

Supporting Fruit Production

OHIO FRUIT NEWS

Research and Recommendations from Experts at The Ohio State University

MARCH 2022

Spring is Almost Here – Are you Prepared for Fire Blight?

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

As spring approaches and the apple blossoms are getting ready to open growers should be thinking about getting ready to protect their trees from fire blight. Fire blight is caused by a bacterium (*Erwinia amylovora*) that can hide out the winter in stem and trunk cankers (referred to as hold over cankers; [Figure 1](#)). As winter breaks, and the weather warms up (~65 °F), the pathogen becomes active and begins its life cycle in the tree. Now is the time to be thinking about stopping the pathogen before it can take hold!

Apply Copper to Hold Over Cankers – An application of a copper-based fungicide should be applied when the buds reach green tip. Copper will kill bacteria on the surface of the cankers. This is a good time to use a soluble copper (copper sulfate pentahydrate) such as bluestone, MasterCop, or Magna-Bon CS. Soluble coppers are more phytotoxic than “fixed coppers” because all the copper ions are available at once when water is present. With “fixed” coppers the copper ions are gradually released so the threat of phytotoxicity is much less. For this reason, soluble coppers should not be applied once green tissue is fully

exposed. In addition, if a frost is predicted, predicted soluble copper should not be applied at green tip until the threat of frost passes. **Growers should aim to apply 2 pounds per acre (2 lb/A) of metallic copper to their trees.**

Protect Blooms from Bacterial Invasions – Bacteria from hold over cankers are splashed to flowers or carried to the flowers by pollinators. Once the bacteria reach the flowers they hang-out and multiply when it is wet, and temperatures are 60 °F or higher. Once the bacterial population gets high enough the bacteria move to the nectaries and begin to infect the blossoms. The application of antibiotics such as

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streptomycin, kasugamycin or oxytetracycline to open blossoms will kill or disable any bacteria in the flowers, preventing them from infecting the nectaries. If you are using a fire blight risk model such as Cougarblight or Maryblyt to guide your timing of antibiotic applications, you can select the best antibiotic to use based on the risk level (Table 1).

If you are not using a risk model an antibiotic should be applied from bloom through petal fall. The first application should be made after the first blossoms open, and temperatures are 60 °F or higher and a wetting event is expected within 24 hours. Wetting events can include rain or heavy dews. A second application 3 to 7 days later depending on the environmental conditions and the type of antibiotic used should be made. Additional applications may be necessary if conditions for fire blight persist. For orchards where streptomycin resistant *Erwinia amylovora* has been confirmed, streptomycin should not be used.

Protect New Shoots Using a Growth Regulator
– Young shoots are very susceptible to fire blight infections so it is important to protect them from



Figure 1. Fire blight hold-over canker on apple.

bacteria that may have made it into the nectaries during bloom. The plant growth regulator prohexadione-calcium (Apogee or Kudos) inhibits the biosynthesis of the hormone gibberellin, which is responsible for stem elongation. By inhibiting this hormone in the plant, the distance between shoot nodes is shortened and cell walls are thicker, making it difficult for the bacteria to kill the shoots.

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Grower's Corner

What is the difference between GAP and PSA Trainings?

GAPs or good agricultural practices are best management practices reducing microbial contamination on the farm and reducing the risk of foodborne illness from produce. GAP trainings are voluntary but are often requested by local markets, restaurants, and other buyers. The Ohio State University Extension Fresh Produce Team provides three-hour GAPs trainings to producers at a nominal fee (\$30). For more information on GAP trainings offered by OSU Extension go to producesafety.osu.edu/. Produce Safety Alliance (PSA) trainings are federally mandated for producers who are covered under the Food Safety Modernization Act (FSMA). These trainings are 7-hours and are offered by The Ohio Department of Agriculture (ODA). For more information of PSA trainings visit agri.ohio.gov/divisions/food-safety/resources/produce-safety. To determine if you are covered under FSMA contact an OSU Extension office or Matt Fout (614-600-4272; mfout@agri.ohio.gov).

Response provided by Ashley Kulhanek, OSU Extension, Medina County

\$250 000 Grant Received to Explore New Strawberry Production Techniques

By Brad Bergefurd, Assistant Professor and Extension Specialty Crops Specialist

Locally produced strawberries have an outstanding market potential. But the number of farms growing strawberries, and strawberry production acreage are decreasing in many areas of the Midwestern United States. High production risk is the main reason for the decrease of strawberry production in the region. In the past three years, extreme weather conditions across the Midwest in the spring (late frost, excessive precipitation and drought) have made the traditional matted-row strawberry production even more challenging. A \$250,000 North Central Sustainable Agriculture and Education ([SARE](#)) grant will make it possible for a team of researchers at Ohio State and Purdue university in collaboration with farmers to develop and modify strawberry production systems that may reduce production risks and increase profit and market potential.

