

## A New Hope: Science Offers a Solution to Pierce's Disease in Grapes

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Scientists at Texas A&M AgriLife Research have discovered a novel method of protecting grapevines from Pierce's disease (PD). This disease is caused by a bacterium, *Xylella fastidiosa* subsp. *fastidiosa*, which resides in the xylem tissue of infected grapevines and is acquired and transmitted by xylem-feeding insects such as sharpshooters. Infected plants begin to show symptoms late in the growing season. Typical symptoms of PD include leaf scorch and "matchsticks," or bare petioles left on canes. Scorched leaves characteristically have a yellow border that separates necrotic leaf margins from green, healthy tissue. Until now, infection was permanent and eventually caused the death of affected vines.



Typical symptoms of Pierce's disease in grapes; leaf scorch (left) and "matchsticks" or bare petioles (right). Photos by Jack Kelly Clark, University of California, and Dr. Lisa Overall, Rogers State University, respectively.

The new technology, a bacteriophage (literally, "bacteria eater"), offers a sustainable and effective strategy for managing PD in affected vineyards. The bacteriophage is a virus that selectively targets and eliminates *X. fastidiosa* from infected tissues without harming the plant or other organisms. Bacteriophages are considered a promising alternative to traditional antibiotics for treating infections in humans, animals, and plants.

This new bactericide treatment has been approved for use in vineyards by the U.S. Environmental Protection Agency and is commercially available as [XylPhi-PD™](#). The product is marketed by A&P Inphatec, LLC, a subsidiary of Otsuka Pharmaceutical Co., LLC, which partnered with Texas A&M to develop this new tool. XylPhi-PD is also approved for use in organic production by the Organic Materials Review Institute (OMRI).

In a two-year study conducted at four sites in California, vines consistently treated with XylPhi-PD for two seasons resulted in a 57% decrease in PD infection compared to a non-treated

control group of vines. In another 3-year study of healthy vines, treatment with the bactericide resulted in a 72% decrease in PD incidence, reduced disease severity, zero vine mortality, and increased yield compared to vines treated only with a buffer solution. These data demonstrate both a curative and preventive solution to PD provided by this product.

Treatment involves injecting the bacteriophage into plant tissue by a special device, the Pulse Xyleject™, specifically designed for use on grapevines to deliver a known dose of liquid under controlled pneumatic pressure. This technology offers several advantages over conventional PD management options. Because they are contained within the plant, bacteriophages are more environmentally sustainable than insecticide applications to manage insect vectors such as versute sharpshooter. In addition, these treatments should reduce the need to rogue out diseased vines. Thus, there is great potential for viticulturists to save money from costs related to treatment and loss of vines, while simultaneously increasing yield and extending the productive life of this valuable specialty crop.

NOTE: As of this writing, XylPhi-PD is not yet registered for use in Oklahoma viticulture. I have inquired with the Oklahoma Department of Agriculture, Food, and Forestry about its registration status.

Additional information about Pierce's disease and its insect vectors can be found in the OCES Fact Sheet, [EPP-7091: Insect Vectors of Pierce's Disease in Oklahoma Vineyards](#).

#### References:

Anonymous. 2021. Viticulture Tech Data Update. 2020 Field Trial Results: XylPhi-PD for Control of Pierce's Disease. Available at: <https://inphatec.com/wp-content/uploads/XylPhi-2020-field-trials-1.pdf>. Accessed 6/10/21.

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