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2023 Insect Control Report

Find out how growers across North America are managing insect pests. Plus, learn more about redheaded flea beetle and get the latest update on the spotted lanternfly (pictured).

Continued commitment

Envu is dedicated to finding solutions and creating partnerships.

Envu is proud to once again partner with *Nursery Management* in support of the State of the Market special report. The past year has brought a lot of changes as we built on our 50-year legacy of excellence to create a new, more agile company dedicated to environmental science: a new name, new systems and new processes. One thing that has not changed is our commitment to developing innovative solutions to help you solve your toughest challenges.

Just as Envu has evolved over the past year, so too have the challenges faced by greenhouse and nursery growers. As new threats have emerged, from invasive species like *Thrips parvispinus* to complex disease challenges like vascular streak dieback and beech leaf disease, our team of experts has been on the front lines, working alongside growers, university researchers and private industry partners. The insights gained from these collaborations are helping to drive Envu research and development efforts as we work to meet the needs of the industry.

In addition to pest and disease issues, you're also facing mounting pressure from labor challenges and environmental concerns. The good news is you're not alone. As a trusted partner in your success, Envu is ready with the solutions and expertise you need. A labor-saving tool, Marengo® herbicide delivers up to eight months of control of economically important weed species. By choosing a product with industry-leading residual control, you can reduce the number of applications needed and hours spent hand-weeding. To help take the guesswork out of developing herbicide rotations, we created a guide for weed management with programs customized to your production type and geographic region.

For growers looking to combine biocontrol methods with traditional chemistry, we offer a portfolio of reduced-risk insecticides that are compatible with

many biological control agents. Altus® insecticide provides systemic control of piercing and sucking pests, with flexibility to apply before, during and after bloom. Kontos® insecticide targets sucking insects as well as tough-to-control mite species

and provides true systemic activity, moving both up and down in plant tissue. For pests with a high risk of resistance development, like spider mites and whiteflies, Savate® insecticide offers quick knockdown control with a unique mode of action. Because we know it can be difficult to find reliable information, we compiled data on the compatibility of our insecticides with common BCAs in an easy-to-use table.

You can count on the greenhouse and nursery team at Envu to be partners in cultivating beautiful results. We are here to help you face new challenges, develop solutions and provide best-in-class support. Now, as always, our priority is your success. Thank you to *Nursery Management* for providing this update. We are fortunate to work in an industry that makes the world a more beautiful place!

Visit us.envu.com/ornamentals to explore resources and learn more about Envu. 🌻



– **Jane Stanley**

**Green Solutions Team Specialist
Envu Turf & Ornamentals**

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Dialing in on nursery pest control



