OVERVIEW OF SPOTTED LANTERNFLY

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Pest Program

WSDA

PEST OVERVIEW: SPOTTED LANTERNFLY

Washington State Department of Agriculture

Plant Protection, Pest Program

17 Projects in 2018

Targets 112 Insect Pests and Pathogens

Detected:

51 European Gypsy Moth (*Lymantria dispar dispar*)
1 Asian Gypsy Moth (*Lymantria dispar asiatica*)
26 Japanese Beetle (*Popilio japonica*)

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On September 22, 2014 the Entomology Program of the Pennsylvania Department of Agriculture received a report from a Pennsylvania Game Commission educator

The report detailed damage to Ailanthus altissima (Tree of Heaven) in Berks County, PA being caused by an unknown insect

It was identified later that day as *Lycorma delicatula,* an insect new to North America

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Lycorma delicatula (WHITE):

A Planthopper in the Family Fulgoridae

696 Species of Lanternflies in the world

Only 17 species in North America

Like most planthoppers, Lycorma pierce the stems of plants, trees, and vines and feed on phloem.









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The spotted lanternfly is native to Asia and is found in China, Bangladesh, Vietnam

It was introduced to Japan, South Korea, Pennsylvania, New Jersey, Delaware, New York, and Virginia

In South Korea, it is considered an invasive pest and impacts grapes and peaches

Follow FLOW:

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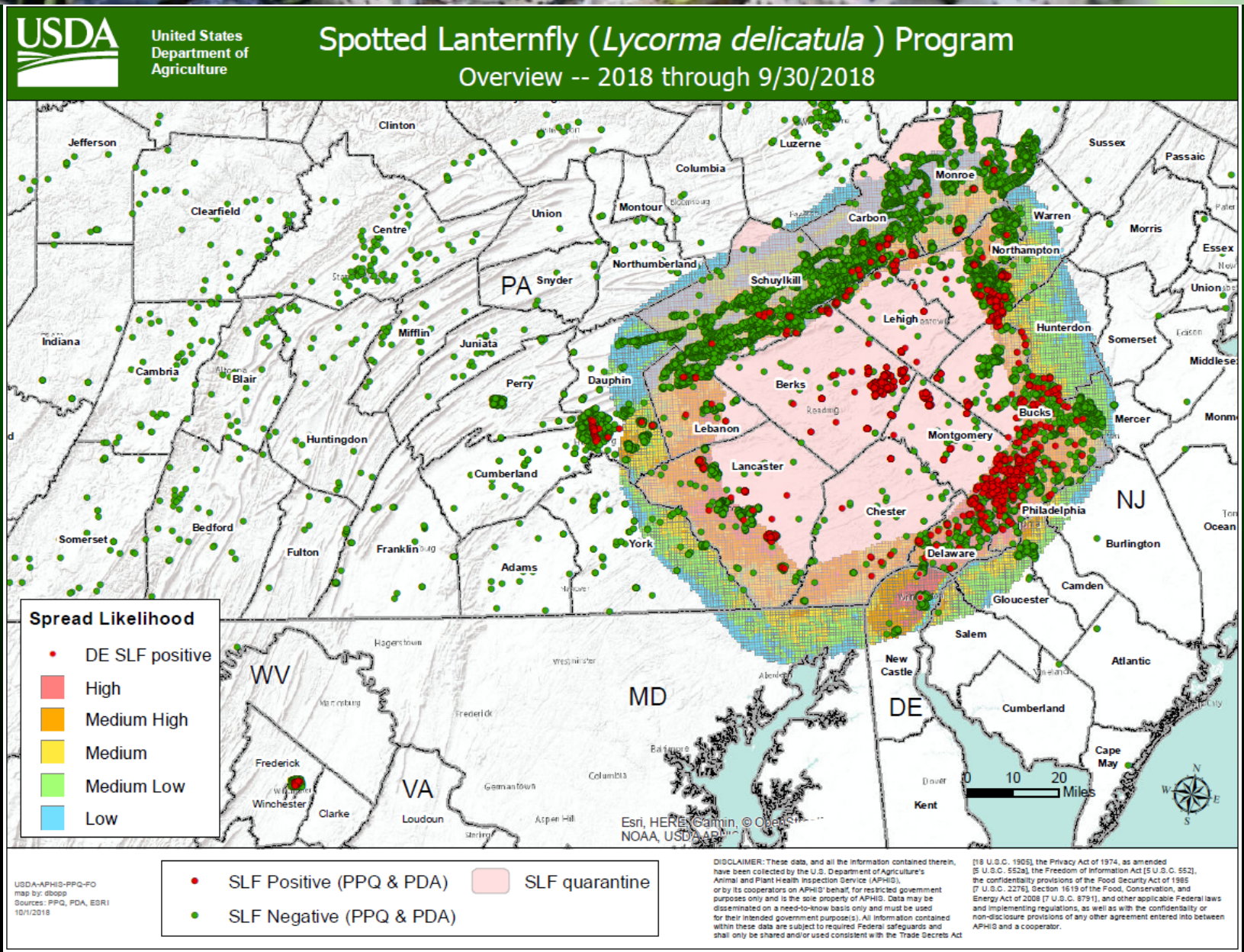
Current Distribution:



SLF Positive (PPQ & PDA)

SLF Negative (PPQ & PDA)

