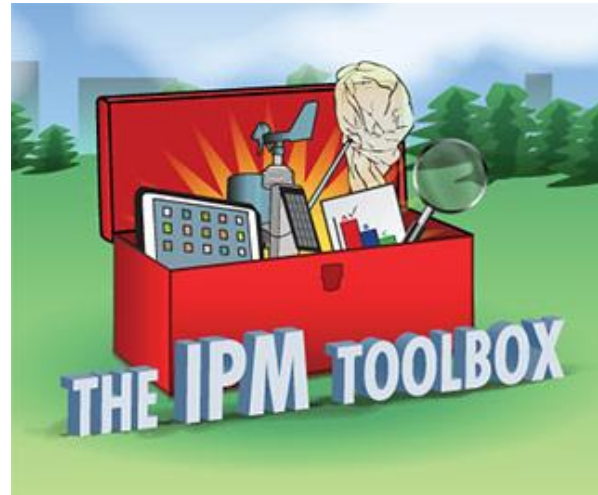


# Spotted Lanternfly Basics



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture



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# Webinar Details

- Welcome
- A recording of this webinar will be available within a week at <http://www.neipmc.org/go/ipmtoolbox>

# We Welcome Your Questions

- Please submit a question **at any time** using the Q&A feature to your right at any time
- If you'd like to ask a question anonymously, please indicate that at the beginning of your query.

# Webinar Presenters



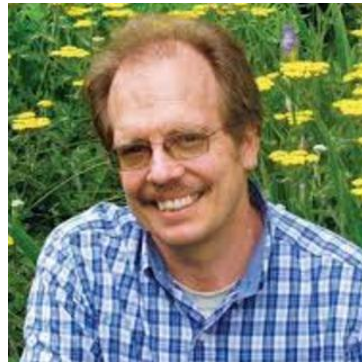
**Elizabeth Lamb**  
Ornamentals IPM Coordinator  
NYS IPM Program



**Brian Eshenaur**  
Ornamentals IPM Specialist  
NYS IPM Program



**Ethan Angell**  
Senior Horticultural Inspector  
NYS Department of Ag & Markets



**Dan Gilrein**  
Entomologist  
Suffolk County CCE



**Tim Weigle**  
Grape and Hops IPM Specialist  
NYS IPM Program



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# Today's Agenda

- Spotted Lanternfly Biology and Identification
- Pathways and Spread
- Monitoring and Management
- Regulatory Update
- Questions



Some Questions for You

# Biology and Identification



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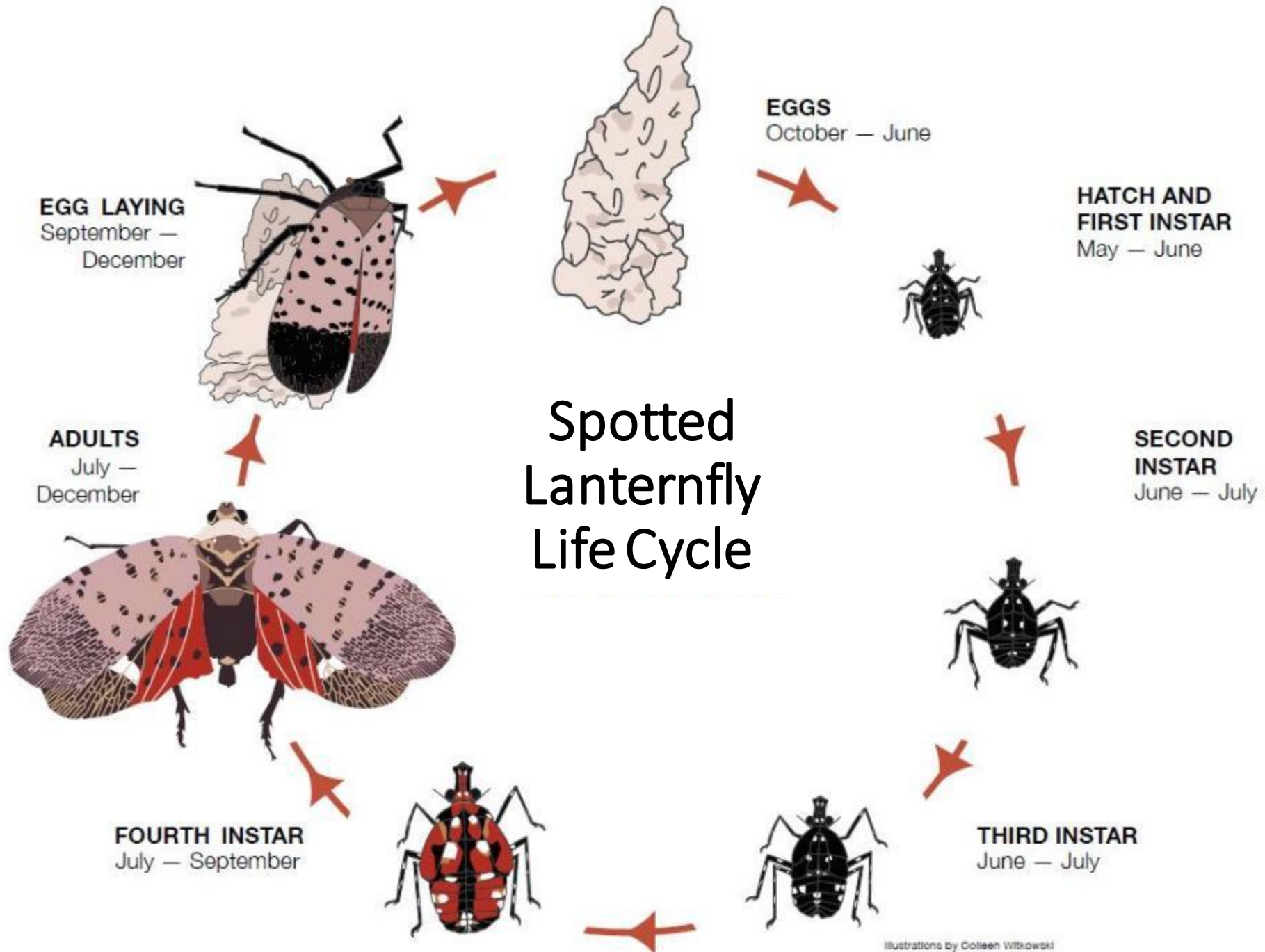
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# Invasive Planthopper

- Native to China and Vietnam
- Feeds on over 70 plant species in United States
- Phloem feeders
- Swarm feeders