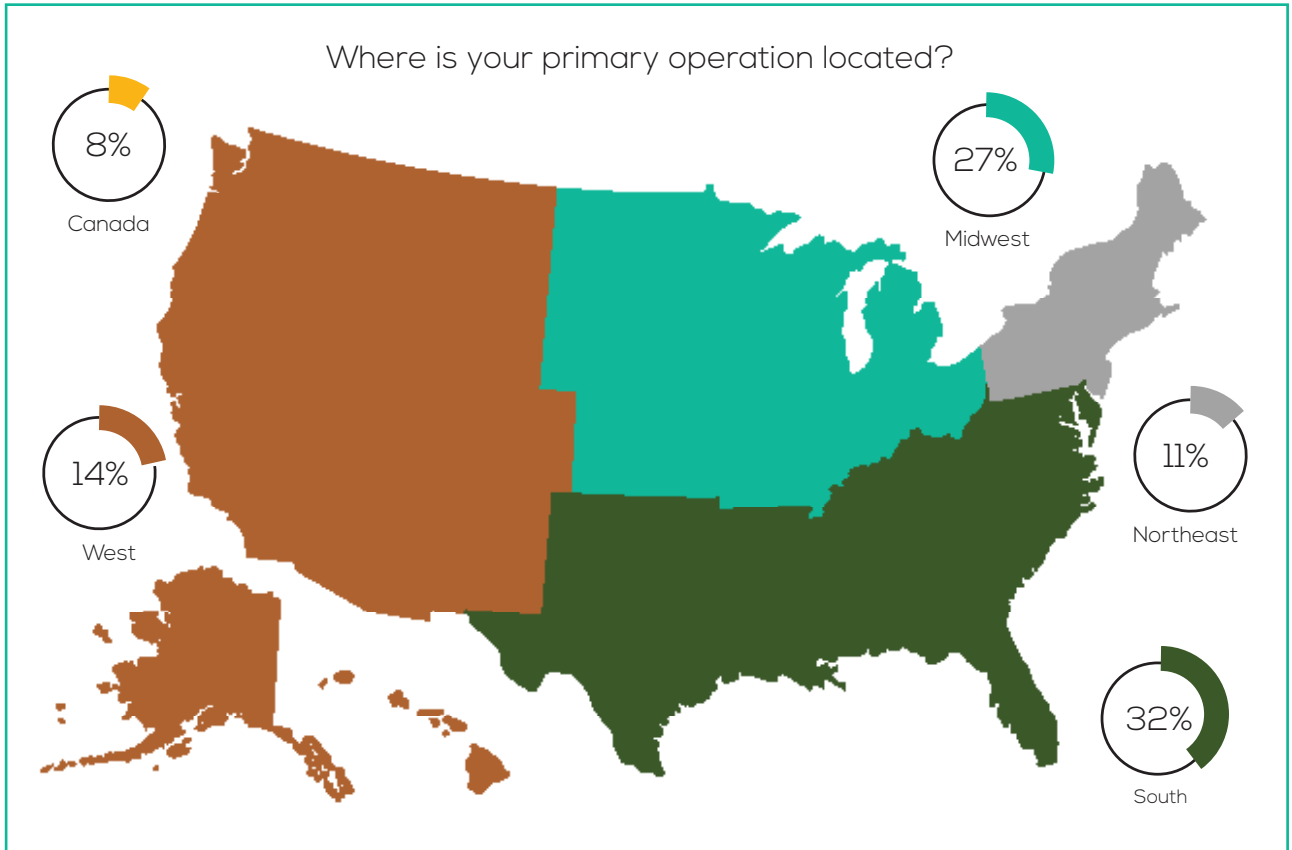
Our exclusive research reveals how North American growers oversee insect pest management, from insect pressures and IPM programs to scouting and budgets.

This summer, *Nursery Management* magazine surveyed North American growers about administering pest management plans, which pests are the most problematic, scouting protocols, pest control budgets and much more. Our survey of more than 315 growers revealed that three-quarters of respondents have an integrated pest management plan and most review IPM plans once a year; more than half said their crews scout for insect pests daily; and 60% practice preventive measures compared to curative.

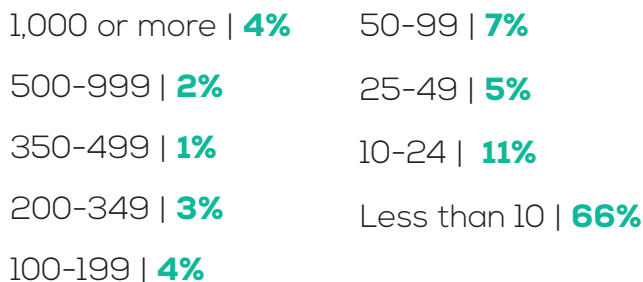
Editor's note: Due to rounding, not all percentages add up to 100.

How many square feet is your location's total growing capacity under cover?

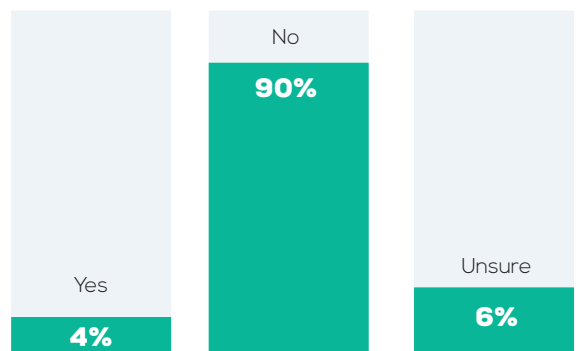
| | |
|--------------------|-----|
| Less than 2,500 | 22% |
| 2,500 to 4,999 | 9% |
| 5,000 to 9,999 | 10% |
| 10,000 to 24,999 | 11% |
| 25,000 to 49,999 | 10% |
| 50,000 to 99,999 | 13% |
| 100,000 to 249,999 | 8% |
| 250,000 to 499,999 | 8% |
| 500,000 or more | 11% |



If applicable, how many acres of outdoor growing space are currently under production?