SLF quarantine

USDA-APHIS-PPQ-FO
map by: dbopp
Sources: PPQ, PDA, ESRI
10/1/2018

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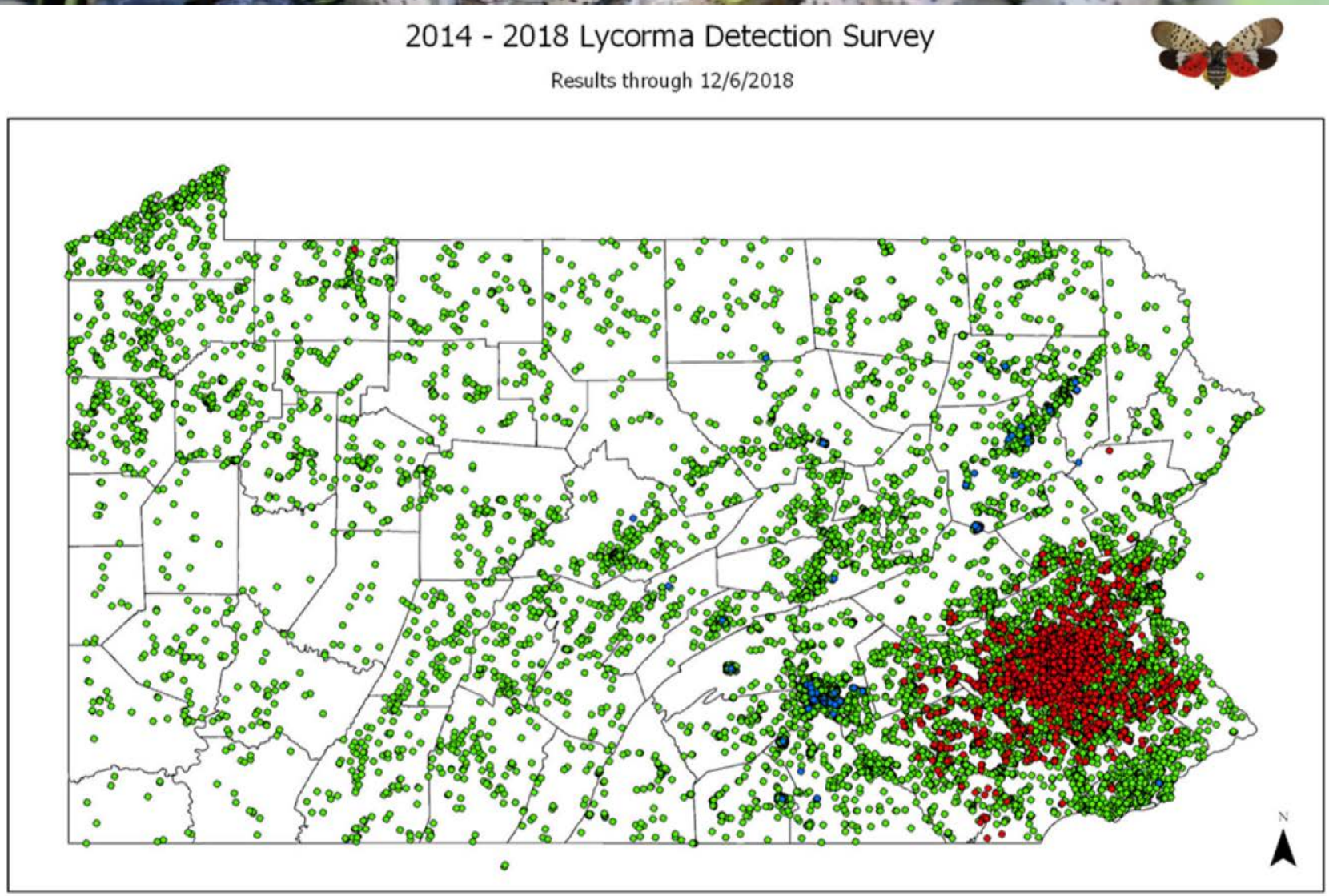
Current Distribution:



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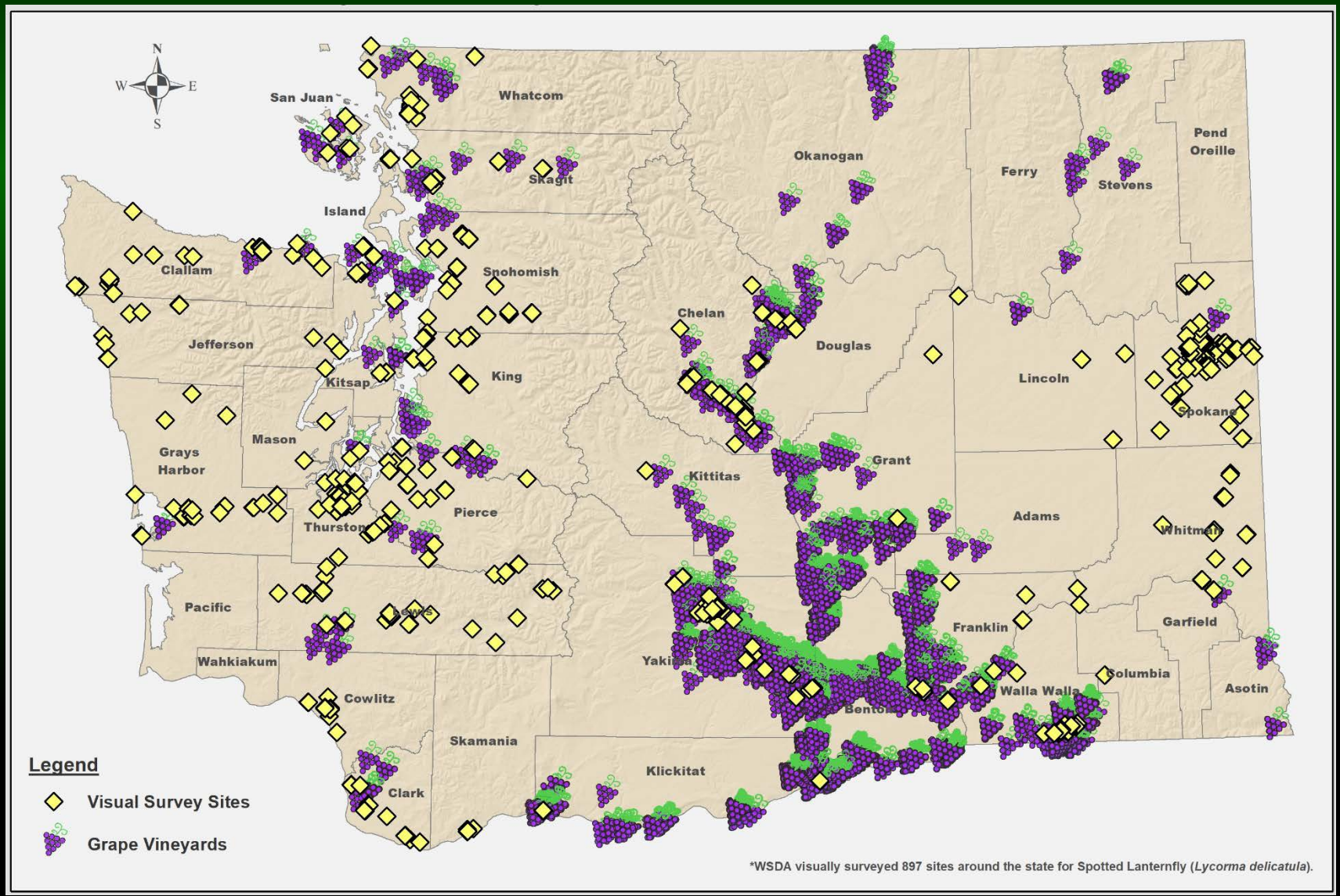
Washington State 2018 Spotted Lanternfly Survey



