



## Recommended Best Management Practices

### Preventing Spread of Spotted Lanternfly

### For the Wine and Vineyard Industry

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**Note:** *This document will be modified and adapted as research is done and our knowledge base evolves relating to this invasive pest. This document was last revised on **October 17, 2018**.*

## **Purpose of this Document**

The wine and vineyard industry in Pennsylvania is committed to doing everything possible to minimize the threat and reduce the risk of spreading Spotted Lanternfly (SLF) during the course of normal operations in our industry. All members of the wine and vineyard industry in Pennsylvania are strongly encouraged to voluntarily comply with the following best management practices – both within and outside the quarantine areas. These practices have been developed by an industry work group in conjunction with Penn State Extension, research scientists and Pennsylvania Department of Agriculture (PDA).

For all businesses operating within and interacting with the wine and vineyard industry in PA, it is vital that we work together to assure that all persons are knowledgeable about and able to identify Spotted Lanternfly egg masses, nymphs (all instars) and adults. Additionally, training regarding the removal of egg masses and viable processes to minimize the movement of living insects during the spring, summer and fall are essential. Employees should be trained to watch for signs not only at their workplace but also their homes and in the community. Finally, all persons should feel empowered and obligated to report any sign or suspicion of this pest.

Anyone that encounters SLF or who needs further training should contact PDA or Penn State Extension to request information and aid from available staff to assist in training.

## **BMPs for Owner/Operator/Overseer**

**NOTE:** If you are the business and land owner as well as a worker supervisor, please use this set of BMPs. If business aspects have separate managers (business management, land owner and worker supervision) those individuals should adhere to later sections that pertain to their area of responsibility.

- Take SLF and any invasive insect threat seriously. If your operation becomes infested with SLF, it could have serious economic impact and severely restrict your ability to operate.
- If your operation becomes infested with swarming SLF, it may require limiting production operations for periods of time. It is imperative that egg masses not be moved, and the likelihood of moving adults and/or egg masses becomes much greater when high populations are present.
- Demonstrate to the public, all employees and all persons interacting with your business that you take SLF BMPs seriously.
- Communicate with your customers your dedication to a safe product and your commitment to ship only products that are SLF-free.
- Inform all outside companies with whom you work that you expect them both to have and to comply with all SLF BMP protocols.

- Communicate with PDA of your company’s decision to implement these BMPs for SLF. This information will be extremely helpful to demonstrate the strong commitment of the wine and vineyard industry in Pennsylvania to USDA and other states as additional quarantines are considered.
- Monitor information about SLF in your county and neighboring counties, especially if your property is in or adjacent to a quarantine area.
- Work with PDA and the PSU Extension community in knowing the predicted emergence, egg hatch and life stage maturation of the insect each year.
- Park in areas away from the tree line if possible and always leave windows up. Kill any SLF that you find in your car before leaving the area.
- Remove all female Ailanthus trees from property. These trees must be chemically killed as any other means rarely succeeds at getting all plant tissue out of the ground. Up to date treatment information for herbicide applications may be found on the Penn State Extension website.
- Reduce populations of and monitor male Ailanthus trees for early signs of SLF.
- Consider banding or treating with insecticide remaining male Ailanthus trees and/or banding other high-risk trees (maple, walnut, apple, etc.) with adhesive tree bands – May to August. This is an excellent monitoring tool for SLF and can kill all walking-life stages in infested areas.
- Understand the SLF life cycle, learn to identify its egg masses and watch for potential egg masses on any surface in, on or around your property. If possible, remove and destroy all egg masses.
- If new populations of SLF are discovered on your property, in addition to alerting the authorities, consider using all means of communication to alert neighbors, businesses and the public at large – including social media, Penn State extension and verbal communication in public forums.
- Understand and comply with the SLF Quarantine and Treatment Order including permit regulations.
- Wineries most take an active role in controlling SLF by educating staff, neighbors and customers. Promote educational materials to increase awareness.
- Make sure all employees under your leadership understand and comply with the industry’s BMPs.
- Educate employees about:
  - The SLF life cycle and how to identify and differentiate each stage.
  - The significance of this pest and *why* it’s important to understand it and inform their supervisor about it if seen.
  - The importance of them feeling empowered to take action – either directly or through channels within the company to limit the spread and mitigate the presence of this invasive species. Additionally, empower them to teach others who are less knowledgeable about the insect.