Illustrations by Colleen Witkowski

# Spotted lanternfly egg masses



## First to third instar



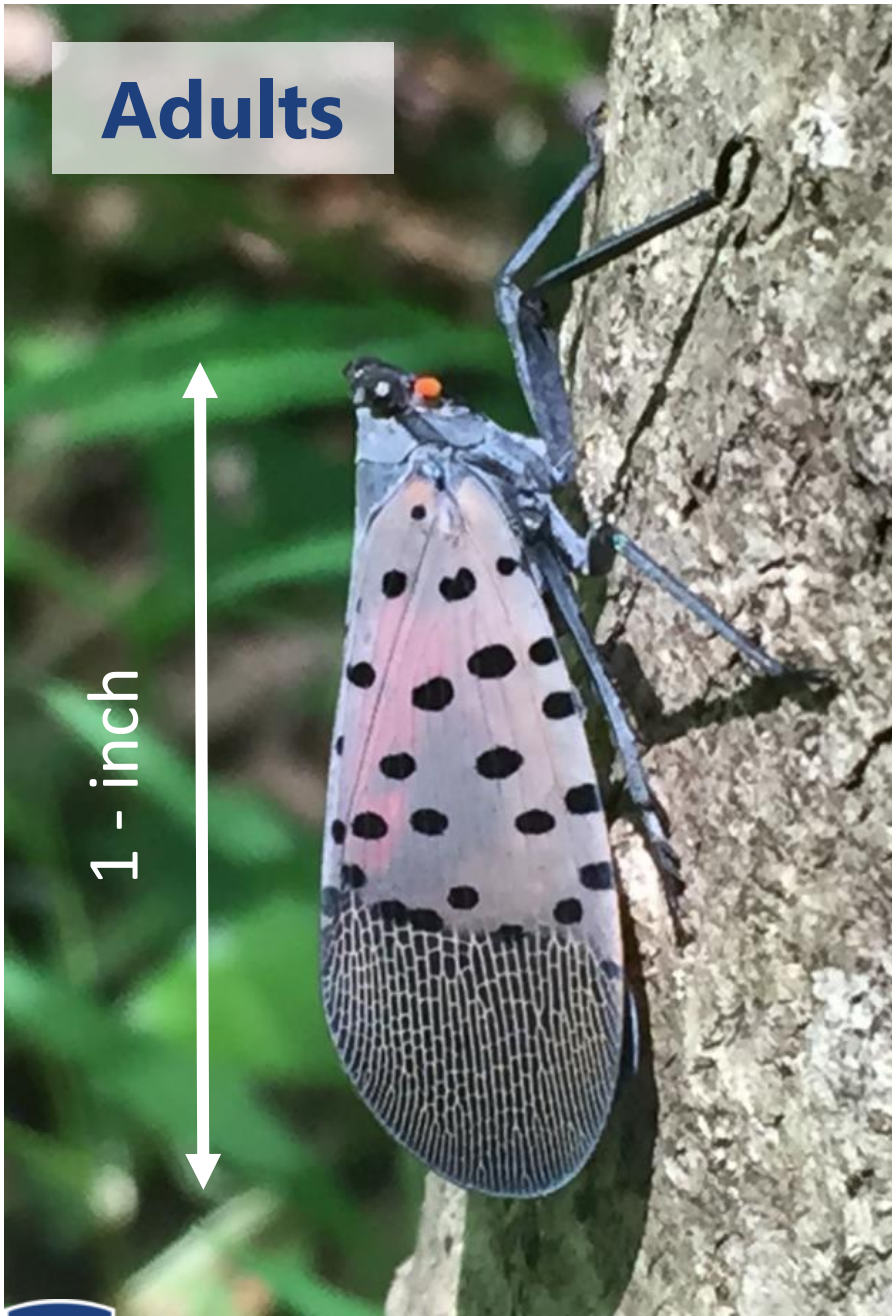
D. Dalton

## Fourth instar



# Adults

1 - inch



## How does SLF feed?



### SPOTTED LANTERNFLY

Feeds on plant sap  
through a  
piercing-sucking  
mouthpart

Excretes  
honeydew (sugar  
water) as it feeds

# Honeydew Production



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Questions?



# Pathways and Spread



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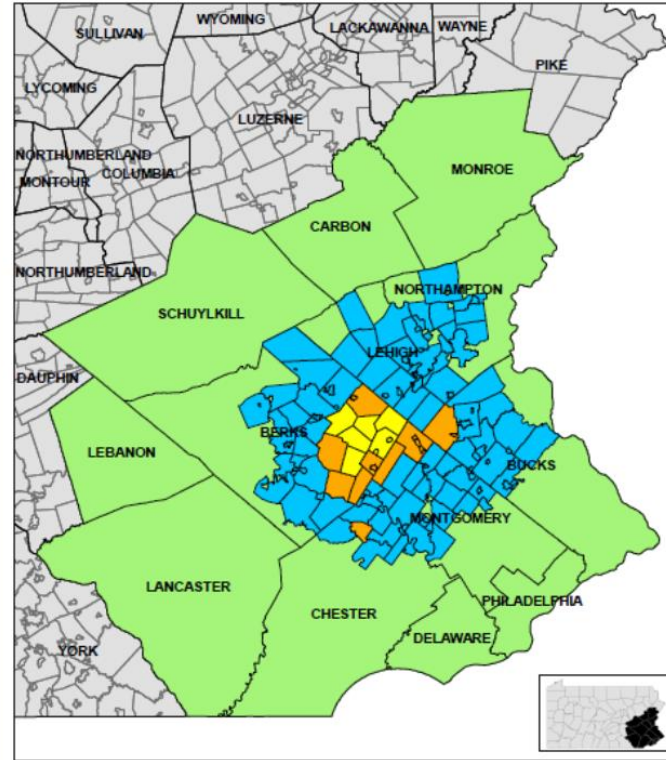
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# Quarantine

Pennsylvania Spotted Lanternfly Quarantine  
Map by Year 2014-2017



**Legend**

- Quarantine2014
- Quarantine2015
- Quarantine2016
- Quarantine2017



# Movement of Spotted Lanternfly

- Reported that the population can move 3 – 4 miles a year on their own
- Most movement due to them being excellent hitchhikers
  - Adults and egg masses most common life stage
  - Adults will lay egg masses on most any surface, seem to like rusty metal
- Typically moved by human activity
  - Check anything coming out of quarantine zone for all life stages
  - NYS IPM SLF Checklist  
<https://nysipm.cornell.edu/sites/nysipm.cornell.edu/files/shared/documents/SLF%20checklist.pdf>

