What You Need to Know About the Spotted Lanternfly – a New Invasive Insect

Julie Urban, Heather Leach, & Dave Jackson, Pennsylvania State University

Wednesday, September 19, 2018. 11:00 am – 12:00 pm

USDA United States Department of Agriculture National Institute of Food and Agriculture

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

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Spotted Lanternfly Extension Coordinator

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Senior Research Associate

Dave Jackson
Extension Educator

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Some Questions for You

Spotted Lanternfly

Research and Management Updates

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Spotted lanternfly

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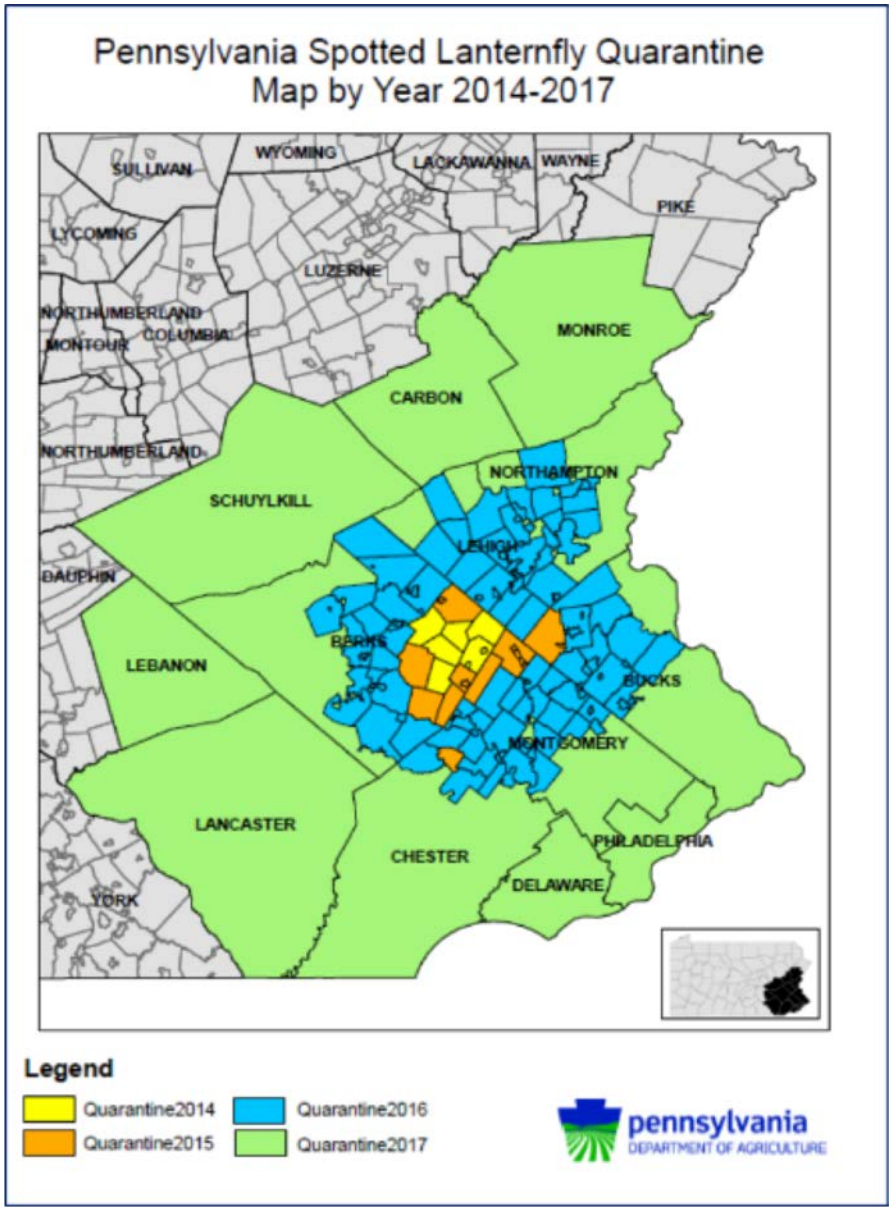
Invasion process