- Understand how the SLF life stage present at any given time impacts the jobs being performed throughout the year.
  - Monitoring and awareness at the job site(s) is essential.
  - Know where Ailanthus trees are on the property. Begin scouting there.
  - Special attention must be placed in the following locations:
    - Every surface of bulk bins being filled in the field. Every bin surface must be examined prior to filling throughout the entire egg-laying time frame.
    - General awareness in and around the job site to trellis posts, fence posts, woods borders and equipment.
    - Check vines/cordons for egg masses during winter pruning
  - If nymphs and/or adults are present, in addition to notifying the authorities, rapid, clear communication with the land owner/manager is necessary so decisions can be made regarding insecticide application.
  - If egg masses are present, remove and destroy by hand.

### **BMPs for Company Management**

- Take SLF and any invasive insect threat seriously. If your operation becomes infested with SLF, it could have serious economic impact and severely restrict your ability to operate.
- Every winery within the quarantine area needs to be aware of best SLF control practices and apply them accordingly.
- Understand and comply with the SLF Quarantine and Treatment Order including permit regulations.
- If your operation becomes infested with swarming SLF, it may require limiting production operations for periods of time. It is imperative that egg masses not be moved and the likelihood of moving adults and/or egg masses becomes much greater when high populations are present.
- Demonstrate to the public, all employees and all persons interacting with your business that you take SLF BMPs seriously.
- Train all employees to look for signs or the presence of SLF including egg masses and various life stages of the insect. Require them to report any sign of the insect to company leadership. Additionally, empower them to teach others who are less knowledgeable about the insect.
- Train and require employees to check all equipment/materials prior to transportation.
- Inform all outside companies with whom you work that you expect them both to have and to comply with all SLF BMP protocols.
- Communicate with your customers your dedication to a safe product and your commitment to ship only products that are SLF-free.
- Communicate with PDA of your company's decision to implement these BMPs for SLF. This information will be extremely helpful to demonstrate the strong commitment of

the vineyards and wine industry in Pennsylvania to USDA and other states as additional quarantines are considered.

### **BMPs for Land Owners**

- Monitor information about SLF in your county and neighboring counties, especially if your property is in or adjacent to a quarantine area.
- Work with PDA and the PSU Extension community in knowing the predicted emergence, egg hatch and life stage maturation of the insect each year.
- Understand the SLF life cycle, learn to identify its egg masses and watch for potential egg masses on any surface in, on or around your property. If found, remove and destroy all egg masses if possible and alert PDA.
- Park in areas away from the tree line if possible and always leave windows up. Kill any SLF that you find in your car before leaving the area.
- Remove all female Ailanthus trees from property. This dioecious species is easy to identify in the late summer when the seed clusters can be easily seen clinging to the female trees. These trees are generally located along the tree line of forested areas or highway rights of way where the soil has been disturbed. These trees must be chemically killed as any other means rarely succeeds at getting all plant tissue out of the ground.
- Reduce populations of and monitor male Ailanthus trees for early signs of SLF.
- Consider banding or treating with insecticide remaining male Ailanthus trees and/or banding other high-risk trees (maple, walnut, apple, etc.) with adhesive tree bands – May to August. This is an excellent monitoring tool for SLF and can kill all walking-life stages in infested areas.
- Additional treatment and control recommendations can be found on the Penn State Extension website: <https://extension.psu.edu/spotted-lanternfly>.
- If new populations of SLF are discovered on your property, in addition to alerting the authorities, consider using any and all means of communication to alert neighbors, businesses and the public at large – including social media, Penn State extension and verbal communication in public forums.
- Make sure all employees under your leadership understand and comply with the industry's BMPs.

### **BMPs for Supervisors**

- Talk with the business owner/supervisor about the presence of SLF in the state, county and area.
- Understand the SLF life cycle, learn to identify its egg masses and watch for potential egg masses on any surface in, on or around the property. If found, remove and destroy all egg masses where possible and report to the property owner and alert PDA.

