CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL PROGRESS REPORT FORM: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

SELECT PERIOD November 2019

Quarterly Report Final

Proposal Title

Improving bactericide therapy for young tree protection and inoculum reduction

Today's Date 12/15/2019

Sponsoring Organization (drop-down) Citrus Research and Development Foundation

Category (drop down) Horticultural & Management

ABSTRACT (750-word Executive Summary-public report-do not disclose proprietary information or intellectual property)

Objective 1: We hypothesized that bactericidal treatment will protect young trees from CLas colonization. Initial leaf samples were collected prior to treatments to evaluate CLas titers in the uninfected trees. Bactericidal treatments were applied from May through December. CLas titer was monitored in leaf tissue in response to antibiotic treatments using quantitative real-time PCR analysis. In this report, the results of the CLas-infection rate in citrus leaves from May to July are described. Currently, citrus leaves tissue samples from August through December are being processed to analyze the CLas-infection rate.Trees were considered CLas-infected (positives) when CT values were below 35 (CN= Copy number).

1. Bactericides (monthly rotation): Prior to bactericide application (May), 15% of trees (20 trees/treatment) were CLas positive (Ct<35) and the overall CT mean of the treatment was 34.5. After the bactericide application (June), 35% of trees were CLas positive (Ct<35) and the overall CT mean of the treatment was 35.1. After the second application (July), 65% of trees were CLas positive (CT<35) and the overall CT mean of the treatment was 33.6. However, CLas titers decreased 5.94-fold from May (CP = 4096) to July (CP = 690).
2. Bactericides (quarterly rotation): Prior to bactericide application (May), 100% of trees were CLas negative (Ct>35) and the overall CT mean of the treatment was 39.2. After the bactericide application (June), 40% of trees were CLas positive (Ct<35) and the overall CT mean of the treatment was 34. After the second application (July), 80% of trees were CLas positive (CT<35) and the overall CT mean of the treatment was 34.1. However, CLas titers decreased 9.05-fold from June (CN = 1277) to July (CN = 141).
3. Negative Control (insecticide + Tree defender exclusion netting): Prior to bactericide application (May), 100% of trees were CLas negative (Ct>35) and the overall CT mean of the treatment was 38.6. After the bactericide application (June), 45% of trees were CLas positive (Ct<35) and the overall CT mean of the treatment was 34.7. After the second application (July), 85% of trees were CLas positive (CT<35) and the overall CT mean of the treatment was 33.7. Additionally, CLas titers increased 1.06-fold from June (CN = 205) to July (CN = 218).
4. Positive Control (insecticide only): Prior to bactericide application (May), 100% of trees were CLas negative (Ct>35) and the overall CT mean of the treatment was 39.1. After the bactericide application (June), 5% of trees were CLas positive (Ct<35) and the overall CT mean of the treatment was 36.1. After the second application (July), 55% of trees were CLas positive (CT<35) and the overall CT mean of the treatment was 34.5. Additionally, CLas titers increased 12-fold from June (CN = 14) to July (CN = 168).
Enumeration of ACP adults using taps was conducted bi-weekly from May through December, the presence of other life stages such as eggs and nymphs were scouted visually. Preliminary results showed a low ACP

PI First Name Kirsten

PI Last Name Pelz-Stelinski

Email pelzstelinski@ufl.edu

Phone 863-956-8666

Organization University of Florida CREC

Sponsor Project Number 18-051C

Project Duration (years 2 *Year of Project* 1

% Completion of Objectives 50.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.