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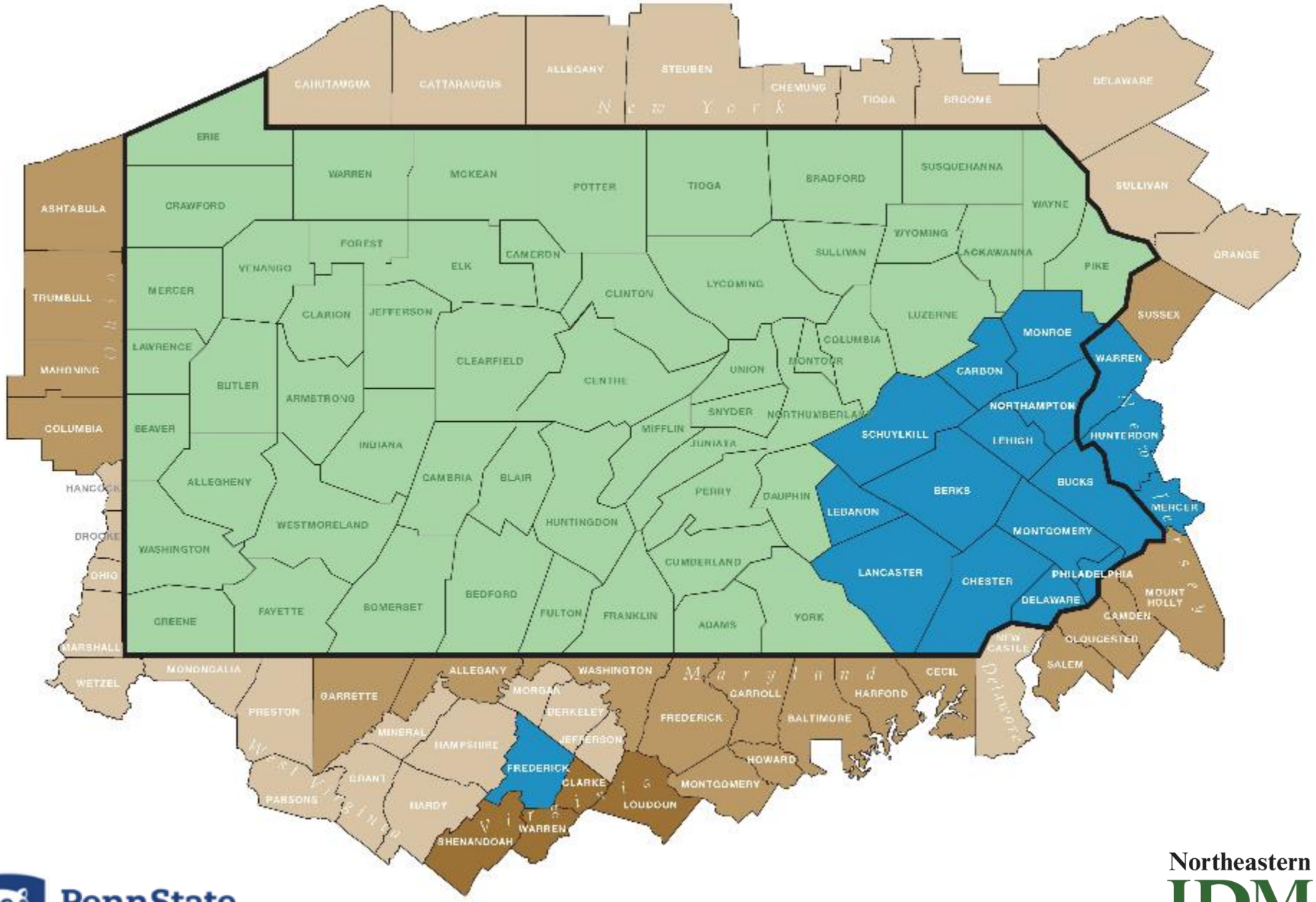

