CITRUS ADVANCED TECHNOLOGY PROGRAM

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

▶ INSTRUCTIONS

(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

•RNAi-mediated gene knock-down of Citrus transcriptome

Proposal Title

•RNAi-mediated gene knock-down of selected members of 'Candidatus Liberibacter asiaticus' induced citrus transcriptome with CTV based silencing vector to prevent HLB infection of young citrus

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
7/8/13	Citrus Research and Development Foundation	Pathogen/Disease Detection

REPORT UPDATE (500 words; summarize your accomplishments)

The main objective of this proposal is the down regulatin of genes of phloem specific Callose synthase andd phloem proteins involved in phloem plugging in citrus infected citrus greening pathogen.
Differential gene expression following infection of citrus by Candidatus Liberibacter asiaticus (CLas) bacterium has been documented by microarray and deep transcriptome profiling. CLas infection elicits over-accumulation of callose, and phloem-specific lectin PP2-like protein in the phloem of infected plants, in addition to number of transcripts of starch and sucrose metabolism, hormone biosynthesis, transcription factors etc. Over-accumulation of callose and PP-2-like proteins presumably causes phloem-plugging and consequent impairment in photoassimilate transport and excessive starch accumulation in leaf chloroplasts which results in disease manifestation. Down-regulation of over-expressed genes responsible for phloem-plugging would potentially negate the CLas disease manifestation.
Towards this end, we have identified Callose7 as phloem specific callose among many calloses in plants based on their homology to Arabidopsis thaliana. At the same time we have also identified phloem protein B8 and B14 as phloem specific. These have been amplified from the total RNA isolated from healthy citrus tissues by reverse transcription and have been cloned into pGEMT easy vector which will be eventually engineered into the Citrus trizteza virus vector as outlined in the proposal and the details will be presented as they become available in the quarterly report.
I am in the process of identifying a suitable post-doctoral candidate to continue with this research.

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Organization IFAS-CREC

Contract Number CATP12 proposal # 728

Project Duration (years) 2 *Year of Project* 1

Total Funds (current year) $96,356.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.