Spotted lanternfly, *Lycorma delicatula* (White): potential impact and chemical control in vineyards

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The spotted lanternfly, *Lycorma delicatula* (White), is a subtropical planthopper that is indigenous to China and Southeast Asia. In the last two decades, this phytophagous hemipteran has subsequently invaded Japan, South Korea, and most recently the United States where it was first discovered in Berks Co., Pennsylvania, in 2014 (Barringer *et al.* 2015). Recent outbreaks and rapid range expansion of *L. delicatula* may be attributed to an increase in winter temperatures within the past thirty years (Lee *et al.* 2010). The ability of this invasive to successfully establish is likely correlated to its polyphagous diet and tolerance for a variety of habitats (Hao *et al.* 2016). *Lycorma delicatula* has been documented feeding on over 70 types of host plants including hardwoods, ornamental trees and shrubs, fruit trees, and vines (Dara *et al.* 2015; Barringer *et al.* 2015). Many of these hosts are present in Pennsylvania and are important agricultural commodities (Barringer *et al.* 2015), thus this species poses a significant economic threat to North American industries. As the life cycle of *L. delicatula* progresses through the season, nymphs transition from a broad range of hosts to a preference for *Ailanthus altissima* and *Vitis vinifera* as an imago (Kim *et al.* 2011; Park 2015). Due to its preference for *Vitis*, the grape industry is particularly at risk. Spotted lanternfly has gained pest status in South Korea where it is reported to cause both economic and environmental damage in agricultural systems, forests, and urban habitats (Park 2015). This phloem feeding insect not only causes direct damage to plants but indirect damage through honeydew excrement which harbors sooty mold growth (Song 2010; Park 2015). Sooty mold disease impedes photosynthesis by blocking sunlight absorption and grows on fruit covered in honeydew, increasing economic costs and decreasing fruit marketability (Song 2010). Research on spotted lanternfly is limited as this insect has only gained interest since its introduction to South Korea and subsequent pest status in urban areas and vineyards. In 2015 through 2017, our team visited private and commercial vineyards in Berks County, PA to observe spotted lanternfly behavior and damage on wild and cultivated grapevines. In 2017, we are currently performing experiments to evaluate insecticides registered for use in Pennsylvania vineyards and the use of deltamethrin incorporated screen to control *L. delicatula*. Additionally, we are recording field temperatures to verify degree-day models for *L. delicatula* as we observe egg hatch. The results from these studies will inform growers about the potential impact of this new invasive and aid them in making pest management decisions.

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