

## Assessing the Potential Economic Impacts of Spotted Lanternfly (*Lycorma delicatula*, Hemiptera: Fulgoridae) Infestations on Grape Production in New York State

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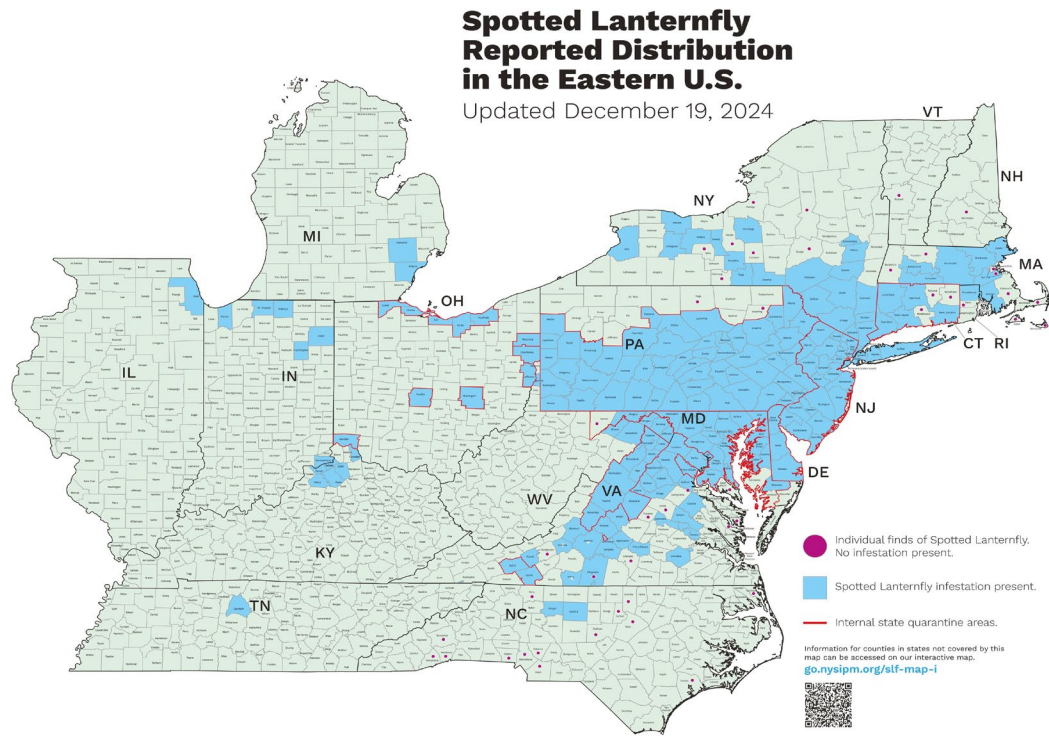
### INTRODUCTION

The economic impact of the Spotted Lanternfly (SLF) on grapes remains uncertain but could be significant. Cornell researchers estimate that without pest management losses to New York state grape growers of \$1.5 million, \$4.0 million, and \$8.8 million may occur in the first, second, and subsequent years, respectively. Native to Asia and introduced to Pennsylvania in 2014, *Lycorma delicatula* has spread across the U.S., severely affecting grapevine health, yields, and fruit quality (Figure 1). Up to 400 adults have been observed on a single vine, causing intense feeding pressure that weakens vines, reduces winter hardiness, and can lead to vine mortality. SLF affects grapevines at all life stages (eggs, nymphs, and adults), but adult feeding is the most damaging due to the large volume of sap they extract (Figure 2).

### THE STUDY

This study estimates the potential economic impact of SLF in the two largest grape-growing regions in New York state, Lake Erie and the Finger Lakes. We calculated estimates for selected red and white grape varieties based on data from studies currently conducted at Pennsylvania State University. These estimates represent possible outcomes of SLF infestation after arrival and establishment in the Finger Lakes and Lake Erie. Our calculations are based on standard vineyard production, acreage, and productivity. The analysis assumes potential yield losses and price reductions due to SLF. All assumptions are presented in Table 1.

Figure 1. Map of Spotted Lanternfly reported locations in the U.S.



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New York State  
Integrated Pest Management

Source: Cornell NYSIPM - [NY-SLF map](#)

Figure 2. Spotted Lanternfly life cycle (Graphic: Hayley Schroeder, Cornell NYSIPM)