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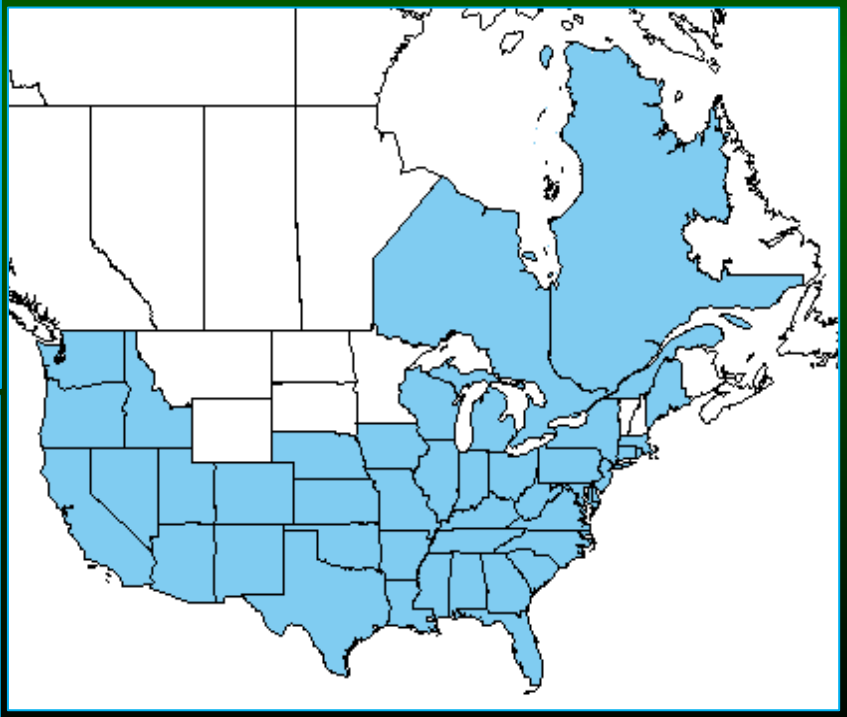
Spotted Lanternfly Makes use of over 70 different plant species but strongly prefers the invasive “Tree of Heaven”



Tree of Heaven Distribution-USDA PLANTS Database

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Recognizing Tree of Heaven (Ailanthus altissima):

Ailanthus has light gray bark and compound leaves.

The tree has a strong odor

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Similar trees: Black Walnut-
Bark has rough, raised ridges, leave are similar, odor is also strong, but different

PEST OVERVIEW: SPOTTED LANTERNFLY

Similar trees: Sumac-

Bark is smoother, leaves are similar and have milky white sap when broken, seed head is distinctive, tree has almost no odor

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Impact: Damage grape, hops, orchards, hardwood, and nursery industries

Damage comes from feeding waste (honeydew) Which turns into sooty mold

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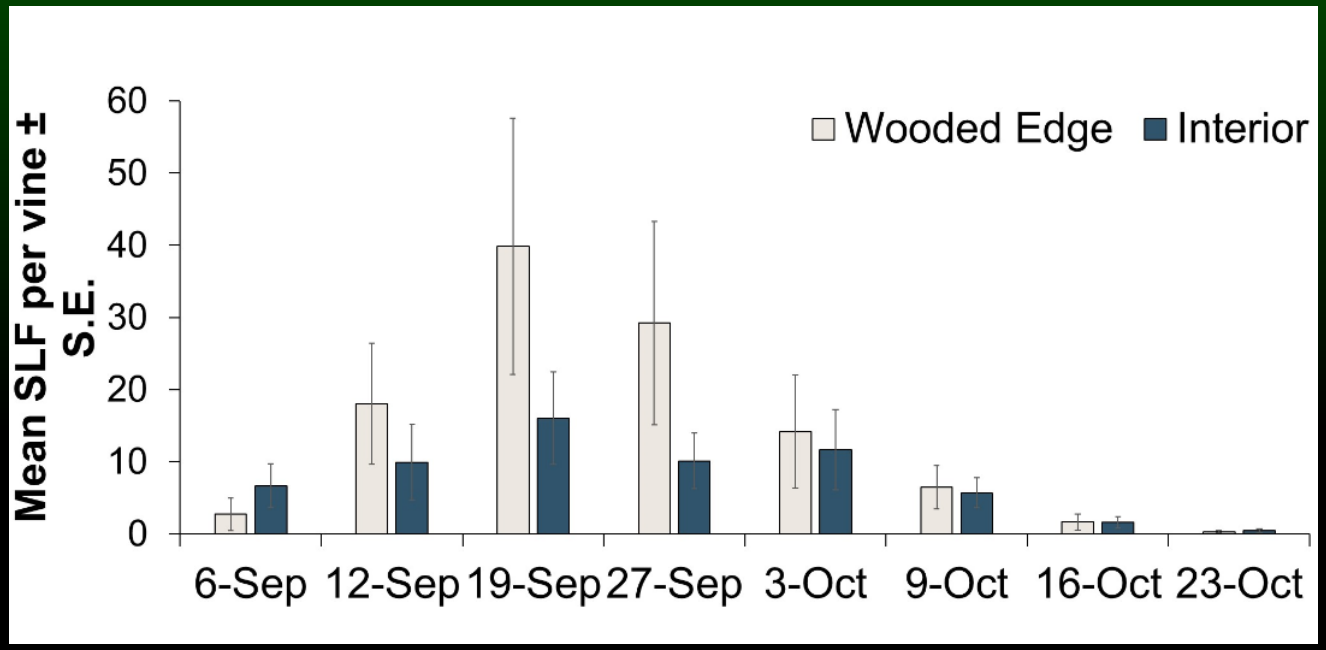
-Video, Erica Smyers, PSU

PEST OVERVIEW: SPOTTED LANTERNFLY

2018 update from Heather Leach, PSU

"3 grape growers had both vine death and vines that did not produce fruit from 2017 SLF damage"

"The maximum number of SLF observed feeding on a single vine was 365, with the season-long average maximum at 187"