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SLF discovered in DE in 2017

Spotted lanternfly confirmed in Delaware

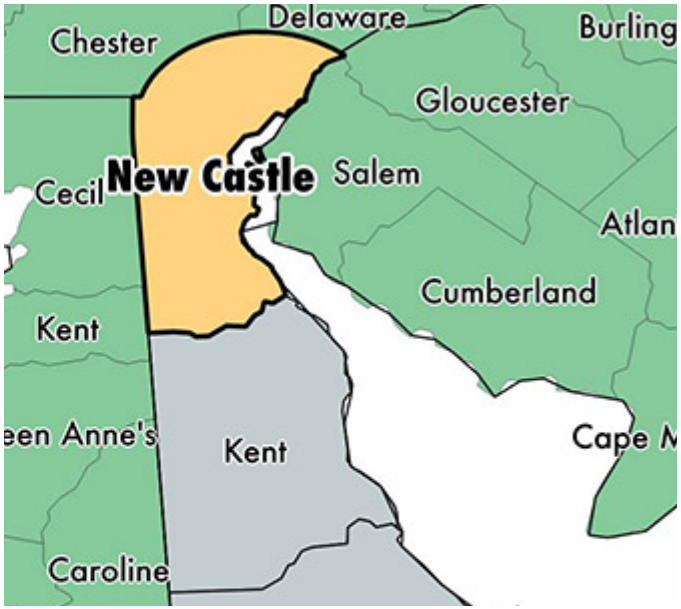
Department of Agriculture | Date Posted: Monday, November 20, 2017

Listen

Media: High-resolution photos are available for download on **Flickr**.

State provides guidelines for detection and reporting at **de.gov/hitchhikerbug**

Dover, Del. — The spotted lanternfly – a destructive, invasive plant hopper – has been confirmed in New Castle County. Delaware is the second state to have found the insect which was first detected in the United States in 2014, in Berks County, PA. The spotted lanternfly has now spread to 13 Pennsylvania counties.



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SLF discovered in NY

Invasive insect discovered in New York 'can wreak havoc' on crops

Updated Nov 29, 2017; Posted Nov 29, 2017

Dreaded Spotted Lanternfly Found in Finger Lakes

Posted by **Christina Herrick** | September 12, 2018

In an alert to New York grape growers, Hans Walter-Peterson, Viticulture Extension Specialist with **Cornell Cooperative Extension's Finger Lakes Grape Program (FLGP)** was to the point — spotted lanternfly has been found in the Finger Lakes.

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SPOTTED LANTERNFLY LIFE CYCLE

EGGS
October — June

HATCH AND FIRST INSTAR
May — June

SECOND INSTAR
June — July

THIRD INSTAR
June — July

FOURTH INSTAR
July — September

ADULTS
July — December

EGG LAYING
September — December

Illustrations by Colleen Witkowski

E. Swackhamer

PA Department of Agriculture

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A. Egg masses

B. Early nymph

C. Late nymph

D. Adult, wings closed

E. Adult, wings open

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Spotted lanternfly is a Hemipteran