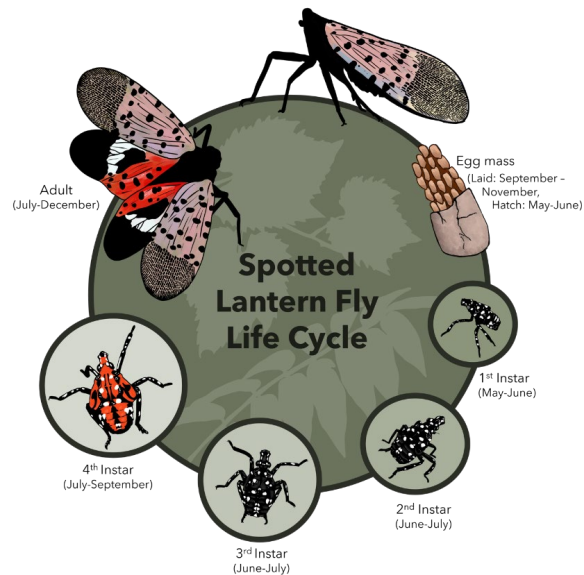


Table 1. Variable assumptions for the analysis

Variables	Assumptions
Grape varieties	Red: Pinot Noir, Cabernet Franc, Concord, Frontenac, and Marquette. White: Chardonnay and Riesling
Years for the analysis	1st year, 2nd year, and subsequent years (3rd ,... nn)
Pesticides applications	Farmers do not increase applications to control for SLF
SLF feeding preferences	For this analysis, we assumed no preference or differential impact of SLF across Vitis species or grape varieties.
SLF impact	1st year: Reduction in price (3%) 2nd year: Reduction in production (3%) and price (5%) Subsequent years: Reduction in production (8%) and price (10%)

#### Assumptions for the estimations of the potential economic impact and losses

- *First year of infestation, 3% decrease in price-* Studies have shown that there was no yield loss in the first year of SLF infestation. The SLF feeding depletes plant resources, affecting total soluble solids (TSS) and other components critical to fruit maturity and market value. We assume a 3% price reduction due to reduced grape quality.
- *Second year of infestation- 5% and 3% decrease in price and yield, respectively -* Preliminary research conducted by PSU has shown that during the second year of a high infestation rate in a grape-growing area, a decrease in yield and chemical characteristics is observed (Table 2).
- *Subsequent years of infestation – 8 and 10% decrease in yield and price, respectively.* In our calculations, we refer to third and so on years as “subsequent years.” We are taking a conservative approach, assuming a greater decrease in yield and price, but keeping everything else the same as in year two (Table 2).
- We assume SLF affects all grape varieties and uses (wine, juice, fresh) uniformly, though responses may vary. While growers typically manage pests, this analysis assumes no active SLF control. Additionally, all acres are assumed equally affected each year. Based on these assumptions, we estimate the potential economic impact (Table 2).

#### Estimations of the potential economic impact and losses

- *First Year (3% Price Decrease):* Losses in the Finger Lakes region are estimated at \$362,755, while Chautauqua-Lake Erie losses could reach \$1.2 million. Total statewide losses are projected at \$1.5 million.
- *Second Year (5% Price, 3% Yield Decrease):* Finger Lakes losses could reach \$949,210 (221 tons), and Chautauqua-Lake Erie losses may total \$3.1 million. Total statewide losses are estimated at \$4.0 million.

- *Subsequent Years (10% Price, 8% Yield Decrease):* Concord losses in Chautauqua-Lake Erie could reach \$6.7 million. Statewide, the grape industry could face losses of up to \$8.8 million annually.

Table 2. Potential total economic losses due to Spotted Lanternfly infestation in the Finger Lakes, Lake Erie region, and NYS

	Finger Lakes	Lake Erie	Total NYS Losses
<b>Current production:</b>			
Production (ton)	7,352	121,545	128,897
Value (\$)	\$12,091,847	\$39,064,034	\$51,155,882
<b>Estimated losses:</b>			
Value lost after 1st year (\$)	\$362,755	\$1,171,921	\$1,534,676
Production lost in 2nd year (ton)	221	3,646	3,867
Value lost after 2nd year (\$)	\$949,210	\$3,066,527	\$4,015,737
Production lost in subsequent years (ton)	588	9,724	10,210
Value lost in subsequent years (\$)	\$2,079,798	\$6,719,014	\$8,798,812

Sources: Cost of establishment and production of V. Vinifera Grapes in the Finger Lakes region of New York – 2019; Cost of Establishment and Production of Cold Hardy Grapes in the Chautauqua Region of New York – 2019; New York Wine & Grape Foundation:

<https://newyorkwines.org/grapes/>.

## MANAGEMENT

Integrated Pest Management (IPM) is a practical approach for detecting and managing SLF, leveraging strategies used for established pests. Prevention is key: monitoring spread routes, and strategic locations can aid early detection and help eliminate isolated populations, slowing SLF’s spread and allowing time to develop improved management tools.

In established areas, growers often rely on insecticides like Dinocide, Ima-Jet, and Swagger. A complete list of pesticides is available in Insecticides Labeled for Spotted Lanternfly Registered in New York State for Commercial and Home Garden Use, May 2023, Appendix). Research is ongoing to develop thresholds and integrate cultural and biological controls, offering a more holistic strategy to mitigate SLF’s agricultural impact.

## CONCLUSION

We estimate the potential economic impact of Spotted Lanternfly (SLF) on New York State grape production. Since its detection in Pennsylvania in 2014, SLF has spread rapidly, threatening various plant species. Though the exact impact on grapes is uncertain, projections under a no-

management scenario suggest losses of \$1.5 million in the first year, \$4.0 million in the second, and \$8.8 million annually in subsequent years. This analysis underscores the economic risks and the importance of proactive management strategies.

### **Funding**

Funding was provided by Cornell New York State Integrated Pest Management Program, the New York State Department of Agriculture and Markets (NYSDAM) and USDA SCRI CAP Proposal: Biology, Management, and Reducing the Impact of the Spotted Lanternfly in Specialty Crops in the Eastern USA Award Number: 2019-51181-30014.

For more information about this project please contact Allan Pinto, [afp68@cornell.edu](mailto:afp68@cornell.edu).

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