CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD December 2013

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Development of a novel system for dissemination of pathogenic fungus to the Asian citrus psyllid in abandoned citrus groves

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
3/5/14	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.)

Abandoned citrus groves in US citrus-producing regions are potential sources for both Asian citrus psyllid (ACP), and Candidatus Liberibacter asiaticus (CLas), the bacterium that causes Huanglongbing (HLB). In Florida and Texas where grower-driven area-wide management programs are underway in commercial groves, no psyllid control is being implemented in abandoned citrus. Since ACP adults are highly mobile, they can disperse from abandoned to productive citrus groves. If not controlled, these psyllids will stymie the effectiveness of area-wide management programs aimed at containing the spread of HLB in commercial citrus. Insecticide-based strategies are not feasible for ACP in abandoned citrus, but biological control of ACP could come from a combination of native or introduced arthropods and pathogens. Two Ifr strains highly pathogenic against ACP and available as spore formulations in the US are the commercial strain PFR97 WDG® (Certis Inc.,USA) and a south Texas isolate (Ifr 3581). ACP is susceptible to a native entomopathogenic fungus, Isaria fumosorosea (Ifr). For our project, we are developing a novel autodissemination system that will inoculate ACP with Ifr and use these infected psyllids to instigate epizootics and rapidly reduce ACP populations in abandoned groves.

Our proposed project objectives for Year 1 were to evaluate: (1) Impact of Ifr dispensers on ACP populations in abandoned and managed trees, and (2) Effect of time and exposure on Ifr dispensers. The efficacy of our management tactic will largely depend on the ability of our Ifr dispensers to attract adult psyllids to the dispensers' spore-coated surfaces. To obtain an effective attractant for our dispensers, we evaluated blends of synthetic aromatic compounds that replicate the flush volatile profiles of host plants favored by ACP in southern Texas. By September of 2013, we had completed preliminary studies with six proprietary blends and selected the two most promising blends for field trials with our current dispenser design during the fall and early winter of 2013. A third recently developed blend was also selected for the field trials. We compared the number of adult ACP captured by dispensers with sticky surfaces instead of Ifr-spore coated surfaces, when the dispensers were hung in research citrus groves at the Texas A&M Citrus Center and augmented with one of the three proprietary blends. For controls, we used non-augmented dispensers. Three separate consecutive trials were completed during October to December of 2013. We found that the numbers of psyllids captured by dispensers augmented with one of the blends (Blend # 3) was 4 times greater than non-augmented dispensers (controls) and 3 times greater than dispensers augmented with the second most attractive blend. Based on these results, we will be using Blend # 3 for our 2014 field trials with dispensers coated with Ifr-spores.

During December of 2013, we contacted the three collaborating USDA-ARS scientists on our project and made arrangements to have them meet with us at the Texas A&M Citrus Center in Weslaco during February 19-21 of 2014. Drs. Christopher Dunlap (USDA-ARS, Peoria, IL), Mark Jackson (USDA-ARS, Peoria, IL, and Joesph Patt (USDA-ARS, Fort Pierce, FL) will be attending the meeting. Our purposes for this meeting will be to evaluate potential field sites and refine project goals, protocols, and time lines. We will also be comparing our current Ifr dispenser design to a new dispenser design that Dr. Patt has been evaluating in greenhouse studies.

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