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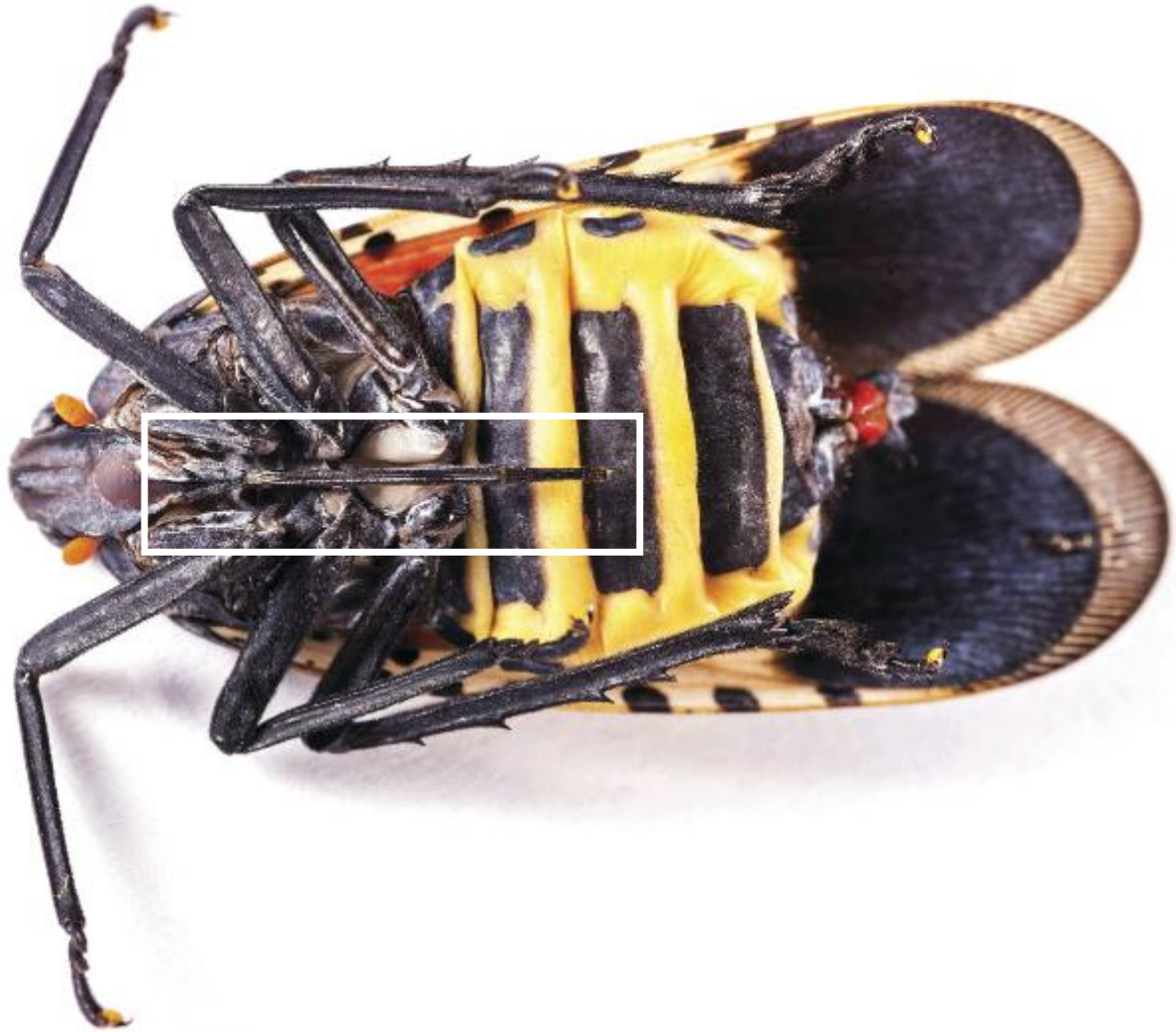
Piercing-sucking mouthparts



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Piercing-sucking mouthparts

Host range

Preferred hosts:

Ailanthus altissima (tree of heaven), black walnut, grape, hops

Feed on 70+ plants:

apple, maple, birch, sycamore, willow, staghorn sumac,

and many others

S. Ausmus


Erica Smyers

Honeydew excretion

Video by Erica Smyers

Sooty mold on grape

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Damage

Oozing, leaf curl, wilting, and potential death of trees

Yield losses in apple, grape

Transmission of pathogens unknown

Sooty mold -> decreased photosynthesis

Sooty mold – a nuisance problem

Sooty mold – a nuisance problem

Steps of Spotted Lanternfly Management

1	Stop the spread
2	Scrape eggs
3	Band trees to catch nymphs
4	Remove tree-of-heaven - **Herbicides**
5	Apply insecticides - **“Trap” trees**

