CITRUS ADVANCED TECHNOLOGY PROGRAM

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

▶ SELECT PERIOD September 2020

(●) *Quarterly Report* ( ) *Final*

Proposal Title

High-Throughput Inoculation of Citrus Germplasm for HLB Resistance Screening

Today's Date: 10/02/2020

Sponsoring Organization (drop-down): Citrus Research and Development Foundation

Category (drop down): Plant Improvement

ABSTRACT (750-word Executive Summary-public report-do not disclose proprietary information or intellectual property)

This quarter:

USDA has mandated that all employees be on maximum telework since March 2020 due to the Covid-19 pandemic. Therefore, existing experiments and ACP colonies have been maintained, but new experiments have been relatively few. Dean Gabriel of UF, and USDA scientists Kim Bowman, Ed Stover and G avin Poole have all run experiments totalling ~2000 ACP. Samples have all been collected on-time from ongoing experiments. All samples collected, that have not been analyzed, have been processed for qPCR.

Project rationale and focus:

The driving force for this three-year project is the need to evaluate citrus germplasm for tolerance to HLB, including germplasm transformed to express proteins that might mitigate HLB, which requires citrus be inoculated with CLas. Citrus can be bud-inoculated, but since the disease is naturally spread by the Asian citrus psyllid, the use of psyllids for inoculations more closely resembles "natural infection", while bud-inoculations might overwhelm some defense responses. CRDF funds supported high-throughput inoculations to evaluate HLB resistance in citrus germplasm developed by Drs. Ed Stover and Kim Bowman. The funds cover the costs associated with establishing and maintaining colonies of infected psyllids; equipment such as insect cages; PCR supplies for assays on psyllid and plant samples from infected colonies; and two GS-7 USDA technicians. A career base-funded USDA technician is also assigned ~50% to the program. USDA provides greenhouses, walk-in chambers and laboratory space to accommodate rearing and inoculations.

Most recent quarter:
A partial shut-down of USHRL was initiated 3/20/2020, as a response to the Covid-19 pandemic. ACP colonies are

Stover lab:
5460 ACP used for inoculating 390 detached leaves, 78 no-choice small trees ,and seven homogenate assays of peptides.

Bowman lab:
Prepared a group of grafted plants and planned to ACP-inoculate in March, but this experiment was disrupted by the Covid-19 slowdown. These ill be inoculated when personnel are allowed more extensive time at USHRL

Other users:

PI First Name Ed

PI Last Name Stover

Email ed.stover@usda.gov

Phone 772-462-5951

Organization USDA/ARS

Sponsor Project Number 18-065C

Project Duration (years 3 *Year of Project* 2

% Completion of Objectives 50.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.