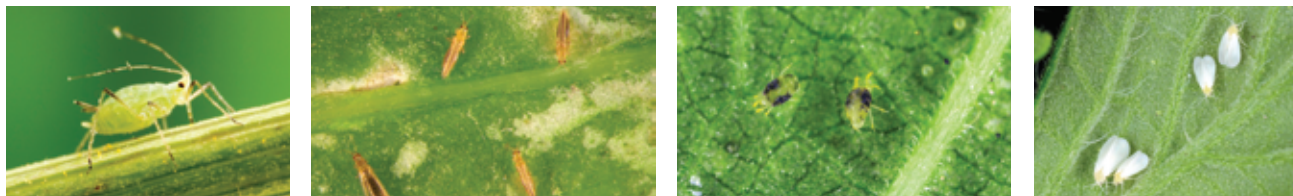
Have you encountered spotted lanternfly at your growing facility?



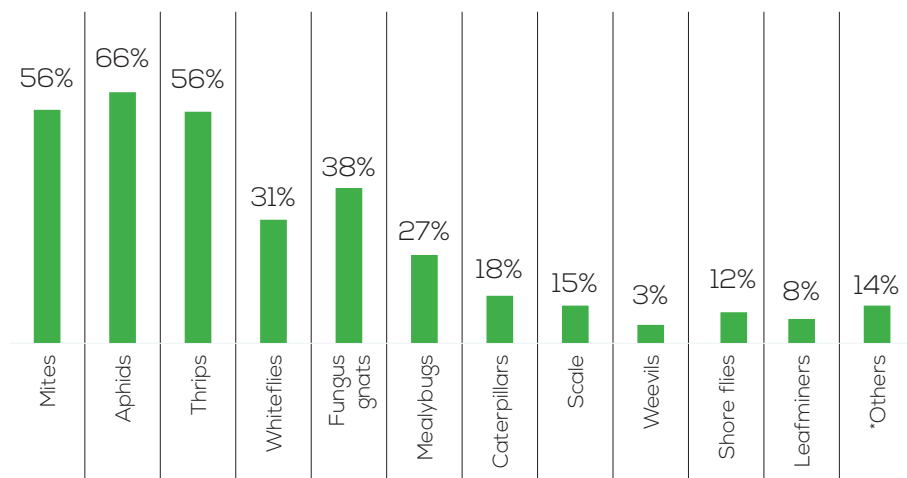
The top five most problematic pests reported are aphids, thrips, mites, fungus gnats and whiteflies. While specific problematic pests don't vary much from year to year, aphids were identified as the biggest problem for the second consecutive year, and mealybugs didn't make the top five this year.

State of the Market: Insect Control Report

Survey Results

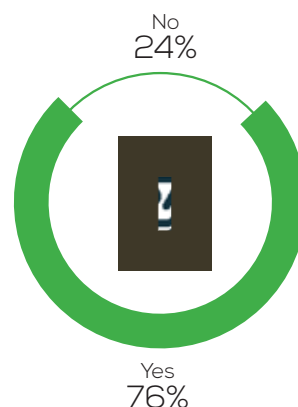


What are your most problematic pests? Select all that apply.



Other answers include: slugs, red-headed flea beetle, ants

Do you have an integrated pest management plan?

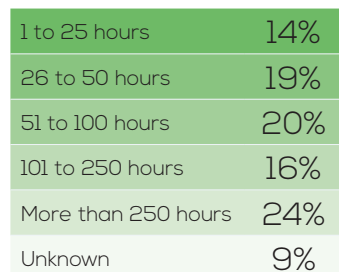


How often do you review your IPM program?



