


Supporting  Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

NOVEMBER 2021

An Emerging Strawberry Disease in Ohio

By Dr. Francesca Rotondo- Wooster Diagnostic Coordinator and Melanie Lewis Ivey- Associate Professor, Extension Fruit Pathologist, Department of Plant Pathology; Marcus McCartney, Extension Educator- Washington County

The start of the 2022 strawberry field season does not bring good news for Ohio strawberry growers. In 2017, researchers in Florida identified a new fungal pathogen affecting strawberries. Since then, the disease has been reported in Georgia, North Carolina, New Jersey, Ontario Canada, and now Ohio. The disease is caused by the fungus *Neopestalotiopsis* and for lack of a better name is called *Neopestalotiopsis* disease. This fall, *Neopestalotiopsis* disease symptoms were observed in a new strawberry planting in Ohio. The fungus can infect all parts of the strawberry plant – fruit, leaves, petioles, crown, and roots. In the Ohio planting the fungus was isolated from lesions on the leaves but not from the crowns. Leaf symptoms start as small brown lesions with light centers at the margins of the leaves (Figure 1). As the disease progresses, the lesions darken and expand to cover the entire leaf (Figure 2). The symptoms on the leaves can easily be confused with common leaf spot (*Mycosphaerella fragariae*), leaf scorch (*Diplocarpon earlianum*, *Marssonina fragariae*) and / or Phomopsis leaf blight (*Phomopsis obscurans*). However, *Neopestalotiopsis* disease symptoms progress much faster than those of common leaf spot,



Figure 1. Foliar symptoms of *Neopestalotiopsis* disease are shown on the leaf in the red circle. Common leaf spot can be seen on the leaf outside of the red circle.

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leaf scorch or Phomopsis leaf blight, especially when conditions are wet and cool. Unlike these other foliar diseases of strawberry, *Neopestalotiopsis* sp. can cause fruit lesions. On the fruit, the lesions are brownish-black, irregular shaped and sunken (like anthracnose fruit rot but without the salmon color spores!) (Figure 3). Black fruiting bodies that allow the fungus to survive for extended periods of time form in the center of leaf and fruit lesions.

The disease is favored by warm (60 to 85 degrees F) and wet (high humidity or rain) conditions. Spores (Figure 4) are dispersed by water splashing from overhead irrigation or rain. Working in the field when conditions are wet can also move the spores around the field. The fungus is most likely introduced into the field via infected but asymptomatic nursery transplants or bare roots as reported in Georgia and North Carolina. It is unknown if the pathogen can overwinter in northern environments such as New Jersey, Ohio or Ontario, Canada. The disease has been reported on 'Albion' and 'Ruby June' in Ontario and Ohio, respectively. Studies to determine the susceptibility of other varieties are



Figure 2. Late-stage foliar symptoms of *Neopestalotiopsis* disease.



Figure 3. Signs and symptoms of *Neopestalotiopsis* spp. Photo courtesy of Dr. Natalia Peres, University of Florida.

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Grower's Corner

Is there anything I can do in the fall to control apple powdery?

The short answer is no. The fungus that causes powdery mildew (*Podosphaera leucotricha*) overwinters in buds (vegetative and flower) and infections are initiated in the spring once the buds break dormancy. Thus, late winter or early spring is the best time to control powdery mildew. Fungicide or horticultural oil applications beginning at tight cluster are recommended (see Midwest Fruit Pest Management Guide). While the fungus is killed at temperatures below -18 degrees F, warmer winters in Ohio have resulted in a surge of apple powdery mildew, especially in susceptible varieties such as HoneyCrisp, Golden Delicious, Crimson Crisp and Pink Lady. Dormant season pruning will go a long way to remove infected buds and reduce the number of spores released in the spring.



Signs of the powdery mildew fungus on apple seedlings in Wooster, Ohio.

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needed as are studies to determine if the fungus can overwinter in Ohio or other northern strawberry growing regions.

Until we know more about this aggressive disease, growers should inspect their plants for symptoms and signs of the pathogen, scout newly planted field regularly, especially during conducive weather conditions, and report suspect symptoms to their local Extension Educator or Extension Specialist. Fungicide applications (i.e., Thiram or Switch) to bare roots, transplants or at transplanting are recommended. Fungicides for control of fruit rot have been evaluated in Florida (see go.osu.edu/flneopestalotiopsisfungicidestudy) but research is needed to determine the most effective fungicides for controlling this *Neopestalotiopsis* disease in Ohio.

The best way to identify this new disease is to send samples to a plant disease diagnostic lab. Commercial growers can send samples to the attention of Dr. Francesca Rotondo or Dr. Melanie Lewis Ivey at the Vegetable and Fruit Diagnostic Laboratory (u.osu.edu/fruitpathology/) in Wooster, OH, for a prompt diagnosis and management recommendations.



