

# Researchers study lanternfly's potential to harm grapevines

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The spotted lanternfly poses a significant threat to Pennsylvania agricultural industries — including the tree-fruit, hardwood and nursery sectors — that collectively are worth nearly \$18 billion to the state's economy. Credit: Erica Smyers

The spotted lanternfly is starting to sour the grape and wine industries in

southeastern Pennsylvania, and research underway in Penn State's College of Agricultural Sciences aims to spoil the invasive pest's party.

"Spotted lanternflies have a taste for the sap from grapevines, and when they arrive on the scene, they are not polite guests that sip a little bit and go home," said Julie Urban, senior research associate in entomology, when speaking about the bug, which first appeared in Berks County in 2014 and has since spread to 13 counties in the state.

"On the contrary, they are out-of-control party crashers that won't stop until they have nearly drained plants dry."

There is a lot at stake for Pennsylvania's grape and wine industries, which pour an estimated \$4.8 billion annually into the state's economy through employment, wine sales, tourism, tax revenue and related avenues, according to the National Association of American Wineries. There are more than 250 in-state wineries and vineyards.

To understand the pest's potential to cause pandemonium in vineyards, Urban and Erica Smyers, a doctoral candidate in entomology, along with Michela Centinari, assistant professor of viticulture, and Michael Saunders, a retired Penn State professor and grape entomologist, have established a satellite research site at Manatawny Creek Vineyard in Berks County.

There, over two growing seasons, they will document how feeding damage caused by the insect affects grapevine health and the quality and quantity of the fruit. The team believes information gleaned from this study will be helpful for growers when making decisions about pest-management strategies.

"We need to establish economic thresholds for growers so they can determine whether crop damage from spotted lanternfly is easier to

absorb than investing in costly insecticide sprays," said Smyers, who is leading the project. "There is a lot we don't know about the pest's basic biology and ecology. Once we better understand these aspects, we will be able to develop better traps and tools to manage these insects in and around the vineyard."

Smyers noted that the Douglassville-based vineyard is the ideal site for the study because it is located in the heart of the current spotted lanternfly quarantine area. The vineyard's owners are familiar with the pest and are eager to help.

"We had our first serious issue with spotted lanternfly last year," said Darvin Levensgood, of Manatawny Creek. "We are expecting it to become worse this year and fearing a worse problem in future years. We are happy to partner with Penn State so we can learn more about how to control it."





Penn State researchers are studying how feeding damage caused by the spotted lanternfly affects grapevine health and the quality and quantity of the fruit. Here, volunteers from Penn State's Fruit Research and Extension Center help prepare holes for planting grapevines at Manatawny Creek Vineyard in Berks County, the location of the research. Credit: Erica Smyers

In late May, the team enlisted a dozen volunteers to help plant 80 Chardonnay vines—donated by Penn State's Lake Erie Regional Grape Research and Extension Center in Erie County—on an outlying section of the property. Large, mesh cages surround the plants, allowing researchers to monitor the behavior of the varying amounts of spotted lanternflies placed inside and to document their impact on grapevine

growth, health, winter hardiness, and fruit production and quality.

Urban explained that spotted lanternflies do not attack the actual fruit; instead, they eat sap from foliage and woody parts of plants. They have piercing-sucking mouthparts that can penetrate tree trunks, branches or vines, thereby inflicting wounds that weep with sap. Because they consume so much plant sap, the pests excrete copious amounts of sugary droppings called honeydew.

That, in turn, makes a bad situation even worse because sap and honeydew can attract other insects and set the stage for the growth of fungi, such as sooty mold, which covers leaf surfaces and grape clusters.

Another leg of the research—aided by Molly Kelly, an enology extension educator, and Jared Ali, chemical ecologist and assistant professor of entomology—will examine whether sooty mold and spotted lanternflies could taint juice and affect wine quality if, by chance, they wind up in the wine-making process.



Large, mesh cages surround the grapevines in the study, allowing researchers to



monitor the behavior of the varying amounts of spotted lanternflies placed inside. These cages not only keep the spotted lanternflies in, but also keep other grapevine-feeding insects/pests out. Credit: Erica Smyers

Also lending support to the overall investigation, which is expected to conclude in fall 2019, are the Lake Erie Regional Grape Research and Extension Center and Penn State's Fruit Research and Extension Center in Biglerville.

The U.S. Department of Agriculture has provided funding for the study, which is one of several concurrent spotted lanternfly research projects taking place at Penn State. The College of Agricultural Sciences and Penn State Extension also are part of a task force consisting of government, industry and agriculture representatives who are working together to identify specific strategies to combat the spotted lanternfly.

The invasive pest poses a significant threat to Pennsylvania agricultural industries—including the tree-fruit, hardwood and nursery sectors—that collectively are worth nearly \$18 billion to the state's economy. The insect, a native of Southeast Asia, also can cause damage to high-value ornamentals in home landscapes.

"This is an 'all-hands-on-deck' effort, and Penn State is proud to be at the helm of research and outreach efforts," Urban said. "Our goal is to prevent further damage from this destructive species. It's imperative that citizens join us and learn how they can help."

**More information:** For more information, see [extension.psu.edu/spotted-lanternfly](http://extension.psu.edu/spotted-lanternfly)

Provided by Pennsylvania State University

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