

Current Research Objectives

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Research topic: Citrus Horticultural Management

Primary Research Objective(s): Improving seed production and availability of major citrus rootstocks by determining seed viability during maturation and storage

Research Goal: To generate valuable data on seed maturity, seed viability and vigor. This will allow the Citrus Industry to understand conditions necessary for maximizing seed production and viability by harvest the fruit as early as possible to avoid losses due to late summer hurricane conditions. Knowledge of the maximum seed cold storage time will allow for better planning in nurseries to produce and supply liners timely. In general, more mature seeds can be stored longer. The maturation stage at which seeds from the major citrus rootstocks can germinate is unknown. Hurricane Irma last summer severely affected the ability of our industry to produce adequate seeds necessary to satisfy nurseries needs. In hardest hit areas, there was massive fruit drop, especially from the US802, US812, US897 and US942 varieties and at a time when fruit was almost ready to be harvested and processed for supplying to the nurseries. Seed availability from the SWFREC Immokalee, USDA Fort Pierce, and Whitmore Foundation in Leesburg decreased by 66% compared to previous season, resulting in a shortage in seed availability. Outcomes from this project will allow us to make informed decisions on when to harvest, facilitating to work around the peak of the hurricane season. Early harvesting can affect germination rate and affect the storage ability. Hence, it is necessary to determine how these two parameters may interact to harvest the fruit and extract the seeds at the right time. In addition, HLB may impact seed viability as well. Heavily infected fruit may yield aborted seeds that will not germinate. Evaluating the number of aborted seeds will help to streamline the production process.

Outcomes to date: We have determined different rates of fruit maturation (external) and abscission in fruit from US897, US802, US812 and US942 rootstocks. We have discovered that leaves and fruit of US897 rootstock do not respond to stress ethylene in promoting abscission as compared to other rootstocks. Seeds from all rootstocks are being extracted through maturation and germination ability will be tested. We anticipate having a predictive model to allow decisions on when to harvest in the next two seasons.

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