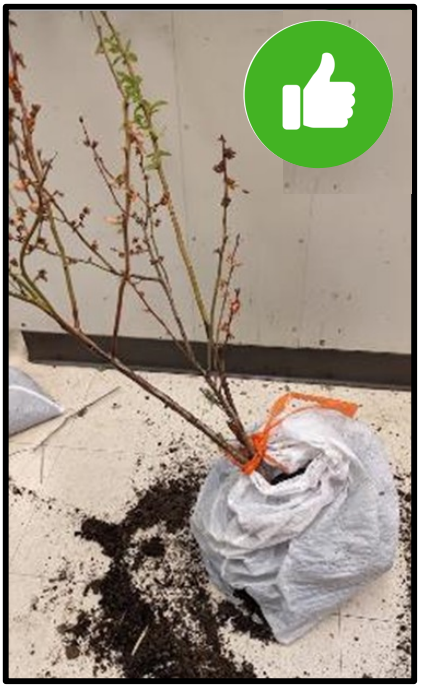
Tree Fruits and Pome Fruits

For vascular wilt diseases, collect at least three branch sections measuring between ½ to 2 inches in diameter and 6 to 8 inches long from recently wilted branches. Select branches that include the transition zone from healthy to symptomatic tissue, as this provides the best diagnostic quality. Keep samples refrigerated and package them in a plastic bag to maintain integrity until shipping.

Soft Fruits and Berries

Soft fruits require careful handling to prevent damage during transportation. Paper bags are preferable to plastic bags, as they help maintain fruit integrity by reducing excess moisture accumulation. If mature fruits are available, package them separately while ensuring the entire plant is submitted for a more comprehensive evaluation. Secure all materials in a sturdy box to avoid crushing during shipment.

By following these guidelines, diagnostic labs can assess fruit samples more effectively, leading to precise recommendations for disease management. Proper packaging, refrigeration, and sample selection are key to obtaining accurate results.



Shipping and Contact Information

Samples can be shipped to:
C. Wayne Ellett Plant and Pest Diagnostic Clinic
1680 Madison Avenue
Wooster, Ohio 44691

In-person drop-off is also available at:
Selby Hall, Room 234
1716 Wilson Road
Wooster, Ohio 44691

The Clinic is open from 9 AM to 5 PM. Please call ahead at 330-263-372 to ensure availability, as we are actively involved in outreach and extension activities during the growing season.

Apple Leaf Spots- Should You Worry?

Melanie L. Lewis Ivey, Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology

This article was first published by Amy Miller in the June 2021 issue of Ohio Fruit News. At the time, Amy was a PhD student in my program. Amy successfully completed her PhD and is now Dr. Amy Miller. I decided to reprint this article since I have been getting quite a few calls about spots on apple leaves. I also added a description of apple scab, since apple scab lesions will often be present on leaves along with other diseases. Lastly, I updated the name of Marssonina leaf blotch, to its new name - Apple leaf blotch (easier to say now!). The fungus that causes this disease has also been renamed and it now called *Diplocarpon coronaria* (previously *Marssonina coronaria*).

Leaf spots are one of the most common maladies on apple trees throughout the summer months, but they can be very difficult to diagnose. Leaf spots can be caused by different types of fungi, by abiotic factors such as sunburn or frost, by damage from pesticides, or by some combination of these factors.

Symptoms from each of these issues can look very similar, and often it is impossible to identify the cause of the leaf spots without using microscopy or specialized lab tests. Many growers who see leaf spots in their apple trees want to know immediately what is causing the spots, will it get worse, and what can they do about it. When diagnosing leaf spots, it is important to note the time of year (spring, early summer, late summer, etc.), the recent and historical weather conditions, recent sprays and chemical use, other symptoms present in the trees (twig cankers, insect issues, etc.), and overall tree health.

So, Should you worry? The short answer is, maybe. If the leaf spots can lead to premature defoliation or significant loss of leaf area, then there is cause for concern. Plentiful, healthy leaves are critical to finishing a good crop of fruit, so significant loss of leaf area can be detrimental to the crop. Leaf spots caused by fungi will typically get worse over time if not managed properly. On the other hand, affected trees that are growing vigorously, are sending out new leaves, and are otherwise healthy can probably still support a good apple crop. Frost, sunburn, and acute chemical damage are issues that can affect leaves at a single time point, and trees can often outgrow damage from these issues. If leaf spots or leaf loss are caused by systemic chemical damage, the best a grower can do is care for the overall health of the tree and hope that the tree can recover. If leaf spots are caused by fungi, active control measures are recommended.