Many Ohio farms have doubled their harvest and marketing season through adoption of the modified annual plasticulture strawberry production method. This method was developed by the OSU South Centers for Ohio and Midwest cool climate growing conditions. However, growers continue to express more interest in alternative strawberry production systems that have potential to increase yields and extend harvest seasons even more, as well as provide increased protection from harsh winter weather and temperature extremes.

Our preliminary research on soil-based high tunnel and low tunnel strawberry production achieved promising results that attracted great attention from farmers throughout Ohio and the Midwest. This encouraged us to continue research to optimize production practices of using these systems in the lower north-central United States.



Encouraged by our previous promising results and tremendous grower interest, this project will enhance strawberry production in the north-central region by optimizing soil-based strawberry production practices under three tunnel systems. The tunnel systems to be researched include:

- 1) four-season high tunnel,
- 2) hay grove high tunnel, and
- 3) low tunnels.

Each tunnel system will have a unique research focus. Ultimate crop growth in fall and winter, as well as fertility management to target fast crop growth are the foci of the four-season high tunnel system; winter protection materials and suitable cultivars will be evaluated for hay-grove high tunnel system and; suitable cultivars and optimal timing of plastic installation and removal to maximize crop growth and minimize spring frost damage are the research foci of low tunnel systems.

An integrated research approach including using cultural practices, fertility management, biological pesticides, and bio-control agents will be established to facilitate success of each

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Strawberry grant awarded from page 3

Tunnel strawberry production system. Economic feasibility of the three tunnel systems will be evaluated in the context of different production scales.

Project information will be delivered through multiple outreach channels, field days, conferences and workshops, and a Mid-west strawberry production guide under tunnel systems will be developed through the project. The future of increased strawberry production in Ohio looks great as we continue to research profitable new season extension methods that can be adopted by Ohio farms. Stay tuned!!

To see research results and production methods on proven season extension strawberry production practices developed by the Ohio State University South Centers visit southcenters.osu.edu/horticulture/fruits/strawberries or contact Brad Bergefurd (bergefurd.1@osu.edu).



Are you prepared for fire blight from page 2

More recent research has demonstrated that the addition of acibenzolar-S-methyl (Actigard) to the spray program will boost the plants natural defense system and provide additional shoot protection. **Growers can apply 2 ounces per acre (2 oz/A) of Apogee or Kudos mixed with one ounce per acre Actigard (1 oz/A) weekly beginning at king bloom petal drop to prevent shoot infections.** If weather conditions are warm and dry, one or two applications may suffice. However, if conditions are warm and wet, favoring shoot growth, three to four applications may be needed. In addition, the rate of Apogee or Kudos can be increased to 3 or 4 oz/A. Once the shoots harden-off they are no longer susceptible to fire blight and additional applications are not needed.

Additional information on managing fire blight in the orchard can be found on the OSU Fruit Pathology Website (u.osu.edu/fruitpathology) under the resources tab or the Midwest Fruit Pest Management Guide.

If you suspect that you may have streptomycin resistant *Erwinia amylovora* in your orchard, please contact Dr. Melanie Lewis Ivey (ivey.14@osu.edu; 330-263-3849) or your county OSU Extension office.

Table 1. Action recommendations depending on the risk level for fire blight. Risk levels are reported when using Maryblyt or Cougarblight risk models through NEWA (NEWA.cornell.edu).

Risk Level	Action
Low	None
Moderate (Caution)	Apply oxytetracycline or a biological if rain/dew is not anticipated. Apply streptomycin if rain/dew is anticipated.
High	Apply streptomycin or kasugamycin.
Extreme (Infection)	Apply streptomycin or kasugamycin if streptomycin resistance is known.



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

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

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

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

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Multi-state Apple Disease Management Survey

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

Dear Apple Grower,

We are conducting a survey to learn about your experiences in managing pests and diseases on apples and your willingness to adopt a new sprayer called the Intelligent Sprayer created by a team of USDA-ARS engineers in Wooster, Ohio, led by Dr. Heping Zhu. This study is evaluating the use of Intelligent Sprayer in the eastern half of the US for control of the full range of pests and diseases on apples. **You can participate in this survey even if you haven't heard of or tried this new sprayer.**

Your participation in this survey is voluntary. Your responses are valuable to us and will contribute to improving smart sprayer innovations.