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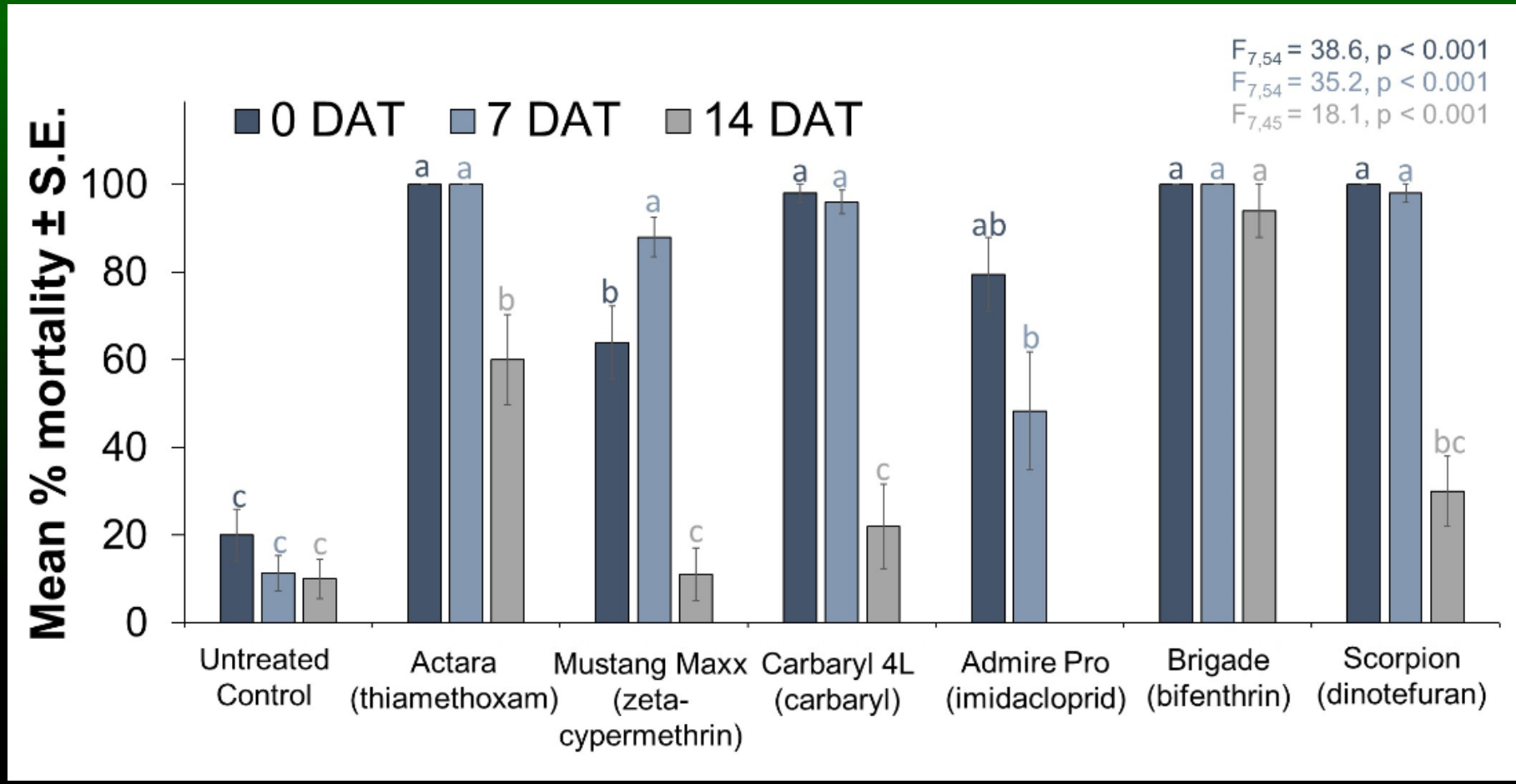
2018 update from Heather Leach, PSU

Researchers are starting to compile results from pesticide trials on grape from this past growing season



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Impact: Damage reported on basil, oregano, blueberry, cucumber and horseradish in 2017

PEST OVERVIEW: SPOTTED LANTERNFLY

Impact: Heavy Feeding on Walnut, Red Oak, Maple, and Hickory resulted in flagging and dieback

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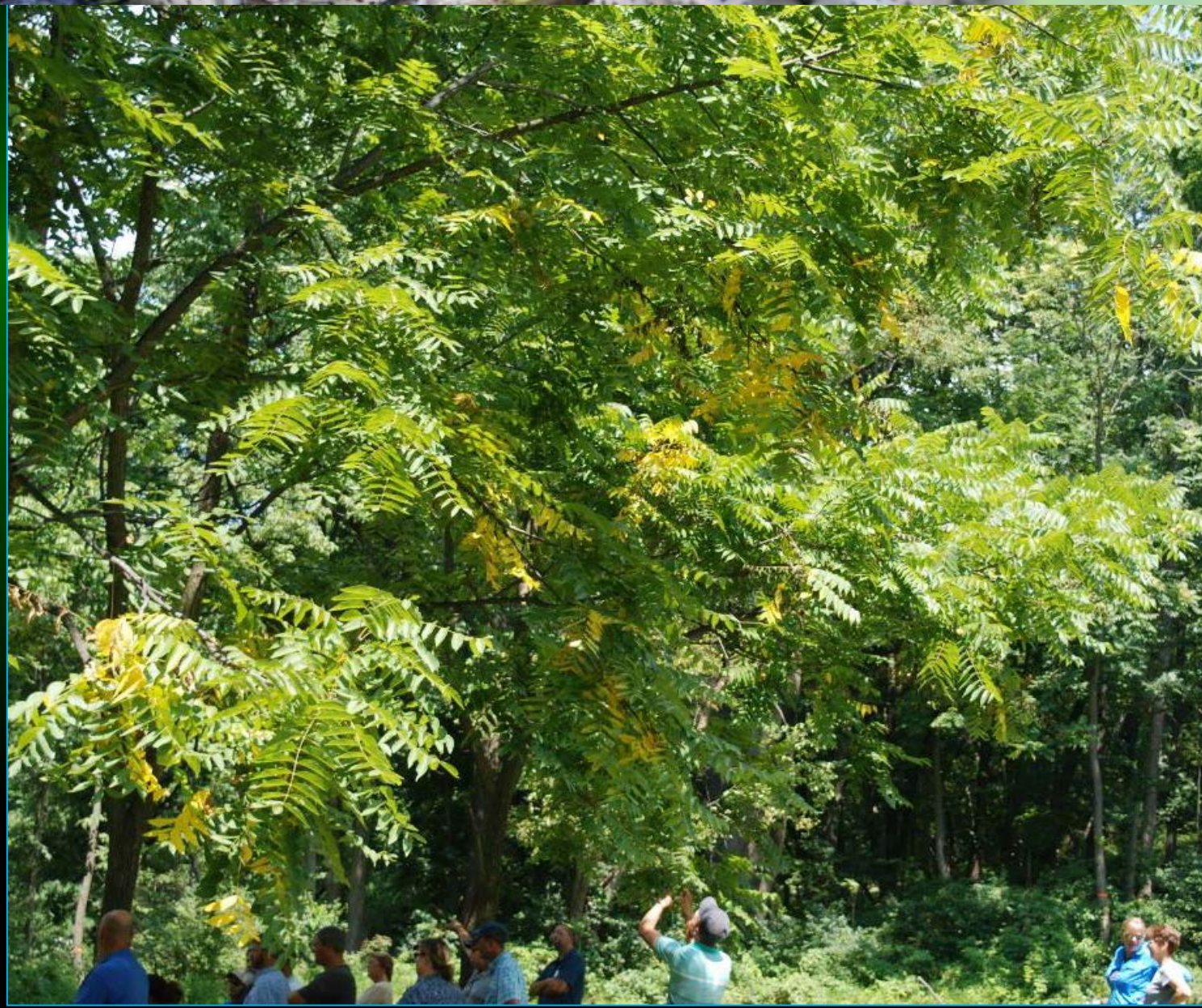
Impact: Flagged branches had several spotted lanternflies feeding



