CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD October 2020

Quarterly Report Final

Proposal Title

Evaluation of the tolerance of newly developed citrus cultivars, on different rootstocks, to Huanglongbing

Today's Date 12/15/2020

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

Category (drop down) ACP Vector

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

Ww are evaluating the new scions and rootstocks for their tolerance to HLB by studying the metabolite content by GC-MS, and challenging new varieties with psyllids and HLB.

Objective(s) pursued:

1. To understand the mechanism behind the tolerance of different varieties toward HLB. The comparison between the varietal responses will allow us to determine the mechanism of tolerance to CLas.
2. To understand the role of rootstocks in citrus tolerance to HLB. The comparison between rootstock metabolites will allow us to determine the best scion/rootstock combination for tolerating CLas.

Progress on Objectives:

Scion evaluations

For " Lucky " and its parents Sugar Belle and Nava x Osceola, we started a biology experiment to determine the response to psyllid infestation (5 plants per scion x 50 insects). After ACPs have colonized the plants for one month, the psyllids will be removed and samples taken to evaluate the citrus response to infestation. One month later, we will graft with HLB-infected budwood to establish CLas bacteria in these scions.

More scions

In cooperation with Dr. Schumann ' s lab we received permission to take samples of some varieties in CUPS. This will comprise a separate set of experiments under CUPS/Semifield conditions.

Group 1 – Scions under CUPS conditions (includes Sugar Belle, Bingo, Early Pride) along with Ray Ruby GF, Ruby Red GF, Persian lime Minneola, Dancy, and Murcott. Set 1a - leaves only for VOC and metabolite evaluations; Set 1b – we will graft these onto Swingle or Carrizo RS. Sugar Belle will be considered the HLB-tolerant control while Minneola will be considered the HLB-susceptible control.

Group 2 – Duncan GF on 4 rootstocks (US-897, Cleopatra mandarin, Volk, BS/BO) for RS comparison

Group 3 – Ray Ruby GF on 3 RS (X639, Sour orange/US897) for RS comparisons

We hope to sample these in early December.

More Rootstock evaluations

In addition to those already in progress, we will receive some more rootstocks from USDA in Ft. Pierce. These include US-802, 812, 897, 942, 1283, 1284, 1516 for metabolite profiling and HLB screening.

* we have published a paper about the evalution of new hybrids that show attraction to ACP and could be used as awindbreak trees.

18- Killiny N, Jones SE, Hijaz F, Kishk A, Santos-Ortega Y, NehelaY, Omar AA, Yu Q, Gmitter FG, Grosser JW, Dutt M. 2020. Metabolic Profiling of Hybrids Generated from Pummelo and Citrus latipes in Relation to Their Attraction to Diaphorina citri, the Vector of Huanglongbing. Metabolites 10: 477.

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Project Duration (years 2 *Year of Project* 1

% Completion of Objectives 50.00%

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