- Educate employees under your supervision about:
  - The SLF life cycle and how to identify and differentiate each stage.
  - The significance of this pest and *why* it's important to understand it and inform their supervisor about it if seen.
  - The importance of them feeling empowered to take action – either directly or through channels within the company to limit the spread and mitigate the presence of this invasive species.
- Understand how the SLF life stage present at any given time impacts the jobs being performed throughout the year.
  - Monitoring and awareness at the job site(s) is essential.
  - Know where Ailanthus trees are on the property. Begin scouting there.
  - Special attention must be placed in the following locations:
    - Every surface of bulk bins being filled in the field. Every bin surface must be examined prior to filling throughout the entire egg-laying time frame.
    - General awareness in and around the job site to trellis posts, fence posts, woods borders and equipment.
    - Check vines/cordons for egg masses during winter pruning
  - If nymphs and/or adults are present, in addition to notifying the authorities, rapid, clear communication with the land owner/manager is necessary so decisions can be made regarding insecticide application.
  - If egg masses are present, remove and destroy by hand.

### **BMPs for Industry Workers**

- Talk with your supervisor about the presence of SLF in the state, county and area.
- Understand the SLF life cycle, learn to identify its egg masses and watch for potential egg masses on any surface in, on or around the property. If found, remove and destroy all egg masses if possible and report to your supervisor.
- Understand:
  - The SLF life cycle and how to identify and differentiate each stage.
  - The significance of this pest and *why* it's important to understand it and inform your supervisor about it if seen.
  - Workers should feel empowered to take action – either directly or through channels within the company to limit the spread and mitigate the presence of this invasive species.

- Understand how the SLF life stage present at any given time impacts the jobs being performed throughout the year.
  - Monitoring and awareness at the job site(s) is essential.
  - Know where Ailanthus trees are on the property. Begin scouting there.
  - Special attention must be placed in the following locations:
    - Every surface of bulk bins being filled in the field. Every bin surface must be examined prior to filling throughout the entire egg-laying time frame.
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    - Check vines/cordons for egg masses during winter pruning
  - If nymphs and/or adults are present, in addition to notifying the authorities, rapid, clear communication with the land owner/manager is necessary so decisions can be made regarding insecticide application.
  - If egg masses are present, remove and destroy by hand.

### **BMPs for Volunteers**

- Understand the SLF life cycle, learn to identify its egg masses and watch for potential egg masses on any surface in, on or around the property. If found, remove and destroy all egg masses if possible and report to your supervisor.
- Keep vehicle windows and doors closed while on the farm.
- Remove and destroy any insects that may have entered your vehicle.
- Check clothing for SLF before leaving the area.

### **BMPs for Tractor & Equipment Operators**

- Confirm if industry workers or supervisors in the field have seen any signs of any stage of SLF.
  - If SLF have been observed, inspect equipment, all plants and materials prior to loading them on the truck to be sure living insects and egg masses are removed and destroyed.
  - If none have been witnessed, inspect the bins/containers for signs of egg masses or insects.
- Visually inspect all equipment every day before heading to and returning from job site(s), especially when the same equipment is used on non-contiguous sites.
- If any SLF are found – of any life stage – immediately contact your supervisor. Never travel or transport equipment where live specimens or egg masses have been found.
- If you see or know of Ailanthus nearby, inspect those trees for signs of SLF. If SLF are seen, inform the field supervisor immediately.
- Check your own clothing and body for SLF before leaving the area. Be sure to kill all live SLF and remove and dispose of any egg masses.

- After the season, work with your supervisor and local extension agents to confirm that adult SLF have stopped egg-laying. After that time, pressure wash *all* surfaces of any tractor/equipment/trucks used in industry operations. This will eradicate any egg masses present.

