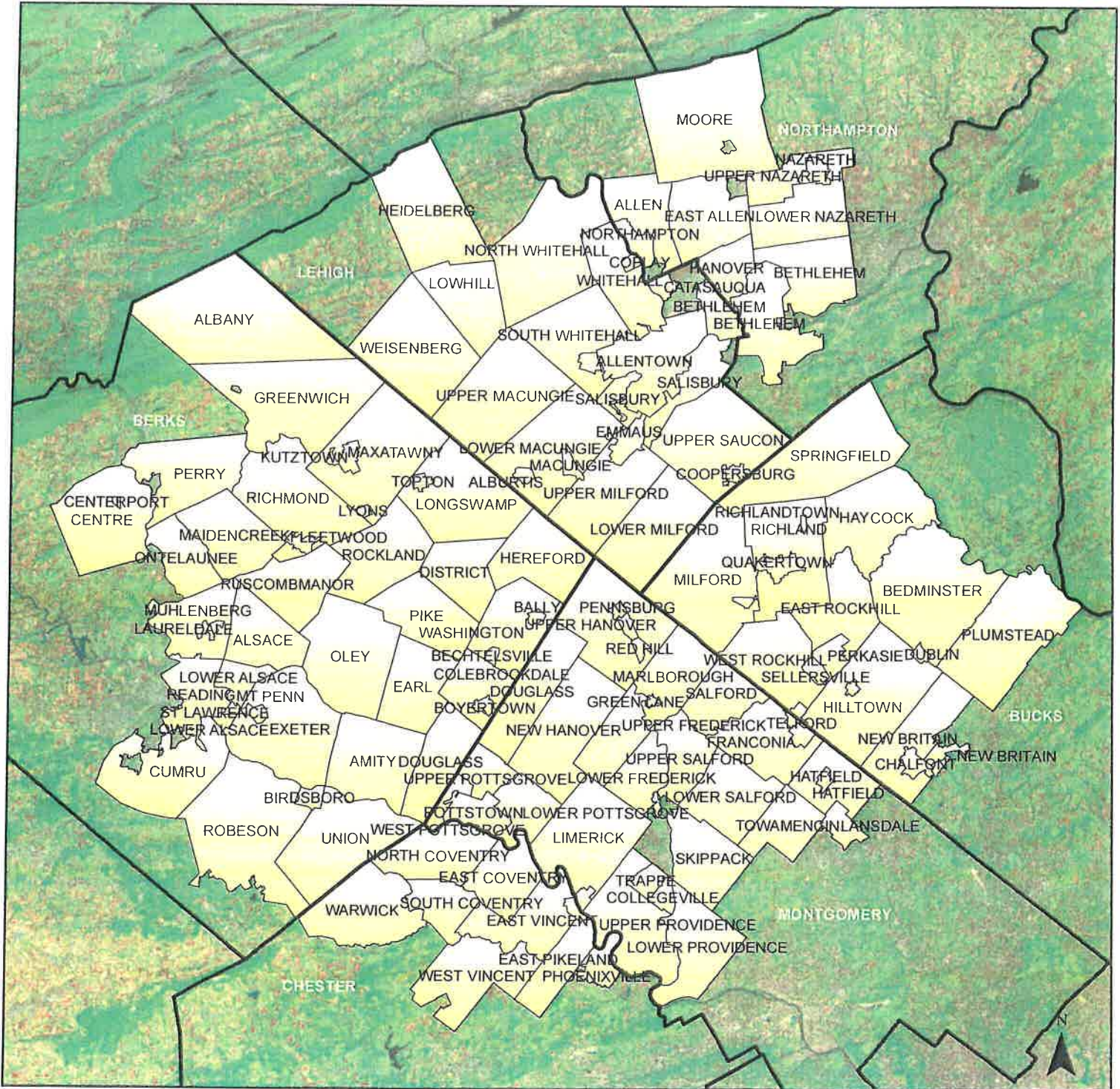


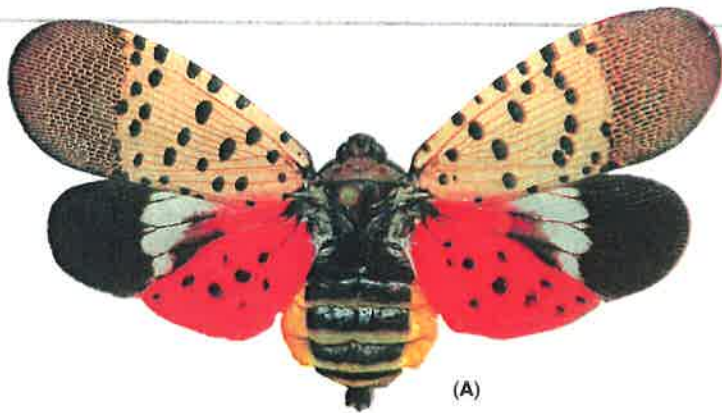
# Spotted Lanternfly Quarantine Map

Municipalities Under Quarantine as of September 22, 2017



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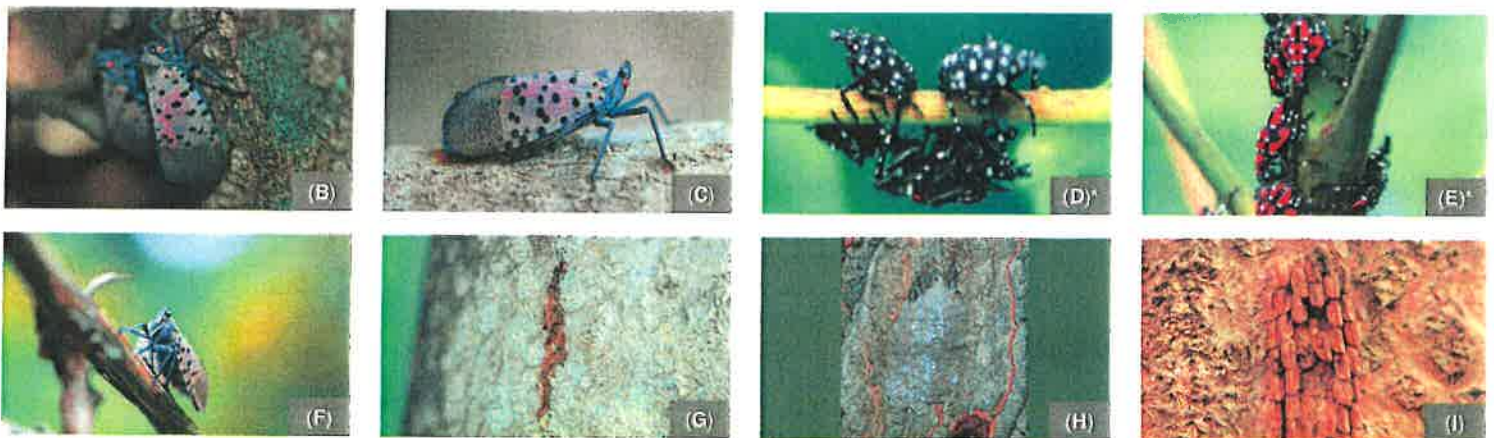
# Pest Alert



## Spotted Lanternfly

*Lycorma delicatula* (WHITE)  
(Hemiptera: Fulgoridae)

The Spotted Lanternfly, *Lycorma delicatula* (White), an invasive planthopper, has been discovered in Berks County, Pennsylvania. It is native to China, India, Vietnam, and introduced to Korea where it has become a major pest. This insect attacks many hosts including grapes, apples, stone fruits, and tree of heaven and has the potential to greatly impact the grape, fruit tree, and logging industries. Early detection is vital for the protection of Pennsylvania businesses and agriculture.



\*Photos courtesy of Park et al. 2009, *Biological Characteristics of Lycorma delicatula and the Control Effects of Some Insecticides*.

(A) Spotted Lanternfly showing the fore and hind wings (B) Resting against bark (C) Lateral view (D) Early nymphs (E) Late nymphs (F) Feeding on wild *Vitis* sp. (G) Weeping sap trail on tree (H) Egg mass covered in waxy coating (I) Old hatched egg mass on a trunk.

### Identification:

The Spotted Lanternfly adult is approximately 1" long and 1/2" wide at rest. The forewing is grey with black spots and the wings tips are reticulated black blocks outlined in grey (A, B, C). The hind wings have contrasting patches of red and black with a white band (A). The legs and head are black; the abdomen is yellow with broad black bands. Immature stages are black with white spots, and develop red patches as they grow (D,E).

