

Best Management Practices for Spotted Lanternfly Around Christmas Tree Farms

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Introduction

Spotted Lanternfly (SLF) is a serious pest of grapes and other crops. SLF does not damage conifers, but it does feed on many plants that can be found on and around Christmas tree farms. SLF eggs can be transported on Christmas trees.




Treatment of Christmas Trees Is Not Necessary

Since SLF is not a pest of Christmas trees, a rigorous, thorough inspection program of all Christmas trees before on-site sale or off-site shipping can be done instead of insecticide treatments. In severe cases of SLF infestation on farms that ship trees, consider treating only the non-conifer trees on the farm's borders. Always be aware of SLF in your general area, and do not move any infested materials to limit the spread of this pest.

Scouting

Since SLF is highly mobile and can easily move from tree to tree, or from the ground up into trees, it is important to monitor SLF populations on a repeated basis during the year. Learn which life stage can be expected during the year and scout for all life stages on the property throughout the year (Table 1).

Table 1. Spotted Lanternfly life stages and when to expect them.

<p>November-April</p> <p>Look for SLF egg masses on branches and trunks of trees and shrubs. Even pencil-sized branches may have egg masses. Also found on equipment, supplies, and goods left outside during the fall.</p>	
<p>May-June</p> <p>Early immature nymphal stages of SLF are black with white spots. They can be found on many types of plants.</p>	
<p>Late June-early July</p> <p>The fourth and final stage of the SLF nymph is larger and red and black with white spots.</p>	
<p>Mid-July to October</p>	

Adults are present from mid-July until killed by a hard frost in late fall. Adults start laying eggs in mid-September.



Treatments for SLF

The key for successful management of SLF depends on the proper timing of applications and the use of effective materials (Table 2). Be aware that SLF will likely move from unsprayed areas into treated areas after treatments dissipate. Scraping egg masses and using band traps on tree trunks to trap SLF are also good control measures (Table 2).

Table 2. Time of year and appropriate treatments for SLF management.

Activity	January-April	May-October	November-December
Scrape eggs			
Apply dormant oil to egg masses			
Use band traps on trunks			
Use contact insecticides as spot sprays			
Use soil drench of systemic insecticides			
Use organic sprays or biological control			
Do not move any infested materials			

Insecticide Application Methods and Timing

Systemic insecticides, regardless of the application method, should be used after the tree or shrub has finished flowering (Table 3). Soil drenches should not be used if flowering plants are planted at the base of the tree or shrub. These practices protect pollinators. Systemic sprays are not effective against SLF egg masses.

Table 3. Application methods and timing of systemic insecticides for control of SLF.

Systemic Insecticides	Method of Application	Timing for Best Control
Dimethoate	Soil drench or trunk spray	July - September
Imidacloprid	Soil drench	After flowering to July
Imidacloprid	Trunk injection	July - September

Contact insecticides should be used as a spot spray for clusters of SLF adults or nymphs found on vegetation (Table 4). The products listed below are effective, but SLF is highly mobile and will likely to move from untreated areas into treated areas after the insecticide wears off. Contact insecticides are not recommended for egg masses.

Table 4. Application methods and timing of contact insecticides for control of spotted lanternfly.

Contact Insecticides	Method of Application	Timing for Best Control
Bifenthrin	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Carbaryl	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Zeta-cypermethrin	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Malathion	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Tau-fluvalinate + tebuconazole	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.

Organic Controls such as neem oil and natural pyrethrins can be used when SLF is found on plants, but repeated applications of these materials may be necessary as SLF is very mobile and more will move in after the pesticide wears off (Table 5). Dormant oil can be used as a spot spray on egg masses, but should only be used in late winter and before bud break in the spring. Some horticultural oils and paraffinic oils can be used as a spot spray on egg masses on trees in the growing season, but these materials should be tested on a few branches first to make sure it will not harm the tree. Wait two weeks and retreat the entire tree if no damage is observed to the tree. Do not use oil sprays as a preventative application to a tree against egg-laying by SLF as this is not effective.

Table 5. Organic insecticides, methods, and timing for control of spotted lanternfly.

Organic Controls	Method of Application	Timing for Best Control
Neem oil	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Natural pyrethrins	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Insecticidal soap	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary.
Horticultural oil and paraffinic oil	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July. Repeat in fall if necessary. May damage some plants; treat a small area and wait two weeks to make sure it will not harm plants.
Dormant oil	Trunk and branches with egg masses. Do not apply to foliage.	Directly on egg masses. Treat from mid-February to late April, beginning when overnight temperatures do not go below freezing the first night after application.

Biological Control: Fungal preparations can be applied from early May to early June (Table 6). Fungal preparations are limited by environmental conditions such as moisture levels and temperature. They are slow-acting and control may not be apparent for several weeks. Also, SLF is highly mobile and will likely to move from untreated areas into a treated area over time.

Table 6. Biological controls, methods, and timing for control of spotted lanternfly.

Biological Controls	Method of Application	Timing for Best Control
Burkholderia spp. strain A396 (Venerate XC)	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July.
Beauveria bassiana (Botanigard, etc.)	Trunk, branch, and foliage sprays	Spot sprays as needed May-early July.

Removing Tree-of-Heaven

Removing Tree-of-Heaven near the Christmas tree farm will help reduce the likelihood of SLF establishing on the property. For more information on the control and use of Tree-of-Heaven, see: Control and Utilization of Tree-of-Heaven, A Guide for Virginia Landowners, https://dof.virginia.gov/wp-content/uploads/Control-and-Utilization-of-Tree-of-Heaven_pub.pdf

Additional Resources

Leach, Heather, E. Swackhamer, and A. Korman. 2019. "Spotted Lanternfly Management for Landscape Professionals," <https://extension.psu.edu/spotted-lanternfly-management-for-landscape-professionals>. Accessed 7 Jun 2021.

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2021

VCE-000NP