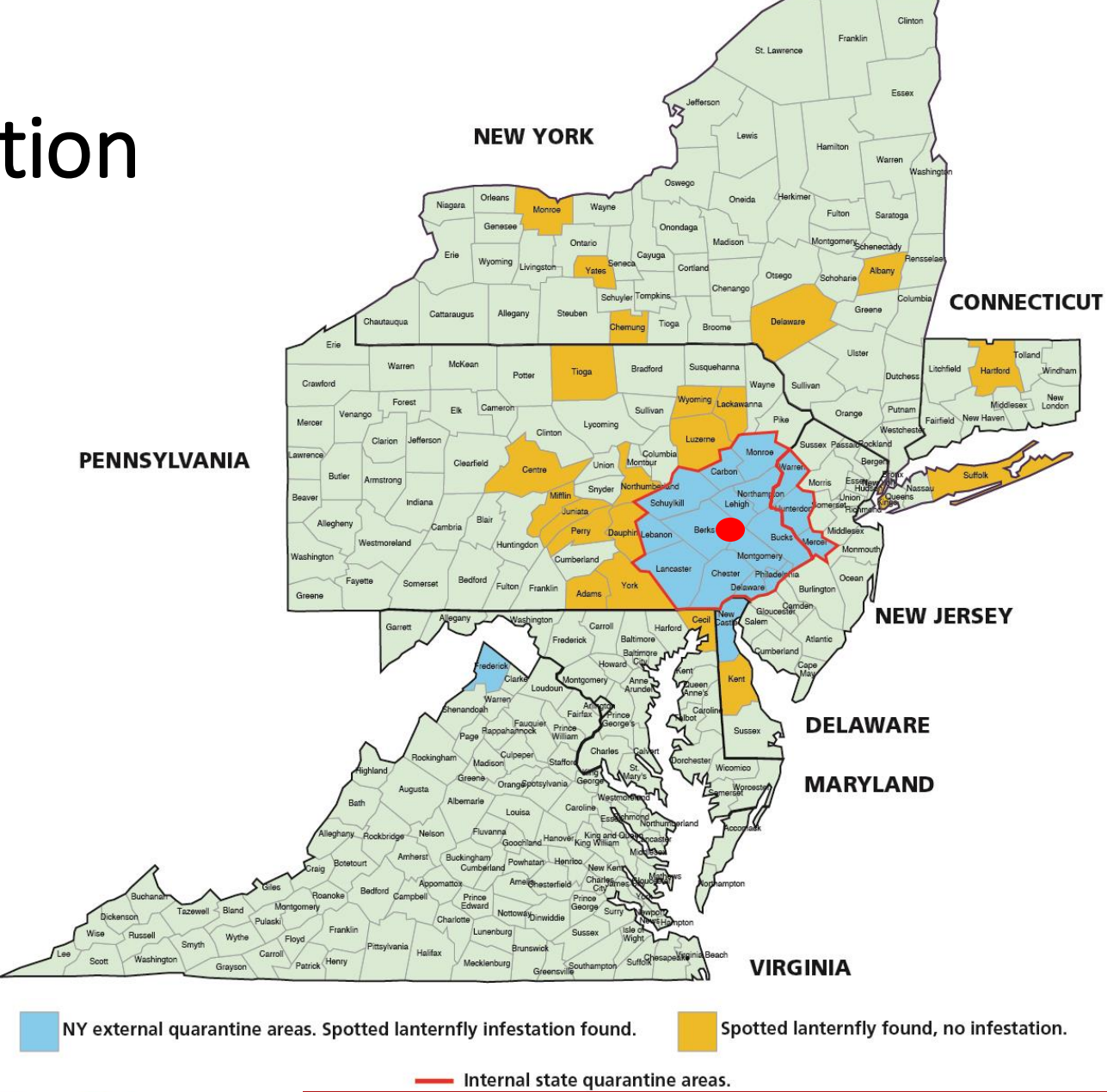




# Spotted Lanternfly Distribution as of January 2019

- PA, VA, NJ, DE, NY, MD, CT
- 8 NY Counties:
  - Albany
  - Chemung
  - Delaware
  - Kings (Brooklyn)
  - Monroe
  - New York (Manhattan)
  - Suffolk
  - Yates