### Hosts:

In the fall, adults congregate on tree of heaven (*Ailanthus altissima*) (F), willows (*Salix* sp.), and other trees, in groups of up to 20. Egg masses will be laid on medium to large trees, on trunk, branches, and limb bases. After hatching in the spring, nymphs will move off the tree and search out new hosts, including several kinds of agricultural crops. In Korea, it has been reported to attack 65 different species, 25+ of which are known to grow in Pennsylvania.

### Signs and Symptoms:

Trees, such as tree of heaven and willow, will develop weeping wounds. These wounds will leave a greyish or black trail along the trunk (G). This sap will attract other insects to feed, notably wasps and ants. In late fall, adults will lay egg masses on host trees and nearby smooth surfaces like stone, outdoor furniture, vehicles, and structures. Newly laid egg masses have a grey mud-like covering which can take on a dry cracked appearance over time (H). Old egg masses appear as rows of 30-50 brownish seed-like deposits in 4-7 columns on the trunk, roughly an inch long (I).

### What to do:

**If you see egg masses, scrape them off, double bag them and throw them away.** You can also place the eggs into alcohol or hand sanitizer to kill them. Please report all destroyed egg masses on our website listed below.

**Collect a specimen:** Specimens of any life stage can be turned in to the Pennsylvania Department of Agriculture's Entomology lab for verification. Directions for submission are on the reverse side of this alert.

**Take a picture:** A photograph of any life stage (including egg masses) can be submitted to [Badbug@pa.gov](mailto:Badbug@pa.gov).

**Report a site:** If you can't take a specimen or photograph, call the Automated Invasive Species Report Line at 1-866-253-7189 and leave a message detailing your sighting and contact information.



# ENTOMOLOGY PROGRAM SAMPLE SUBMISSION FORM

*The Entomology Program at the Pennsylvania Department of Agriculture can provide identification.  
Please complete this form to be submitted with the specimen(s).*

## SPECIMEN REQUIREMENTS:

1. All specimens should be dead.
2. Most specimens should be placed in 70-80% Ethyl or Isopropyl Alcohol in a leak proof vial.  
*(Moths, Butterflies, and Mealy bugs should be frozen and placed in a hard plastic container with dry paper toweling)*
3. The vial should be placed in a zipper style bag.
4. Specimens from different locations (if applicable) should be placed in different vials.
5. A completed sample submission form must accompany the vial/container.

## REQUIRED INFORMATION:

Name of Submitter:

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Contact Information: Telephone:

Email:

---

Address where specimen was collected:

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Date Collected:

Plant Host/Habitat:

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Name of Person Who Collected Specimen:

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Comments/Special Instruction:

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***Mail the vial/container and completed form, or deliver in person to:***

Pennsylvania Department of Agriculture  
Entomology - Room 111  
2301 North Cameron Street  
Harrisburg, PA 17110

Contact: Sven-Erik Spichiger at 717-772-5229 or Leo Donovall at 717-772-5225

# Checklist for Residents Living in Spotted Lanternfly Quarantine Areas

**IMPORTANT:** Before you move outdoor items from the quarantine area, check for spotted lanternfly egg masses, adults, and nymphs. Make sure all items are pest free before you move them. Help keep this pest from spreading.

If you find any of these life stages of the Spotted Lanternfly, remove, devitalize, place in a sealed bag, and dispose of bag in the garbage.



Adult Spotted Lanternfly, present in autumn months.



Spotted Lanternfly nymphs, present in spring and summer months. (Images from Park et al. 2009)

Fresh Spotted Lanternfly egg mass (outlined in red). Egg masses are present in autumn and winter months, blending in with their surroundings.



By signing this checklist, I am confirming that I have inspected my vehicle and those items I am moving from the Spotted Lanternfly quarantine area, and do not see any egg masses or insects in or on anything I am moving.

Signature \_\_\_\_\_ Address \_\_\_\_\_ Date \_\_\_\_\_

Please sign, date, and keep this checklist in your vehicle with you – use it each time you need it.

For more information, visit the Pennsylvania Department of Agriculture website:

[www.pda.state.pa.us/spottedlanternfly](http://www.pda.state.pa.us/spottedlanternfly)



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# Checklist for Residents

## Living in Spotted Lanternfly Quarantine Areas

**IMPORTANT:** Before you move outdoor items from the quarantine area, check for spotted lanternfly egg masses, adults, and nymphs. Make sure all items are pest free before you move them. Help keep this pest from spreading.