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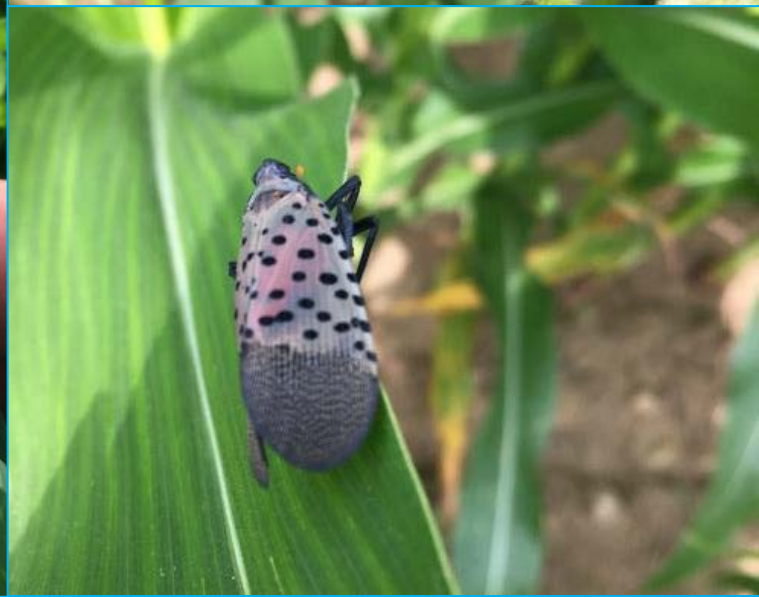
Impact:
Presence on other crops, alfalfa, soy, corn with reports of reduced yield on alfalfa.
No feeding documented



PEST OVERVIEW: SPOTTED LANTERNFLY

Impact : Adult Clustering, swarming and Honeydew accumulation can impact quality of life

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Homeowner recommendations from Penn State University

Active Ingredient	Mode of Exposure	Available Products	Legal Use	Activity Against SLF	Residual Activity
bifenthrin	contact	Talstar P	ornamental and landscape plants and trees	excellent	excellent
carbaryl	contact	Garden Tech Sevin Ready-to-Spray Bug Killer (note: new formulation is sold with zeta-cypermethrin)	vegetable and ornamental plants and trees under 10 feet tall	excellent	good
dinotefuran	systemic/contact	Safari 20SG, Transect 70 WSP, Zylam Liquid	ornamental and landscape plants and trees	excellent	excellent
insecticidal soaps*	contact	Garden Safe Insecticidal Soap	vegetables, fruit trees, ornamentals, shrubs, flowers, and gardens	good	poor
malathion	contact	Spectracide Malathion Insect Spray	flowers and bushes, fruit, and vegetables	excellent	poor
natural pyrethrins	contact	Garden Safe Multi-Purpose Garden Insect Killer, Natria Insect Mite and Disease Control	vegetables, ornamentals, trees, shrubs, and flowers	excellent	poor
neem oil*	contact	Bonide Neem Oil	flowers, ornamental trees and shrubs, fruit, nuts, and vegetables	good	poor
spinosad*	systemic	Bonide Captain Jack's Deadbug Brew	outdoor ornamentals, fruit, and vegetables	fair	poor
tau-fluvalinate, tebuconazole	contact/systemic	BioAdvance 3 in 1, Insect, Disease and Mite Control	nonedible plants only, groundcovers, vines, ornamentals, shrubs, and trees	excellent	good
zeta-cypermethrin	contact	Amdro Quick Kill Outdoor Insect Killer Concentrate	lawns, trees and shrubs, roses, and flowers	excellent	excellent

*Recommended for organic production.

Note: The listing of products in this table is not an endorsement or specific recommendation of the product or the company. Other products with the same active ingredient should also work in the same way, but they may have different rates or formulations.

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First report of SLF on Apple

Video shot hours after orchard contact indicated no impact from pest on Sept 12, 2017

-Video, Erica Smyers, PSU

PEST OVERVIEW: SPOTTED LANTERNFLY

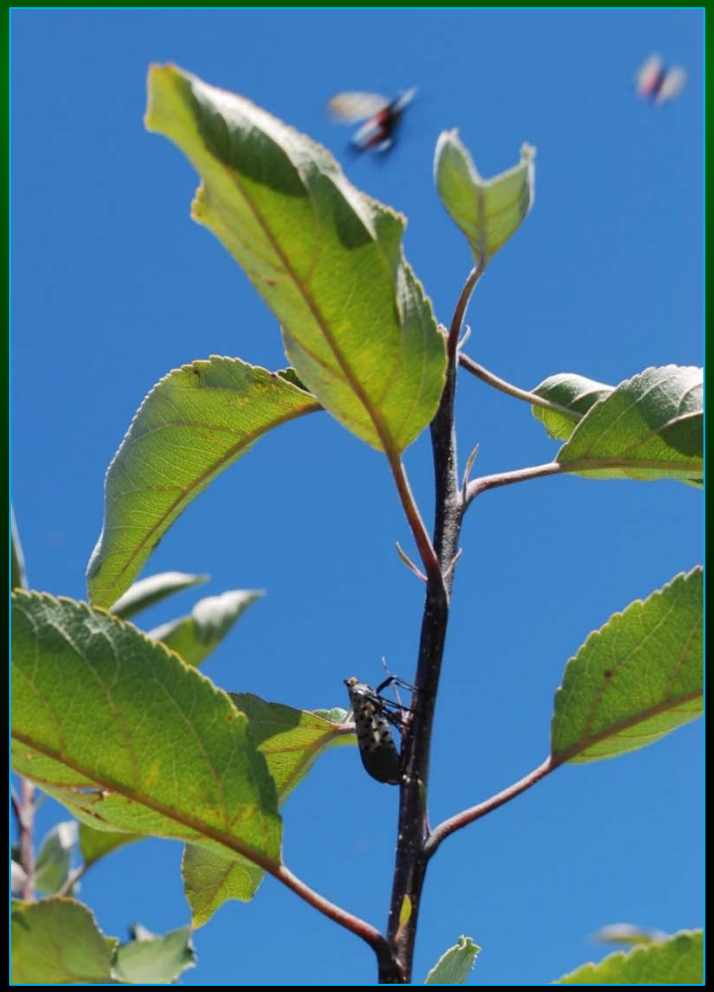
A closer look at orchard activity:
What are they doing?