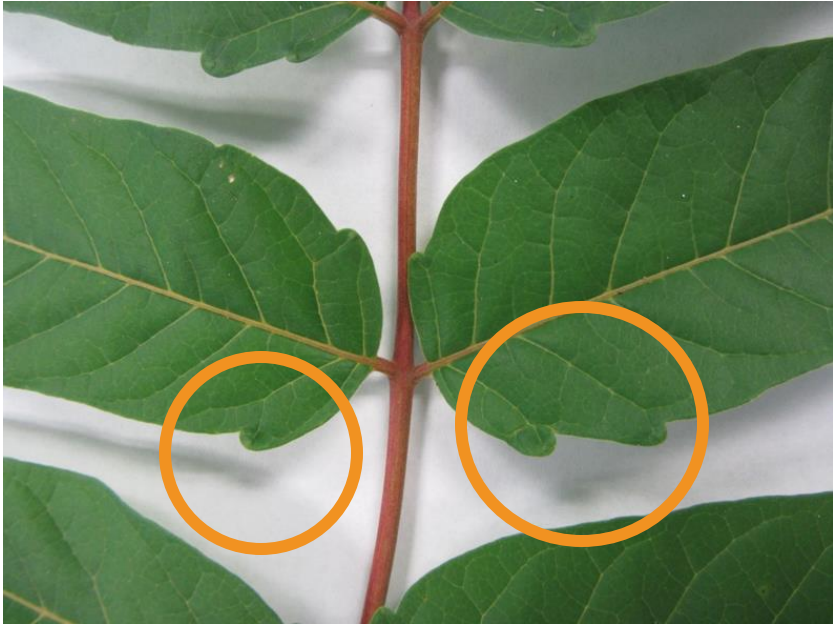
● Initial infestation



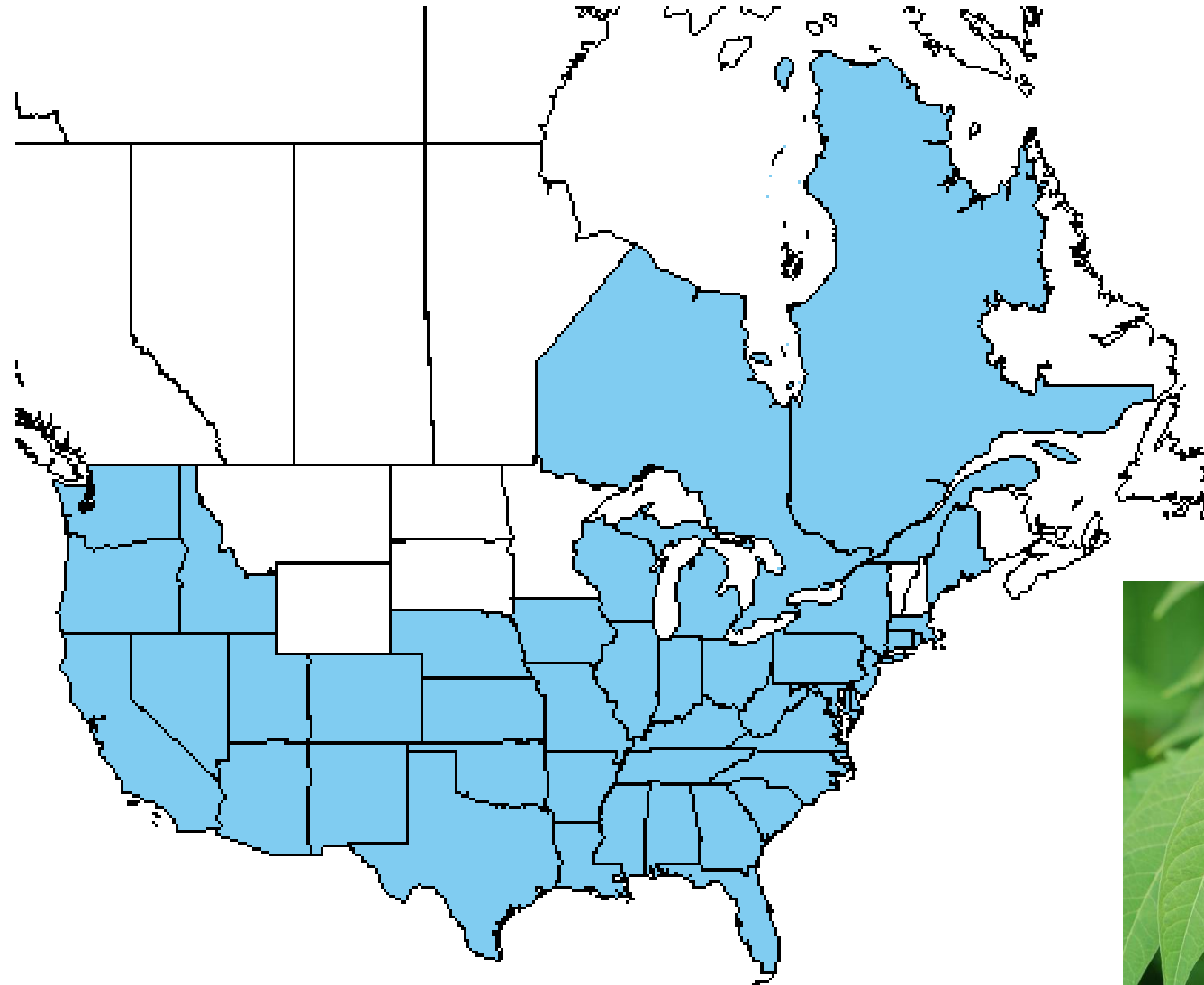
Recognizing  
*Ailanthus altissima*  
the  
“Tree of Heaven”



Spotted Lanternfly will feed on over 70 different plant species but strongly prefers Tree of Heaven



# Tree of Heaven Zones 4 – 8



Tree of Heaven Distribution-USDA PLANTS Database



# Plants at Risk

- Grapes, Apples and Hops
- Ornamentals
- Lumber Industry
- Christmas Trees
- Residential Shade Trees
- Maple Industry?

• Silver maple  Red maple  Sugar maple



# Can Impact Quality of Life



Questions?

# Monitoring and Management



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# SLF Management

- **Public education:** awareness, recognition
- **Monitoring/Detection:** esp. ailanthus
  - Movement on nursery stock, commodities, vehicles
- **Non-insecticide strategies**
  - Remove eggs, ailanthus
  - Research: biological and other controls
- **Insecticides**
  - Trap trees
  - Eradication
  - Maintenance if established



Photos: Ken Law

# Insects that resemble lanternfly



Green stink bug nymphs

Gerald J. Lenhard, Louisiana State University, Bugwood.org



Herb Pilcher, USDA Agricultural Research Service, Bugwood.org



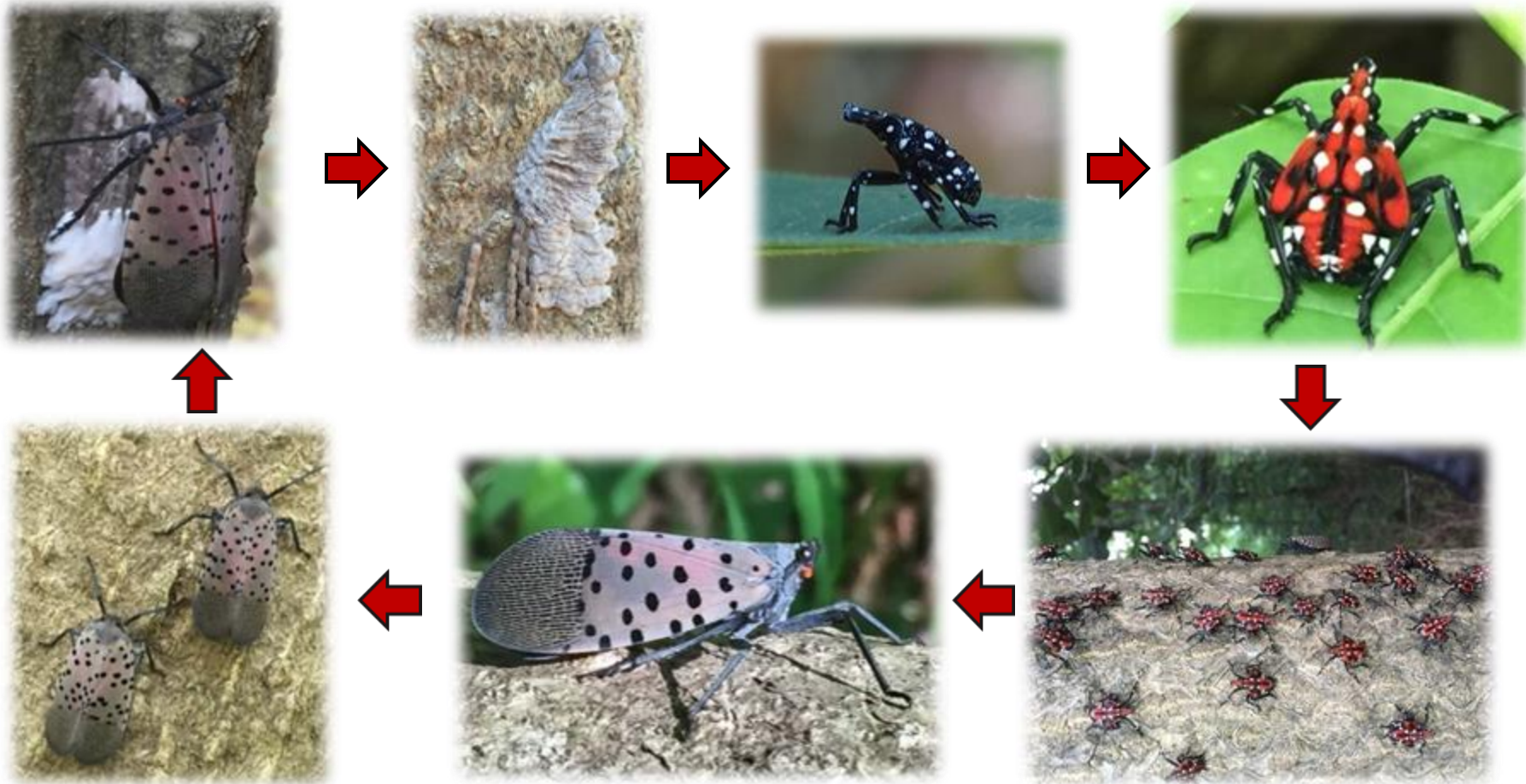
Herb Pilcher, USDA Agricultural Research Service, Bugwood.org