### **BMPs for Delivery / Pick Up**

- Be aware of all quarantine zones for SLF and other invasive insects. Adhere to regulations outlined in the quarantine order(s).
- Attempt to route trucks so they do not need to travel through quarantine zones.
- If you must deliver to a quarantine zone, then remind those receiving the shipment that the product is SLF free and should be stored indoors July – December.
- If you must travel through a quarantine zone to another location outside the quarantine, then avoid any lengthy stops within the quarantine zone. Stop lights, normal traffic patterns are not a concern. Stopping for meals or rest breaks should be avoided in the quarantine zone, if possible.
- If you travel through swarming SLF, do not stop! Before leaving a quarantined county, immediately inspect shipment and interior of truck and equipment and attempt to kill any hitchhikers.
- Visually inspect all equipment every day before heading to and returning from job site(s), especially when the same equipment is used on non-contiguous sites.
- When picking up, confirm if location workers or supervisors in the field have seen any signs of any stage of SLF.
  - If SLF have been observed, inspect equipment, all plants and materials prior to loading them on the truck to be sure living insects and egg masses are removed and destroyed.
  - If none have been witnessed, inspect the bins/containers for signs of egg masses or insects.
- Be sure the inside and outside of the truck is free of egg masses before it is loaded.
- If you see any life stage of living SLF on the property, do not transport any product off the property until you know that permitting has been completed and proper stamps are on the required paperwork.
- If any SLF are found – of any life stage – immediately contact your supervisor. Never travel or transport equipment where live specimens or egg masses have been found.
- Do not move trucks, materials or equipment from the property if high populations or swarming activity is observed.
- Refuse to load containers or shipments if you see SLF swarming in the area. It will be impossible to load without transporting adults. Swarming activity is limited to a small window of time.
- Inspect your truck tires and truck body for egg masses or other life stages before leaving a site and be sure you are not moving SLF inside the cab of the truck. Take whatever time is necessary to assure that you are moving safe products and equipment. \*See attached BMP checklist.

- Check your own clothing and body for SLF before leaving the area. Be sure to kill all live SLF and remove and dispose of any egg masses.
- After the season, work with your supervisor and local extension agents to confirm that adult SLF have stopped egg-laying. After that time, pressure wash *all* surfaces of any vehicle used in industry operations. This will eradicate any egg masses present.

## **BMPs for Finished Product and Sales Areas**

### **Product Produced/Stored on Your Farm**

- Educate all employees on how to identify all stages of the Spotted Lanternfly, what to look for and actions to be taken if live insects or egg masses are found.
- When possible, keep doors to production and storage areas closed during season that live insects may be moving.
- Before loading pallets/totes to carry materials to a job site, check for egg masses. Remove/destroy any egg masses before using.
- Keep pallets/totes of product that will be taken to job site(s) indoors (after inspection) and prior to loading, if possible.
- Visually inspect interior and exterior of trucks and equipment, as applicable, before loading with product and leaving the site. During season check for both live insects and egg masses. At other times, check for egg masses. If live insects are found, kill them. If egg masses are found, remove and destroy them.
- When moving product in or out of the quarantine zone, consider using closed or covered trucks, where practical.

### **Products Purchased from Others for Resale**

- Know where the products you are purchasing originated.
  - Was product grown or stored in the SLF quarantine zone?
  - If so, does supplier have BMPs in place for SLF?
  - Are pallets or other packing materials free of SLF egg masses?
- Inspect newly arrived products for adults and egg masses. Kill any adults that are found and remove any egg masses.
- Inspect pallets, totes and packaging materials for egg masses. Remove and destroy any egg masses found or destroy pallets/packaging. (Don't just throw packaging with egg masses away. Decontaminate first or burn.)
- Instruct drivers not to stop (other than following normal traffic patterns) in a quarantine zone. Stopping for meals or rest breaks in a quarantine zone should be avoided if possible.

### **Retail Operations**

- Utilize official posting placards as well as more light-hearted, simple displays and signs to make public aware of Spotted Lanternfly.
- Use every means possible to keep SLF from customer parking areas at your winery.
- If possible, display and sell products in a fully enclosed building and keep the doors on the building closed except for entering and exiting.
- Encourage customers to keep vehicle windows and doors closed.
- Encourage customers to remove and destroy any insects that may have entered vehicle.
- Encourage customers to check clothing for SLF before leaving the area.

### **Venue Rentals**

- Herbicide and remove *Ailanthus* trees near parking areas according to recommended treatments.
- Tell customers the steps you are taking to help combat the pest.
- Add verbiage in rental contracts or provide separate document(s) stating expectations regarding SLF.
- Utilize official posting placards as well as more light-hearted, simple displays and signs to make public aware of Spotted Lanternfly.
- Encourage renter to communicate SLF information with guests and any third-party service providers.
- Encourage renter and their guests to park personal vehicles as far away from the tree line as possible with windows up and doors closed.
- Encourage renter, guests and service providers to inspect vehicles for SLF and to remove and destroy any insects that may have entered vehicle.
- Encourage renter and their guests to check clothing for SLF before leaving the area.

