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

New non-phytotoxic composite polymer film barrier as ACP repellent for controlling HLB infection

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
10/26/2016	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.)

The objective of this research project is to investigate and develop a potential non-phytotoxic, environmentally-friendly film-forming ACP repellent solution for preventing HLB infection.

In the last reporting period OS-SG 15 was optimized for potential use in future ACP infection trials. In this report period, a new formulation called OS-SG-16 was developed to further build on the concept of OS-SG 15. OS-SG 16 was synthesized using an all natural silica substrate, along with both an EPA approved "For Food Use" polymer and "For Food Use" surfactant. Additionally an industrially approved dispersant was introduced to further stabilize and increase the film forming capabilities of the material. This new version was expected to display high colloidal stability in aqueous solution, high surface coverage and moderate rain-fastness properties. The colloidal stability of the formulation was checked via measuring %Transmittance (%T) of the supernatant collected from the solution left undisturbed. The formulation revealed less than %50 transmittance up to 6+ hours which was found to be better compare to commercial control -Surround WP- which is currently commercially available for growers. OS-SG 16 was characterized using UV-Vis and FTIR spectroscopy which revealed the presence and interaction between the individual components such as silica, surfactant and polymer. Peaks in the FTIR were found for Si-C stretch (788 cm-1) for the silica source, C-N stretch (1466 cm-1) for the surfactant and C=O stretch (1220 cm-1) for the polymer. Safety analysis and plant leaf surface coverage of OS-SG 16 formulations were conducted using Cleopatra orange sp (common citrus variety) as a model plant. The formulations were sprayed in triplicate at the application rate of 0.5 lbs/gallon (recommended rate for the commercial control) based on active content. The formulations revealed high plant leaf surface coverage at the application rate which was comparable to the commercial control. Compared to the previous OS-SG 15 version, the inclusion of the industrial dispersant increased the overall leaf coverage of the material and improved the film formed. Phytotoxicity studies were conducted using a Panasonic Environmental Test Chamber (Model MLR- 352H) to control light intensity, humidity and temperature cycling to simulate summer conditions (85% RH, 32 Celsius). OS-SG 16 formulation did not cause any plant tissue damage at the applied rates, matching the commercial control. To fully ascertain the potential of recent OS-SG versions, the possibility of new ACP trials are currently being discussed.

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

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.