The responses you provide will be kept completely confidential, and results will be reported in a summary form only. Please answer the questions by clicking on a response option or entering text in the box. You will have an opportunity to add comments at the end of the survey.

To participate in this survey, please use this [link](https://go.iastate.edu/4TRGKO) or use the QR Code to access the survey.



<https://go.iastate.edu/4TRGKO>

If you have trouble accessing the online survey or would prefer a paper copy, please contact Dr. Lewis Ivey. For more information about the survey, please contact:

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Iowa State University, mgleason@iastate.edu,
515-294-0579

Dr. Melanie Lewis Ivey, State Fruit Pathologist,
the Ohio State University, ivey.14@osu.edu, 330-
263-3849

Dr. Heping Zhu, Lead Scientist, USDA-
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Thank you in advance for your time and attention!



Ohio Specialty Crop Stakeholder Meeting – March 25th

By James (Jim) Jasinski, Professor, Extension Fruit Pathologist and IPM Program Coordinator

Over the past 10-20 years there has been significant change in the specialty crops industry and in OSU department specialists and Extension educators serving the specialty crop arena.

We invite you to join us in quality conversation about CFAES research and Extension support for Ohio Specialty Crops Partners. CFAES administration and department chairs will provide updates on our priorities, existing support for specialty crops, and actions we are taking related to research and education for specialty crops. We will also take time to explore emerging trends for specialty crops agriculture in the state, listen to the industry needs and how CFAES plays a role in the industry.

Due to the comprehensive statewide nature of this meeting, it will be held virtually over Zoom so that travel will not be a barrier to participate. Please REGISTER no later than March 24, 2022.

<https://go.osu.edu/2022speccropreg>

We look forward to seeing you on March 25th!

Meeting Agenda

March 25th 9:30 a.m to 11:00 a.m

- **Welcome** – CFAES Dean Cathann Kress – 10 minutes
- **Department Updates** – 24 minutes (3 minutes each)
 - Entomology – Dr. Jamie Strange
 - Food, Agricultural & Biological Engineering – Dr. Scott Shearer
 - Food Science and Technology – Sheryl Barringer
 - Horticulture and Crop Science – Dr. Doug Karcher
 - Plant Pathology – Dr. Tom Mitchell
 - School of Environment and Natural Resources – Dr. Jeff Sharp
- **Extension** – OSU Extension Associate Dean and Director - Dr. Jackie Wilkins
- **CFAES Research Stations, Field Labs and Farms** – Mr. Ken Scaife
- **Specialty Crop Industry Trends** – Dr. Guil Signorini – 10 minutes
- **Small Group Interview Sessions Report** – Mr. Jim Jasinski – 5 minutes
- **Stakeholder Listening Session** – 45 minutes

The COLLEGE of FOOD, AGRICULTURAL,
and ENVIRONMENTAL SCIENCES

invites you to the

**OHIO SPECIALTY CROP
PARTNERS VIRTUAL
LISTENING SESSION**

**March 25th , 2022
9:30 AM -11:00 AM**



Multi-site Fungicides are Under Review by the EPA

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

Four multi-site (broad spectrum) fungicides commonly used to manage tree and small fruit disease – **Thiram, Ziram, Ferbam and iprodione** – are currently under review by the United States Environmental Protection Agency (EPA). Thiram, Ferbam, and Ziram are being considered for for all specialty crops; iprodione cancellations of caneberries and bushberries are proposed, while application rates for on grapes are proposed to be nearly half the current rate.

Multi-site fungicides affect multiple targets in the fungal pathogen and thus interfere with many metabolic process of the fungus. In contrast, single-site fungicides, target one site only in the fungus, interfering with only one metabolic process. Because multi-site fungicides target multiple sites within the fungus they are considered as low risk for fungicide resistance development. To date, no cases of fungicide resistance in the field have been reported and thus multi-site fungicides are critical to a pesticide stewardship program.

Restricting the use of multi-site fungicides in fruit crops could result in the rapid development of resistance to single-site fungicides. This is concerning because it

could result in disease outbreaks and serious crop losses. It could also lead to the loss of highly effective single-site fungicides.