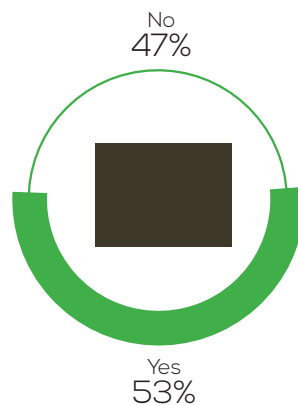
Other answers include: Every month, constantly adapting as we go, every week

How many labor hours on average are spent on pest management during a 12-month period?

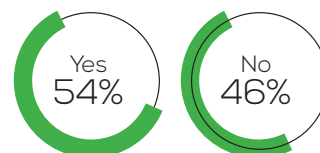


Just over half of growers said they have a dedicated IPM manager to help keep track of insect pressures, spray plans, beneficial releases and scouting crews. Nearly a quarter of respondents said they spend more than 250 hours of labor hours annually on pest management.

Do you have a dedicated IPM manager?



If you don't already have an IPM program, are you planning to implement one in the next 12 months?



*The discovery of *Thrips parvispinus* in Florida has caused concern because of the large amount of plant material being shipped out of the Sunshine State. But nearly 50% of respondents said they have not discovered the pest yet.*

Nearly a quarter of respondents said they use biocontrol measures and 88% said they use them in conjunction with traditional pest control methods. When it comes to the type of biocontrol products used, predators are the top method. Out of the 46% of respondents who are not using biocontrols, most said they haven't adopted those methods because they need more education and training.



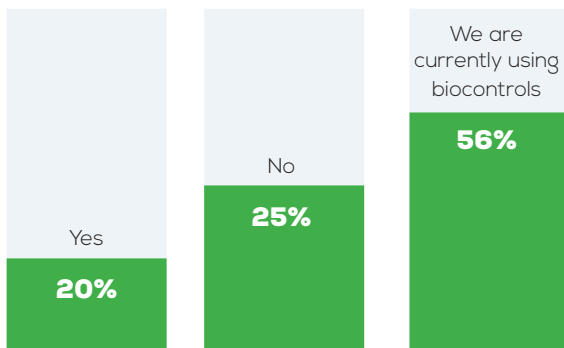
Do you use biocontrol measures exclusively or in conjunction with traditional pest control methods?

| | |
|----------------|-----|
| Exclusively | 12% |
| In conjunction | 88% |

Which biocontrol products do you use? Please select all that apply.

| | |
|-------------|-----|
| Predators | 85% |
| Parasitoids | 58% |
| Pathogens | 59% |

Do you plan to adopt biocontrol measures in the next 12 months?



If you do not use biocontrol measures, explain why.

| | |
|--|-----|
| Price | 13% |
| Product performance is not good enough | 18% |
| Need more education/training | 30% |
| We are using biocontrol measures | 54% |

State of the Market: Insect Control Report

Survey Results

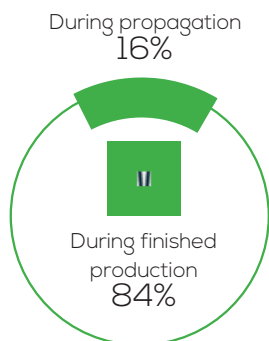
How many crew members typically scout for pests?



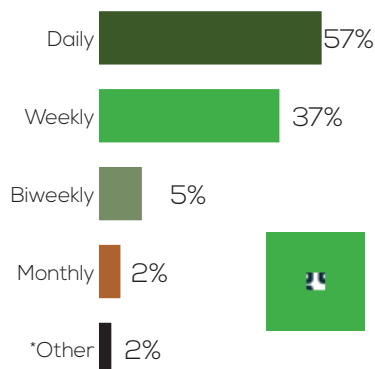
How much do you budget each year for pest management expenses?

| | |
|----------------------|-----|
| Less than \$5,000 | 34% |
| \$5,000 to \$9,999 | 17% |
| \$10,000 to \$24,999 | 13% |
| \$25,000 to \$49,999 | 7% |
| \$50,000 to \$99,999 | 10% |
| \$100,000 or more | 19% |

During which stage of production do you experience the greatest pest pressure?



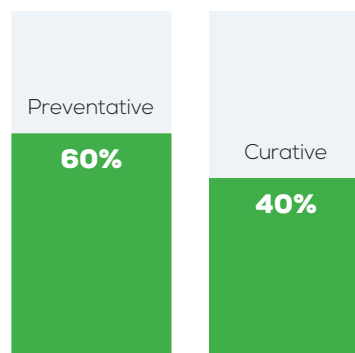
How often do you scout for pests during active growing seasons?



