

## Moving HLB Tolerance and Resistance to the Field

*By Harold Browning*



The balance of efforts to deliver solutions to Huanglongbing (HLB) in Florida includes a major focus on the development of tolerance and/or resistance to the disease in commercial scions and rootstocks that are important to the industry. The appropriate combination of rootstock and scion provides the foundation in citrus for cultivation in the presence of diverse soils and conditions, and ultimately defines the characteristics and quality of fruit produced, whether it is for fresh or processed markets.

HLB has disrupted normal citrus production in Florida, and the community of citrus breeders and biotechnologists has been hard at work to develop and test new plant material that could provide the resistance or tolerance needed to allow sustained production in the presence of this disease. The long-term existence of citrus breeding programs in Florida and elsewhere in the United States and the world provides the basis for this work, and significant progress has been made in creation of a broad germplasm collection that has traits which may confer tolerance or resistance.

The only way to demonstrate the level of benefit that this might provide is through testing of candidate material under field HLB pressure. Numerous tests are underway across the state in research plots and grower field trials, and observations indicate emergence of good candidates. Commercial-scale field trials were planted on three sites in 2015 to demonstrate the benefit of tolerant rootstocks, and there are many more candidates that can be evaluated.

Recently, CRDF partnered with PepsiCo/Tropicana to organize a knowledge-sharing activity that brought 20 citrus breeders and biotechnologists together to discuss how best to move strong candidates to the field. Over a two-day period, the group — representing Florida, Texas and California citrus breeding programs, HLB researchers from across the country, and a few plant breeders involved in other crops — discussed and planned for a common evaluation stream that can be employed to accelerate the testing, licensing, deregulation and scale-up of citrus material that may deliver tolerance or resistance to HLB. Recognizing the need to integrate various program products and to facilitate side-by-side comparisons of the elite materials coming from research, the group discussed and suggested field trial design, data collection needs and how to remove time from the lengthy period of step-wise evaluation of rootstocks and scions.

The results of this very productive workshop are being summarized, and over the next two months, a plan for implementation of an aggressive statewide evaluation program for tolerance and resistance will be discussed and approved. The goal will be to gather information on the best class of rootstock candidates and in parallel, best scion candidates from all sources available. A committee of growers and researchers then can make determinations of which candidates should go forward into the compressed field evaluation.

A critical parallel set of activities also was discussed and inserted into the process. Along with the field evaluation, separate processes for addressing the intellectual property and licensing, regulatory considerations and scale-up will be initiated so that appropriate steps in these areas can be pursued in tandem with the field trials.

*Harold Browning is Chief Operations Officer of CRDF. The foundation is charged with funding citrus research and getting the results of that research to use in the grove.*



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