

Executive Summary

Potential Economic Impact of the Spotted Lanternfly on Agriculture and Forestry in Pennsylvania

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The spotted lanternfly (SLF) is an invasive insect species that is currently having a destructive impact on vulnerable agricultural crops and tree species within Pennsylvania. This study estimates the total economic impact of the SLF within the entire state of Pennsylvania. The analysis considers several scenarios, which vary based on geographic scope and the estimated potential severity of damages. These include estimates based on damages (1) if the SLF is successfully limited to the 14 counties in the quarantine zone only (Berks, Bucks, Carbon, Chester, Dauphin, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Philadelphia, and Schuylkill counties), (2) if the SLF expands to the 12 counties adjacent to the quarantine zone (Adams, Columbia, Cumberland, Franklin, Lackawanna, Luzerne, Montour, Northumberland, Perry, Pike, Wayne, and York counties), and (3) if the SLF expands statewide, directly affecting all 67 counties in Pennsylvania.

To calculate the direct impacts of SLF on Pennsylvania agriculture, the researchers used data from the 2017 Census of Agriculture and a survey of crop production experts. From this data, it is estimated that the expected overall annual direct economic impact of SLF damage on Pennsylvania agriculture is \$13.1 million in the quarantine zone, \$7.7 million in the adjacent counties, and \$42.6 million statewide. Losses to SLF are projected to fall particularly heavily on several types of agricultural operations: nursery operators (\$8.0 million in the quarantine zone and \$22.9 million statewide), fruit growers (especially grape growers), and Christmas tree growers. If the worst-case scenario occurs, where damage is estimated to be the maximum projected by the experts, then the overall annual impact of the SLF damage on Pennsylvania agriculture is estimated to be \$29.6 million in the quarantine zone, \$20.4 million in the adjacent counties, and \$99.1 million statewide.

To calculate the direct impacts of SLF on the Pennsylvania forestry industry, the researchers used data from the U.S. Department of Agriculture's (USDA) Forest Inventory and Analysis database, quarterly price data from the PA Timber Market Report, and a survey of forestry production experts. The overall annual impact of the SLF feeding on forest trees is estimated to be \$16.7 million in the quarantine zone, \$15.6 million in the adjacent counties, and \$152.6 million statewide. SLF feeding on forests is projected to cause considerable economic damage over time, especially to soft maple, various oak species, and black walnut. If the worst-case scenario occurs, where damage is estimated to be the maximum projected by the experts, then the overall annual impact of the SLF feeding on forest trees is estimated to be \$25.8 million in the quarantine zone, \$25.2 million in the adjacent counties, and \$236.3 million statewide.

The analysis also used IMPLAN to estimate how damage from SLF

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will affect Pennsylvania's larger economy (including direct, indirect, and induced effects). Indirect effects are the negative impact on the purchase of goods and services from local industries from the direct losses caused by SLF. Induced effects are the negative impact on household spending from the direct losses caused by SLF. These impacts are expressed as changes in employment, labor income, total value added, and output. Overall, the expected impact of SLF in the quarantine zone is currently estimated to be \$50.1 million total per year with a loss of 484 jobs. If the worst-case scenario occurred, these losses would be expected to increase to \$92.8 million total per year with a loss of 927 jobs. If the SLF spreads into the adjacent counties, expected losses would increase to \$89.2 million total per year with a loss of 843 jobs. In this case, if the worst-case scenario occurred, these losses would increase to \$168.8 million total per year with a loss of 1,665 jobs. If SLF spread throughout Pennsylvania, then the expected losses would amount to \$324.9 million annually with a loss of 2,810 jobs. Under the worst-case scenario, losses would increase to \$554.0 million, with a loss of 4,987 jobs.

Best management practices (BMPs) developed by the Pennsylvania Department of Agriculture for SLF seek to slow the spread of SLF populations. They vary from fairly simple tactics like employee education and pest monitoring to much more intensive practices involving inspection, phytosanitation, and *Ailanthus altissima*

eradication. Overall, a conservative estimate of the cost of the BMPs for agricultural operations would initially be \$27.9 million in the quarantine zone, \$19.8 million in the adjacent counties, and \$106.4 million statewide. A similar estimate for the timber industry would be \$23.2 million in the quarantine zone, \$30.3 million in the adjacent counties, and \$219.6 million statewide. Implementation of certain BMPs represent one-time costs like those for training and permitting, and others, like *ailanthus* eradication, will have costs that will likely decline over time. Others, like inspection and phytosanitation, will continue for a long time. Use of these types of practices is necessary to provide the time needed to develop effective SLF management practices, including biological control. However, the cost of these BMPs fall rather heavily on certain sectors of the economy, including the timber and nursery industries.

The impact of the SLF in the quarantine zone is already significant and its spread throughout the state could be potentially devastating for Pennsylvania's agriculture and forestry industries. This indicates that the vigorous response by the Pennsylvania Department of Agriculture, USDA, and Pennsylvania State University to limiting the spread of SLF is clearly warranted. The potential spread of this pest to neighboring states with major timber and grape industries argues for the continuance of existing programs and strengthening of research and management efforts.

The full report, *Potential Economic Impact of the Spotted Lanternfly on Agriculture and Forestry in Pennsylvania*, is available on the Center's website at www.rural.palegislature.us.

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