

# WHICH GRAPE VARIETALS ARE SOURCES OF PIERCE'S DISEASE SPREAD? DECOUPLING RESISTANCE, TOLERANCE, AND GLASSY-WINGED SHARPSHOOTER DISCRIMINATION

## Principal Investigator:

Rodrigo Almeida  
Dept. Environ. Sci., Policy, & Mgmt.  
University of California  
Berkeley, CA 94720  
[rodrigo@nature.berkeley.edu](mailto:rodrigo@nature.berkeley.edu)

## Cooperators:

Jennifer Hashim-Buckey  
UC Cooperative Extension  
Bakersfield, CA 93307  
[jmhashim@ucdavis.edu](mailto:jmhashim@ucdavis.edu)

Matthew Daugherty  
Dept. Environ. Sci., Policy, & Mgmt.  
University of California  
Berkeley, CA 94720  
[fezzik@berkeley.edu](mailto:fezzik@berkeley.edu)

**Reporting Period:** This project has just been funded. We have no results to report at this time.

## ABSTRACT

The glassy-winged sharpshooter (*Homalodisca vitripennis*; GWSS) is an important vector of *Xylella fastidiosa* (*Xf*), the etiological agent of Pierce's disease (PD). Grape species and cultivars differ in PD severity, suggesting there is variability among cultivars in resistance or tolerance to *Xf*. Quantifying the relative levels of resistance and tolerance among different varieties is critical because each may impact GWSS spread of Pierce's disease in different ways. Tolerant varieties, especially, may act as *Xf* sources. We will evaluate the feasibility of using existing *Vitis vinifera* cultivars to control PD spread by quantifying resistance, tolerance, and GWSS behavior for several important table and wine grape varieties. This work will provide recommendations to growers in high risk PD areas on which varieties to use to minimize spread.

## OBJECTIVES

We propose to independently quantify *Xylella fastidiosa* (*Xf*) infection level (i.e. resistance), symptom severity (i.e. tolerance), and glassy-winged sharpshooter (GWSS) preference for infected versus healthy plants, for several economically important raisin, table and wine grape varieties. Our specific objectives are:

1. Measure the relative levels of both resistance and tolerance for important California grape varieties.
2. Measure GWSS discrimination against infected vines and *Xf* spread for different grape varieties.
3. Measure overwinter recovery from infection for different grape varieties.

We will address the first objective in both greenhouse and field experiments that evaluate comprehensively *Xf* infection and symptom development in several table and wine grape varieties. The second objective is needed to understand how GWSS movement and feeding preference (for healthy vs. infected) differ among grape varieties, and what are the consequences for *Xf* spread. We will address the third objective with field and greenhouse measurements of recovery from *Xf* infection for different varieties – an important epidemiological determinant of Pierce's disease (PD) prevalence. Collectively, this research will allow us to pinpoint which of the current table and wine grape varieties are most and least likely to promote spread of *Xf*. Such information will allow vineyard managers to temper PD outbreaks with targeted plantings of low risk varieties.

## FUNDING AGENCIES

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