Figure 4. Spores of *Neopestalotiopsis* spp. isolated from strawberry leaves with symptoms of *Neopestalotiopsis* disease.

Pesticide Spray Coverage: Searching for the Goldilocks Zone

By Olivia Meyer, Graduate Student and Mark Gleason, Professor- Department of Plant Pathology and Microbiology, Iowa State University and Heping Zhu- Agricultural Engineer, USDA-ARS.

** This article was first published as a blog on the Smart Apple Spray website*

Getting an airblast sprayer ready to use in an apple orchard involves a fair amount of tweaking. Sprayer pressure, nozzle size, and travel speed may need to be adjusted to spray for insect pests and diseases in the upcoming growing season. The goal is to get adequate coverage. But how can you make pesticide spraying more efficient?

Dr. Heping Zhu of the USDA Agricultural Research Service Spray Lab in Ohio works on optimizing sprayer design. Zhu talks about a measurement called “spray coverage,” which is the percentage of the targeted crop surface on which spray droplets land (**Figure 1**).

A long-standing tradition for apple growers, who typically use airblast sprayers, has been to spray pesticides until runoff – in other words, spray until the pesticides are dripping off the foliage.



Figure 1. Spray coverage is the percentage of the crop surface on which spray droplets land. Water sensitive paper can be used to visualize coverage.

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But spraying to runoff can also mean applying more pesticide than needed.

Despite providing thorough coverage, airblast sprayers waste quite a bit of spray. More than half ends up in the air or on the ground rather than on the trees. This inaccuracy wastes money and time besides contributing to environmental pollution. The ideal spray application puts on just enough pesticide to get adequate pest and disease control - with minimal waste.

Airblast sprayers operate “blindly” in that they don’t adjust their output for differences in tree size, foliage density, or even the absence of trees. The inflexibility of using a constant flow rate leads to over-spraying.

The Intelligent Sprayer, developed by Dr. Zhu’s team, uses new technology that varies the spray rate and direction based on orchard canopy structure and the stage of the growing season. Specifically, it uses laser beams to sense apple tree structure. The sensors mean that the Intelligent Sprayer can “see” the tree, allowing more accuracy during pesticide applications (Figure 2). The Intelligent Sprayer has already shown so much promise that it’s available commercially.

So how can you use this new technology to hit the optimal level (i.e., not too much, not too little) of percent coverage? In other words, how can you get to the pesticide spray coverage ‘Goldilocks’ zone? In limited field trials by Dr. Zhu and his collaborators, **pesticide spray coverage as low as 30% was sufficient to handle pests and diseases**. That means the spray particles landed on less than a third of the leaf area. This seemingly low percentage of spray coverage was effective because the pesticide droplets deposited on leaves could spread in rainfall and dew. In addition, systemic pesticides could enter and move around inside leaves.

How low can you go when it comes to percent spray coverage on apples? Will 30% coverage do an adequate job on all pests and diseases, year in and year out? Field trials in many orchards, with many varieties, over multiple years will help us zero in on optimal coverage levels for efficiency and crop protection. Dr. Zhu and colleagues collected coverage and deposition data from apple tree canopies, comparing the performance of the Intelligent Sprayer and constant-rate airblast sprayers. They found that the Intelligent Sprayer had better uniformity in spray coverage than the standard airblast at multiple growth stages throughout the season. Intelligent Sprayer technology, with its superior spray deposition uniformity, may soon help growers to zero in on the Goldilocks zone.



Figure 2. The intelligent sprayer uses sensors to target the tree canopy.



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Quarantine Alert - An Update on Spotted Lantern Fly in Ohio

By Dr. Maria Smith- Viticulture Outreach Specialist, Department of Horticulture and Crop Science

Two recent press releases issued by the Ohio Department of Agriculture (ODA) and Indiana Department of Natural Resources (DNR) announced the arrival of the invasive Spotted Lanternfly (SLF; *Lycorma deliatala*) in Cuyahoga County, Ohio and the first detection of SLF in Indiana. Additional new adults have been detected this fall at rest areas along I-70 Westbound in Belmon and Muskinham county and in the Mingo Junction area where it was first found.

Beginning October 28, a quarantine policy will go into effect for Jefferson and Cuyahoga counties to try and limit the spread of SLF on materials entering and exiting the quarantined counties. Additional information on laws published in the Ohio Revised Code are available from the ODA (614-728-6400) or agri.ohio.gov/wps/portal/gov/oda/divisions/plant-health/laws-and-rules.

The updated map (Figure 1) shows the latest distribution of SLF in the eastern US. Currently, Ohio has **two** populations of SLF, one in Jefferson County (SE) and Cuyahoga County (NE). The Cuyahoga County, Ohio population announced September 2 is not shown on the map.