Stakeholders can provide comments to the EPA on the proposed registration changes for Thiram, Ziram, Ferbam and iprodione. A separate comment must be submitted for each fungicide. **Comments are due by April 4th, 2022.** To submit a comment, click on the link provided below and then navigate to the "View More Documents" tab (**Figure 1-top**). You can access all comments that have been submitted and submit your own comment by clicking on "Comment" (**Figure 1- bottom**). To submit a comment, you can write it directly in the text box or upload a document.

Thiram: <https://www.regulations.gov/document/EPA-HQ-OPP-2015-0433-0091>

Ziram: <https://www.regulations.gov/document/EPA-HQ-OPP-2015-0568-0058>

Ferbam: <https://www.regulations.gov/document/EPA-HQ-OPP-2015-0567-0028>

Iprodione: <https://www.regulations.gov/document/EPA-HQ-OPP-2012-0392-0056>

If you do not have access to the internet, you can contact the EPA pesticide registration office by phone to get assistance with submitting a comment.

**Call Monday - Friday, 9 am - 5 pm ET
1-877-378-5457 (toll free)
703-454-9859**

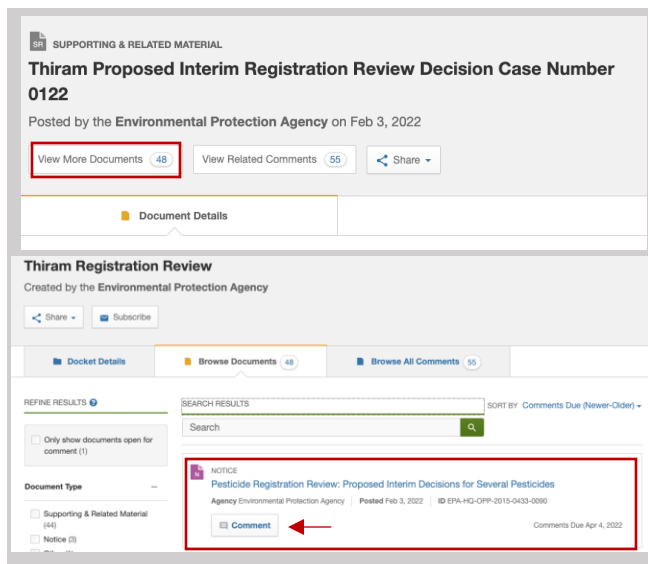


Figure 1. To submit a comment to the EPA, click on the link provide, then select view more documents and then select comment. Comments can be entered in the text box, or a document can be uploaded.

Keep a lookout for spotted lanternfly

Ashley Leach and Amy Stone, Ohio State University, Entomology department and Agriculture and Natural Resources, Lucas County

WHAT IS SPOTTED LANTERNFLY?

Spotted lanternfly (SLF) is a new invasive insect. Originally detected in PA in 2014, SLF has quickly spread and now can be found in 11 states in the US. **In 2020, SLF was found in Jefferson county, and has since been detected in 2 additional Ohio counties.** SLF has a long stylet (straw-like mouthpart), which it inserts into plants to feed on phloem (plant sap). This means it's hard to tell if SLF has fed on plants without observing active feeding. However, we can rely on other insect tells, including copious amount of honeydew (which may or may not develop into sooty mold), or unusually high amounts of plant stress (e.g., early senescence of leaves).

WHAT CROPS ARE IMPACTED?

(full list of impacted crops is unknown)

The full impact of SLF in agriculture is undetermined. **Certain crops, like grape and nursery crops, have been impacted by SLF** and some growers have documented losses from large SLF infestations. Most research has centered around reports from PA. While these initial reports are incredibly useful to direct research efforts, we still need information on if this pest will damage crops to economically damaging levels.



Grape



Nursery



Apple?



Hops?

HOW DO I IDENTIFY SLF?

SLF are active from May to October. Nymphs hatch in late spring, and are **polka-dotted** with white or red spots (Fig. 2a-b).

Adults emerge in July and are easily distinguished by their **bright red markings** and large size (>1 inch) (Fig 1). In October, adults will lay egg masses which can resemble concrete or mud (Fig. 2c-e). **Be on alert for their preferred plant host, the tree of heaven (*Ailanthus altissima*).** This invasive plant species is a fast grower that multiplies through root sprouts and seeds. Researchers have reported that the female tree can produce approximately 10 million seeds over a 40-year life-time!