### **Consumer/Visitor Education**

- Use the interaction you have with customers to help spread the word on the gravity of the situation when it comes to SLF and what they can do to help prevent its spread.
- Tell customers the steps you are taking to help combat the pest.
- Post signs or utilize PSU/PDA Fact sheets or cards to give to customers.
- Utilize social media as much as possible in communicating to customers.



## Spotted Lanternfly Third-Party Inspection

The following is a list of items/places that may harbor SLF. This list is not all-inclusive but should serve as a starting point in actively inspecting for SLF.

Depending on the time of year, check for both live insects and/or egg masses.

October-June	Eggs
Late April-Mid July	1 <sup>st</sup> -3 <sup>rd</sup> Instars
July-September	4 <sup>th</sup> Instar
July-December	Adults

If live insects are found, kill them. If egg masses are found, remove and destroy them.

Vehicles (interior)	_____	Pallets	_____
Vehicles (exterior)	_____	Storage Bins	_____
Truck beds	_____	Storage Crates	_____
Wheel wells	_____	Animal Travel Crates	_____
Trailers	_____	Tent	_____
Tool Boxes (Outside)	_____	Dollies	_____
Furniture	_____	Boxes	_____
Tables	_____		_____
Grills	_____		_____
Ladders	_____		_____
Trash Cans	_____		_____

Other:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



## Spotted Lanternfly Property Inspection

The following is a list of places that may harbor SLF egg masses. This list is not all-inclusive but should serve as a starting point in actively inspecting for SLF.

Vehicles (interior)	_____	Pavilions	_____	Fences	_____
Vehicles (exterior)	_____	Equipment Sheds	_____	Posts	_____
Truck beds	_____	Storage Bldgs.	_____	Block walls	_____
Wheel wells	_____	Production Bldgs.	_____	Concrete structures	_____
Trailers	_____	Picnic tables	_____	Pallets	_____
Mowers	_____	Lawn Furniture	_____	Storage Crates	_____
Decks	_____	Fire Rings	_____	Animal Travel Crates	_____
Ladders	_____	Outdoor Kitchen	_____	Cigarette Receptacle	_____
Hose Reels	_____	Grills	_____	Trash Cans	_____
Dumpsters	_____	Boats	_____	Tool Boxes (Outside)	_____
Storage Bins	_____	Tables	_____	Harvest Bins/totes	_____

Other:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



## Spotted Lanternfly Vehicle Inspection

Shipping Company \_\_\_\_\_

Shipping point address \_\_\_\_\_

Product loaded on date & time \_\_\_\_\_

Designated inspector \_\_\_\_\_

Truck Company \_\_\_\_\_

Trailer License number \_\_\_\_\_

The exterior of the truck cab and trailer have been visually inspected for presence of adult Spotted Lanternflies (SLF). The interior of the trailer has also been visually inspected.

There were no visually detected SLF. \_\_\_\_\_

**or**

There were observed adult SLF.  
The SLFs were removed from the truck cab/ trailer. \_\_\_\_\_

Inspector \_\_\_\_\_

# Egg Mass Identification

## Egg Laying



Egg-laying begins in September and continues until an extended freeze kills the adults and ends the egg-laying period. The egg masses can be found on smooth surfaces such as tree bark; fence posts; outdoor equipment such as ATVs, trailers, boards, lawn tractors, grills and covers, etc.; pool covers and tarps; tile; smooth stone; deck boards; and rusty metal or siding. They are often laid in protected spots, such as underneath peeling bark or in crevices between rocks.

The egg masses resemble 1-2-inch-long gray mud smears with 30-50 brown eggs beneath the gray matter. They often appear waxy. Later the egg masses will turn dark brown and appear cracked and scaly or like dried mud. It is imperative that egg masses be removed whenever seen and properties should be inspected early winter and again in early spring before the eggs hatch.