Reminder: Be on the lookout for adult SLF and egg masses!

Now through November is the easiest time to be looking out for SLF since most are in their distinct adult form (Figure 2). Egg masses containing upwards of 30 to 50 eggs per mass are laid by adults in the fall. These egg masses are commonly laid on hard surfaces near where SLF are feeding and contribute to rapid increases in local population size (Figure 3).

If you suspect sightings of either SLF nymphs, adults, or egg masses, contact the

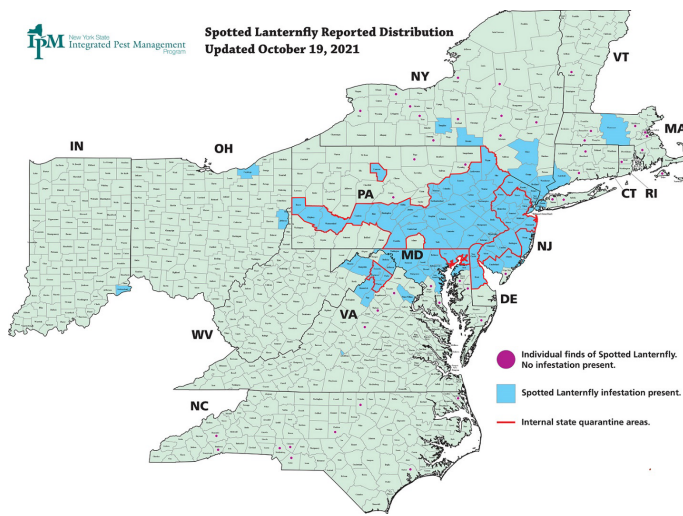


Figure 1. Distribution of spotted lantern fly infestations and positively identified individuals, updated October 19, 2021. Not included: Cuyahoga County population announced September 2. Map from <https://nysipm.cornell.edu/environment/invasive-species-exotic-pests/spotted-lanternfly/>.

ODA via the [Spotted Lanternfly Information Page](#) or by contacting the Plant Pest Control Division at 614-728-6400.

To date, SLF have not been found on Ohio farms. Help do your part to reduce the spread by having guests from known areas with SLF to inspect vehicles before arriving and departing your site!

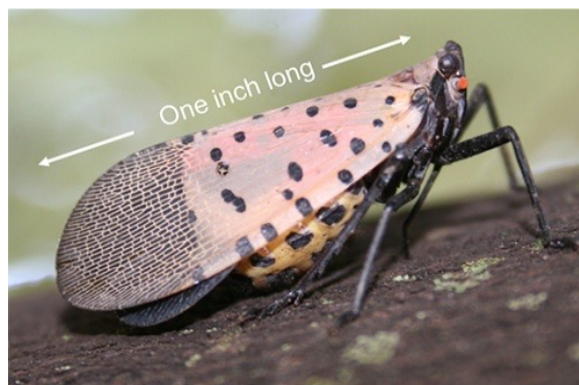


Figure 2. Adult spotted lantern fly. Photo courtesy of New York State Integrated Pest Management (NYS-IPM) program staff.

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Figure 3. Spotted lantern fly egg masses take on a putty-like appearance at first and visually change over time. Photo courtesy of Erica Smyers, Pennsylvania State University.

The following statement is the shared statement from the Ohio ODA:

Spotted Lanternfly Found in Cuyahoga County

“ODA Plant Pest inspectors confirmed living, adult SLF are in the area. An inspector with the Animal and Plant Health Inspection Service (APHIS), an agency of the United States Department of Agriculture (USDA), also confirmed a population of the SLF has been found at a secondary location, near the initial report.

A railroad line connects both locations.

ODA has been working with the United States Department of Agriculture, Ohio Department of Natural Resources, Ohio State University Extension, and the Ohio Grape Industries Committee to do visual surveys, insect trapping, and outreach in the region.

SLF is a great concern to the grape and wine industry. The insect is fond of grapevines, fruit trees, hops, blueberry, oak, pine, poplar, and walnut. Adult SLF are attracted to the invasive Ailanthus tree, also known as tree-of-heaven, while nymphs feed on a wide range of hosts. Both adults and nymphs feed on stems and leaves, causing sap bleeding and reduced photosynthesis, which can eventually kill the plant.

Now through November is the best time to spot the SLF because it is in its most recognizable stages as a colorful winged adult plant hopper. After hatching in the late spring, the SLF goes through four nymph stages. By midsummer, the nymph SLF can be identified by its red body, roughly a half-inch in size, with black stripes and white dots. During the late summer until roughly November, the SLF is in the adult stage. These adults are larger, roughly one inch in size, with black bodies and brightly colored wings. The public is the first line of defense against the SLF. If you believe you have seen an SLF in your area, you can easily report a suspected infestation by going to ODA’s Spotted Lanternfly Information Page and filling out a suspected infestation report. You may also call the Plant Pest Control Division at 614-728-6400.”