Fig. 1. Adult spotted lanternfly

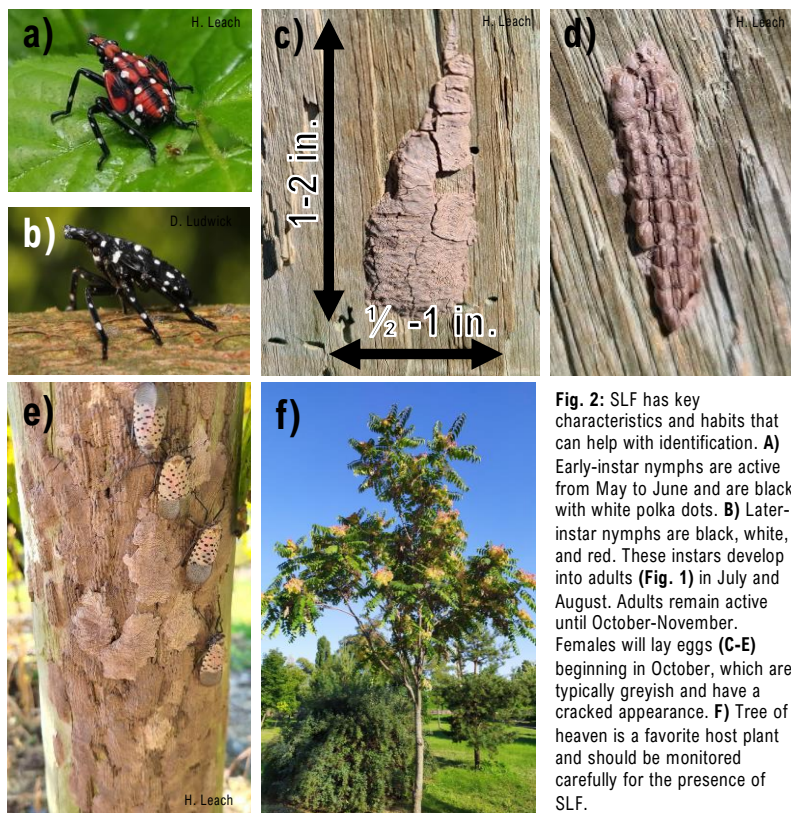


Fig. 2: SLF has key characteristics and habits that can help with identification. **A)** Early-instar nymphs are active from May to June and are black with white polka dots. **B)** Later-instar nymphs are black, white, and red. These instars develop into adults (**Fig. 1**) in July and August. Adults remain active until October-November. Females will lay eggs (**C-E**) beginning in October, which are typically greyish and have a cracked appearance. **F)** Tree of heaven is a favorite host plant and should be monitored carefully for the presence of SLF.

THINK YOU'VE SPOTTED THE SPOTTED LANTERNFLY

If you think you've seen SLF, reports can be made to the Ohio Department of Agriculture by calling (614-728-6400), emailing (plantpest@agri.ohio.gov), or reporting on their **online reporting system**. Photos, actual specimens, and exact locations are extremely important. You can also make reports on the Great Lakes Early Detection Network (GLEDN) App, which relies on citizen reporting for invasive species across the Great Lakes region.



Adult spotted lanternfly



Photo courtesy of OMAFRA

Phytophthora root rot of strawberry can cause complete plant collapse in the spring, especially when springs are wet and there is standing water in the fields. The crown of the plants will have a reddish-brown color that is sharply delineated from healthy tissue (as shown in image), although eventually the entire crown may be affected. In addition, the roots near the crown will be black and the entire root system will be small. A spring treatment of mefenoxam will reduce disease incidence and severity but will not eradicate the pathogen if the field has a history of *Phytophthora*. If new plants are going into the ground dipping the bare roots in them in a phosphorous acid-based fungicide can protect the roots from infections. Consult the Midwest Fruit Pest Management Guide (beginning on page 171) for detailed recommendations for using fungicides to manage *Phytophthora* root rot of strawberry.

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 **hops** is now available [on-line](#). For a hard copy please contact Brad Bergefurd (bergefurd.1@osu.edu; 740-289-2071 ext.136).



OSU Upcoming Events-2022

General Pest Control - New Applicator Training (On-line Training) – March 22 [link here](#)
New Pesticide Applicator Training (On-line Training) – March 23 [link here](#)
Private Pesticide Applicator Training- Video Make-up – March 31 [link here](#)
License Re-certification and Fertilizer Applicator Recertification Training – Video Make-up – March 31 [link here](#)
2021-2022 Spotted lantern fly management workshops – April 11 [link here](#)
Plant Discovery Day (Wooster) – May 14 [link here](#)
SAVE THE DATE Apple Field Day (Wooster) – July 26

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

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