**In the photo to the left you can see:**

- ← Covered Egg Mass
- ← Adult Spotted Lanternfly
- ← Uncovered Egg Mass

**Here is an example of an unfinished egg mass.**

**Note:** You can see seed-like eggs in loose columns poking out the top.

The Spotted Lanternfly lays columns of eggs side by side. There can be as many as 30 to 50 eggs per mass. The eggs are then covered in a grey putty-like covering.

The covering is slightly tacky and will wear away over the course of the year.

**This is an egg mass from the previous season. You can see that the Spotted Lanternfly will lay several vertical rows of eggs.**

The grey putty like covering you see on fresh egg masses is missing. A few eggs are also missing.

The overall length of an egg mass is about 1 inch.

### **TO REMOVE and DESTROY EGG MASSES:**

Scrape egg masses into a plastic bag from trees and other surfaces with a knife, credit card, or egg mass scraper. Double bag the eggs and throw away in the garbage. Or place them in alcohol or hand sanitizer to kill the eggs.

### **SIGNS of SLF INFESTATION:**

You may identify trees that have been infested with SLF, and therefore likely to have egg masses, from honeydew and fungus covering the trunk or ground near the tree. The fungus is a mold that grows on any surface, feeding on the sweet excrement of the insects. The mold will be dense enough to not allow sunlight to the leaf or ground.





## Tree-of-heaven (*Ailanthus altissima*)

### Description

- Tree-of-heaven is commonly known as 'ailanthus'.
- Refer to the DCNR Invasive Plants page and the ailanthus page ([http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr\\_010311.pdf](http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_010311.pdf)).
- Fast growing, weak-wooded, clonal (root suckering) tree.
- Dioecious – male and female flowers on separate plants.
- Individual stems are typically short-lived, but they can reach heights of 80 ft.
- Grows in dense clones where ailanthus stems occupy all layers, from understory to canopy.
- Native to East Asia, imported as an ornamental and urban street tree in the late-1700's.
- Grows almost anywhere, from sidewalk cracks or spoil in full sun to fertile, shaded alluvial soils along rivers and streams.

### Management Keys

Due to its size and vigor, and extensive spreading root system, ailanthus can be difficult to control. As long as you are willing to invest the up-front effort and treat at the proper time, it can be successfully suppressed.

#### Be Persistent

There are two phases of invasive species management – control and maintenance. The control phase for ailanthus takes two seasons, and would ideally include two applications the first season and a rigorous follow-up treatment the second year.

After your control efforts have nearly eliminated the ailanthus, you need to periodically monitor the sites and treat any signs of new growth to prevent re-infestation.

#### Target the Roots – Timing is Key

To control ailanthus, you have to injure the root system. This is most effectively done with systemic herbicides, when the plant canopy is exporting sugars to the roots for growth and storage.

Systemic herbicides are most effective when

applied later in the growing season (Figure 1). For ailanthus, we recommend waiting until July 1 to initiate treatment. This is when the foliage is sending sugars produced through photosynthesis back to the roots. Systemic herbicides are moved in the same direction through the plant as the sugars.

Applications made too early in the season do not translocate effectively to the roots, and only injure the aboveground growth.

#### Mechanical Operations

Cutting ailanthus is often necessary to remove potentially hazardous stems, but it is not useful as a control measure. In situations where you want to remove ailanthus stems, it is better to cut *after* herbicide treatment has taken effect.

#### Herbicide Applications

Ailanthus can be effectively treated with foliage or stem treatments. Tall, dense growth is best treated with a high volume ('spray to wet') application, while smaller stems can be treated with a low volume foliar or stem treatment approach.

Effective stem treatment methods include basal bark and 'hack and squirt'. Basal bark treatments use a concentrated mixture of herbicide in oil, applied to the complete circumference of the lower 12 to 18 inches of the stem. The 'hack and squirt' method uses concentrated herbicide solution applied to *spaced* cuts around the perimeter of the stem. It is critical that the stem cuts are spaced so the applied herbicide can translocate to the roots. If you completely girdle the stem, the herbicide can only move up in the stem, and you will not injure the roots or the stem below the girdle.

Dense, or extensive infestations should be treated initially with a foliar application. This will eliminate the small, dense growth. The 'clean-up' application can be stem treatment, or foliar, depending on the size of the remaining stems. Large, tall plants are easier to treat with stem treatment, while smaller stems are easier to treat with a foliar application.

