Managing Grape Root Borer and Spotted Lanternfly







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Insect monitoring in vineyards



Grape root borer



Spotted lanternfly



Take home reminders







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Impact of Insect and Mite Pests



"It's a market vane. It helps me keep track of the trade winds." Pressure highly variable Economic impact differs by damage type as well as market and production strategy





You must decide what level of pest damage is of concern for your vineyard production strategy

"It's a market vane. It helps me keep track of the trade winds."

Early Detection Key for Success



More effective management options when pests are detected early

Regular and Careful Scouting





At least one dormant inspection (pruning) As regularly as possible from bud swell through harvest Weekly ideal

Accurate Identification



Brown marmorated stink bug Pest species

Brown stink bug Pest species







Spined soldier bug Predatory beneficial



Maximize time for identifying the issue and determining management approach Nore effective management options when pests are detected early







Inspect bark, buds, shoots, leaves, flowers, and berries



Insect Monitoring





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Cara HAR







Grape Berry Moth

Wild Grape Phenology Degree-Day Model

Pheromone Trap Capture Model

Biofix: Wild grape bloom (50% flowers open **E** on 50% of wild grape clusters)

Lower developmental threshold: 47°F Scout clusters: ~2-6% damaged clusters Generation time (egg to adult) : 810 DD Egg hatch: 100 degree days Timing: Small pea sized grapes and veraison,

Biofix: First moth capture 3 traps per site in high risk areas

Lower developmental threshold: 50°F **Scout clusters:** 400-700 DD, 1200-1600 DD, 2400-2700 DD

Timing: Small pea sized grapes and veraison, **Timing:** Scouting and DD combined adjusted with DD accumulation and scouting

Two approaches to timing grape berry moth insecticide sprays



Grape Berry Moth

Wild Grape Phenology Degree-Day Model Pheromone Trap Capture Model

Biofix: V	(ild groups blooms (EOO/ flowers on an Biofix , Eirst moth conture	
on 50% (Egg/early larvae target of	
Lower de Scout clu	reduced risk insecticides like	: 50°F
Egg hatc Timing: 1	Intrepid, Altacor, and	ed
adjusted	Delegate	

Two approaches to timing grape berry moth insecticide sprays



Insect Monitoring



The lowest pest population that will cause economic damage or the amount of pest injury that will justify the cost of management.



Economic Threshold





Action Threshold



15% leaves damaged

Fixed pest density that relates to its injury and subsequent damage



Outline



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Grape Root Borer





Vitacea polistiformis Approx. 1-1.5" wingspan



Identifying Adults







Grape root borer *Vitacea polistiformis*

Paper wasp *Polistes* spp.

Squash vine borer *Melittia cucurbitae*



Grape Root Borer Damage



Above ground symptoms difficult to attribute Decline often evident 2-5 years after infestation begins

Weakens and can eventually kill vine



Grape Root Borer Life Cycle



Monitoring Adults





~1 per variety block Captures do not necessarily indicate infestation

Help determine activity and spots for pupal monitoring



Monitoring Pupae





Only sure way to determine infestation of vines and vineyard blocks Examine weekly for 3-4 week period of peak emergence



Monitoring Pupae







Thresholds



No economic or action threshold Around 5% of vines infested

Grape Root Borer Management

Must implement for multiple consecutive years

1-3 years in roots



Management Options





Management Options



Mating Disruption



Tends to work better in larger blocks

Wind direction and topography can also be an issue



Mating Disruption



100 twist ties per acre of Isomate[®] GRB before moth emergence Issue with availability or registration? Isonet-Z-Leopard moth may also work (not registered)



Mating Disruption





Pair with a trap Should see a dramatic reduction in captures



Management Options





Mulch Barrier



Has not been tested in our area and may not be feasible at commercial scale



Mulch Barrier



~3 ft on either side of the vines Damage enables larvae to penetrate

Insecticide



Apply to soil at the base of the vine, > 35 days before harvest



Apply at onset of moth activity
Insecticide





Management Options





Biological Control





Heterorhabditis nematodes Somewhat expensive, not tested in our area Must be stored, handled, and applied correctly



Management Options





Cultural Control



Cultivate or mound soil under vines during pupation period Difficult to time Mounds removed to prevent rooting Erosion





Difficult to detect and manage, few options Often found after cumulative years of feeding Well maintained vines may continue to produce a satisfactory crop



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Spotted Lanternfly





Spotted Lanternfly





Groups of 30-50 eggs Usually covered until hatch



Spotted Lanternfly IPM





Spotted Lanternfly IPM





Quarantine



Spotted Lanternfly Quarantine

MD Dept. of Agriculture, Plant Protection and Weed Management





Quarantine

Spotted Lanternfly Permit Training for Businesses: Maryland

The invasive insect spotted lanternfly threatens the U.S. economy and environment. Businesses operating in quarantine zones must have permits to move equipment and goods within and out of the zones.