Figure 1. Apple scab (top) caused by *Venturia inaequalis*. Spores of *V. inaequalis* (bottom). Spore photo credit: Nicole Gauthier, University of Kentucky.

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Leaf spots on apples continued from page 6

Leaf spots caused by fungi are best managed by a combination of good cultural practices and some chemical control. Many fungi that cause leaf spots can overwinter in dead leaves, so flail-mowing and applications of urea (5%) are recommended in the fall after leaf drop. Intensive scab (Figure 1) spray regimes, that include captan or mancozeb, typically also control other fungi that can cause leaf spots, such as *Botryosphaeria obtusa*, which causes frog eye leaf spot and black rot (Figure 2), *Diplocarpon coronaria*, which causes Apple leaf blotch (Figure 3), and *Glomerella cingulata*, which causes Glomerella leaf spot (Figure 4). These sprays are very effective against disease on leaves and fruit, but not as effective against twig cankers. If untreated, cankers can continue to produce inoculum for twigs, leaves, and fruit. Growers should make sure they're using good sanitation and cultural practices to get rid of twig cankers and not rely on chemical sprays alone. Over-application of fungicides without good cultural practices can lead to development of fungicide resistance in common fungal pathogens.

Figure 3. Apple leaf blotch (top) caused by *Diplocarpon coronaria*. Spores of *D. coronaria* (bottom) at 400X magnification. Photo credit: Amy Miller, The Ohio State University

Figure 2. Frogeye leaf spot (top) caused by *Botryosphaeria obtusa*. Spores of *B. obsusa* (bottom) at 400X magnification. Photo credit: Amy Miller, The Ohio State University

Figure 4. Glomerella leaf spot (top) caused by *Glomerella cingulata*. Spores of *G. cingulata* (bottom) at 400X magnification. Photo credit: Dr. Sara Villani, North Carolina State University

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Leaf spots on apples continued from page 7

Opportunistic fungal pathogens are fungi that live in the environment and normally don't cause disease on apple trees; however, they can cause disease if trees are stressed or unhealthy for some other reason. Extreme weather events (such as extreme temperatures, flood, and drought, or rapidly changing temperatures), poor site/soil conditions, lack of nutrition, and attack from other pathogens (such as root pathogens) can cause trees to become weak and get leaf spots and cankers from fungi that normally wouldn't cause disease. Alternaria leaf spot, caused by *Alternaria mali*, is an opportunistic pathogen in Ohio (Figure 4). Other fungi such as *Cladosporium* species (Figure 5), *Curvularia* species, and *Diplodia* species, have been found associated with apple leaf spots, but it is not clear whether these are opportunistic pathogens or just saprophytic fungi feeding on dead leaves killed by something else.

Figure 4. Alternaria leaf blotch (top) cased by *Alternaria mali*. Spores of *A. mali* (bottom) at 400X magnification. Photo credit: Amy Miller, The Ohio State University

Tree health is the foundation of good disease management. To minimize apple leaf spots, regardless of the cause, ensure that trees are planted properly in good soil with the right rootstock for the site conditions and desired tree vigor. Strive for balanced nutrition, as over-fertilization can be as stressful as under-fertilization. As much as possible, protect trees from spring frost, which can significantly set back growth at a critical time in the beginning of the season. Avoid aerial sprays during midday sun on hot summer days as spray droplets on leaves can result in sunburn. Minimize use of broad-spectrum herbicides within rows, as these can stunt tree leaf development and growth during spring and early summer. Pay attention to spots associated with certain apple cultivars, as cultivars can vary in their sensitivity to certain chemicals. Finally, use sprays only in combination with good cultural practices, such as leaf mulching and canker removal.