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Additional On-line resources on Spotted Lantern Fly

New York State Integrated Pest Management (NYS-IPM) SLF Resource List – [link here](#)

Pennsylvania State University (PSU) – What should you do with Spotted Lanternfly Egg Masses? [link here](#)

PSU Spotted Lanternfly Extension Resources – [link here](#)

The following statement is the shared statement from the Indiana DNR:

“Spotted lanternfly (*Lycorma delicatula*) was found in Indiana for the first time in Switzerland County earlier this week, the farthest west the insect has been found. This federally regulated invasive species has a detrimental impact upon plant growth and fruit production, especially in vineyards and orchards.

A homeowner in Vevay contacted DNR’s Division of Entomology & Plant Pathology (DEPP) with a picture that was taken outside his home of a fourth instar. DEPP staff surveyed the site and discovered an infestation in the woodlot adjacent to a few homes in the area. The site is within 2 miles of the Ohio River and the Markland Dam. DEPP and USDA are conducting an investigation to determine exactly how large the infestation is and where it could have come from, as well as how to limit the spread and eradicate the population.

Spotted lanternfly is a planthopper that originated in Asia. It was first discovered in the United States in Pennsylvania in 2014. The Pennsylvania Department of Agriculture tried to limit the spread of this pest, but it excels at being a hitchhiker and is often spread unknowingly by humans.

Adult spotted lanternfly has two sets of wings, and the underwing has a very distinct red color with spots on the outer wings. The fourth instar of the insect is bright red with black and white markings. The egg masses of this invasive

insect look like mud and they can be spread by vehicle transport including recreational vehicles, cargo carriers (truck transport) and freight trains. They can also be spread through trade materials sold in infested areas that are shipped out of state including nursery stock, outdoor furniture, lumber, etc. Anyone receiving goods from the east coast should inspect for signs of the insect, especially if the commodity is to be kept outdoors.

Spotted lanternfly prefers to feed on tree of heaven (*Ailanthus altissima*), but it has been found on more than 103 species of plant including walnut, oak, maple, and various fruit trees. This insect is often found on grapevines in vineyards. Adult insects have piercing, sucking mouthparts and weaken the plants through feeding on them, which can make it difficult for the plant to survive the winter months. Congregating spotted lanternfly insects produce a sticky substance called “honeydew” in large quantities that over time becomes infested with sooty mold that attracts other pests in the area.

The Indiana DNR is asking for all citizens to keep an eye out for spotted lanternfly. The bright color of both the fourth instar and the adults of the insect should be present at this time of the year. Anyone that spots signs of the spotted lanternfly should contact DEPP by calling 866-NO EXOTIC (866-663-9684) or send an email to DEPP@dnr.IN.gov. For more information on this or other invasive pests see the following link <https://www.in.gov/dnr/entomology/pests-of-concern/spotted-lanternfly/>”

“Spotting the Spot – Spotted Lanternfly Outreach and Engagement” Webinar

Join Amy Stone from OSU Extension-Lucas County on November 4th at 11:00 A.M. (EST) for a free webinar on identifying and reporting the spotted lantern fly.

Visit www.emeraldashborer.info/eabu.php to join the webinar!



CFAES



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 Extension 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

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 **THE OHIO STATE UNIVERSITY**
COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

—We Sustain Life—
u.osu.edu/spottedlanternfly

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Fruit cracking occurs following excess rainfall in late summer to early fall. The fruit undergo rapid expansion due to the uptake of water and cause splitting at the stem end of the fruit. Varieties such as Buckeye Gala, HoneyCrisp, Golden Delicious, Fuji and Winesap are particularly prone to fruit cracking. While we can't always predict the weather, harvesting fruit as soon as they ripen is recommended to reduce the risk of cracking.

Photo courtesy of John Strang, University of Kentucky

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 Upcoming Events-2021-2022

2021 Spotting the Spot – Spotted Lanternfly Outreach and Engagement” Webinar – November 4 [link here](#)

2021-2022 Spotted lantern fly management workshops – November 8 and 15; March 3; April 11 [link here](#)

2021 Wood-destroying insect inspection training – November 10 [link here](#)

2021 Virtual Agricultural Policy and Outlook Conference – November 18-19 [link here](#)

2022 Ohio Commercial Pesticide Recertification Conferences

- Akron, January 27 [link here](#)
- Columbus, February 10 [link here](#)
- Dayton, February 23 [link here](#)

2022 Ohio Produce Network – January 17-18

2022 Ohio Grape and Wine Conference – February 21-22

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

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

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