#### Recommended Herbicides

There are many herbicides available that are very



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Where trade names appear, no discrimination is intended, and no endorsement by the Penn State College of Agricultural Sciences is implied.

effective against ailanthus, but we recommend using *glyphosate* or *triclopyr*. They are both effective, have no or little soil activity, and are available as aquatic-labeled products. For foliar applications, we recommend mixing them together (Table 1). Either herbicide can be used for hack-and-squirt treatments, and *triclopyr* is available in oil soluble formulations for basal bark applications.

### What about Stump Treatment?

If you need to cut down ailanthus for immediate safety reasons, by all means do so and treat the stump. However, cutting the stems and treating the

stumps does not provide effective control of the roots. When you remove the top, there is no more downward flow of sugars to the roots. Stump treatment of ailanthus will keep the stump free of sprouts, but it will not prevent root suckering.

If you want to cut ailanthus, treat it first, and then wait until the dormant season to cut it. You should cut it before the next growing season because standing dead ailanthus decays quickly. If you leave it stand too long, you may be faced with considerable hazard while trying to remove the ailanthus.

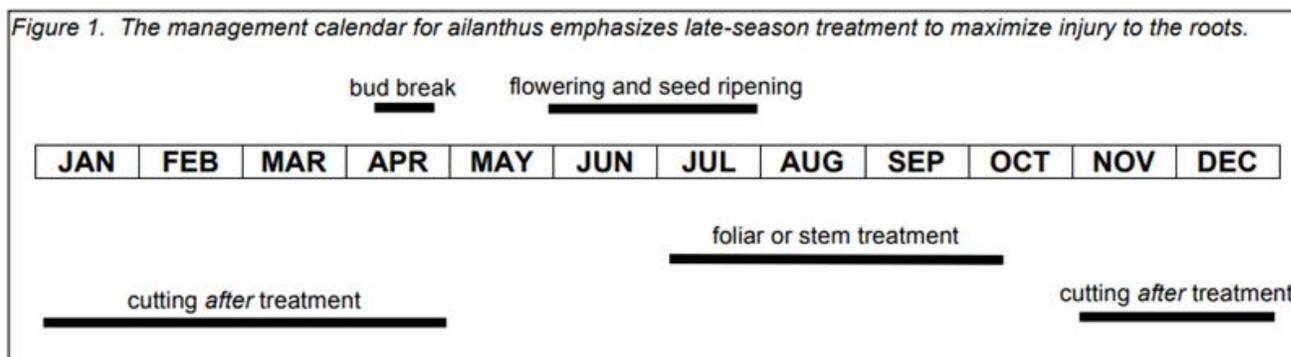


Table 1. Prescriptions for controlling ailanthus stress proper timing of operations to maximize injury to the roots. Improper timing will result in treatments that provide 'topkill' (shoot injury) but little net effect. Product names reflect the current PA State Herbicide Contract.

