

Vinews Viticulture Information News, Week of 13 July 2015 Columbia, MO



Pierce's Disease

In 2013, Pierce's disease (PD) was confirmed to be present in Central Missouri. Pierce's disease is caused by a bacterium *Xylella fastidiosa*. The bacterium once inside a vine colonizes the water conducting vascular system (xylem) that over time results in water flow being reduced or stopped. Infected vines once infected with PD often die within 2 years. To reduce the spread of PD it is important to learn to identify infected vines and implement management strategies.

The foliar symptoms of PD are dependent on the cultivar being susceptible to the bacterium. The first notable symptoms are leaf scorch. Leaf scorch starts with marginal yellowing (chlorosis) followed by marginal browning (necrosis) of the leaf blade. Often these symptoms appear during a stress event that includes heat or drought. This season the roots of some vines likely experienced a lack of oxygen from the large rainfall events. Waterlogged soils may have resulted in some vines experiencing the loss of some root hairs limiting water uptake. It is difficult to say if waterlogged soils will exacerbate vines infected with PD. I would surmise that vines located in waterlogged soils that are infected with PD will likely express PD symptoms faster than PD infected vines in well-drained soils. Loss of root hairs coupled with a reduced xylem flow from PD bacterium likely would accentuate PD symptoms since water flow will be hampered.



Shoots displaying symptomology of Pierce's disease from Central Missouri in early July 2015.

The symptoms of PD are often not apparent on every shoot of the plant unless the vine has been infected for a period of time. What makes PD diagnosis difficult in the field is that PD symptoms can appear similar to many other vine maladies. These include; potassium deficiency, phosphorous deficiency, magnesium deficiency, leafroll virus, crown gall, and Esca. A healthy looking vine infected with PD may have only one or two shoots that are showing visual symptoms. As the symptoms of PD progress the leaf blades will drop from the petioles resulting in a matchstick appearance with the petioles remaining attached to the shoot. Further, the shoot will start to brown resulting in a patchwork of brown and green islands along the infected shoot. To confirm PD, vines showing marginal chlorosis/necrosis can be tested using a laboratory ELISA test.

To have vines tested for PD, leaf petioles are collected from leaves expressing marginal chlorosis/necrosis. These petioles can be sent to the Missouri Plant Diagnostic Clinic to be tested for PD. The mailing address and cost of analysis can be found at the end of this article.

Pierce's disease is transmitted to vines by insect vectors. Although sharpshooters have been identified as the primary vectors of PD in California, Texas, Oklahoma and other states there likely are other insects involved in the transmission of PD. In Missouri, no clear insect vector has been identified as contributing to the spread of PD.

Management of PD is dependent on habitat modification, removing infected vines, and insect vector control. Habitat modification includes keeping grassy areas near and within the vineyard mowed regularly to reduce insect vector habitat. Many plants including common vineyard weeds can serve as hosts for PD and do not exhibit any PD disease symptomology. Controlling weeds will reduce potential PD-host plants. Vines exhibiting PD symptoms should be tested and if found to be positive for PD should be removed from the vineyard. The removal of infected vines will reduce the vine to vine spread of PD. Insecticides have been used within and in surrounding grass buffer areas to control insect vectors in California. These sprays are typically applied starting at bud-break and for another 6-weeks. Closer to home, Oklahoma has identified 6 different sharpshooters as potential vectors of PD. The most common sharpshooter found in Oklahoma vineyards has been the versute sharpshooter (*Graphocephala versuta*). In Missouri it is still unclear of the insect vector(s) involved in the transmission of PD and what time of year potential insect vectors are transmitting PD.

To monitor for small jumping and flying insects including sharpshooters yellow sticky cards are used. Yellow sticky cards are placed in border rows by attaching the cards to the highest canopy wire (clothes pins work well for this). Some monitoring cards should also be placed within the vineyard. Check cards twice a week using a 15X hand lens. A picture of different species of sharpshooters can be [found here](#).

In Summary, PD is not running rampant through Missouri, but you should be aware that PD has been confirmed in Missouri. Be alert as you scout vineyard border rows near woods and grass areas. The symptomology of a PD infection can resemble many other vine maladies. If you would like PD suspect grapevines tested send samples to the Plant Diagnostic Clinic at the address below.