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Tree-of-Heaven - Identification

- Pinnately compound leaves
  - 1-4 feet in length
  - 10-40 leaflets
  - Smooth leaf margin
  - 1-2 teeth at base of leaflet

Photo: Dave Jackson

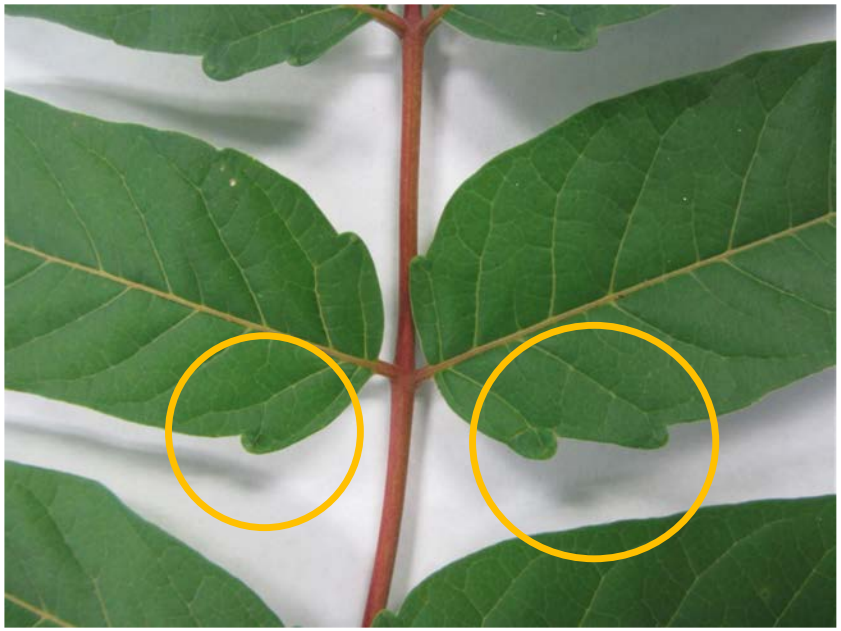
Photo: Dave Jackson

Strong offensive odor when crushed

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Tree-of-Heaven - Identification

- Alternate, smooth, stout, blunt, greenish to brown twigs
- V or Heart-shaped leaf scar
- Brown spongy pith
- Smooth pale gray bark

Photos: Dave Jackson

Photo: Dave Jackson

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Tree-of-Heaven - Identification

- Male and female trees
- Papery seeds (samaras)


Photo: Dave Jackson


Photos: Dave Jackson

Photo: Eric Burkhart

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Tree-of-Heaven - Identification

- Large, root suckering tree
  - 80 - 100 feet in height
  - 6 feet in diameter
- Grows in colonies or "clones"

Photos: Dave Jackson

Photo: Dave Jackson

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Tree-of-Heaven – "Trap" Trees

Photos: Dave Jackson

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Tree-of-Heaven - Control

- Herbicides – Treat Approximately 85% of ToH
  - Target female trees

Photos: Dave Jackson

July - September

- **Foliar**
  - Triclopyr (amine): 3 qts/acre
- **Hack & Squirt** – spaced cuts
  - Triclopyr (amine): 50% solution
- **Basal Bark**
  - Triclopyr (ester): 20% solution

Photos: Dave Jackson

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Tree-of-Heaven - Control

- **Cutting Alone and Cutting & Treating Stumps are ineffective at controlling tree-of-heaven**
  - **TREAT FIRST…….THEN CUT**

Photos: Dave Jackson

If trees need to be removed, wait 30 days after treatment

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Tree-of-Heaven – "Trap" Tree