### Check before you move

#### Recreational or Camping Items

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- |  |  |                                |
|--|--|--------------------------------|
| <input type="checkbox"/> Backpacks             | <input type="checkbox"/> Ice chests            | <input type="checkbox"/> Tarps |
| <input type="checkbox"/> Basketball backboards | <input type="checkbox"/> Motorcycles           | <input type="checkbox"/> Tents |
| <input type="checkbox"/> Bicycles              | <input type="checkbox"/> Motor homes           | <input type="checkbox"/> Other |
| <input type="checkbox"/> Boats/Boat trailers   | <input type="checkbox"/> Recreational vehicles |                                |
| <input type="checkbox"/> Campers               | <input type="checkbox"/> Snowmobiles           |                                |

#### Outdoor Household Items

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- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Barrels                   | <input type="checkbox"/> Propane or oil tanks   | <input type="checkbox"/> Storm/Screen doors and windows |
| <input type="checkbox"/> Cardboard or wooden boxes | <input type="checkbox"/> Trash cans             | <input type="checkbox"/> Window awnings                 |
| <input type="checkbox"/> Outdoor poles             | <input type="checkbox"/> Refrigerators/Freezers | <input type="checkbox"/> Outdoor furniture              |
| <input type="checkbox"/> Plant containers          | <input type="checkbox"/> Storage sheds          | <input type="checkbox"/> Other                          |
| <input type="checkbox"/> Firewood                  | <input type="checkbox"/> Shutters               |   |

#### Building Materials

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- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Bricks/Cinder blocks | <input type="checkbox"/> Roofing materials   | <input type="checkbox"/> Skidsters/Forklifts |
| <input type="checkbox"/> Cement mixing tubs   | <input type="checkbox"/> Tools and toolboxes | <input type="checkbox"/> Pipes               |
| <input type="checkbox"/> Lumber               | <input type="checkbox"/> Workbenches         | <input type="checkbox"/> Other               |

#### Yard and Garden Items

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- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Dog houses, rabbit sheds, chicken coops, etc | <input type="checkbox"/> Garden tillers   | <input type="checkbox"/> Signs and posts          |
| <input type="checkbox"/> Barbecue grills                              | <input type="checkbox"/> Yard decorations | <input type="checkbox"/> Storage sheds            |
| <input type="checkbox"/> Carts  | <input type="checkbox"/> Garden tools     | <input type="checkbox"/> Tractors and trailers    |
| <input type="checkbox"/> Cold frames                                  | <input type="checkbox"/> Backhoes         | <input type="checkbox"/> Trees, shrubs and plants |
| <input type="checkbox"/> Fencing                                      | <input type="checkbox"/> Lawnmowers       | <input type="checkbox"/> Other                    |

#### Children's Playthings

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- |                                       |   |                                |
|---------------------------------------|---|--------------------------------|
| <input type="checkbox"/> Play houses  | <input type="checkbox"/> Bicycles, scooters | <input type="checkbox"/> Other |
| <input type="checkbox"/> Kiddie pools | <input type="checkbox"/> Sandboxes          |                                |

## How to Eliminate or Control Spotted Lanternfly Adults:

### **If you find Spotted Lanternflies in a municipality where they are known to exist, you should try to kill them.**

The most effective way to eliminate these insects is to disrupt their favorite food and hang-out. In late summer and fall, Spotted Lanternflies prefer feeding on *Ailanthus altissima*, commonly known as the "Tree of Heaven." They can be found feeding on other plants and trees, but *Ailanthus altissima* is their favorite host. Here's an excellent resource to help you identify the tree:

[https://pubs.ext.vt.edu/content/dam/pubs\\_ext\\_vt\\_edu/420/420-322/420-322\\_pdf.pdf](https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/420/420-322/420-322_pdf.pdf)

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**If you have *Ailanthus* on your property:** please consider reducing the number of *Ailanthus* trees, then treat remaining "trap trees" with insecticides. This is a longer-lasting solution than simply spraying insects you see.