- Swarming?
- Feeding?
- Mating?
- Dispersal?
- Laying Eggs?

PEST OVERVIEW: SPOTTED LANTERNFLY

A closer look at orchard activity:
Looks like primarily dispersal

- Land
- Crawl up
- Launch into the wind

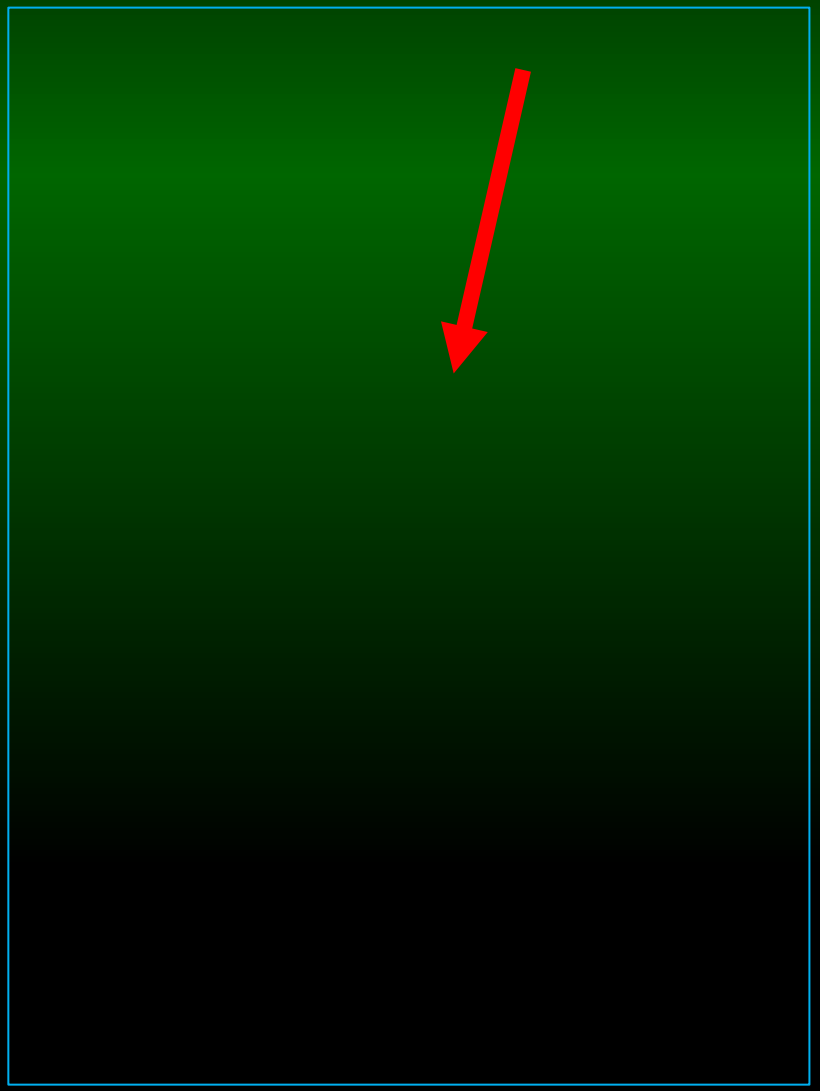


PEST OVERVIEW: SPOTTED LANTERNFLY

A closer look at orchard activity:

- Adults are stopping to feed

- No mated females seen



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A closer look at orchard activity:

Adults are dying

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Swarming adults present a biosecurity challenge, and can impact trade

-Video, Erica Smyers, PSU

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A closer look at orchard activity:

Will these be free from adults?

The answer was no, Adults were found in product at destination

PEST OVERVIEW: SPOTTED LANTERNFLY

Unpublished tree-fruit recommendations from PSU Fruit Research Lab

Trade name	Active ingredient	Class	Rate per acre	Systemic, Contact, Ingestion	PHI (days)	REI (hrs)	Days of activity	Labeled for SLF?	SLF activity
Imidan 70WP	phosmet	Organophosphate	2.125 lb	C, I	14	336	0	Yes, 2(ee)	Poor
Imidan 70WP	phosmet	Organophosphate	1.33 lb	C, I	7	336	0	Yes, 2(ee)	Poor
Scorpion 35SL	dinotefuran	Neonicitinoid	5 fl oz	S, C, I	1	12	<14	Yes, 2(ee)	Excellent
Brigade 10WSB	bifenthrin	Pyrethroid	16 oz.	C, I	30	12	21	Yes, 2(ee)	Excellent
Mustang Maxx 0.8EC	zeta-cypermethrin	Pyrethroid	4 fl. oz.	C, I	1	12	<7	Yes, 2(ee)	Good
Closer 2SC	sulfoxaflor	Sulfoximine	5.75 fl oz.	S, C, I	7	12	0	2(ee) pending	Poor
Actara 25WDG	thiamethoxam	Neonicitinoid	3.5 oz	S, C, I	5	12	<21	Yes, 2(ee)	Excellent
Assail 30SG	acetamiprid	Neonicitinoid	5.2 oz	S, C, I	3	48	0	Yes, 2(ee) on nymphs only	Poor
Carbaryl 4L	carbaryl	Carbamate	2 qt	C, I	7	12	<14	No	Excellent
Avaunt 30DG	indoxicarb	Oxadiazine	6 oz	C, I	7	12	0	Yes, 2(ee)	Fair
Movento 2SC	spirotetramat	Ketoenol	9 fl oz	S, C, I	7	24	7	No	Poor (nymphs only)
Danitol 2.4EC	fenpropathrin	Pyrethroid	21.33 fl oz	C, I	21	24	7	No	Excellent (nymphs only)
Admire Pro	imidacloprid	Neonicitinoid	1.4 fl oz	C, I	0	12	<7	No	Poor
Venerate XC + Nu-Film P	*Burkholderia spp.* strain	Other	4 qt	C, I	0	4	0	No	Poor
Entrust 80WP	spinosad	Spinosyn	2.5 oz	C, I	7	4	0	No	Poor
Sivanto Prime 1.67SC	flupyradiferone	Butenolide	14 fl oz	S, C, I	0	4	0	No	Poor

Please note that registrations and labels may change, and human error is always possible. You must check the most current label before applying any pesticide.