Sampling suspect grapevines for Pierces Disease

- Collect petioles from a minimum of 10 leaves showing PD symptoms
- Place samples a small paper bag
- Fill out a sample submission form found here
- Send samples and [submission form](#) to:

Plant Diagnostic Clinic

28 Mumford Hall

University of Missouri

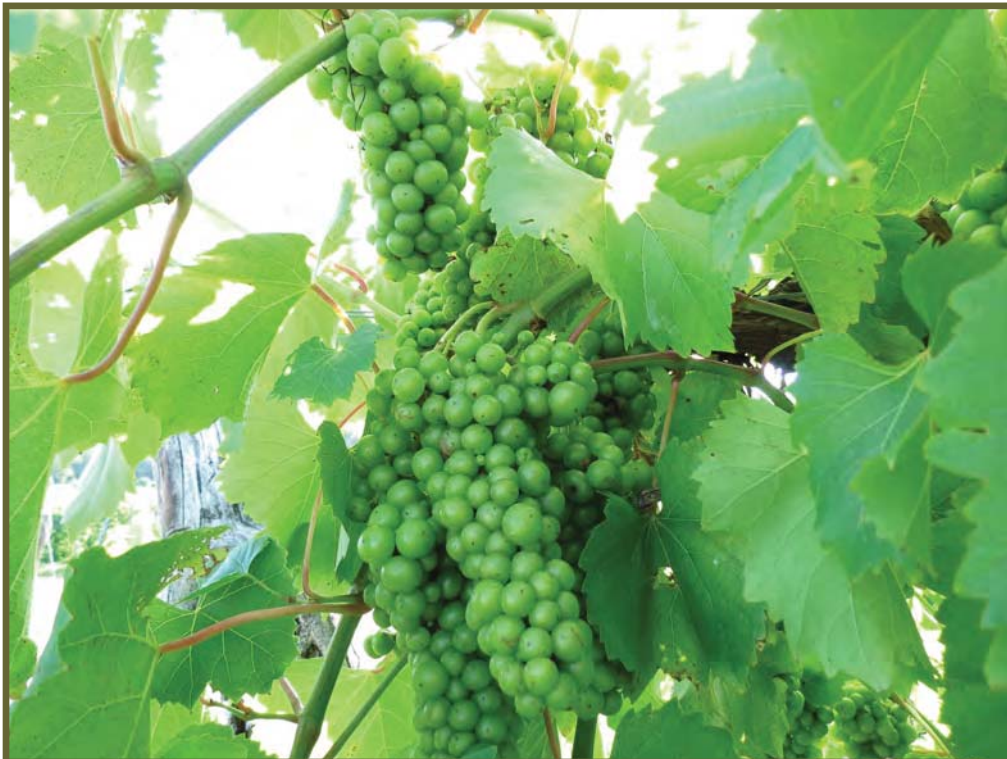
Columbia, MO 65211

- Samples should be sent on a Monday or Tuesday to avoid weekend mail delays
- Cost is \$25 for the Elisa test for Pierces Disease

Phenology from Gasconade County



Chambourcin on July 13, 2015. Berries are showing a touch of veraison. Gasconade County



Vignoles on July 13, 2015. Gasconade County

Cumulative Growing Degree Days for the Seven Grape Growing Regions of Missouri from April 1 to July 13, 2015.

Region	Location by County	Growing Degree Days ¹		
		2015	2014	30 Year Average
Augusta	St. Charles	1797	1779	1734
Hermann	Gasconade	1713	1678	1656
Ozark Highland	Phelps	1866	1837	1771
Ozark Mountain	Lawrence	1825	1792	1744
Southeast	Ste. Genevieve	1895	1858	1777
Central	Boone	1705	1663	1690
Western	Ray	1647	1704	1645

¹Growing degree days at base 50 from April 1 to July 13, 2015. Data compiled from Useful and Useable at <https://mygeohub.org/groups/u2u/tools>. Click on link below to determine growing degree days in your area.

To determine the number of growing degree days accumulated in your area since April 1, click this link [Search for GDD at your location using this tool](#).

Please scout your vineyards on a regularly scheduled basis in an effort to manage problem pests. This report contains information on scouting reports from specific locations and may not reflect pest problems in your vineyard. If you would like more information on IPM in grapes, please contact Dean Volenberg at 573-882-0476 or volenbergd@missouri.edu

Grape Berry Moth (GBM) Update

We are still a ways off from the third generation of GBM. As of July 13, 1,630 (Cape Girardeau County), 1,451 Boone County, and 1,352 (Gentry County) growing degree days have accumulated since May 15 at base 47. A total of 1,620 growing degree days need to accumulate before egg laying begins for the third generation.

Third generation egg laying began in Cape Girardeau on Monday July 13. In Central Missouri, 3rd generation egg laying is predicted to be July 18. Third generation egg laying is predicted to begin in Gentry County around July 23.



Grape berry moth adult captured in a pheromone trap.