CITRUS ADVANCED TECHNOLOGY PROGRAM

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

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

Proposal Title

Testing grapefruit trees expressing an anti-NodT antibody for resistance to HLB

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
06/30/2021	Citrus Research and Development Foundation	Plant Improvement

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:
This report covers the period of March 1, 2021 - May 31, 2021. The objective of this project is to test transgenic 'Ducan' grapefruit trees expressing an anti-HLB antibody fused to the FT (Flowering Locus T) protein (FT-scFv protein). Several accomplishments were made during this reporting period. Graduate student Mr. Chad Vosburg was able to take a trip to Florida to assess trees again, take samples, and send samples for qPCR analysis at Southern Gardens. Chad visited Fort Pierce for several days in May, 2021. The samples taken and/or processed, and then sent to Southern Garderns included those from a field trial natural inoculation, an Asian citrus psyllid (ACP) infection in the greenhouse, and a repeate experiment of graft challenge of FT-scFv scions grafted to HLB-infected rough lemon rootstocks. These samples were prepared and sent to Southern Gardens for qPCR detection and quantification of 'Candidatus Liberibacter asiaticus' (CLas) within the tissues. Data are anticipated to be received from these samples in July-August 2021. In addition, growth data were taken from FT-scFv scions on infected rough lemon. The transgenic scions appeared to be consistently growing faster and more robustly than the control non-transgenic scions. However, this difference did not meet a standard cutoff for statistical significance. The FT-scFv protein appears to provide a mild benefit to the grapefruit trees when inoculated by grafting, even if not statistically significant. The replicate grafting inoculation experiment begun in January, 2021, has additional replicates and may provide more statistically robust results. In March, 2021, we applied for a no-cost extension through November of 2021, and it was granted in May, 2021.

2. Please state what work is anticipated for next quarter:
Additional qPCR data from the field, graft, and psyllid-transmission HLB challenge tests will be received from Southern Gardens in the summer of 2021. These data will be analyzed during the next reporting period. Additional sampling of field grown trees will be performed with help from collaborators at the USDA USHRL. These will be sent to Southern Gardens for qPCR CLas quantification for an additional infection time point.

3. Please state budget status (underspend or overspend, and why):
This project is running under budget thanks for wage support from Penn State for Chad Vosburg's work on the project, which resulted in some salary funds not being expended.

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Organization Penn State University

Sponsor Project Number 18-016

Project Duration (years) 3.0 *Year of Project* 2

% Completion of Objectives (FDACS requirement) 80.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.