CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

SELECT PERIOD September 2016

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Metabolomic profiling to accelerate development of HLB tolerant rootstocks

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
10/15/2016	Citrus Research and Development Foundation	Conventional Citrus Breeding

REPORT UPDATE (500 words-It is not necessary in this public report to disclose your institution's proprietary information or intellectual property.)

Good progress was made in the validation of the effectiveness of metabolite profiles for selection of HLB tolerant rootstocks. Focused studies were continued using plant material established in the USHRL greenhouse and field during the previous year. Trees that were inoculated with Las for controlled greenhouse and field metabolic studies were sampled and tested by PCR for Las infection, to identify those suitable for the next group of metabolic samples.

Metabolomics data was received from the first set of grafted and non-grafted rootstocks that was sent to the West Coast Metabolomics Center (WCMC) at UC Davis earlier this year for GC-TOF-MS analysis. The research team at the Southwest Florida Research and Education Center (SWFREC)/UF began working with this first data set, in which over 500 metabolites were detected (30% of known chemical structure and 70% of unknown chemical structure) in four standard rootstocks (Cleopatra mandarin, Swingle citrumelo, Ridge Pineapple, and Sour orange), which were grown as seedlings and as grafted plants under greenhouse and under field conditions. Analysis of this first data set is currently being conducted to 1) identify metabolites associated with rootstock traits, 2) decipher tissue-specific (roots and leaves) metabolite profiles and their value for rootstock characterization, 3) identify rootstock effects on scion, and 4) identify significance and impact of environmental factors on metabolite profiles. Preparation of a manuscript for publication of preliminary data is in progress.

The results from the second data set, for which samples were submitted to WCMC in June and July, and which include rootstocks with well-characterized responses to HLB, are required to focus in detail on the discovery of metabolites associated with tolerance to HLB and other positive rootstock attributes. The team is in regular contact with WCMC and was informed that results from this data set will be available in the coming weeks.

Research results from a previous data set on leaf metabolite profiles of HLB tolerant and susceptible rootstocks were presented at the International Citrus Congress in Brazil in September 2016. A presentation of results from metabolomic studies is anticipated at the 5th International Research Conference on Huanglongbing, to be held in Orlando next spring.

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Form PR-12 Quarterly Reports **SUBMIT REPORT**

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.