

NYWGF RESEARCH - FINAL REPORT TEMPLATE

Please fill in by **typing over the red** directions in each section and change font to black.

Funding for fiscal year: 2023

SECTION 1:

Project title: Distribution of tree of heaven and assessing risks for SLF establishment in NY vineyards

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New Research **Continued Research** (**CHECK APPROPRIATE BOX**)

Amount Funded \$24,456

SECTION 2: (This section should be in depth and akin to an academic report)

Project Summary Impact Statement:

The invasive Spotted Lanternfly (SLF), a large planthopper originally from Asia, has been spreading from its center of invasion in Pennsylvania to neighboring states, including New York, where it represents a serious threat to the grape industry. The invasive tree species Tree of Heaven (TOH) is a preferred food source of SLF and is closely associated with first detection of SLF in a new area. We developed educational material to help grape growers correctly identify TOH, developed a data collection tool with MyEV spatial mapping to map out locations of TOH, including training on how to distinguish TOH for look alike plant species and to use the tool, and began mapping out TOH bordering a select number of vineyard blocks in the Finger Lakes. Through this project we increased the awareness of Finger Lakes grape growers to the connection between TOH and SLF colonization and the use of MyEv to map out TOH and other spatial data at their farms.

Objectives:

1. Develop resources to educate grape growers to use MyEV to map TOH adjacent to vineyard blocks.
2. Work with select high-traffic Finger Lakes wineries/vineyards at higher risk for SLF establishment to map out TOH adjacent to vineyard blocks and initiate SLF monitoring.

Materials & Methods:

Objective 1. Develop resources to educate grape growers to use MyEV to map TOH adjacent to vineyard blocks.

MyEV (My Efficient Vineyard) is an important output from multiple years of funding from

USDA and other agencies to develop technology to advance viticulture practices in the US, especially for medium and small growers and includes a multifunctional mapping tool developed for growers to use to record spatial information, such as leaf area index, vine size, yield, fertility status, etc., from their vineyard blocks. Our team used MyEV to create a data collection tool to record the abundance and distribution of TOH. In addition, we developed a fact sheet detailing how to correctly identify TOH based on leaf, flower and bark morphology, growth form, and other characteristics, including links to cell phone apps such as PlantNet and Leaf Snap that can be used to confirm identifications. The data collection tool allows growers to record the location and number of TOH, size of trees and any other desired information, in areas adjacent to vineyard blocks.

Objective 2. Work with select high-traffic Finger Lakes wineries/vineyards at higher risk for SLF establishment to map out TOH adjacent to vineyard blocks and initiate SLF monitoring.

Based on experiences from other areas, including Pennsylvania, Virginia, and New Jersey, as SLF expands, it often first appears along transportation corridors and other high-traffic areas where vehicles stop and park such as visitor centers along highways, parks, and tourist stops such as wineries. We worked with several vineyard/winery owners in the Finger Lakes region to monitor for TOH and SLF. For each site, we obtained maps showing the location of vineyard blocks and then walked or drove the periphery of these blocks in search of TOH and SLF. When found, the data collection tool was used to indicate the location, number and size of TOH. We also visually inspected TOH for SLF. In a few locations, we also placed sticky band traps used for monitoring immature SLF that were checked periodically during the summer. We provided a report to owners on location of TOH on or near their property.

Results/Outcomes/Next Steps:

Objective 1. Develop resources to educate grape growers to use MyEV to map TOH adjacent to vineyard blocks.

The TOH identification fact sheet was prepared during the spring of 2023 as a one page pdf (both sides). The fact sheet emphasizes key traits of TOH foliage, reproductive structures, and bark that help distinguish it from look at like species, specifically black walnut and staghorn sumac. The fact sheet includes color photos of distinguishing features of all three species. The fact sheet also included links to several plant identification phone applications along with instructions on how to acquire and use. Simultaneously, we used MyEV to create a TOH data collection tool. The tool allows the user to use MyEV, running on their phone, to map out the location, number and size of TOH.

After the data collector and fact sheet were developed, we held two tailgate meetings at vineyard sites in the Finger Lakes region in later July and August, respectively, to provide training on identification of TOH, SLF and use of the TOH data collection tool with MyEV. Approximately 40 growers attended each meeting. We brought specimen of SLF, TOH, black walnut and staghorn sumac to show attendees and we demonstrated the use of the TOH data collection tool. The next steps for this objective are to make the fact sheet available for downloading as well as the TOH data collection tool. We will continue to provide training on the use of MyEV to map out locations of TOH as well as other spatially relevant data.

Objective 2. Work with select high-traffic Finger Lakes wineries/vineyards at higher risk for SLF establishment to map out TOH adjacent to vineyard blocks and initiate SLF monitoring.

We worked with a total of six vineyard/winery owners located along Cayuga, Seneca and Keuka Lakes. We found TOH at five of the sites, which were mapped using the TOH data collection tool (see google map image below). At one site, we only found a few small trees, but at three sites we found a fairly substantial number of TOH, including in some cases quite large trees. SLF was not found at any location through visual observations nor on sticky band traps. Going forward, our plan is to continue to educate growers on SLF, TOH, and the mapping tool with the objective of getting more growers actively mapping TOH near their vineyard blocks and scouting these locations for SLF. Researchers can use these maps to help identify potential research sites as well as potential sites to test the idea that SLF can be managed by managing TOH (removal and also insecticide injections). In addition, we are collaborating with Dr. Sara Emery (Entomology at Cornell) and Dr. Katie Gold (Plant Pathology Plant Microbe Biology at Cornell) on a new project to use remote sensing to identify the location of TOH near NY vineyards. If successful, this will likely be more effective method for mapping TOH and assessing risk from SLF establishment.