Black-legged tick



## Life Stage Present (one generation per year in Pennsylvania)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Eggs												
Nymphs												
Adults												



Symptoms, signs:  
Yellowing, flagging,  
honeydew, sooty  
mold, sap streaks







Monitoring:  
inspecting  
fruit at shipping  
(S. Korea)



# Monitoring: Inspecting vehicles, plants, stone...



Photo: NYS Dept of Agriculture and Markets



Photos Eric Day, Virginia Tech




PA Department of Agriculture



# Sticky band traps on Ailanthus

- Trap nymphs moving up in spring
- Detect all stages spring - fall



A close-up photograph showing a person's hands using a piece of white paper to scrape soil from a porous, grey rock. The soil is being collected into a clear plastic bag held by the other hand. The background is blurred, suggesting an outdoor setting.

**Controlling SLF:  
Eggs scraped off  
into rubbing alcohol**

Photo Nancy Bosold, Penn State

# Biological Control

Egg parasitoid of gypsy moth  
Found attacking lanternfly eggs in PA  
*Ooencyrtus kuvanae*

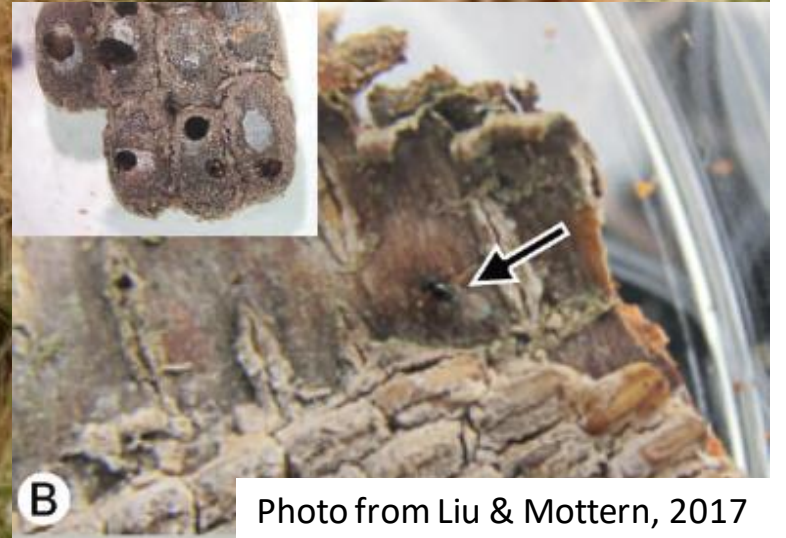


Photo from Liu & Mottern, 2017

Introduced 1908  
~7% egg masses attacked  
~20% eggs parasitized

Liu & Mottern (2017) J. Insect Sci.

Gyorgy Csoka  
Hungary Forest Research Institute  
Bugwood.org

# Biological Control: Research in Progress

## Asian egg parasitoid of spotted lanternfly *Anastatus orientalis*



Parasitizes  $\leq 26\%$  eggs,  $\leq 92\%$   
SLF egg masses in China  
– In quarantine USDA APHIS

# Fungal Pathogens for Spotted Lanternfly

Research by Dr. Ann Hajek, Cornell University

- *Beauveria* sp.
  - Found in PA attacking both nymphs and adults
- Unknown fungi closely related to *Entomophaga* sp.
  - Believed related to gypsy moth pathogen



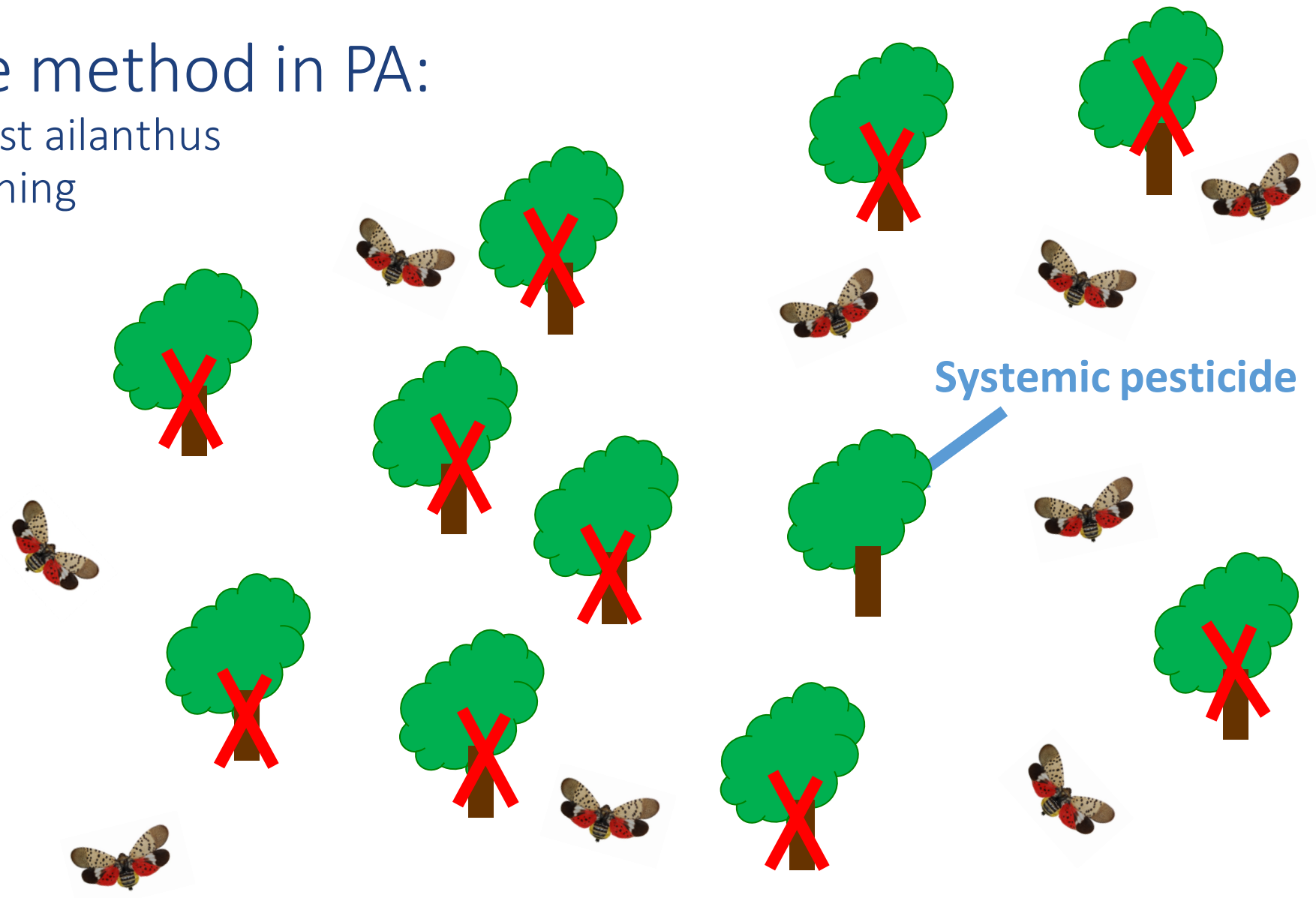
# Insecticides for Spotted Lanternfly in NY on Ornamentals (so far ...)

