



FALL 2020

bulletin



CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

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How Can We Keep Spotted Lanternfly out of California?

The half-inch long, ravenous spotted lanternfly (SLF) can kill a plant outright or leave it so damaged it can no longer produce fruit. Swarming by the tens of thousands, the pest feeds on a vast range of plants and trees, including grapes, nuts, stone fruit, apples, and hops, with a preference for tree of heaven.

“We have vineyards in Pennsylvania that, after two years are dead. It kills the plant and you’re out of business,” said Pennsylvania Agriculture Secretary Russell Redding.

It’s hard to miss the SLF, with its large size and red and spotted wings. California agriculture officials are hoping the showy adults catch the public’s attention, before any intruders lay eggs, which are much more difficult to identify because they look like splashes of mud. The SLF lays egg masses in the fall on surfaces such as tree trunks, rail cars, trucks, and lawn furniture. Eggs hatch in the spring, growing into aggressive phloem feeders by summer. Although adults have large wings, the SLF mostly hops or glides, damaging or killing plants and leaving honeydew and sooty mold behind.

A DANGEROUS THREAT TO WINEGRAPES

The SLF was first seen in Pennsylvania in 2014 and spread in the mid-Atlantic, infesting six states and found in 11. Five states have enacted quarantines and inspections to slow artificial movement of the pest.

Habitat modeling shows that the entire California grape growing region is highly suitable to SLF. Over the past two years during regular California Department of Food and Agriculture inspections of air-cargo flights for Japanese beetle, dead SLF were found on a few flights originating in Pennsylvania. No egg masses have been found in California. “We hope it never gets here, but we need to be prepared if it does,” said Tyler Blackney of the Wine Institute.

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Expanded Area-Wide Treatments Tackle GWSS Population Increase

- 190% increase in Kern County compared to 2019
- 215% increase in Tulare County compared to 2019

THREE WAYS GROWERS CAN PROTECT GRAPES



Learn what the SLF looks like in its various life stages



Identify any tree of heaven on your property



Report SLF finds to the CDFA Pest Hotline 1-800-491-1899

Mid-Atlantic grape growers, facing hordes of SLF moving easily between vineyards and the surrounding landscape, are experiencing high economic damage due to honeydew, sooty mold, reduced freeze tolerance, failed fruit set, and mass feeding killing vines. The insect's peak feeding occurs near and at harvest time, affecting ripening and sugars, while spraying can disrupt harvest timing.

FIGHTING BACK

The pest presents many challenges to containment and eradication. Its human-driven dispersal is similar to gypsy moth, but presents new regulatory challenges because SLF is not well-studied and acts differently in the United States compared to its native range. Growers have used insecticide sprays, tree of heaven removal and treatment, and manual egg scraping as control measures. Research efforts are underway across the country to learn more about SLF, including rearing, lures, pesticides, biocontrol, host range, and communication. Lures and mating disruption have been ineffective, but parasitoid wasps, entomopathogenic fungi, and biocontrol of tree of heaven using plant pathogens are being explored.

CALIFORNIA'S RESPONSE

California agriculture officials and industry representatives have been monitoring the evolving SLF situation for the past few years.

"We want to find it before it becomes a big issue or heavily established in California," says Dr. Matt Kaiser, CDFA State Survey Coordinator. "With no trap or lure currently available, visual inspections will be the most effective detection method."

Response activities include:

- CDFA A-rated pest; suspect shipments of plants, outdoor items, etc. may be refused entry into the state and may be returned, quarantined, treated, and/or destroyed
- With no lure currently available, visual inspections will be the most effective detection method
- CDFA participation in national stakeholder working groups
- On the PD/GWSS Board's designated pest list
- Trainings for county regulatory staff about what to look for in the field
- Advisories to state/county agriculture staff about pest biology and identification
- Inspections at border stations and airports and follow-up inspections once goods have been unpacked at destination
- Risk-based survey along high-risk pathways, including major railyards, stone importers, and ports
- Biocontrol research grant to UC Riverside
- Planning to implement a state exterior quarantine

LEARN MORE

Listen to the webinar, "Spotted Lanternfly – A Threat to California Winegrapes" with Dr. Kaiser, available online at bit.ly/30A7EXU.