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Adults: July - December

Egg Laying:
September - November

Eggs: October - June

Fourth Instar:
July - September

One Generation Per Year

Hatch and 1st Instar:
April - June

Third Instar: June - July

Second Instar: June - July

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Egg masses have on average between 30-50 eggs and can be laid on trees or any smooth surface

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Egg masses have been found on many different objects and often are well hidden

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Egg masses that can be seen or reached are easily controlled by scraping

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Immature stages migrate up trees/plants each day and are easily caught on sticky tree bands

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Adults begin to appear in late summer, feed preferentially on Ailanthus, mate, and lay eggs

Males and females mate multiple times

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All life stages can hitchhike to new areas, but egg and adults pose the greatest risk for movement

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Why should Washington Care?

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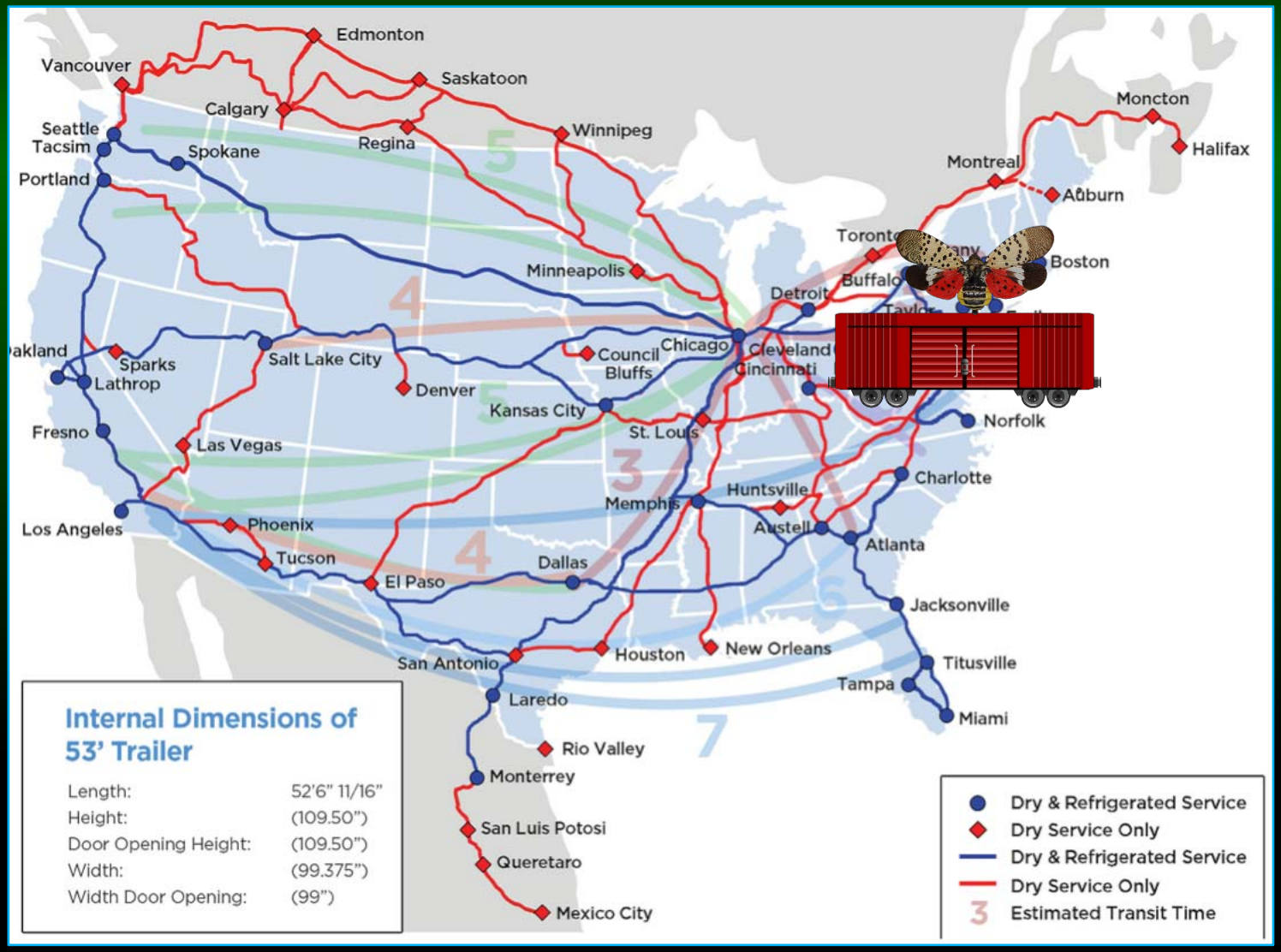
Why should Washington Care?



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What is Being Done?