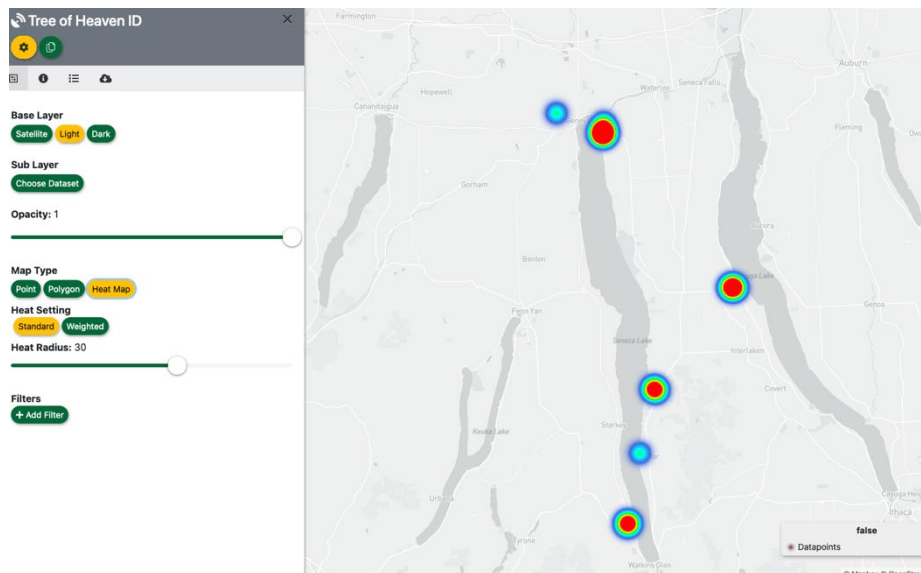


Figure 1. Location of TOH mapped near several vineyard sites in the Finger Lakes using the TOH data collection tool with MyEV for summer of 2023. Red indicates higher TOH density.

Technology Transfer Plan:

This project, and the map that is developed from it, will be presented to the New York Spotted Lanternfly Working Group, which consists of representatives of academia, state and local governments, and other non-profit organizations who are working to manage the spread and impacts of SLF in New York. The map will be used in future outreach efforts to growers about monitoring for SLF and best practices to manage TOH that are located near vineyards as

well as an opportunity to educate growers on the potential uses of the MyEV mapping tool.

Attachments: relevant charts and graphs, photos etc.

SECTION 3: (The goal of this research is to benefit growers and producers across New York State. Result summaries will be shared on the NYWGF website and via email newsletters. To that end, this section should be brief and written in terms understandable for the average grower and producer, as well as consumers and trade interested in our industry.)

Project summary and objectives:

The invasive Spotted Lanternfly (SLF) has been spreading from its center of invasion in Pennsylvania to neighboring states, including New York, where it represents a serious threat to the grape industry. The invasive tree species Tree of Heaven (TOH) is a preferred food source of SLF and is closely associated with first detection of SLF in a new area. In this project we addressed two objectives: 1) Develop resources to educate grape growers to use MyEV to map TOH adjacent to vineyard block and 2) Work with select high-traffic Finger Lakes wineries/vineyards at higher risk for SLF establishment to map out TOH adjacent to vineyard blocks and initiate SLF monitoring. Through this project we increased the awareness of Finger Lakes grape growers to the connection between TOH and SLF colonization and the use of MyEv to map out TOH and other spatial data on their farms.

Importance of research to the NY wine industry:

The invasive Spotted Lanternfly (SLF), *Lycorma delicatula*, represents a serious economic threat to NY vineyards, as it has become well established in some parts of New York, especially NY City and recently the Hudson Valley, with smaller populations becoming established in upstate NY. The invasive tree *Ailanthus altissima* (tree of heaven or TOH) is an important and preferred host for SLF, and it is widely distributed in the USA, including NY. As SLF spreads into grape growing regions of NY, early detection will be important to its effective management and focusing on the distribution of TOH adjacent to vineyards will be critical. Therefore, the goal of this project was to develop technology and educational materials to assist grape growers and wineries in the Finger Lakes region to map out the distribution of TOH. Our longer-term goal is to use these maps in planning other SLF-related projects, including SLF monitoring efforts and further research projects focused on ways to manage TOH and SLF.

Project Results/next steps:

We developed educational material to help grape growers correctly identify TOH, developed a data collection tool with MyEV spatial mapping to map out locations of TOH, including training on how to distinguish TOH similar looking plant species and to use the tool, and began mapping out TOH bordering a select number of vineyard blocks in the Finger Lakes. Through this project we increased the awareness of Finger Lakes grape growers to the connection between TOH and SLF colonization and the use of MyEv to map out TOH and other spatial data at their farms. Going forward, our plan is to continue to educate growers on SLF, TOH, and the mapping tool with the objective of getting more growers actively mapping TOH near their vineyard blocks. Researchers can use these maps to help identify

potential research sites as well as potential sites to test the idea that SLF can be managed by managing TOH (removal and also insecticide injections). In addition, we are collaborating with Dr. Sara Emery (Entomology at Cornell) and Dr. Katie Gold (Plant Pathology Plant Microbe Biology at Cornell) on a new project to use remote sensing to identify the location of TOH near NY vineyards. If successful, this will likely be more effective method for mapping TOH and assessing risk from SLF establishment.

Supporting attachments: (Choose a maximum of 1 supporting figure or table to demonstrate results if desired)