

EBT EAC In-Depth Report: “Integrated Pest Management to Stop the Spread of the Spotted Lanternfly”

The Spotted Lanternfly (SLF) is a newly identified pest in SE PA that can damage many plants including fruit trees, e.g., apple and peach, hardwood trees, e.g., maple, tulip poplar, oak, walnut and willow and kill grape vines ^(1,2,3). Besides damage to our yards, plant nurseries, farms and orchards, SLF has the potential to cause substantial economic damage to Pennsylvania’s grape production. PA is the 5th largest grape producing state in the US! ⁽⁴⁾ Pennsylvania’s agriculture is at risk and, the grape, tree-fruit, hardwood and nursery industries collectively are worth nearly \$18 billion to the state’s economy” ⁽⁵⁾.

In Fall 2017, the Pennsylvania Department of Agriculture placed Chester County along with 12 other counties in SE PA under quarantine for this pest ⁽⁶⁾. This means it’s critical to stop the spread of this pest to other counties, states and countries and to reduce its population within our area. Everyone needs to do their part.

What should we do?

✓ *Identify*

See Figure 1 to learn how to identify the pest in its different forms found at different times of the year ⁽⁷⁾.



Figure 1: Spotted Lanternfly Stages of Development and Time to Observe Each Stage ⁽⁷⁾

SLF in their nymph stage are very small as shown in Figure 2. Nymphs and adults can damage over 60 different plant species ⁽³⁾.

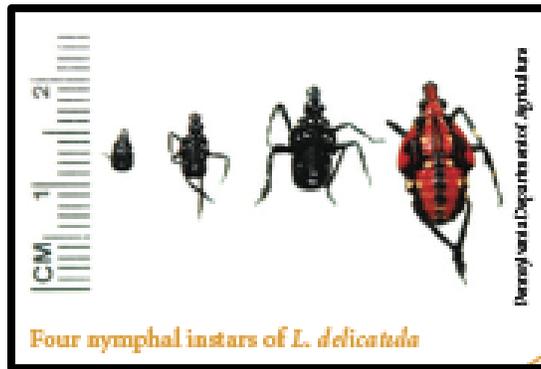


Figure 2 Spotted Lanternfly: Sizes of nymph stages (instars) (3)

SLF can cause oozing or a sticky fluid on or under plants. Bees may be attracted to this sweet fluid and mold may grow on the fluid at the base of a plant ⁽¹⁾. It may be easier to find the SLF adults at dusk or at night when they swarm onto vegetation ⁽²⁾.

✓ **Report the Pest**

If you find SLF in your yard, email photographs or just report your sighting via email to badbug@pa.gov . You can also call the Invasive Species Hotline at 1-866-253-7189 to report sightings ^(7, 8).

✓ **Act at the Right Time**

The calendar in Figure 3 shows various management methods and the most effective timing for the action.

SPOTTED LANTERNFLY MANAGEMENT CALENDAR												
	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
Destroy egg masses												
Destroy most <i>Ailanthus altissima</i> trees ¹												
Treat most <i>Ailanthus</i> trees with herbicide ^{2,3}												
Use sticky bands to destroy nymphs												
Treat <i>Ailanthus</i> trap trees with systemic insecticides ³												
Registered contact insecticides may be effective ³												
Avoid moving gravid (fertilized) females ⁴												
Avoid moving viable egg masses ⁴												
PEDOMINANT LIFE STAGE PRESENT- (one generation per year in Pennsylvania in 2015 and 2016)												
eggs												
nymphs												
adults												
¹ Destroying all <i>Ailanthus</i> trees (Tree of Heaven) may result in spotted lanternfly moving to surrounding plants and increase the pest pressure on them. It is recommended about 10% of <i>Ailanthus</i> trees are left alive to serve as trap trees to attract the spotted lanternflies. Leave only male trees if possible. ² <i>Ailanthus</i> trees will re-sprout vigorously from cut stumps and roots, unless they are treated with a systemic herbicide. Repeat applications of herbicide may be necessary. ³ ALWAYS READ HERBICIDE AND INSECTICIDE LABELS AND FOLLOW THE DIRECTIONS ⁴ Before you move outdoor items from the quarantine area, check for spotted lanternfly egg masses, adults, and nymphs and destroy them. Use the checklist at http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted_lanternfly/Documents/SLF%20Checklist%2011-12-2014.pdf												

Figure 3: Spotted Lanternfly Management Calendar ⁽⁹⁾

✓ *Destroy the egg masses*

The egg mass is the easiest form to kill, and it's important to kill this stage since eggs can be spread easily to areas outside of the quarantine ⁽¹⁾. Destroying an egg mass will kill about 50 SLF ^(1, 10). Identify the egg mass by reviewing Figure 4. Use a plastic putty knife or similar object to scrape off the egg mass into a plastic bag containing rubbing alcohol or hand sanitizer. Make sure all of the mass is doused in the liquid. Double bag it and dispose of the mass ⁽¹¹⁾. See the video https://www.youtube.com/watch?v=WoFp_MbDiE8 for how to remove egg masses ⁽¹¹⁾. The egg masses can be on trees or any outdoor hard surface e.g. patio furniture, toys, hardscaping, firewood, nursery stock and other stored items, so it is important to check these items and destroy the egg masses ⁽¹⁾. Vehicles parked outside especially below infested trees can harbor the insect at any stage including the egg form ⁽⁸⁾.



