How to use this slide set

• This is a slide set for educators on the spotted lanternfly. Slides can be used individually or grouped with other topics.

• To ensure content is up to date, review and update distribution maps

• There may be text in the notes section to support what is presented on the slide or provided as a reference for the source of the material. Links for more information are included at the end of the presentation.

• Please credit this presentation or any slides used as: First Detector educator slides: spotted lanternfly

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Spotted lanternfly (SLF)

Lycorma delicatula
SLF introduction

The spotted lanternfly is a planthopper that feeds on many species of plants including some important agriculture crops, and forest and landscape trees.

SLF adults. Photo Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org
The spotted lanternfly is native to east Asia and has been introduced to several countries outside of its native range.

In 2004, it was detected in South Korea. Since then it has become a serious pest, affecting many host plants and causing significant economic loss to grapes and peaches.
Presentation outline

• Potential impact
• How it spreads
• Host plants
• Symptoms & signs
• Life cycle
• Scouting guide
• Reporting
• Resources
SLF introduction

SLF can be spread to new areas by people moving goods or traveling through infested areas.

Early detection and rapid response (EDRR) can minimize the impacts from this pest, but we need your help!
Potential impact

What’s at risk?

• Fruit and wine industries
• Forests and urban landscape
• Logging industry
Potential impact

Local impact

In highly infested areas, SLF has affected quality of life. Thousands of insects feeding on plants. Tremendous amounts of honeydew and sooty mold growth on plants and outdoor items.

Adult SLF on cherry tree. Photo Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org
Counties where SLF is established.

EDDMapS. 2020. Update this map at: https://www.eddmaps.org/distribution/uscounty.cfm?sub=77293
SLF finds, infestations and quarantines

NYS IPM. 2020. Update this map at: nysipm.cornell.edu/environment/invasive-species-exotic-pests/spotted-lanternfly/
Pathways

SLF lays its eggs on many different materials including:

- non-host plants
- rocks
- posts
- vehicles
- lawn furniture
- other outdoor items
Pathways

Since we move many of these items – especially vehicles – the potential for spread to new areas is very high.

Natural spread
Lanternflies also spread on their own through hopping and short flights.
Preferred hosts

Preferred host for egg laying is tree-of-heaven (*Ailanthus altissima*)

Economically important hosts include: grape, stone fruit, apple, hops, walnut, oak, and willow.

The most significant economic damage in the U.S. has occurred in vineyards.
Identifying tree-of-heaven (*Ailanthus altissima*)

Mature tree of heaven. Photo Leslie J. Mehrhoff, University of Connecticut, Bugwood.org
Tree-of-heaven (Ailanthus altissima)

- Leaves are **pinnately compound**, with 5–20 pairs of leaflets.
- Leaves measure 1–4′ long.
- Margin of leaflets “entire” without teeth.

(Pinnately compound means that leaflets are arranged opposite each other along central stem.)
Tree-of-heaven  
(*Ailanthus altissima*)

- **Fruit** are ash-like samaras (seeds).
- **Leaf scars** (where the leaf attaches to the tree) are shield shaped and arranged alternately—not directly opposite one another.
- **Pith** is brown and spongy.
- Leaves and stems have a pungent **odor** when crushed.
Signs & symptoms

Spotted lanternfly
What to look for in the field

• Presence of SLF life stages
• Seeping wounds on trunks
• Honeydew, ants & wasps
• Sooty mold on trunks and base of plant in heavy infestations

SLF adults. Photo Richard Gardner, Bugwood.org
What to look for in the field

Presence of SLF life stages

Finding SLF nymphs and adults is the best way to know if SLF is present in your area.

SLF are distinct in appearance and easy to recognize with the help of identification aids.

SLF adults. Photo Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org
Identification—nymphs

When SLF hatch, they are black with white spots.

As they grow, they develop red mottling underneath the white spots.

The older a nymph is, generally the redder they are.
Identification—adults

Planthoppers — wings held tent-like over back

• 1” long and ½” wide

• **Forewings**: light brown to gray with black spots towards the wing base and reticulated black blocks towards the tip

• **Hindwings**: scarlet red with black spots towards the base and white & black bars towards the tip

SLF adults (top) photo John, flickr, CC BY NC SA2 and (bottom) Eric Day, Virginia Polytechnic
Identification—eggs

SLF eggs are **seed-like** and laid in tidy, **vertical columns**.

Females cover eggs with a shiny grey mud-like deposit that becomes dull, dry and cracked over time.

Double egg mass. Photo [Pennsylvania Department of Agriculture, Bugwood.org](http://www.bugwood.org)
Identification—eggs

Protective covering may weather away to reveal eggs beneath.

egg masses covered and uncovered. Photo Emelie Swackhamer, Penn State University, Bugwood.org
What to look for in the field

• Presence of SLF life stages
• Seeping wounds on trunks
• Honeydew, ants & wasps
• Sooty mold on trunks and base of plant in heavy infestations
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Honeydew on oak leaves (top) and adult with wasps (bottom). Photos Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org
What to look for in the field

• Presence of SLF life stages
• Seeping wounds on trunks
• Ants & wasps feeding on honeydew
• Sooty mold on trunks and base of plant in heavy infestations

SLF adults, seeping wounds, and sooty mold. Photo Emelie Swackhamer, Penn State University, Bugwood.org
SLF life cycle

Overwinter
Eggs (figure 1)

Late spring
Eggs hatch and nymphs begin feeding
(figure 2)

Spring-summer
Nymphs continue to feed; four instars (figure 3)

Mid-summer
Adults present
(figure 4)

Late summer
Adults mate and females lay eggs
(figure 5)

(1,2,4) R. Gardner; (3&5) L. Barringer, Pennsylvania Department of Agriculture; all images Bugwood.org
Seasonal scouting guide

Spotted lanternfly
Spring monitoring

SLF eggs begin to hatch in spring.
Early instar nymphs are black with white spots becoming more red as they mature.

(Photos from left) R. Gardner, Bugwood; D. McMunn, flickr; and L. Barringer, Bugwood.org
Summer and fall monitoring

It is common for multiple life stages to be present in the landscape at the same time.

(Photos from left) E. Swackhamer, Bugwood; USDA, flickr; and L. Barringer, Bugwood.org
Fall through winter monitoring

- Adults mate and females lay eggs through fall
- Adults have been reported feeding as late as December
- Look for and scrape egg masses throughout winter

(Photos from left) John, flickr; and E. Swackhamer, bugwood
SLF—reporting with EDDMapS

NOTE: SLF is a quarantine pest. All suspect reports are verified by officials with USDA or your state regulatory agency.

There are different ways to report pests. Our suggested methods are outlined on the First Detector report a pest page.

When reporting with the FD EDDMapS form, you can trust that the appropriate federal and state regulatory officials will receive your report. Access the FD EDDMapS form at www.firstdetector.org/report-form
More First Detector resources on SLF

- SLF pocket sized pest card
- SLF photo clue

Resources available at
www.firstdetector.org.diag-resources
SLF—more information and partner links

Links below as well as suggested links for more information are available at our First Detector SLF page.

Images: from Bugwood.org: SLF FD field guide and USDA’s flickr SLF album

USDA resources including state quarantine information

Distribution:
EDDMapS established SLF populations by county
SLF global distribution by EPPO Global Database
Presentation credits

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