CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL PROGRESS REPORT FORM: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

▶PROJECT QUARTER END June 2021 ● *Quarterly Report* ○ *Final*

Proposal Title

Large-scale testing of the endophytic bacterium Frateuria defendens, a potential biocontrol agent of HLB

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
07/12/2021	Citrus Research and Development Foundation	Horticultural & Management

ABSTRACT (Executive Summary-public report-do not disclose proprietary information or intellectual property)

1. Please state project objectives and what work was done this quarter to address them:

The overall goal of the proposed research is to test the effectiveness of *Frateuria defendens* (Frd) in reducing HLB damage in FL citrus. The original proposal was revised for a 1-year feasibility study.

Objective 1. Determine the optimal application method of Frd to citrus trees.

We continued with the spray experiment that was initiated in Dec 2020 and data (horticultural and plant health assesment; CLas and Frd titer determination) are being collected bimonthly. The last dataset collected (April) suggested a positive but weak effect of weekly foliar sprays of Frd on the number of leaves and internodes and a slight reduction of CLas titers compared to the plants sprayed biweekly and non-sprayed controls.

We are continuuing our experimentation regarding viability/survival of Frd in citrus tissues. Our studies indicate that an organisms or compound that is associated with CLas (but not CLas itself) inhibits Frd growth in CLas infected leaves.

Because of the growth promoting effects of Frd observed in the first experiment, a follow-up experiment was initiated to test the hypothesis that Frd influences the hormonal balance in citrus plants. For this experiment Frd is applied by leaf infiltration. Plant growth is evaluated on a bimonthly basis.

We have also initiated an experiment to assess Frd efficacy against CLas when delivered by stem injection. For this experiment Frd is compared against oxytetracycline.

Objective 2. Determine if Frd pre-treatment can prevent trees from getting infected with *Candidatus* Liberibacter asiaticus (CLas).

So far, efficacy of Frd applications (foliar or injected) in restoring health of HLB affected plants was not found to be strong enough to justify initiation of this experiment.

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Sponsor Project Number 19-027C

Project Duration (years) 1 *Year of Project* 1

% Completion of Objectives (FDACS requirement) 75.00%

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