FARM NAME Fact Sheet

2012 & 2013

Potato Virus Y (PVY) is a viral disease that affects solanaceous crops, including potato, tomato, pepper, and tobacco. It reduces yields, and can sicken the plants without causing visible symptoms, making it difficult to detect and manage in the field. The study that your farm participated in explored ecological factors that influence the amount of PVY on farms across the Finger Lakes region, in an effort to better understand what drives virus prevalence (the overall proportion of plants that are infected). Specifically, this study investigated the relationship between the PVY prevalence and 1. the amount of agricultural land in the surrounding area, 2. the abundance and diversity of aphids (the insects that transmit PVY between plants), and 3. the abundance and diversity of lady bugs (the main predators of aphids) .

**At FARM NAME**

In 2012, 5% of potato plants sampled were infected with PVY and 2.5% were infected in 2013. Throughout the 2012 season, I caught 91 aphids, and in 2013 I caught 120, which amounts to about 1.5 per trap. The aphid community was variable; in 2012, aphid numbers peaked in May and dropped off quickly throughout the season, but in 2013 numbers rose again in July (see graph below). The landscape within 1 kilometer of the potato field was about 16% agricultural in 2012 and 24% in 2013, with the remainder being largely unmanaged natural environments (i.e. fallow fields, forested land).

**Figure 1:** This graphs shows the abundance of aphids collected in each month in both years. The month is indicated by a number, where January=1.

**Overall**

PVY does not come from the environment (there are no wild hosts that overwinter in this area); the virus is introduced each year in infected seed tubers. Because of this, only farms where infection was found were included in analyses. Across infected farms, there were three important patterns in PVY prevalence. First, the more aphids there were, the more infected plants there were. Second, the more diverse the aphid community was (the more species there were), the greater the PVY prevalence. Finally, the more agricultural land within a 0.5, 1, and 1.5 kilometer radius, the greater the PVY prevalence (see graph below).

**Figure 2:** This graph shows the significant relationship between the amount of agricultural land (percent cropland within a 1km in 2012 and 2013) and the final percent of sampled plants that were infected with PVY. The more agricultural land, the more infected plants at the end of the season on farms, where the virus was present.

**Management Suggestions**

The best prevention for PVY is to plant certified seed tubers, and to avoid planting saved seed. Saved seed has not been inspected for PVY, and it has been exposed to aphids, and over time the amount of PVY in the seed stock will increase due to within-season spread. This is especially important if the area surrounding your farm is predominately agricultural. For more information, visit: http://www.potatovirus.com/index.cfm/page/index.htm.

**Thank you for participating in my research; this project would not have happened without your help!**