

AN OVERVIEW OF PIERCE'S DISEASE / GLASSY WINGED SHARPSHOOTER RESEARCH AT THE CROP DISEASE, PESTS, AND GENETICS RESEARCH UNIT, PARLIER, CA



CDPGRU SCIENTISTS CONDUCTING PD/GWSS RESEARCH

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RESEARCH HIGHLIGHTS

HORTICULTURE

PD resistance breeding:

Table grape selection A81-17 from a modified BC1 family of *V. arizonica* 8909-08. Selected by molecular markers and verified as resistant in greenhouse tests. It demonstrates how rapidly berry size can be improved. Its berries averaged 4.9 g compared to 1.8 g for the largest fruited selection in the F1 family.



MOLECULAR BIOLOGY

Xylella fastidiosa (Xf)-

grape interactions: Micro-array based identification of ESTs in resistant and susceptible genotypes challenged with Xf. Identified candidate genes may reveal basis of PD resistance/susceptibility and provide genetic markers for selection. Work performed in collaboration with Dr. Andrew Walker, UC Davis.



| Variety | Starting ESTs | Selected ESTs |
|--------------------------------------|---------------------|---------------|
| <i>V. arizonica</i> (SSH-AFLP) | 4972 | 1949 |
| <i>V. aestivalis</i> | 2117 | 1219 |
| <i>V. shuttleworthii</i> | 10704 | 5470 |
| <i>V. riparia</i> | 1986 | 588 |
| <i>V. vinifera</i> | 12593 (UniGene set) | 10014 |
| <i>V. rupestris</i> X <i>V. spp.</i> | 6533 | 780 |
| Total | 38905 | 20020 |

PLANT PATHOLOGY

Xylella fastidiosa (Xf) strain discrimination:

Microscopic colony morphology of different Xf genotypes isolated from almond leaf scorch disease samples. Colonies were triple-cloned from a single almond petiole: smooth "G-type" that causes PD (top) and pit-like "A-type" (bottom) unable to cause PD in grapes.



ENTOMOLOGY

Colonization of GWSS by *Xylella fastidiosa* (Xf):

Optical sections through cibarium (top) and precibarium (bottom) of GWSS. Fluorescent GFP-Xf are green. Lab-reared GWSS (left) accumulate higher levels of GFP-Xf compared to field-collected GWSS (right), likely due to competition from other microbes resident in the GWSS foregut.

