CITRUS ADVANCED TECHNOLOGY PROGRAM

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

PROJECT QUARTER END October 2024 ● *Quarterly Report* ○ *Final*

Proposal Title

Development of Next-Generation SuperSour rootstocks with tolerance to HLB

Today's Date: 11/15/2024

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

Category (drop down): Plant Improvement

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

Objective 1. Collect field performance data from replicated rootstock field trials and release new rootstock cultivars as justified by superior performance in multiyear field trials.

Collect field performance data. Yield and fruit quality data was collected from rootstock field trials that contain early season cultivars. Canopy health data was collected from all rootstock field trials during this quarter. Renovation of the fruit processing lab at USHRL was finished, and processing of juice samples from late-season trials is being completed.

Work continued to evaluate uniform seed propagation of all the new candidate SuperSour rootstocks, including about 22,000 seedlings, and using microsatellite markers to measure trueness-to-type from seed. Additional work on trueness-to-type assessment and salinity tolerance of new rootstocks was also continued. Cooperative work was continued to assess USDA rootstocks for resistance/tolerance to citrus nematode, sting nematode, Phytophthora, Fusarium, and other traits.

Release of new rootstocks. New rootstocks will be officially released by USDA for commercial use when justified by superior performance in multi-year replicated field trials. The most promising USDA rootstock selections are provided to the FDACS-DPI program for shoot tip grafting and disease testing in advance of potential release. Six promising new USDA rootstocks were provided to DPI for STG and testing in 2024, in preparation for possible release in 2026.

Three of the newest-released USDA rootstocks, SuperSour 3, SuperSour 4, and SuperSour 5 continued to appear outstanding in field performance data from trials during the past year. SuperSours 3, 4, and 5, and others of the most promising SuperSour hybrids were propagated for planting in upcoming demonstration plantings and new field trials.

Objective 2. Create hybrid rootstocks that combine germplasm from parental material with good rootstock traits and HLB tolerance, propagate the most promising of these hybrids, and establish replicated field trials with commercial scions.

Create hybrids. Parent and progeny detailed analysis revealed particular parental combinations most likely to produce new hybrid rootstocks with ideal combinations of high yield, high fruit quality, and HLB tolerance. Preliminary genetic and morphological evaluation of new hybrid seedlings from these new high priority crosses are underway.

Propagate hybrids. About 1700 trees for two other new stage 3 rootstock trials with 35 advanced selection SuperSour rootstocks continue growing in the nursery at USHRL, with a plan for field planting soon.

Establish replicated field trials. One Stage 2 rootstock trial with Roble scion on SuperSour rootstocks was field planted. Trees for two additional trials are being prepared for planting in the next month.

Tree care in trials. This quarter included tree care in the rootstock field trials to maintain irrigation systems, tree health and productivity, and manage weeds.

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Organization: USDA

Sponsor Project Number: 21-008

Project Duration (years): 3 *Year of Project* 3

% Completion of Objectives (FDACS requirement): 83.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.