- [Transtect, Zylam](#) (dinotefuran) – **24(c) SLN label**, basal bark spray for **ailanthus only**
- [Ima-Jet](#) (imidacloprid) – **2(ee) label**, trunk injection for trees, shrubs, evergreens incl Christmas trees, forest areas, landscapes, tree plantations
- [Ima-Jet 10](#) (imidacloprid) – **2(ee) label**, trunk injection for trees in plantations, parks, planted Xmas trees, non-urban forests
- [Merit 75W, Merit 2F](#) (imidacloprid) – **foliar or drench** use on landscape ornamentals residential, commercial, industrial landscape ornamentals (drench incl. forestry)
- [ImidaStar 2I T&O, Enforcer 75WSP](#) (imidacloprid) – **foliar only**, landscapes only
- [Lada 2F](#) (imidacloprid) – landscape & nursery use, **foliar only**
- [BotaniGard ES/22WP](#) (*B. bassiana*), [BotaniGard Maxx](#) (+ pyrethrins) – Nursery, landscape, interiorscape, turf
- [BoteGHA](#) (*B. bassiana*) – Forestry trees & seedlings



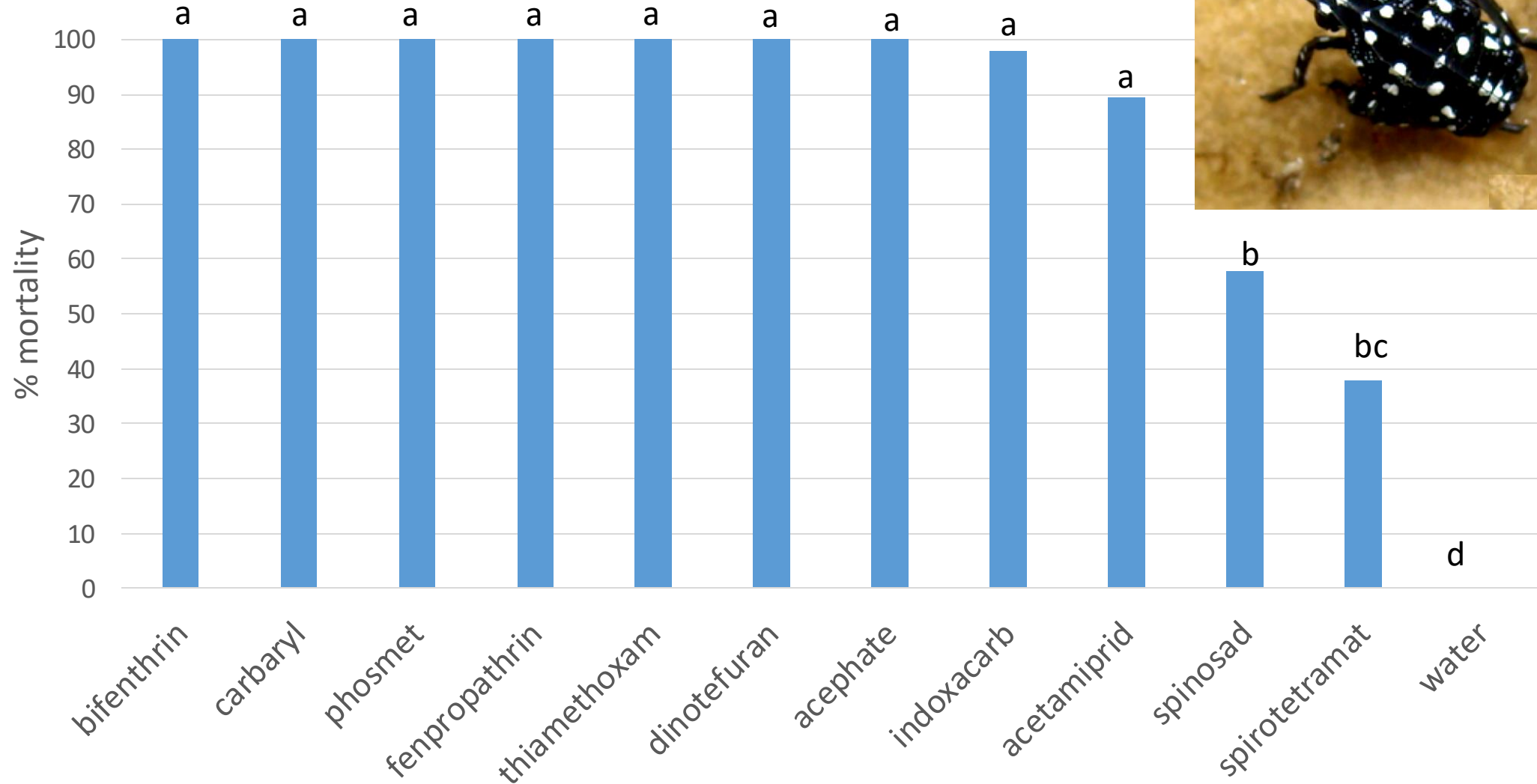
# Trap tree method in PA:

- remove most ailanthus
- treat remaining



E. Swackhamer & A. Corman

# PA trials: Control of spotted lanternfly nymphs on peach 0 days after application

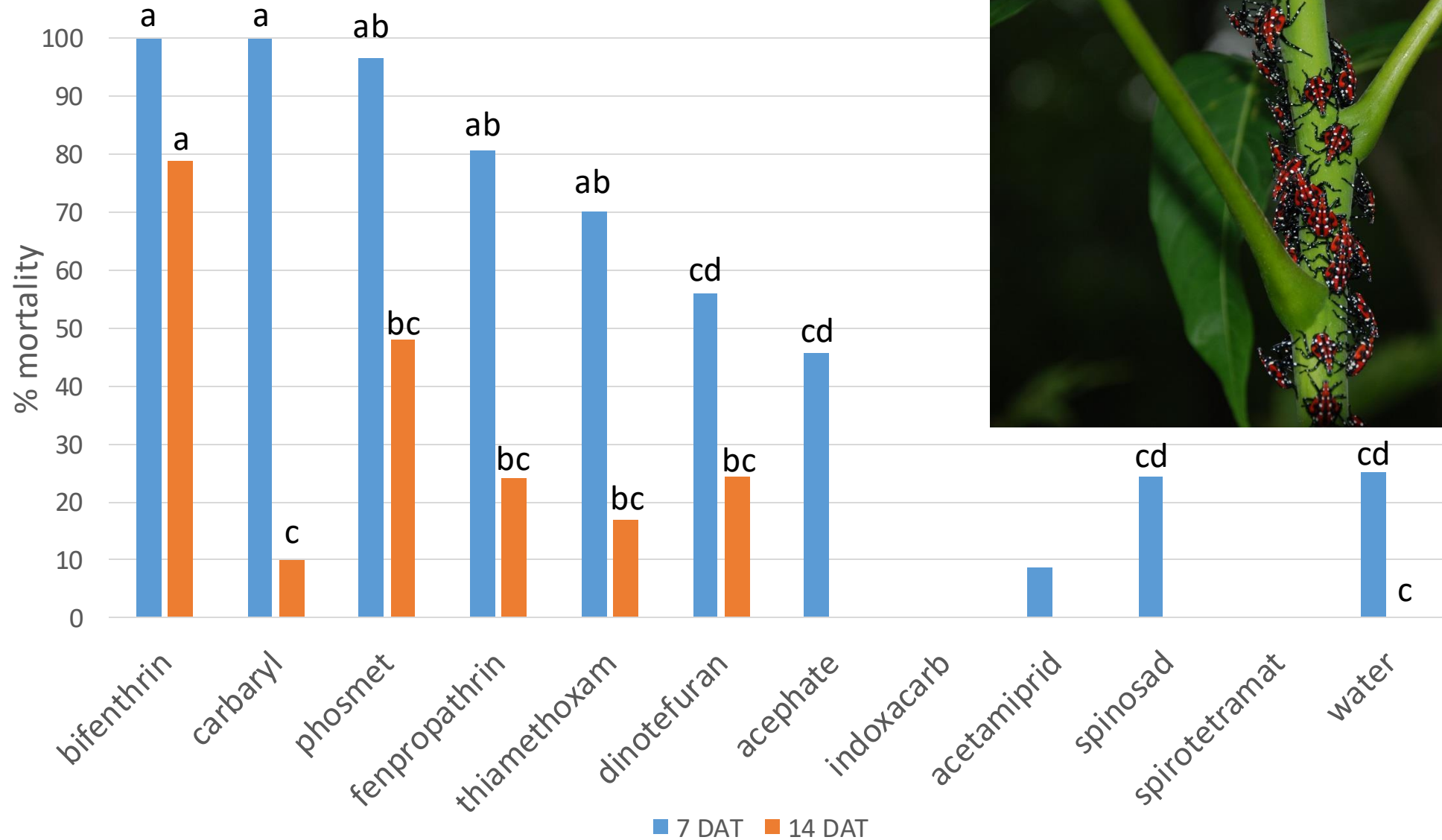


Source: D. Biddinger & H. Leach, Penn State Univ.  
assessments 48 hrs after exposure

Photo Eric Day, Virginia Tech

# PA trials: Control of spotted lanternfly nymphs on peach

## 7 & 14 days after application



Source: D. Biddinger & H. Leach, Penn State Univ. assessments 48 hrs after exposure

Photo Eric Day, Virginia Tech

# If you find spotted lanternfly in New York:

- Email clear photos, details to [spottedlanternfly@dec.ny.gov](mailto:spottedlanternfly@dec.ny.gov)
- Provide location (street address and zip code, intersecting streets, or GPS coordinates)
- Save specimens! (rubbing alcohol)
- For more information, visit the NYSDEC spotted lanternfly page:

<https://www.dec.ny.gov/animals/113303.html>



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# If you find Spotted Lanternfly in New York:

- Take a photo and report it via email to **[spottedlanternfly@dec.ny.gov](mailto:spottedlanternfly@dec.ny.gov)**
- If you find any Spotted Lanternfly life stages, remove, kill, and place in a sealed bag and put in freezer.
- For more information, visit the New York State Department of Environmental Conservation website:  
[dec.ny.gov/animals/113303.html](http://dec.ny.gov/animals/113303.html)



[www.StopSLF.org](http://www.StopSLF.org)

- A quick way to access information from the Spotted Lanternfly Working Group and a home for future SLF research.

Questions?

# Regulatory Update



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# Spotted lanternfly



Prevention, Detection and Response in the State of New York

Ethan Angell, New York State Department of Agriculture and Markets – Division of Plant Industry

# Quarantines

- When an actionable pest is identified quarantine authority is exercised to regulate “articles” that may facilitate the further movement and distribution of the pest outside the regulated area.
- The purpose is to prevent restrictions on host commodities and non-host commodities that might otherwise come under regulation and to maintain the smallest regulated area possible.