Other answers include: Several times a week, varies



On average, what percentage of your pest management processes are preventative? Curative?



What is your biggest problem when it comes to pest management?



Other answers include: REI times during peak season; not enough time during peak season; program failure with not enough time to react; new grower with a lack of knowledge

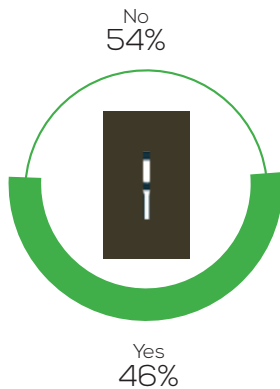
Nearly 50% of growers identified price of treatments and lack of labor as their biggest problems regarding pest management. Price ranked higher this year, which was in second place behind labor for the last two years of this survey.

State of the Market: Insect Control Report

Survey Results



Do any of your customers have restrictions on what type of pest control products are used during production (i.e., specific chemistries, organic producers/retailers)?



Do you use biocontrol measures?

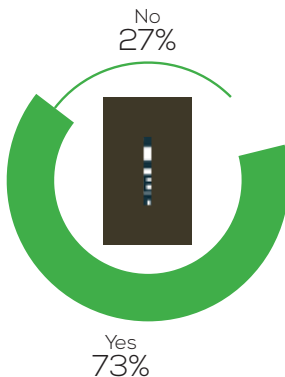
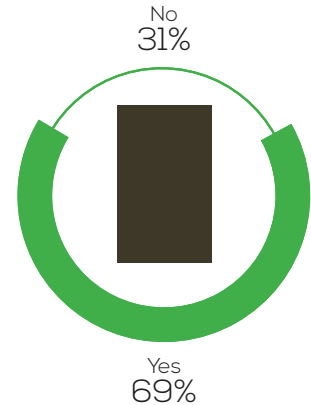


PHOTO: (LEFT); ©TOMASZ / ADOBE STOCK

Have you discovered Thrips parvispinus at your facility?



Are you comfortable with the amount of rotation with chemical active ingredients and modes of action in your pest control program?



Have you discovered red-headed flea beetle at your growing operation? 🐛



Red head, dead to rights

Understanding the life cycle of the redheaded flea beetle is the key to defeating this pest.

By Matt McClellan



The redheaded flea beetle, *Systena frontalis*, is a major insect pest in nursery production, skeletonizing leaves and making their host plants unmarketable. Adult beetles feed on many different ornamental plants. However, *Itea* sp., *Hydrangea* sp., *Cornus* sp., and *Weigela* sp., are some of the favored foods of redheaded flea beetle adults, making them particularly susceptible to damage.

“Redheaded flea beetle has been a major issue in the Southeast and up and down the East Coast for years now and continues to be a problem,” says Jane Stanley, Green Solutions Team Specialist, Envu Turf & Ornamentals.

Though the pest is most problematic

in the Southeast, it’s often seen east of the Mississippi, including states as far north as Ohio, New Jersey and even Connecticut.

It has spread, and it is native, for better or worse, Stanley says. There are flea beetles out West, she says, but not redheaded flea beetles.

Stanley says Envu has been involved in RHFBS research and there is some promising new chemistry potentially in the pipeline, but the main factor in controlling and preventing the beetle is proper drench timing.

“It’s a tricky one for growers to balance logistically and from a labor standpoint, but it is a pest where the way that you treat it is even more important than what

you’re treating it with,” she says. “If you can do a targeted drench application to that larval life stage you will get 80 to 90% control and then you can clean up any adults that may have escaped as opposed to targeting the adult life stage, where you’re never going to get the control that you need. They’ve already done the feeding damage. You’ve already got the aesthetic damage.”

Stanley recommends drench applications for nursery growers, which can be a tough pill to swallow if you don’t have the infrastructure for that.

