CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD September 2014

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Transgenic RNAi-based psyllid control

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
10/30/14	Citrus Research and Development Foundation	Vector Management

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

We have compared the qualitative and quantitative expression in plants of amiRNAs engineered to target psyllids by directly expressing them from Agrobacterium tumefaciens, by using Tobacco mosaic virus (TMV) and by using a modified Begomovirus expression system (Tomato mottle virus, A component, TAV). Based on the results of Hi-seq illumina deep sequencing, TAV is the best candidate to express artificial microRNAs in plants. We are currently evaluating more samples by deep sequencing and engineering additional constructs to target psyllids.

Objective 2 is to evaluate and optimize in planta expression of anti-psyllid interfering RNAs. We have started the leaf-disc feeding assays using our transgenic plants expressing double-stranded RNAs expressed from two different promoters (the 35S promoter for general tissue expression and the AtSuc2 promoter for phloem-specific expression) and the in planta transient expression of specific artificial microRNAs. So far the transient delivery/expression system has not worked for citrus. Thus, we are evaluating additional candidate interfering RNAs by in vitro feeding assays, and evaluating specific interfering RNAs in citrus plants infected with recombinant Citrus tristeza virus (CTV). The latter is in collaboration with Dr. W. O. Dawson.

We have also been optimizing the conditions of our on plant feeding tests to have them close to natural feeding environment.

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