More detail about this process can be found at the following websites:

[http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted\\_lanternfly/Documents/What%20to%20do%20if%20you%20find%20spotted%20lanternfly%20on%20your%20property%20fact%20sheet%20February%202017.pdf](http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted_lanternfly/Documents/What%20to%20do%20if%20you%20find%20spotted%20lanternfly%20on%20your%20property%20fact%20sheet%20February%202017.pdf)

[http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted\\_lanternfly/Documents/Spotted%20Lanternfly%20Property%20Management.pdf](http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted_lanternfly/Documents/Spotted%20Lanternfly%20Property%20Management.pdf)

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### **If you want to kill Spotted Lanternflies without controlling *Ailanthus*:**

When there are only a few insects, you can kill spotted lanternflies by swatting or crushing them. For large populations, two kinds of insecticides are widely available that will kill Spotted Lanternfly adults. **Contact insecticides** kill spotted lanternflies when the chemical contacts the insect directly. **Systemic insecticides** are absorbed by the tree and kill insects feeding on it. **ALL** insecticides must be used as directed on the label. Take the time to read the label carefully and follow the directions. This increases your safety, the safety of the environment, and the effectiveness of the insecticide.

Pennsylvania law requires that pesticide labels list the site where a pesticide (such as an insecticide) may be used. In Pennsylvania, insecticide labels do not have to specifically list the targeted insect. There are insecticides labeled for use on ornamental trees and around buildings. These products are legal to use on the sites listed in order to control Spotted Lanternflies in Pennsylvania.

Penn State Extension is currently testing to determine which insecticides are most effective in controlling adult spotted lanternflies. Preliminary results show insecticides with the active ingredients ***dinotefuran, imidacloprid, carbaryl, and bifenthrin*** are effective at controlling the spotted lanternfly. Neem oil and insecticidal soap provided some control, but results varied, and insects sometimes took several days to die.



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Examples listed below are some of the available insecticide products containing the most effective ingredients studied (*dinotefuran, imidacloprid, carbaryl, and bifenthrin*).

**EXAMPLES OF PRODUCTS CONTAINING INSECTICIDES LABELED FOR USE IN LANDSCAPES AND GARDENS:**

Contact insecticides (bifenthrin, carbaryl) - apply when adult insects are present:

AVALON INSECTICIDE  
BIFEN 7.9F SELECT  
FERTI-LOME BROAD SPECTRUM INSECTICIDE  
FLEE READY-TO-USE YARD SPRAY  
HOME MD MAXIMUM DEFENSE YARD CONCENTRATE  
LESCO CROSSCHECK PLUS MULTI INSECTICIDE  
MAXXTHOR SG  
ORTHO MAX PRO  
SEVIN  
TALSTAR SELECT INSECTICIDE  
UP-STAR GOLD INSECTICIDE

Systemic insecticides (imidacloprid, dinotefuran) – most effective when applied in spring and summer, before adults build up:

BAYER ADVANCED 12 MONTH TREE & SHRUB INSECT CONTROL  
BONIDE ANNUAL TREE AND SHRUB INSECT CONTROL WITH SYSTEMAXX  
COMPARE-N-SAVE SYSTEMIC TREE & SHRUB INSECT DRENCH  
GREEN LIGHT TREE & SHRUB INSECT CONTROL WITH SAFARI  
MONTEREY ONCE A YEAR INSECT CONTROL II  
ORTHO BUG B GON YEAR-LONG TREE & SHRUB INSECT CONTROL CONCENTRATE  
SPECTRACIDE TREE & SHRUB INSECT CONTROL  
TRANSTECT 70 WSP INSECTICIDE  
VENOM INSECTICIDE  
ZYLAM LIQUID SYSTEMIC INSECTICIDE

**EXAMPLES OF PRODUCTS CONTAINING INSECTICIDES FOR USE ON VEGETABLES, FRUIT, BERRIES AND GRAPES:**

*WHEN USING INSECTICIDES ON EDIBLE CROPS: It is especially important to follow directions for chemical application and timing from harvest as stated on the label.*

AGWAY COMPLETE FRUIT TREE SPRAY  
BONIDE COMPLETE FRUIT TREE SPRAY LIQUID  
BONIDE EIGHT INSECT CONTROL FLOWER & VEGETABLE ABOVE AND BELOW SOIL INSECT GRANULES  
HI-YIELD VEGETABLE & ORNAMENTAL INSECT CONTROL GRANULES  
SEVIN  
VEGETABLE GARDEN SOIL INSECTICIDE

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The products listed above are registered for use in specific settings. Read the pesticide label and follow the directions, including application rates, methods, and appropriate protective clothing and equipment.

THE LIST IS PROVIDED BASED ON CURRENT PRODUCT REGISTRATIONS. THIS IS NOT AN ENDORSEMENT OF ANY PRODUCT OR PESTICIDE PRODUCER. THIS IS NOT A COMPLETE LIST OF POSSIBLE LABELED PRODUCTS OR BRANDS.

