Progress with Rootstock Screening for HLB Tolerance or Resistance

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Summary: The ultimate solution to the huanglongbing (HLB) problem is having improved 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. To date, approximately 20,000 hybrid seeds have been screened in our high throughput 'gauntlet' screening process. We have identified several promising hybrids showing the ability to transmit HLB tolerance across the graft union into the infected 'Valencia' scion. Most of the promising new rootstock candidates are from the 'gauntlet' screening, but we have also identified a few from other field trials. The most promising rootstocks emerging from this work include STR-4-1, an apparent mutant of x639 (Cleopatra x trifoliate orange) that minimizes HLB symptoms in infected trees; S11x50-7-16-6, a 'gauntlet' hybrid of Hirado Buntan pummelo, Shekwasha mandarin and trifoliate orange (this hybrid rootstock is showing ability to suppress *C*Las replication in grafted scions); and 8-1-99-2BxC22-12-28, a 'gauntlet' hybrid of an HLB-tolerant pummelo, Sunki mandarin and trifoliate orange (by far the most productive rootstock among the early 'gauntlet' rootstocks planted). STR-4-1 and S11x50-7-16-6 are both performing well in tissue culture micropropagation at Agromillora FL. Inc., and trees are being grown for large-scale trials. 8-1-99-2BxC22-12-28 was just recovered from the field (CLas free!), and propagations are underway. Combining these new rootstock candidates with emerging high quality, more HLB-tolerant scions should pave the way forward for our industry.

Take Home Message:

- A horticulturally acceptable rootstock that can mitigate HLB in any commercial scion is the ultimate solution to HLB.
- New rootstock candidates, including the 3 mentioned above, are showing ability to strongly suppress *C*Las replication in their root systems, probably contributing to their ability to confer tolerance to susceptible scions.
- Combining improved HLB-tolerant rootstocks with emerging improved HLB-tolerant scions should produce the sustainable, profitable trees needed to rescue our industry.

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