Removal/Trap Tree Method

Most Ailanthus are removed or killed with herbicide

Remaining trees are treated with insecticide

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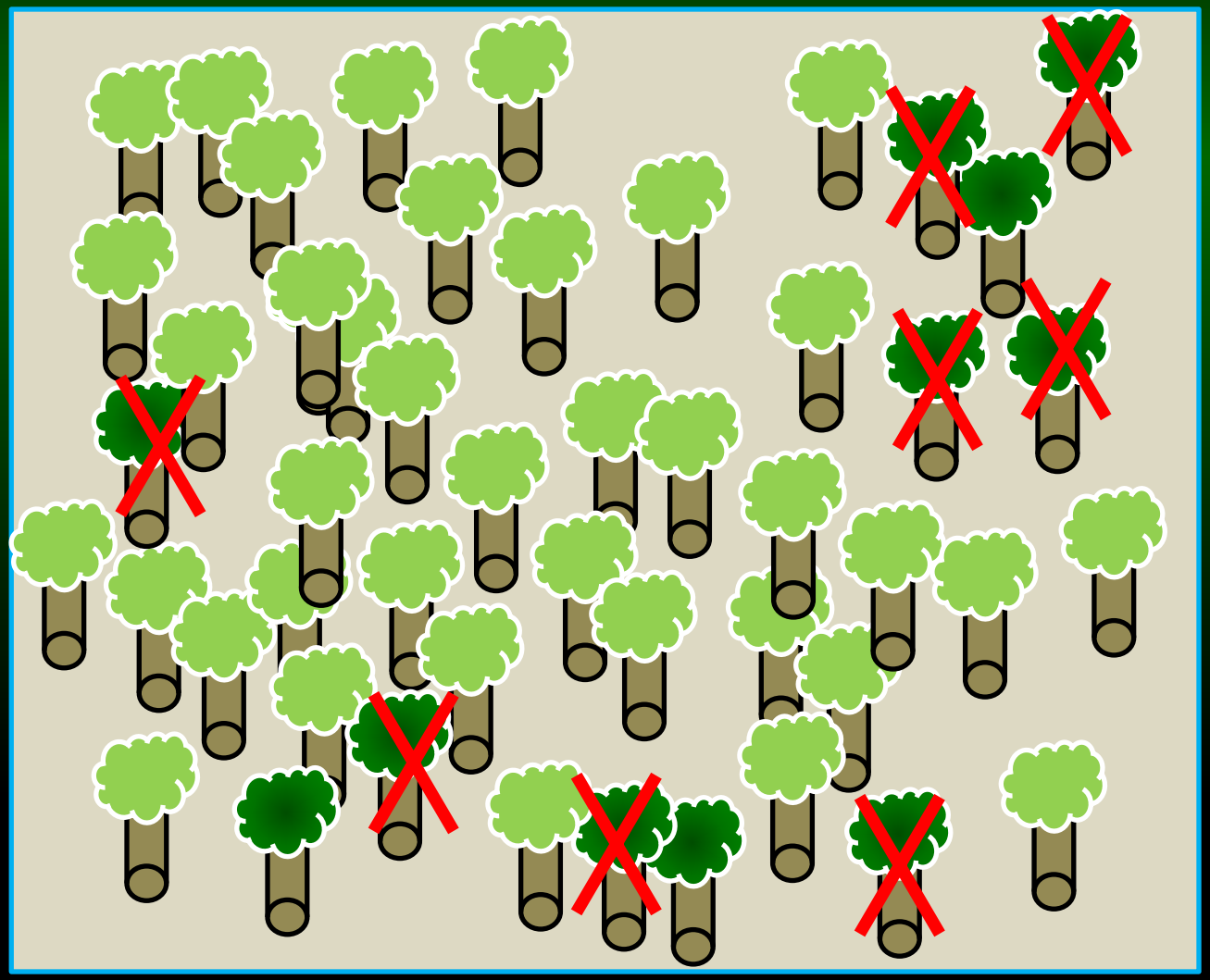

Host Reduction

Remove Most Ailanthus

Leave a few male trees and treat with systemic insecticide

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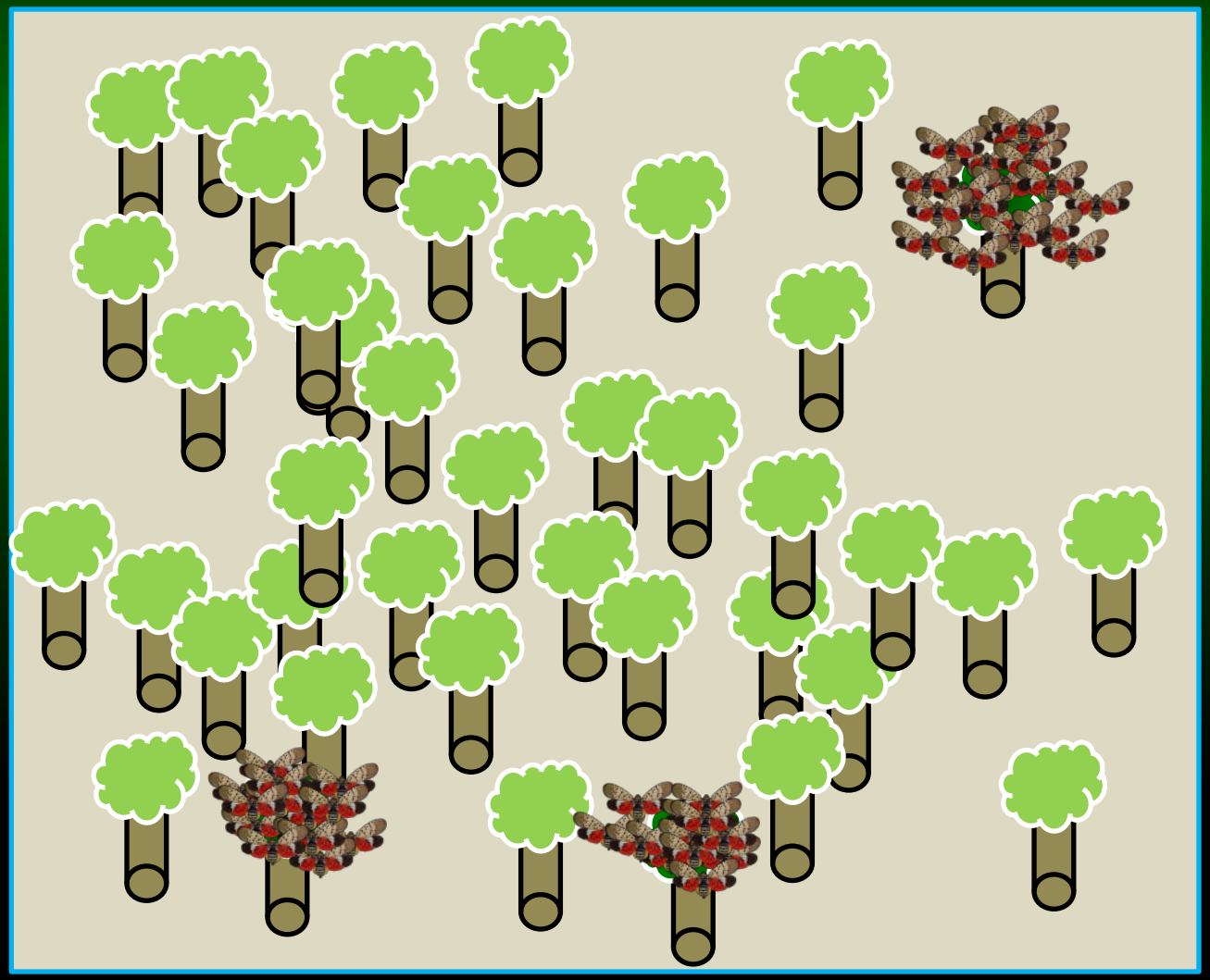

Trap trees

July-September
4th Instar and
Adults

SLF Concentrates to feed on Tree of Heaven with insecticide and Die

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Removal-Trap Tree Method

Though this method targets Adult Lycorma, it also impacts the immature stages, which is a bonus

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Removal-Trap Tree Method

The trap trees attract

and the insecticide kills

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Impact on Adults is Dramatic

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Impact on Adults is Dramatic

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My Humble Advice for Washington:

Ailanthus is not an ornamental, its invasive

Map and remove Ailanthus

Focus on rails, trucking terminals,
and military land

Report detections early and OVER REACT

Don't wait, start now

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THANK YOU

Entomology Branch

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Pest Program

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