***THESE INSECTICIDES HAVE NOT ALL BEEN TESTED AGAINST SPOTTED LANTERNFLY SPECIFICALLY, AND ADDITIONAL EXPERIMENTS ARE NEEDED TO DETERMINE THEIR EFFICACY.***

September 2017

People are looking for specific approaches to pest management to minimize off-target exposure to pesticides. This type of strategy is known as Integrated Pest Management (IPM). The Pennsylvania Department of Agriculture (PDA) has been using an IPM strategy for spotted lanternfly infestations, and landowners may consider using the same IPM strategy on their properties, or hiring a professional service to do it.

#### IPM Strategy for the Spotted Lanternfly:

1. Locate *Ailanthus altissima* trees on the site. For reasons not understood, spotted lanternfly seem to prefer some individual *Ailanthus altissima* trees over others. Try to identify the specific *Ailanthus* trees that are most attractive to the insects, based on how many are feeding on them. For information on how to identify *Ailanthus altissima* and how to control it, see this fact sheet: <https://pubs.ext.vt.edu/420/420-322/420-322.html>.
2. Destroy approximately 90% of the *Ailanthus altissima* trees, leaving only a few that are most attractive to the insect. They will serve as "trap" trees. It is recommended that you try to kill all the female *Ailanthus altissima* trees, because they produce seed and contribute to the spread of this invasive tree.

Be careful handling *Ailanthus altissima* wood, leaves, and branches. Chemicals in the sap of this tree can cause headaches, nausea, and possible heart problems. Wear gloves and protect yourself from exposure.

When you cut down *Ailanthus altissima* trees, they will sprout profusely from the stumps and can grow back in a few years. Because they regenerate so easily, it is highly recommended that you treat the stumps with a herbicide to kill them and prevent them from sprouting new shoots.

Herbicides that are labelled for this use usually contain one of the following active ingredients: triclopyr, dicamba, imazapyr or glyphosate. Use the herbicide carefully and according to the label directions. Alternative methods for using herbicides to kill *Ailanthus altissima* trees include foliar sprays, basal bark applications, and a method called frill application or "hack and squirt." For more information about these methods go to <http://extension.psu.edu/publications/uh174>. Whatever method you choose, remember that you will have dead *Ailanthus* trees which may eventually have to be removed.

3. Treat the remaining *Ailanthus altissima* trees with a systemic insecticide that will move throughout the tree. The insecticide must be applied according to the label and at the right time of year for the trees to absorb it. When spotted lanternflies feed on correctly treated trees, they will die. Systemic insecticides that are labelled to treat ornamental trees usually contain the active ingredients dinotefuran or imidacloprid. The PDA is using dinotefuran in their IPM strategy.

Treating only a few trap trees with a systemic product can reduce the amount of insecticide released into the environment and may help conserve beneficial insects.

Prepared by: Emelie Swackhamer, Horticulture Extension Educator, Montgomery County, February, 2017.

**[extension.psu.edu](http://extension.psu.edu)**

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Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

This publication is available in alternative media on request.





 Time to use management practices.

**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 <sup>1</sup>												
Treat most <i>Ailanthus</i> trees with herbicide <sup>2,3</sup>												
Use sticky bands to destroy nymphs												
Treat <i>Ailanthus</i> trap trees with systemic insecticides <sup>3</sup>												
Registered contact insecticides may be effective <sup>3</sup>												
Avoid moving gravid (fertilized) females <sup>4</sup>												
Avoid moving viable egg masses <sup>4</sup>												
PEDOMINANT LIFE STAGE PRESENT- (one generation per year in Pennsylvania in 2015 and 2016)												
eggs												
nymphs												
adults												

<sup>1</sup> Destroying all *Ailanthus* 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 *Ailanthus* trees are left alive to serve as trap trees to attract the spotted lanternflies. Leave only male trees if possible.

<sup>2</sup> *Ailanthus* 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.

<sup>3</sup> ALWAYS READ HERBICIDE AND INSECTICIDE LABELS AND FOLLOW THE DIRECTIONS

<sup>4</sup> 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](http://www.agriculture.pa.gov/Protect/PlantIndustry/spotted_lanternfly/Documents/SLF%20Checklist%2011-12-2014.pdf)