LIFECYCLE OF THE SPOTTED LANTERNFLY



EGGS

January – May



EARLY TO LATE NYMPH

April – late August

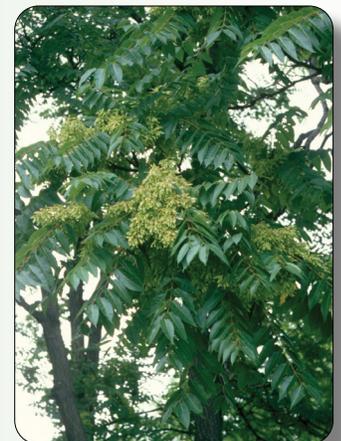


ADULT

August – December



TREE OF HEAVEN



on the RESEARCH FRONT



CALIFORNIA PD/GWSS BOARD

Partnership for Winegrape Pest Solutions



Now available "What Every Winegrower Should Know: Viruses"

Grapevine Virus Management in Lodi: A Collaborative Research and Integrated Outreach Effort to Help Solve a Statewide Challenge

Project leader: Dr. Stephanie Bolton, Lodi Winegrape Commission

One component of the project's education and outreach program is the development of a virus workbook, "What Every Winegrower Should Know: Viruses." Full of pictures and written in grower language, the book addresses these topics and more: grapevine virus basics, nursery ordering, mealybugs, beneficial insects, virus testing, mapping your vineyard, virus spread, infected vine removal (including the USDA TAP), local case studies, and the sudden vine collapse. Email Dr. Bolton at stephanie@lodiwine.com to request a hard copy or electronic version, with educational videos, of the book.

Grape Protoplast Isolation and Regeneration of Plants for use in Gene Editing Technology

Project Leader: David Tricoli, UC Davis

CRISPR-Cas9 is a gene editing technology allowing for precise changes to be made to a plant's genetic blueprint, but the walls of plant cells make it challenging to introduce DNA into the cell. The team has developed a method to generate protoplasts, plant cells with cell walls removed, from grape embryo suspension to stimulate the protoplasts to reform a cell wall and then divide for Chardonnay, Merlot, Thompson seedless, and rootstock 101-14. They have also successfully stimulated the small cell colonies for Thompson seedless and Merlot to form into embryos and germinate into plants. These techniques will provide a valuable tool for deploying gene-editing techniques to produce non-chimeric gene edited plants, which is critical for clonally propagated crops such as grapes.



Thompson seedless and Merlot vines propagated from protoplasts.



Yellow sticky traps are used to monitor GWSS populations

Riverside County Glassy-Winged Sharpshooter Program: Temecula Valley and Coachella Valley

Project Leaders: Matt Daugherty & Christina Hoddle, UC Riverside & Carmen Gispert, UC Cooperative Extension Riverside County

Monitoring of GWSS populations continues in order to guide grape grower management decisions by identifying those areas and those times of year where the vector is most active. This season, results of monitoring in Temecula Valley citrus and winegrape vineyards were fairly average by historic standards, with very low GWSS activity through spring, a typical summer peak, and relatively low numbers thus far in the fall. Monitoring in and around Coachella Valley table grape and raisin vineyards continues to indicate that GWSS is rare if not absent from the area.

Expanded Area-Wide Treatments Tackle GWSS Population Increase

Glassy-winged sharpshooter trap finds have increased in the Southern San Joaquin Valley this year, even with treatments of organic citrus targeting GWSS nymphs in May.

As of Oct. 31 2020, trap finds have increased 190% in Kern County and 215% in Tulare County compared to 2019. The population increase is most likely due to a combination of warmer weather, an increase in organic citrus acreage, and reduced treatments in previous years due to budget constraints. Sharpshooters can be challenging to control effectively in organic citrus due to a lack of available products offering long residual activity.

“It is paramount to keep glassy-winged sharpshooter populations in the San Joaquin Valley under control. We don’t want populations to build up making it easier for the pest to move to new areas of the state,” said Steve McIntyre, PD/GWSS Board member and Monterey County winegrape grower.

The area-wide management program was initiated 20 years ago to hold the line on glassy-winged sharpshooter infested areas of the state, while buying time for research to find solutions to Pierce’s disease and GWSS. The treatments, coordinated by the United States Department of Agriculture, have drastically reduced GWSS populations, but GWSS have been creeping back over the past few years.

Thanks to an additional \$1.2 million from the PD/GWSS Board and the Consolidated Central Valley Table Grape Pest & Disease Control District, coordinators are able to treat an additional 8,800 acres in Tulare County and 10,700 acres in Kern County to kill overwintering GWSS. A total of 42,500 acres in the two counties will be treated this year, with coordinators prioritizing treating areas with GWSS finds near grapes, GWSS finds outside of infested area boundaries, and high population levels.

GWSS TRAP FINDS HAVE INCREASED ACROSS THE SAN JOAQUIN VALLEY IN 2020

Kern County — 190% increase in GWSS trapped

GWSS Trapped in 2019	GWSS Trapped as of 10-31-2020
48,035	139,732

Tulare County — 215% increase in GWSS trapped

GWSS Trapped in 2019	GWSS Trapped as of 10-31-2020
8,954	28,163
