Can Finger Limes Help ‘Valencia’ and ‘Hamlin’ Trees be More Tolerant of Huanglongbing?

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Process of ‘interstock’ stick grafting.

Take Home Message:

- HLB-tolerant finger limes interstock grafted to other scions may provide protection from HLB.
- Developing HLB-tolerance through interstock grafting is much faster than conventional citrus breeding.
- The best performing finger limes identified will be used in the breeding program for genetic resistance to HLB.

Summary: To evaluate the ability of huanglongbing (HLB)-tolerant finger limes to protect susceptible scions such as ‘Valencia’ and ‘Hamlin’ against HLB, we utilized the interstock grafting technique. The idea is to assess whether antimicrobial peptides (and potentially other molecules) found in finger limes are graft transmissible and can provide HLB-tolerance to citrus tree cultivars grown in Florida. For this, we established numerous ‘Valencia’ and ‘Hamlin’ plants interstock grafted with various finger lime types in a greenhouse at UF/IFAS Southwest Florida Research and Education Center in Immokalee. We are now challenge-inoculating these plants with Asian citrus psyllids (ACP) carrying HLB-causing bacterium to determine whether interstock grafted scions (‘Valencia’ grafted on finger lime, which was grafted on Swingle rootstock) will tolerate the HLB disease and/or ACPs better over regularly grafted scions (‘Valencia’ grafted directly on Swingle rootstock). Later, we will follow the HLB infection rate and amount of bacterium accumulating in these plants with monthly visual observations for symptoms in the greenhouse and with qPCR assays in the lab. This study will allow us to better understand the mechanism of HLB tolerance in these graft combinations and evaluate the chemical composition of the sap, root, and leaf metabolites. The greenhouse experiments are designed so that the data generated from these experiments in a relatively short time, approximately 12-18 months, will be useful to stakeholders in Florida, California, and Texas.

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