#OLC-G-1053 | BE THE FIRST TO LEAVE A REVIEW



ONLINE COURSES

SKILL LEVEL:

Beginner, Intermediate, Advanced

LENGTH OF ACCESS:

365 days

SECTIONS:

3

OPTIONS*

Spotted Lanternfly Permit ... 💊

FREE

Training and permit required to move regulated articles

Packing materials, plants and plant parts, vehicles, outdoor items, etc.



Report Sightings

	Report a Spotted Lanternfly Sighting in Maryland	
	Please fill out the following information about your spotted lanternfly sighting.	
	MD residents no longer need to report spotted lanternflies sighted within Cecil or Harford counties.	
	Contact Info 💿	
	First Name*	
	Last Name*	
	Address	
10	1000 /	6
	Phone Number	
	Format as 123-456-7890	Contraction of the local division of the loc

https://mda.maryland.gov/plants-pests/Pages/spottedlantern-fly.aspx

Except Cecil and Harford Counties



Potential for Damage



Video: Erica Smyers, PhD student, Penn State Department of Entomology



Potential for Damage





Fewer clusters per shoot in year following feeding **Reduce hardiness** and can increase winter kill and bud injury



Spotted Lanternfly





1 generation per year



Sept. - Oct.







April-June

Spotted Lanternfly





Adults most damaging and in vineyards from August to November





April-June





Monitoring



Tree of heaven, Ailanthus altissima, highly desirable host and good spot to monitor Also wild grapevines and black walnut



Tree Trap



Sticky band covered with vinyl mesh to reduce bycatch of mammals, birds, and pollinators

Monitoring



Around $\frac{1}{2}$ - $\frac{3}{4}$ of population within first 50 ft of the vineyard edge Typically feed on shoots, found on undersides of leaves



Thresholds



No economic or action threshold More than 10-20 per vine worth an intervention



Spotted Lanternfly IPM





Biological Control



Natural enemies and pathogens Not enough to reduce populations





Cultural Control



Has to be secured tightly on the sides and bottom Finer mesh than common bird netting





Cultural Control



Some people feel removing or insecticide treating *Ailanthus* helps

Likely depends on # of SLF and other

hosts





Chemical Control



Border sprays can be as effective as treating the full field

Keep an eye on the pre-harvest interval



Insecticides

Group	Trade name	PHI (days)	Residual Activity (days)	Efficacy	Toxicity to Bees
3 pyrethroids	Brigade, Bifenture	30	7 – 14	Е	High
	Baythroid	3	7 – 14	E	High
	Danitol	21	21	E	High
	Mustang Maxx	1	0	Е	High
4A neonicotinoids	Venom, Scorpion	1	3 – 5	E	High
	Actara	5	3 – 5	E	High
1A carbamates	Sevin, Carbaryl	7	0	G to E	High
1B organophosphates	Malathion	3	0	E	High

ALWAYS READ AND FOLLOW LABEL INSTRUCTIONS THE LABEL IS THE LAW



Insecticides

Group	Trade name	PHI (days)	Residual Activity (days)	Efficacy	Toxicity to Bees				
	Brigade,	30	7 – 14	E	High				
^{3 pyreth} Watch out for phytotoxicity, carbaryl can cause damage									
4A neonico	when application is								
f	ollowe	d bv	high hu	mid	itv. –				
1A carba	Carbaryl								
1B organophosphate	s Malathion	3	0	E	High				

ALWAYS READ AND FOLLOW LABEL INSTRUCTIONS THE LABEL IS THE LAW



Chemical Control





Continue to reinvade, may have to spray multiple times Potentially need management through November

Also target other pests



Spotted Lanternfly Summary



Keep and eye out and report sightings Lots of research underway to find solutions

Damaging disruption of sustainable IPM



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At least one dormant inspection (pruning) As regularly as possible from bud swell through harvest Weekly ideal



Maintain Overall Health



Make sure plants get enough water and nutrients

Vigorous vineyards tolerate damage





Make note of pest issues and trends for your plantings

Improves management of reoccurring issues



Further Resources



UGA Extension Viticulture Blog

Educational Resources

Preparation for grape root borer 2019

Jun 18, 2019 | Written by <u>Blaauw</u>



PennState Extension MENU Y SEARCH

GA Regions

HOME | SPOTTED LANTERNFLY

Spotted Lanternfly



Spotted lanternfly (SLF) is an invasive insect that has spread throughout Pennsylvania since its discovery in Berks County in 2014. SLF feeds on the plant sap of many different plants including grapevines, maples, black walnut, and other important plants in PA. If you see SLF, help us stop it in its tracks! To report a sighting, use our reporting tool below or call our hotline at 1-888-422-3359.

Production -

Regional Programming 🔻

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ACCOUNT 🛛 📜 CART



E-mail me at kahamby@umd.edu
Questions