“It could be a major labor sink,” she says. “So it’s a tough one, but the management strategy is there if you can embrace the drench application. There is a lot of

Scouting tips for RHFB from Danny Lauderdale, NCSU

- Focus on crops commonly injured first
- Start on the south side of the blocks
- Best to scout on warm days, not cold
- Ideally, time your scouting pass for 30 minutes to 1 hour after irrigation
- A rigid block pattern is best
- Keep your body between the sun and the container to aid visibility
- Scout for a second generation if desired

chemistry that is very effective applied that way.”

However, proper timing is crucial. Growers need to apply the drench when the larva is there, but before the adults hatch. To time it correctly, they need to understand the pest’s life cycle.

Life cycle

Redheaded flea beetles overwinter as eggs in potting media. Creamy-white larvae hatch in spring, at around 250 degree-days (base 50°F), and begin feeding on roots. Adult redheaded flea beetles are small, shiny black, beetles with reddish to dark colored heads and long antennae. True to their name, they can jump great distances and do, when approached. Adults tend to emerge around 500 degree-days (base 50°F) from plants overwintered in structures and 900-1,000 degree days (base 50°F) if overwintered outdoors, although this can vary by year and region.

Growers can find an accurate growing degree day model for their area from their

State of the Market: Insect Control Report

Pest Spotlight

local extension office. Extension personnel can be valuable partners for growers.

This is the key to know when the red-headed flea beetle life cycle shifts. Stanley recommends Danny Lauderdale’s growing degree day publications. Lauderdale is the eastern region area specialized agent for nursery and greenhouse with NC State Extension. For more details on his research, reach him at dmlauder@ncsu.edu.

Many extension services send out updates based on growing degree day (GDD) data. Lauderdale does that for many counties and helps nursery owners and managers use the growing degree day model. He explains what you may be seeing at a certain number.

“Those resources can be very helpful for growers,” Stanley says. “They don’t have to track it themselves if they can plug into their extension resources.”

Management tips

Once growers are following growing degree days in their area based on the closest weather station or recording and calculating on site, Lauderdale recommends keeping a list of plant bloom at the nursery based on GDD base 50°F. This will guide scouting for first generation larvae and adults.

Scouting and keeping records will help

determine application timing. Here are some application timing suggestions from Lauderdale:

1. Target pre-egg hatch with neonicotinoids, azadirachtin or cyantraniliprole. Neonicotinoids provide the best control of larvae and adults and the longest protection from foliar injury if applied to rooted cuttings or liners prior to potting. They can also be incorporated in potting substrate or applied as a drench or top-dress after potting.

2. After egg hatch, target larvae with products like acephate, chlorpyrifos, *Isaria fumosorosea* or beneficial nematodes (*Steinernema carpocapsae*).

3. Make applications of adult foliar insecticides just prior to historical first-generation adult emergence or based on scouting susceptible crops closely and frequently.

Many foliar insecticides kill adults short term but don’t break the life cycle. Repeat applications are needed during the summer to control newly emerging adults. Make sure to follow label instructions related to rate and limited number of applications per acre and/or year, growing season or generation of insect. Use a rotation of products based on their IRAC (Insect Resistance Action Committee) classification to avoid resistance. 🌱



USDA announces strategic plan to fight spotted lanternfly

The five-year plan aims to limit the pest's spread and continue research into management tools.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) Spotted Lanternfly Strategic Planning Working Group has released its five-year strategic plan to combat the invasive insect.

U.S. Rep. Chrissy Houlahan of Pennsylvania helped set up a late June press conference at Harmony Hill Nursery in Downingtown, Pennsylvania, on behalf of the Pennsylvania Landscape & Nursery Association (PLNA). At the press conference, USDA Marketing and Regulatory Programs Under Secretary Jenny Lester

Moffitt presented the Spotted Lanternfly (SLF) Five-Year Strategy for fiscal years 2024-2028.

"These pests damage trees and ruin crops — which can have devastating effects for our farmers," said Houlahan. "This plan is a great step in combating this invasive species that is detrimental to our environment."

The event was attended by elected officials like Mayor Phil Dague of Downingtown and Chester County Commissioner Josh Maxwell and representatives from government agencies such as the Pennsylvania Department of Agriculture and Pennsylvania Department of Environ-

mental Protection.

