

EVALUATION OF BACTERICIDES AND GRAPEVINE ENDOPHYTES FOR MANAGEMENT OF PIERCE'S DISEASE

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ABSTRACT

Results obtained in 2004 in our therapeutic and prophylactic bactericides were similar to those obtained in previous years. To date none of our prophylactic treatments using metallic plant microelements or inducers of systemic acquired resistance (SAR) provided protection against *Xylella fastidiosa* (*Xf*) infection in greenhouse or field studies. Results with the therapeutic treatments using microelements and 2 antibiotics were more encouraging and consistent with previously reported results. Pierce's disease (PD)-affected Merlot vines injected with zinc sulfate/oxide and streptomycin either 3 or 4 years ago had significantly less mortality than non-injected, PD control vines. We are continuing these studies in a Chardonnay vineyard located in Sonoma County; unfortunately another trial in Napa was unexpectedly removed by the grower. Six grapevine endophytes that exhibited antagonism to *Xf* *in vitro*, and moved greater than 8cm following pin-prick inoculations were inoculated into greenhouse grown vines in 2003. Six weeks later these vines were inoculated using *Xf*-infectious sharpshooters raised by Purcell's group at UC Berkeley. Results of symptom severity of these vines were reported in last year's Symposium. In spring, 2004 these vines were removed from the greenhouse and planted in the field at University of California, Davis. In October 2004 the vines were rated for mortality and PD symptoms. Only one *Xf*-inoculated, positive control remained alive. None of the 10 vines inoculated with one of the endophytes had any PD symptoms; other endophytes varied from 0 to 8 healthy appearing vines. These vines will be tested for the presence of *Xf* using PCR and the most promising candidates will be re-tested in the field in 2005. Another set of *Pseudomonas* endophytes that exhibited movement *in planta* and *in vitro* antagonism were inoculated into grapevines growing in the greenhouse. Symptom development and the presence of the endophyte and *Xf* in the vines will be determined in November 2004.