CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD March 2014

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Detection of Huanglongbing using secreted proteins of Candidatus Liberibacter

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
4/11/14	California Citrus Research Board	Pathogen/Disease Detection

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

The goal of this project is to generate antibodies of selected secreted proteins from Ca. Liberibacter and use them as detection markers for HLB. This method is more reliable than examining host (i.e. citrus) changes (including DNA, RNA and protein) in the infected plants, which may not be specific for HLB. The basic idea is to generate antibodies targeting selected proteins secreted from Ca. Liberibacter asiaticus (CLas), which are relatively independent on live pathogen cells and can spread out systemically in the infected trees through phloem flow. Using these secreted proteins as detection markers, we have a better chance to detect Ca. Liberibacter in a direct and highly specific manner by overcoming the large variability in titer and distribution of the pathogen within citrus trees, types of tissue tested and degrees of disease progression.

We have made significant progress and obtained exciting results. We identified CLas secreted proteins that are highly expressed in citrus, generated antibodies against four unique CLas secreted proteins, and developed detection assays using direct tissue imprints. Our results suggested that these antibodies were able to specifically detect HLB from infected citrus trees.

We are now in the process of extensively evaluating these four antibodies using HLB-infected field trees from California and Florida. We will also monitor the presence of movement of the secreted proteins using graft-inoculated citrus seedlings generated at the Contained Research Facility at the University of California Davis. Our results will be compared to other detection methods targeting plant metabolites and CLas DNA. This method holds promise for allowing early detection on newly infected trees and large-scale field surveys.

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Organization University of California Riverside

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Project Duration (years) 3 *Year of Project* 3

Total Funds (current year) $233,263.00

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

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.