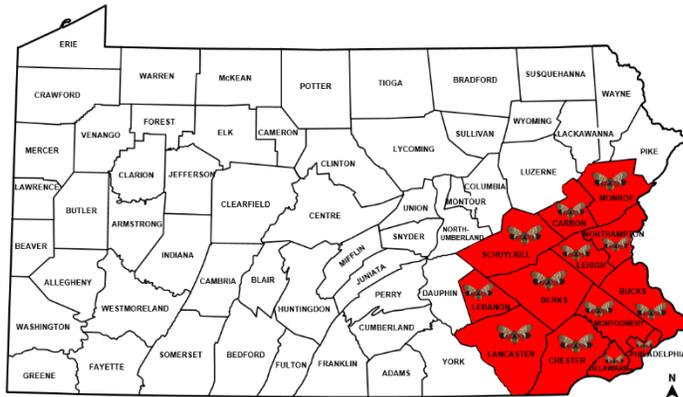
Treatment and Timing	Treatment	Product Rate	Comments
Foliar Application July 1 to fall color	'Rodeo' plus 'Triclopyr 3'	3 qts/acre plus 2 qts/acre	The combination of <i>glyphosate</i> and <i>triclopyr</i> provides a broad-spectrum treatment that is effective against ailanthus and other woody species that should be targeted as well during the operation. This is a non-selective mixture, but it has little soil activity, poses low risk to non-target organisms, and both products have aquatic labeling. A surfactant (e.g. 'Alligare 90') needs to be added. If the <i>glyphosate</i> product 'Glyphomate 41' is used instead (4.3 qts/acre), no additional surfactant is needed.
Basal Bark July 1 to fall color	'Pathfinder II'	ready-to-use	'Pathfinder II' is an oil-based formulation of <i>triclopyr</i> that can be used for basal bark applications. Treat stems up to 6-in diameter by wetting the entire circumference of the lower 12 to 18 inches, without runoff. You can apply a shorter band to small stems. This technique is laborious, and is best suited for treating small infestations or as a follow-up to surviving stems after a foliar application. If stems are significantly larger than 6-in diameter, use hack and squirt.
Hack and Squirt July 1 to fall color	'Rodeo' or 'Triclopyr 3'	Use either product undiluted or 1:1 with water	These are water-based formulations useful for hack-and-squirt treatments. It is essential to space the cuts so there is intact bark between the cuts. If you completely girdle the stem, the herbicide cannot translocate to the roots. A simple guideline for number of cuts is 'inches in diameter plus one'. This is a laborious treatment best suited for low stem numbers, and stems at least 1-inch in diameter. Treat immediately after cutting, filling the cut with herbicide mixture using a squirt bottle.

This publication is available in alternative media on request.

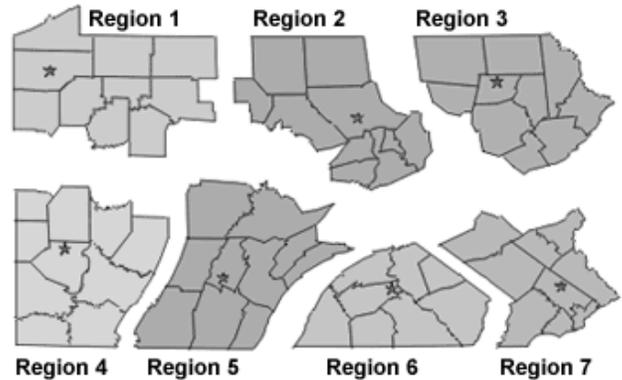
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## For a Permit or Compliance Agreement:

For information and questions regarding permits related to Spotted Lanternfly, please contact your Pennsylvania Department of Agriculture Regional Office and speak with the Bureau of Plant Industry Supervisor (listed below).



Current SLF Quarantine includes all counties in red.



PA Department of Agriculture Regions

**Region 1:** Clarion, Crawford, Elk, Erie, Forest, Jefferson, McKean, Mercer, Venango, and Warren  
Lisa K. Candelore Phone: (814) 332-6890

**Region 2:** Cameron, Clinton, Columbia, Lycoming, Northumberland, Montour, Potter, Snyder, Tioga, and Union  
Jay P. Bagley Phone: (570) 433-2640 ext. 206

**Region 3:** Bradford, Carbon, Lackawanna, Luzerne, Monroe, Pike, Sullivan, Susquehanna, Wayne, and Wyoming  
Richard J. Malak Phone: (570) 836-2181 ext. 111

**Region 4:** Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Lawrence, Washington, and Westmoreland  
Lisa K. Candelore Phone: (724) 832-1073 ext. 125

**Region 5:** Bedford, Blair, Cambria, Centre, Clearfield, Fulton, Huntingdon, Juniata, Mifflin, and Somerset  
Abbie Clark Phone: (814) 793-1849 ext. 216

**Region 6:** Adams, Cumberland, Dauphin, Franklin, Lebanon, Lancaster, Perry and York  
Jeff Miller Phone: (717) 772-5206

**Region 7:** Berks, Bucks, Chester, Delaware, Lehigh, Montgomery, Northampton, Philadelphia, and Schuylkill  
Howard Walker Phone: (610) 489-1003 ext. 108

**FOR MORE INFORMATION:**



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

PA Department of Agriculture: <https://agriculture.pa.gov/SpottedLanternfly>

United States Department of Agriculture:  
<https://www.aphis.usda.gov/aphis/resources/pests-diseases/hungry-pests/the-threat/spotted-lanternfly/spotted-lanternfly>

