RENEWAL PROGRESS REPORT

I. PROJECT TITLE

BIOLOGICAL CONTROL OF PIERCE'S DISEASE OF GRAPEVINE WITH BENIGN STRAIN OF *XYLELLA FASTIDIOSA* SUBSP. *PIERCEI*

II. PRINCIPAL INVESTIGATORS AND COOPERATORS

Project Leader:
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Cooperators:
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III. LIST OF OJECTIVES

Objective 1. To evaluate strain EB92-1 of *X. fastidiosa* subsp. *piercei* which has provided effective biocontrol of PD in previous greenhouse and vineyard tests in Florida for possible commercial application for the biological control of Pierce's disease of grapevine in the vineyard in California. It took from July to December to obtain the USDA Permits to test this biocontrol strain in California. The permits are now in place and we are establishing field plots in the spring of 2008. Two plots are being established in the Bella Vista Vineyard in Temecula, CA. Two vineyards in the Napa Valley will serve as the other two plot sites, one site will be the Beringer Big Ranch vineyard along the Napa river. Plants for the test plots are being obtained and grown in Bruce Kirkpatrick's greenhouse. They will be injected with the biocontrol strain when new growth is 2-3 feet in length. Approximately three weeks later, they will be transplanted into the test plots..

Objective 2. To compare different methods of treatment with strain EB92-1 of *X. fastidiosa* subsp. *piercei* for the biocontrol of PD in *V. vinifera* in the vineyard. Experiments to evaluate different methods of treatment with EB92-1 were established in the MREC vineyard in Apopka, Florida during the summer, 2007. Four treatments were applied to the cultivar Merlot/101-14 on May 29 and the plants were transplanted into the vineyard on June 21. The treatments were 1) injection of EB92-1 into the scion only, 2) injection of EB92-1 into the rootstock only, 3) injection of EB92-1 into both the rootstock and scion, and 4) nontreated. Five treatments were applied to the cultivar

Chardonnay CL96/3309 on June 13 for the greenhouse treatments and on July 26 for the vineyard treatment. The plants were transplanted into the vineyard on July 3. The treatments were 1) injection of EB92-1 into the scion only in the greenhouse, 2) injection of EB92-1 into the rootstock only in the greenhouse, 3) injection of EB92-1 into both the rootstock and scion in the greenhouse, 4) nontreated, and 5) injection of EB92-1 into the scion only in the vineyard. In a third experiment, Chardonnay cuttings from the MREC vineyard were grafted onto Salt Creek rootstock rooted cutting from the vineyard. The grafted plants were transplanted into the vineyard on August 14. The treatments included 1) Chardonnay cuttings from mature vines that had been treated 3 years ago with EB92-1 on Salt Creek, 2) Chardonnay cuttings from mature nontreated vines on Salt Creek, and 3) Chardonnay cuttings from mature nontreated vines on Salt Creek, with the scion injected with EB92-1 in the vineyard on August 29.

IV. SUMMARY OF MAJOR RESEARCH ACCOMPLISHMENTS

Objective 1. To evaluate strain EB92-1 of *X. fastidiosa* subsp. *piercei* which has provided effective biocontrol of PD in previous greenhouse and vineyard tests in Florida for possible commercial application for the biological control of Pierce's disease of grapevine in the vineyard in California.
The USDA permit could not be obtained in time to put the plots out in 2007. The big accomplishment was obtaining the permit and locating the vineyards for testing in the Temecula area and in the Napa Valley.

Objective 2. To compare different methods of treatment with strain EB92-1 of *X. fastidiosa* subsp. *piercei* for the biocontrol of PD in *V. vinifera* in the vineyard.
Experiments to evaluate biological control treatments of the scion, rootstock ,or both were established in the MREC vineyard. An experiment to evaluate biological control of Pierce's disease with scion wood obtained from Chardonnay grapevines that are colonized by EB92-1 was also established in Florida.

V. PUBLICATIONS OR REPORTS

Hopkins, D. L. 2007. Biological control of Pierce's disease of grapevine with benign strains of *Xylella fastidiosa* subsp. *piercei*. IN: Proceedings of the Pierce's Disease Research Symposium, December 12-14, 2007, San Diego, CA, California Department of Food and Agriculture.

VI. PRESENTATIONS ON RESEARCH

Poster at Pierce's Disease Research Symposium in San Diego, December 12-14, 2007

VII. RESEARCH RELEVANCE STATEMENT

The successful completion of the proposed research could lead to an effective control of Pierce's disease that is environmentally friendly. The strains utilized in this study are naturally occurring and are not genetically modified in any way. Thus, we would avoid

the concerns associated with introducing genetically modified organisms or plants. This should lead to faster implementation than could be attained with genetically engineered plants or biocontrol organisms. This project should yield results within the next 3-4 years and if the control is successful, there should be a biological control for Pierce's disease available for commercial use in vineyards in California.

VIII. LAY SUMMARY OF CURRENT YEAR'S RESULTS

Required USDA permit was obtained to test this biological control for Pierce's disease in the vineyards in California. Test vineyards were selected in the Temecula area and in the Napa Valley for field tests to be planted in spring 2008. Tests to evaluate the introduction of the biological control bacterial strain into the grapevine through propagation wood or through injection into the scion and/or rootstock were planted in the UF research vineyard in Florida.

IX. STATUS OF FUNDS

Due to negotiations between UF and CDFA on some of the contract terms, funds have not yet been received by the PI and cooperators. To this date, work on this project have been accomplished with other funds. Hopefully, this will be resolved shortly. Because of this delay in getting the funds distributed and the USDA Permit, we plan to request that the 2-year funding for this project extend through the third year (2009-2010) with no additional funds..

X. SUMMARY AND STATUS OF INTELLECTUAL PROPERTY PRODUCED DURING THIS RESEARCH PROJECT

None.