

Evaluation of Resistant Budwood and Rootstock in the Native Range of Pierce's Disease

ARS LOCATION:

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PRINCIPAL INVESTIGATOR:

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PROJECT OBJECTIVES:

1. To evaluate seasonal phenology glassywinged sharpshooter populations on cultivated grapes in the native range.
2. To evaluate the impact of rootstock variety on expression of Pierce's Disease (PD) symptoms in naturally infected PD susceptible *Vitis vinifera* scion varieties Chardonnay.
3. To evaluate the PD resistance of new budwood cultivars in the native range of the glassywinged sharpshooter and *Xylella fastidiosa*.

PROGRESS REPORT:

A collaborative host plant resistance testing program for Pierce's disease resistance grape, budwood, and rootstock, with scientists from ARS Parlier, CA, and ARS Geneva, NY, is underway. Selections from both breeders have been planted at the ARS experimental vineyard in Weslaco, TX. Glassywinged sharpshooter populations have been evaluated for 5 years on cultivated grapes in Weslaco. Populations of *Homalodisca vitripennis* and *Oncometopia nigricans* are present throughout the year and peak in September-October. Rootstock trials have shown that susceptible Chardonnay budwood combined Dogridge rootstock performed better than other rootstock combinations. Plans are underway to test Dogridge with Blanc du Bois budwood to increase vigor and production of this 'tolerant' white wine grape variety. Budwood selections developed by ARS scientist David Ramming have been established and are being evaluated for field level resistance to Pierce's disease.

MAJOR ACCOMPLISHMENTS (2007-2010):

Populations of Proconiini sharpshooters are significantly lower in the Lower Rio Grande Valley (LRGV) as compared to other sites on the upper Texas Gulf coast near Houston, TX. *Oncometopia nigricans* and *Homalodisca vitripennis* are the most common sharpshooters in the LRGV on cultivated grapes. Populations of sharpshooters peaked in September/October during all 5 years of the field study. Moderate levels of egg parasitism were observed in the vineyard. The agronomic qualities of the Lower Rio Grande Valley appear to be well-suited to grape production and evaluation of Pierce's disease-resistant rootstocks and budwood.

Host Plant Resistance:

Two host plant resistance strategies are undergoing evaluation. Vigorous rootstocks, such as Dogridge, may increase the tolerance and/or susceptible grape budwood varieties to Pierce's disease. New Pierce's disease-resistant varieties developed by

David Ramming, ARS Parlier, CA, have been established at the ARS research farm in Weslaco, TX. Long-term studies are underway to evaluate their field level resistance to *Xylella fastidiosa* and the 'background' pressure of the pathogen in this location within the native range of the glassywinged sharpshooter. Host plant resistance strategies developed in this research may minimize the impact of Pierce's disease in production areas such as California, where this disease is invasive, and within the native range where production of *Vitis vinifera* grapes has been limited.

TECHNOLOGY TRANSFER/OUTREACH:

- Texas growers are showing strong interest in the potentially new Pierce's disease-resistant grape varieties. More than 100 growers have attended annual meetings at Rio Farms, Monte Alto, TX, where information about the varieties was presented.
- Dr. Fritz Westover, Texas Agrilife, Extension Viticulturist, is collaborating to test trellis designs for Dogridge rootstock combined with Blanc du Bois budwood. Experimental vineyard will be planted at the ARS Weslaco, TX, experimental farm. Long-term evaluation of pruning weights and grape production will be collected by Dr. Westover. Technology will be transferred to grape growers in the Lower Rio Grande Valley.

EXTERNAL SUPPORT:

Rio Grande Valley Agricultural Research Fund

COLLABORATORS:

Peter Cousins, ARS Geneva, NY; David W. Ramming, ARS Parlier, CA; Fritz Westover, Texas AgriLife Extension Service, Houston, TX; and Andy Scott, Rio Farms, Inc., Monte Alto, TX.

RECENT PUBLICATION:

- Skevington, J. H. and Goolsby, J. A. New records of Pipunculidae attacking proconiine sharpshooters (Auchenorrhyncha: Cicadellidae: Proconiini). Journal of the Entomological Society of Ontario. 140: 19-26.