

Supporting



Fruit Production

# OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

JUNE 2021

## Apple Leaf Spots- Should I Worry?

By Amy Miller- Graduate Research Assistant, Department of Plant Pathology

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.



**Figure 1.** Frog-eye leaf spot (top) caused by *Botryosphaeria obtusa*. Spores of *B. obtusa* (bottom) at 400X magnification. Photo credit: Amy Miller, The Ohio State University

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 I worry?

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## Grower's Corner

### How can I control peach scab in my backyard peach trees?

Peach scab is common disease in home orchards where intensive fungicides spray programs are not used. Scab is caused by the fungus *Cladosporium carpophilum*. Wet and warm (65 to 75 F) conditions immediately after pet fall or when the shuck begins to split can result in severe infections. The twigs, leaves and fruit can be infected, although the fruit spots are mostly superficial and fruit quality is not generally affected. Most peach varieties are susceptible to peach scab so other strategies to manage the disease are necessary. The following practices can be implemented to prevent and manage peach scab.

1. Peaches grown in low lying or shaded areas are more prone to infections. Any practice(i.e., pruning, adequate spacing between trees, open areas in the yard) that promotes faster drying of leaves and fruit will help to prevent infections from occurring.
2. The fungus overwinters in infected twigs (see image) from the previous season. Therefore, pruning and removal of pruned material before growth starts in the early spring will prevent new infections.
3. Applications of sulfur or captan beginning at full bloom and every 10-14 days afterwards for a total of five applications will protect the fruit from getting spots. However, remember that the spots don't affect fruit quality or flavor, so fungicides are probably not necessary.



## Leaf spots on apples continued from page 1

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.

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 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 1), *Marssonina coronaria*, which causes Marssonina leaf blotch (Figure 2), and *Glomerella cingulata*, which causes Glomerella leaf spot (Figure 3). These sprays are very effective against disease on twigs 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 2.** Marssonina leaf blotch (top) caused by *Marssonina coronaria*. Spores of *M. coronaria* (bottom) at 400X magnification. Photo credit: Amy Miller, The Ohio State University



**Figure 3.** 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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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) caused 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.

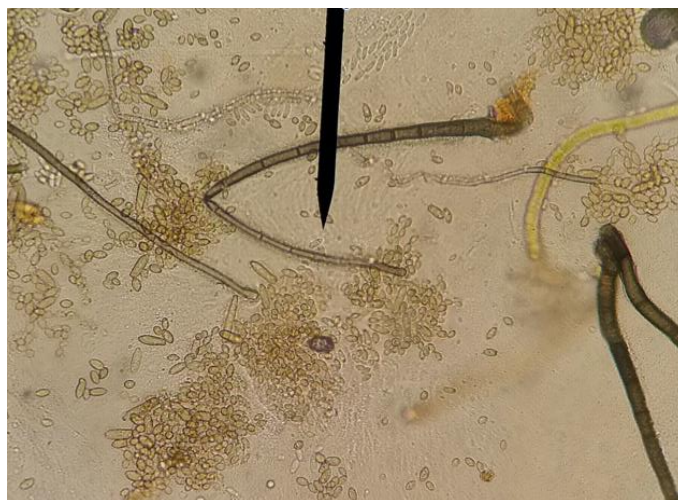


Figure 5. Spores of *Cladosporium* species (400X magnification) are often found associated with apple leaf spots. It is unclear whether *Cladosporium* is an opportunistic pathogen or merely a saprophyte. Photo credit: Amy Miller, The Ohio State University

# Timely Canopy Management of Grapes

By Maria Smith- Viticulture Outreach Specialist, Department of Horticulture and Crop Science and Melanie Lewis Ivey, Associate Professor, Extension Fruit Pathologist  
Department of Plant Pathology

Management of the grape canopy is critical to the success of the vine and the production of a high-quality berry. The goal of vegetation management in the midseason is to ensure an open canopy that allows for adequate air flow, optimal sunlight exposure, and good fungicide coverage. Open canopies with optimal sunlight exposure provides the best environment for successful disease management and fruit ripening later in the season.