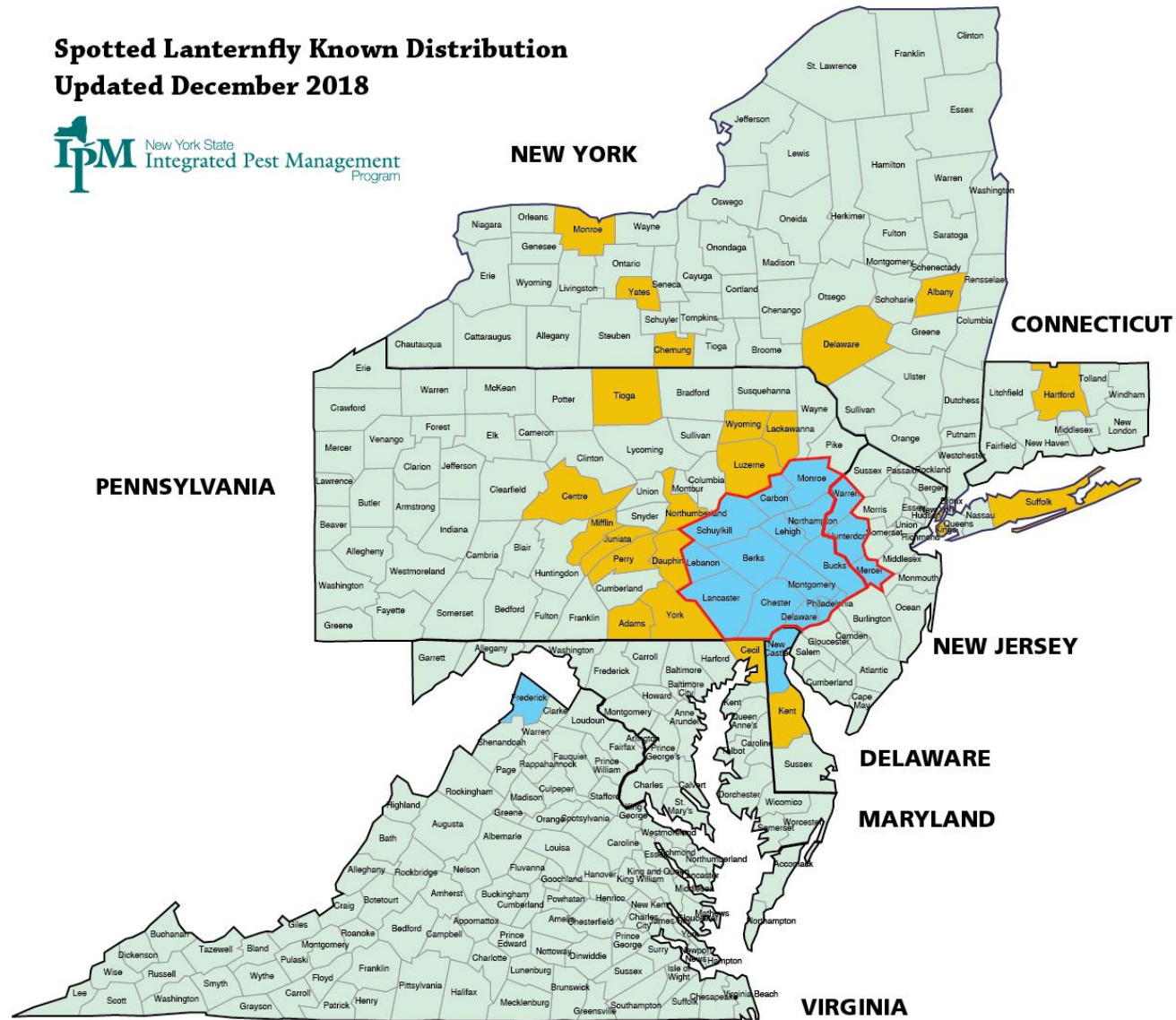


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# Spotted Lanternfly Known Distribution

## Updated December 2018



NY external quarantine areas. Spotted lanternfly infestation found.
  Spotted lanternfly found, no infestation.
  Internal state quarantine areas.



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## §142.2 Quarantine area.

- The quarantine area consists of the following counties:
- (a) In the Commonwealth of Pennsylvania, the counties of Berks, Bucks, Carbon, Chester, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Philadelphia, and Schuylkill.
- (b) In the Commonwealth of Virginia, the county of Frederick.
- (c) In the State of New Jersey, the counties of Hunterdon, Mercer, and Warren.
- (d) In the State of Delaware, the county of New Castle.



# §142.3 Regulated articles.

- §142.3 Regulated articles.
- The following articles are regulated when originating from, located within, or moved through the area as described in Section 142.2 of this Part:
  - (a) **Any living life stage of the Spotted lanternfly.**
  - (b) Brush, debris, bark, or yard waste.
  - (c) **Landscaping, remodeling, or construction waste.**
  - (d) Logs, stumps, or any tree parts.
  - (e) Firewood of any species.
  - (f) **Packing materials**, such as wood crates or boxes.
  - (g) **All plants and plant parts** including but not limited to nursery stock, green lumber, fruit and produce and other material living, dead, cut, fallen (including stumps), roots, branches, mulch, and composted and uncomposted chips.
  - (h) **Outdoor household articles**, including, but not limited to, recreational vehicles, lawn tractors and mowers, mower decks, grills, grill and furniture covers, tarps, mobile homes, tile, stone, deck boards, mobile fire pits, and any equipment associated therewith, and trucks or vehicles not stored indoors.
  - (i) **Any other article, commodity, item, or product that has or that is reasonably believed to be infested with or harboring Spotted lanternfly.**



# §142.4 Restrictions on movement of regulated articles originating from or moved through a quarantine area, into the State of New York.

- (a) No person shall move a regulated article that has originated from a quarantine area into the State of New York unless:
  - (1) such regulated article is accompanied by a **certificate of inspection** or will be moved into the State of New York for experimental or scientific purposes, on such conditions and under such safeguards as may be prescribed in writing by the Department; and
  - (2) such regulated article has been loaded, handled, or shipped in a manner reasonably designed to prevent it from becoming infested with or harboring Spotted lanternfly; and
  - (3) the regulated article is **accompanied by a waybill** that sets forth its point of origin and intended destination.
- (b) No person shall move a regulated article that has not originated from a quarantine area but has moved through a quarantine area, into the State of New York unless:
  - (1) such regulated article is **accompanied by a waybill** that sets forth its point of origin and intended destination; and
  - (2) such regulated article **has moved directly through a quarantine area without stopping** except for refueling and traffic conditions.



# How to obtain a permit

- **Spotted Lanternfly (SLF) Online Permit Training and Exam**
- 1. Visit [www.agriculture.pa.gov](http://www.agriculture.pa.gov)
- 2. Click Spotted Lanternfly (SLF) link on left-side of page.
- 3. Click 'Quarantine' box.
- 4. Review 'Permit Training' link under Business Resources.



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# Shipment Inspections



- NYS AML requires that all shipments of plant material shipped into the state must be accompanied by a certificate of inspection.
- In addition NYS Horticultural inspectors are checking shipments to ensure compliance with SLF regulations under our department's authority.
- You should contact Inspectors if you receive shipments that either:
  - Do not have a certificate of inspection
  - Infested with any disease or insect, especially SLF



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# Take Home Messages

- Learn to identify all life stages of Spotted Lanternfly
- Inspect all items coming out of quarantine zone
- If visiting quarantine zone, inspect vehicle (inside and out) before departure
- If you see it, Report it!

[spottedlanternfly@dec.ny.gov](mailto:spottedlanternfly@dec.ny.gov)

For more info search using “NYS IPM Spotted Lanternfly Resources” or check [www.StopSLF.org](http://www.StopSLF.org)



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Some Questions for You

# Questions



For more information

<https://nysipm.cornell.edu/environment/invasive-species-exotic-pests/spotted-lanternfly/>

and [www.StopSLF.org](http://www.StopSLF.org)



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# Find a Colleague

- To post a profile about yourself and your work:

<http://neipmc.org/go/APra>

- “Find a Colleague” site

<http://neipmc.org/go/colleagues>

# Archive of Today's Webinar

- Today's Webinar will be available to view **on demand** in a few business days.

<http://www.neipmc.org/go/ipmtoolbox>

- You can watch as often as you like.

# Acknowledgements

## Northeastern IPM Center

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