Several growers from the region attended the event, including Alan Jones, president of Manor View Farms and immediate past president of the Horticultural Research Institute, Joe Clark, owner of Clark Brothers Nursery and Jim MacKenzie, president of Octoraro Native Plant Nursery, among others. Pennsylvania nurseries have been impacted by the invasive pest for years, so they are well aware that the lanternfly is a problem. Harmony Hill's president of operations Chris Uhland is encouraged by USDA's efforts at outreach beyond government and politicians. He believes contacting



PHOTO: USDA



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State of the Market: Insect Control Report

Pest Update



other people invested in stopping the lanternfly was a good and necessary step.

“Everyone that spoke made it very clear that they’re looking for financial support and for us growers to help stir the pot a little bit to get more funds,” Uhland said. “They mentioned several times the saying ‘It’s going to take a village’ to get something done. They’re acknowledging that they need everybody to work together on this. It’s not [a situation] where they’re just going to step forward and get something done.”

The people and the plan

USDA-APHIS brought together the Spotted Lanternfly Strategic Planning Working Group working group in August 2022 with representatives from APHIS, the National Association of State Departments of Agriculture (NASDA) and the National Plant Board (NPB). The working group developed a unified approach

Over the next five years, federal and state partners will work to limit the spotted lanternfly’s advancement as we further scientific research that will help us develop better pest management tools and options.

to reduce the spotted lanternfly’s spread and impacts through the effective use of available State and Federal resources.

“Spotted lanternfly is an invasive pest that feeds on crops and natural resources,” Moffitt said. “Over the next five years, federal and state partners will work to limit the spotted lanternfly’s advancement as we further scientific research that will help us develop better pest management

tools and options.”

The five-year strategy prioritizes the following goals:

Effectively limit the advancement of spotted lanternfly and efficiently respond to its introduction within federal and state authority and resource availability.

Support continued scientific research towards practical management and risk mitigation.

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Pest Update



Establish a consistent national and state-level outreach message and educational campaign for the public and industries at risk for spreading spotted lanternfly.

To read the full five-year plan, go to <https://bit.ly/spottedlanternflyplan>.

SLF has spread to 13 additional states since it was first detected in Pennsylvania in 2014. Spotted lanternflies prefer to feed on the invasive tree of heaven, but they also feed on a wide range of crops and plants, including grapes, apples, hops, walnuts and hardwood trees. As resources available are limited, developing a strategy in coordination with the states to address this invasive pest is critical.

To reduce the spread, APHIS and states will create a framework to prevent human-assisted movement, promote public reporting and early detection, and continuously leverage the latest research and management tools available. The new strategy builds the capacity to combat SLF in areas at high risk of introduction and stresses that SLF management plans be based on the latest risk-assessment modeling data which helps predict where SLF populations may emerge. Federal and state partners will also unite their research resources and share knowledge about SLF to limit

its movement and distribution. While leveraging best practices in the field, state and federal partners will prioritize more research on climate and host-plant suitability, biocontrol agents, as well as other effective management tools.

In addition to representatives from APHIS, the Spotted Lanternfly Strategic Planning Working Group also included NASDA and NPB State representatives from California, Connecticut, Illinois, Indiana, New York, Oklahoma, Pennsylvania, South Carolina, Washington, and Virginia.

“The National Plant Board believes that this renewed and refocused approach to managing spotted lanternfly will buy us the time needed to solve this plant pest riddle,” said Steven Long, president of the National Plant Board and co-chair of the SLF working group.

In May 2023, APHIS hosted a tribal listening session on the Spotted Lanternfly Five-Year Strategy to provide tribes insight on the plan and give them an opportunity to provide feedback. The webinar was well received with a few questions about funding, how to respond to the spotted lanternfly on sacred sites, and outreach support for tribes. APHIS will continue to engage tribes and solicit feedback on the spotted lanternfly management and outreach strategy. 🌻



The Envu logo is displayed in a white rounded rectangle in the top left corner. It features the word "envu" in a lowercase, sans-serif font, with the "e" in red and the "v" in blue. The background of the entire advertisement is a photograph of a man in a white sweater and blue jeans crouching in a nursery field, surrounded by rows of potted plants. A green tractor is visible in the distance under a blue sky with light clouds.

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