A frequently asked question is “when is the best time to remove leaves surrounding the clusters?” **Leaf removal should be performed between fruit-set and when the berries reach pea-size (Figure 1).** While leaf removal can be done just prior to or during bloom (“early leaf removal” or ELR), the best timing for leaf removal for most varieties begins at fruit-set. When performed between fruit-set and pea-size stages, potential yield reductions are minimized (this contrasts with ELR) and the risk of berry sun is reduced. This is also the critical period for protecting the fruit from pathogen infections. By opening the canopy, the environmental conditions that favor most fungal pathogens (i.e., high humidity and free moisture) are reduced. In addition, fungicide coverage of the susceptible berries is improved.



Figure 2. Sun burn (scald) on grape berries. Photo credit: Ontario Grape IPM, OMAFRA

Leaves can also be removed later in the season but again, berry sunburn (Figure 2) is a concern and more caution for exposure intensity should be considered.

Leaf removal intensity may depend on vineyard location, variety, and training system. White varieties, very early ripening varieties, and those trained as HWC may only require defoliation on the shaded side of the canopy (usually East side with rows oriented North/South) instead of both sides of the canopy to avoid overexposure to sunlight and higher temperatures.



Figure 1. Example of early leaf removal on Cabernet Franc. Berries are at pea-size (EL Stage 31). Photo credit: Maria Smith, The Ohio State University



## Brown Marmorated Stink Bug- A NEW Factsheet

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

Drs. Celeste Welty and Kelley Tilmon from the Department of Entomology and Jim Jasinski from the Department of Extension published a new factsheet on the brown marmorated stink bug in June. The brown marmorated stink bug was accidentally introduced into the United States from Japan, Korea and China and is now present in 46 states. It has a broad host range and can attack almost any crop that has fruit or immature seeds. Among the fruit crops, the bugs are commonly found on peach, apple, pear, Asian pear, cherry, grape, raspberry, blackberry and blueberry.

To learn more about the economic importance, host range and management in crops download the factsheet from [ohioline - ohioline.osu.edu/factsheet/ent-90](https://ohioline.osu.edu/factsheet/ent-90). You can also request a copy of the factsheet by calling your county OSU Extension office.



Brown marmorated stink bug. Photo credit: A. Raudenbush, The Ohio State University



**Phomopsis twig blight** of blueberry is the most common canker disease of blueberries and is caused by the fungus *Phomopsis vaccinii*. On susceptible varieties the disease can decrease productivity significantly. The fungus survives the winter in dead or infected twigs so pruning out infected material is an important management strategy. A delayed dormant application of sulfur can be effective in reducing early season infections. Fungicide recommendations begin on page 145 of the 2021 – 2022 Midwest Fruit Pest Management Guide.

Photo credit: Ashley Kulhanek, OSU Extension- Medina County, Medina, Ohio

### Grower Resources:

- OSU Fruit Pathology website ([u.osu.edu/fruitpathology](https://u.osu.edu/fruitpathology))
- OSU Fruit and Vegetable Safety website (<https://producesafety.osu.edu>)
- OSU Fruit and Vegetable Pest Management website ([entomology.osu.edu](https://entomology.osu.edu))
- OSU Fruit and Vegetable Diagnostic Laboratory ([u.osu.edu/vegetablediseasefacts/](https://u.osu.edu/vegetablediseasefacts/))
- OSU Bramble: Production Management and Marketing Guide (Bulletin 782) ([extensionpubs.osu.edu](https://extensionpubs.osu.edu))

# OSU Upcoming Events-2021

**August 1-4** – Northern Nut Growers Association Annual Conference; [Link here](#)

**August 5** – Hydroponics & Aquaponics: Impacts + Opportunities; [Link here](#)

**September 17-19** – 23<sup>rd</sup> Annual Ohio Pawpaw Festival; [Link here](#)

**September 21-23** – Farm Science Review; [Link here](#)

**October 24** – Thinking Inside the Box: Growing CSA's Across the Tri-State Conference; [Link here](#)

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

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