- Treat remaining trees with a systemic insecticide
  - Active ingredients **dinotefuran** or **imidacloprid**
  - Bark sprays (dinotefuran) or soil drench
  - July-August

Photo: Plant Health Solutions

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The Spotted Lanternfly, *Lycorma delicatula:*
Research Update: September, 2018

Photo : Pennsylvania Dept. of Agriculture

Insecticide efficacy

Efficacy against Egg Cases – Beekman Orchard (Penn State)

Fruit tree & grape study (Penn State)

-- 500 peach trees: test 20 insecticides (contact & residual effects on nymphs, adults)

-- 250 1 yr. grapevines: test 10 of most effective (from peach results) on adults

Efficacy on Ornamentals (Penn State)

-- 2 sites each planted with maple (same age, etc.)

-- in collaboration with industry (Rainbow, ArborJet)

Will test 20 insecticides under controlled lab conditions (Leskey)

-- Fort Detrick Quarantine Lab – in prep.

SLF monitoring

Lure Development (Cooperband)

-- USDA Otis lab: methyl salicilate

Testing Lures & Traps (Cooperband, Leach, Leskey)

-- testing lures against multiple trap designs

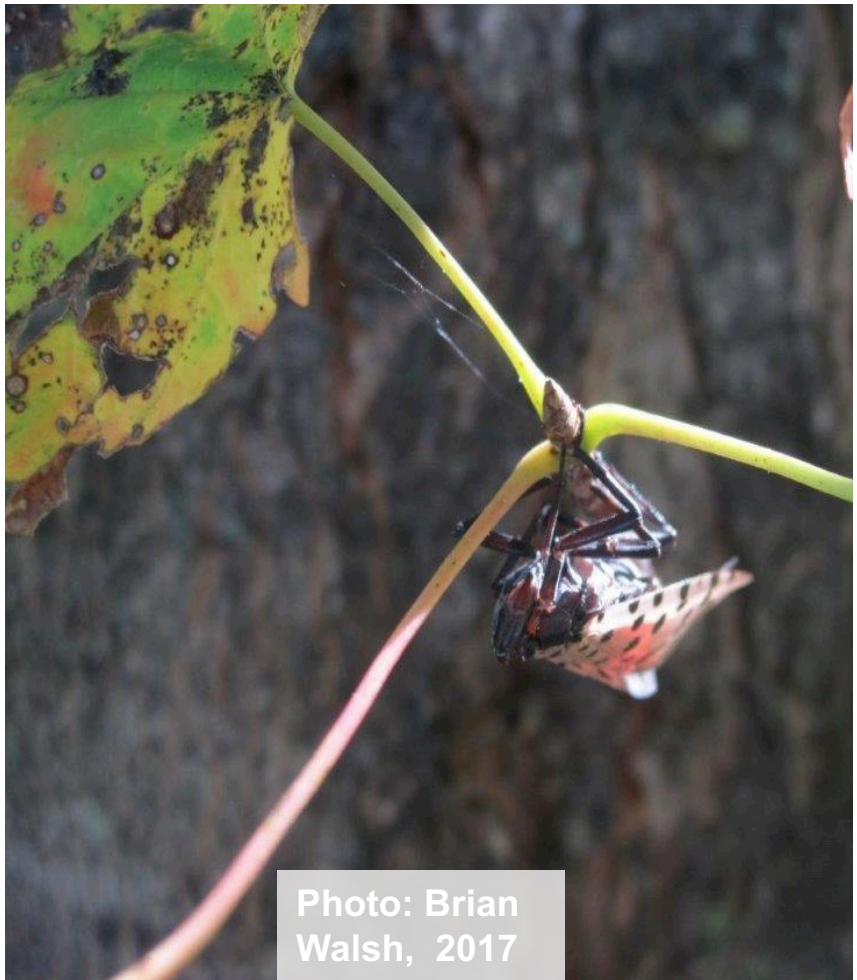
-- experiments being conducted in PA (high pest pressure) and in VA (low pest pressure)