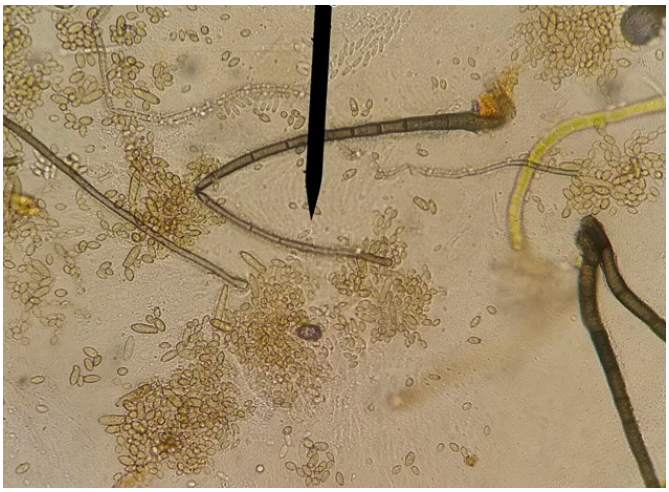
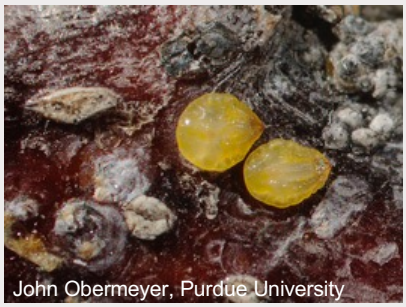


Figure 5. Spores of *Cladosporium* species (400X magnification) are often found associated with apple leaf spots. It is unclear whether *Cladosporium* is an opportunistic pathogen or merely a saprophyte. Photo credit: Amy Miller, The Ohio State University


John Obermeyer, Purdue University

San Jose scale is a sap sucking insect pest that affects many fruit tree crops including apple, peach, pear and plum. It is a non-native insect that was introduced into the United States in the early 1870s. The insects are very small and can be difficult to see until they reach high levels in tree. If uncontrolled, San Jose scale can kill a tree (especially older trees) and make the fruit unmarketable. As the scales start to feed on the fruit a bright red halo forms around the feeding site. As the fruit grows, the red color fades to light red or pink. A slight depression at the feeding site can also occur. San Jose scale can be controlled by applying an insecticide at green tip. Insecticide recommendations can be found on page 17 of the 2023-2024 Midwest Fruit Pest Management Guide. Pruning out heavily infested branches is also recommended. Parasitoid wasps are naturally enemies of San Jose scale. The wasps attack immobile scales by laying their eggs inside the scale. As the eggs hatch they eat the scale as the new parasitoid develops.

Grower Resources:

- OSU Fruit Pathology website (u.osu.edu/fruitpathology)
- OSU Plant and Pest Diagnostic Clinic website (ppdc.osu.edu or 330-263-3650)
- OSU Extension Fruit, Vegetable & Specialty Crop News (https://u.osu.edu/vegnetnews/)
- OSU Fruit and Vegetable Safety website (https://producesafety.osu.edu)
- OSU Fruit and Vegetable Pest Management website (entomology.osu.edu)
- OSU Bramble: Production Management and Marketing Guide (Bulletin 782) (extensionpubs.osu.edu)

CFAES & Other Upcoming Events – 2025

OEFFA Multi-Urban Farm Tour – June 21 link here
OPGMA Summer Tour – June 24 link here
Ohio CEA Conference – July 16 link here
OEFFA Transitioning to Organic Berry Farm Tour – July 19 link here
Northern Nut Growers Conference – August 3-6 link here
New Sprayer Technologies & Best Spraying Practices Workshop – August 12 link here
Ohio Pawpaw Festival – September 12-14 link here
Farm Science Review – September 16-18 link here
New Applicator Training Webinar – October 8 link here

*Contact your county Extension office to register for CFAES events by phone.

Contributors:

Dr. Melanie Lewis Ivey
Associate Professor and Extension State Specialist
Dept. of Plant Pathology;
224 Selby Hall
1680 Madison Avenue,
Wooster, OH, 44691
ivey.14@osu.edu; 330-263-3849

Dr. Francesca Rotondo
C. Wayne Ellett Plant and Pest Diagnostic Clinic
Dept. of Plant Pathology;
234 Selby Hall
1680 Madison Avenue,
Wooster, OH, 44691
rotondo.11@osu.edu;
ppdc@osu.edu; 330-263-3721

Dr. Diane Doud Miller
Associate Professor and Extension State Specialist
Dept. Horticulture and Crop Sciences
203A Williams Hall
1680 Madison Ave.
Wooster, OH, 44691
Miller.87@osu.edu;
330-263-3824