

'Gauntlet' Rootstock Screening for HLB Tolerance/Resistance

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One-year old 'Gauntlet' tree of HLB+ 'Valencia'/ S11x50-7 [(salt tolerant HBPummelo X Shekwasha) x trifoliolate orange 50-7]. No bacteria detected in roots, and almost none in the scion.

The ultimate solution to the HLB problem is having good rootstocks that can mitigate or eliminate HLB impacts in any grafted commercial scion. With this, growers could profitably grow any scion, including grapefruit, 'Hamlin', or even 'Murcott'. Thus, our rootstock breeding efforts focus on directly screening new rootstock hybrids for their ability to confer HLB tolerance, or perhaps even resistance to grafted scions. The screening process begins with seeds from controlled crosses planted in high pH, calcareous soil inoculated with *Phytophthora*, as a preliminary screen to weed out

weak hybrids. The more rootstock hybrids that can be screened, the higher the odds of finding rootstocks that can completely protect any scion. To date, approximately 16,000 hybrid seeds have been entered in the process. Superior selected hybrids from the initial screen are propagated by cuttings to preserve the genotype, and the original liner is stick-grafted with an HLB-positive budstick of 'Valencia'. Infected trees showing good health are planted at the USDA Picos Farm to determine if the rootstock has any ability to mitigate or prevent HLB under challenging field conditions.

Approximately 825 rootstock hybrids have been planted at Picos Farm to date, and we have identified several promising hybrids showing ability to transmit HLB tolerance across the graft union to the infected 'Valencia' scion. A few of these rootstock candidates show no *CLAs* replication in the roots, and suppression of *CLAs* in the scion. These rootstock candidates are being propagated by rooted cutting and tissue culture micropropagation for subsequent stage two trials.

Funding

 National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