Figure 4: Spotted Lanternfly “fresh” uncovered & covered egg masses (left) as seen in the Fall and the same egg masses the following Spring (right) ⁽¹²⁾

✓ *Destroy Most of the Ailanthus Trees on Your Property*

Although SLF eats many different plants and can lay eggs on any smooth surface, *Ailanthus* (Tree of Heaven) shown in Figure 5 is a favorite food source for the adult stage of this pest. SLF mates and lays eggs on this plant ^(1, 8).



Figure 5 *Ailanthus* plant and leaf pattern ^(13, 14)

Since *Ailanthus* is an invasive plant, cutting them down is recommended but make sure to cut the correct tree. This tree looks similar to plants such as sumac or an immature black walnut ⁽¹³⁾. To help identify the tree, see

the Penn State Extension Service video at <https://extension.psu.edu/spotted-lanternfly-identifying-tree-of-heaven-and-some-native-look-a-like> ⁽¹⁵⁾. Wear two layers of protective disposable gloves when cutting because *Ailanthus* leaves give off an irritating substance that smells like rancid peanut butter ⁽¹⁾. Some people experience other health effects when exposed to this tree's sap ⁽⁸⁾. Responsibly dispose of the trees ⁽¹⁶⁾. Kill all female *Ailanthus* trees since they spread seed ⁽⁸⁾. Don't destroy all of the *Ailanthus* in your yard; leave some male *Ailanthus* as a "trap" for SLF ⁽⁸⁾. This tree grows back easily so repeatedly cut back the sprouts of the cut down *Ailanthus* ^(8, 13).

✓ ***Kill other stages of the insect***

The adult stage is easier to see and identify but the insect can jump away from you, so it's hard to catch ⁽¹⁰⁾. SLF do not bite humans so you can swat or crush them. Destroying one female can reduce the potential population since she can produce ~100 eggs per year ⁽⁸⁾. Remove insects manually or with a pressure washer ⁽⁷⁾ making sure not to spread the living insects.

To minimize environmental and human health effects, limit use of herbicides (to kill *Ailanthus* trees) and insecticides (to kill SLF). It is more environmentally sound to reduce the adult population by removing the *Ailanthus* trees than to over-use insecticides. Restrict the use of insecticides to only the *Ailanthus* "trap" trees and employ systemic application ⁽⁹⁾. Only use insecticides that will be effective ⁽¹³⁾ and are safe and approved for homeowner use ⁽⁹⁾. Follow application directions and use the minimal amount of insecticide to limit negative effects on beneficial insects, our waterways and sensitive humans. Appropriate insecticides are being assessed by Penn State Extension service ⁽¹⁷⁾. For catching the nymph stage, sticky bands have been shown to be effective in Asia ⁽³⁾ and the PA Extension Service is investigating this method.

✓ ***Don't move infested material that has insects or egg masses***

Don't transport this pest to other areas on your vehicle. Don't park under SLF infested trees ^(7, 8). Check vehicles and remove insects and egg masses. Be sure to inspect hidden areas of the vehicle such as wheel wells – remove and destroy the pest before traveling. Businesses need to check for insects or egg masses on containers, firewood, construction material or anything that has been stored outdoors before transporting the item within or outside the quarantined area. To assure compliance with the quarantine, residents and businesses should see the list provided by the PA Department of Agriculture before transporting items ⁽⁶⁾. Businesses should review additional resources ^(7, 16) to assure their compliance with the quarantine.

Why Should We Care?

The SLF is a pest that can be managed if we take quick action. The potential environmental damage caused by this pest can affect the beauty and health of our natural environment and can cause substantial economic effects. Besides affecting our orchard and grape production, other states and countries could ban various commodities coming from our area. Acting now and controlling this pest in a responsible way can protect our economy and most importantly, our environment.

References and More Information

The following references and websites provide additional information and links to articles, websites and videos:

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Pennsylvania Department of Agriculture

http://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/Entomology/spotted_lanternfly/program-information/Pages/default.aspx

PennState Extension Service

<https://extension.psu.edu/spotted-lanternfly>

U.S. Department of Agriculture

https://www.aphis.usda.gov/aphis/resources/pests-diseases/hungry-pests/the-threat/spotted-lanternfly/spotted-lanternfly?utm_keyword=/the-threat/spotted-lanternfly.php