Feeding impacts

Effects on physiology of host plants (Penn State)

-- grapes

-- ornamentals



SLF natural enemies

Classical Biological Control (Hoelmer, Gould, Liu, Bartlett)

-- foreign exploration to identify important Asian predators (parasitoids) of SLF

-- examining impact of biocontrol on non-targets

-- search for native parasitoids

SLF biology

Behavior of Adult SLF (Penn State):

Sex Pheromone Attractant Research

Non-Pheromonal Communication

Seasonal Changes in Adult SLF

dispersal behavior of flying adult SLF

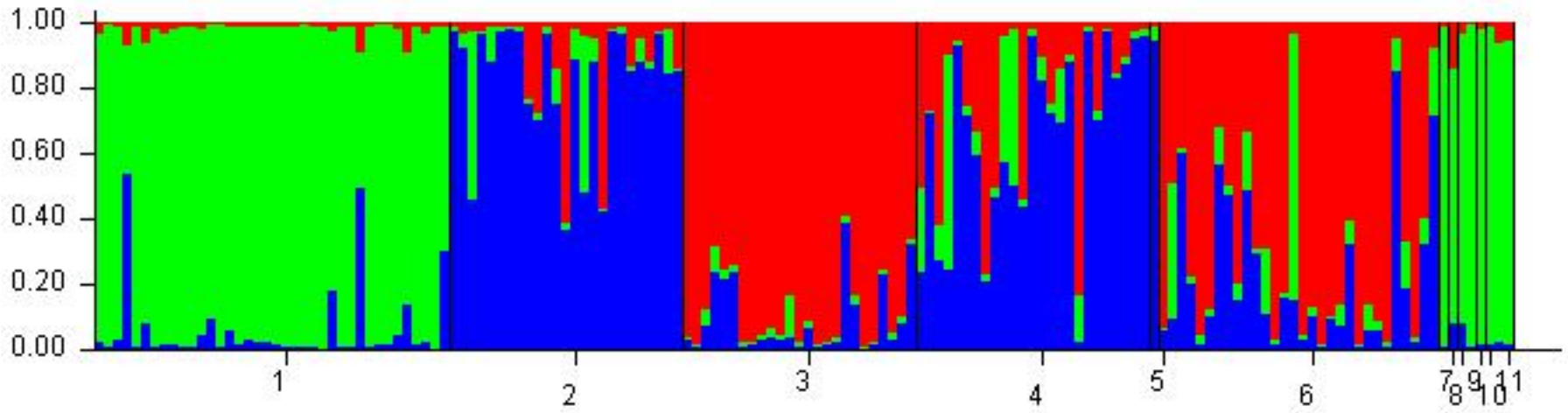
changes in wing morphology (w/ Urban)

SLF biology

Development of Genetic Markers (Penn State):

-- find the origin of Pennsylvania population of SLF

-- results to date: Korea not origin



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SLF biology

Sooty Mold Development (Penn State):

Characterize microbial communities

-- changes in bacterial and fungal communities over time using high-throughput amplicon

SLF Internal Microbial Communities (Penn State):

-- obligate endosymbionts

-- gut microbial communities

SLF biology

Feeding Behavior (Penn State):

-- feeding preference studies: Ailanthus

-- feeding preference studies: phloem flow

-- testing artificial diets

-- examination of tree penetration in feeding

-- salivary gland proteomics

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- Cornell's Climate Smart Farming Program: Decision Tools & Practices

Thursday, September 20, 2018. 2:00 pm – 3:00 pm

- Pest Management in No-till Corn Silage Systems – with an introduction to NE SARE funding programs & resources

Tuesday, September 25, 2018. 2:00 pm – 3:00 pm

2019 RFA now available

- http://neipmc.org/go/PaGs

Acknowledgement

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