11.9 Candidatus Liberibacter asiaticus (CLas) Titer in Field HLB-Exposed Commercial Citrus Cultivars

Stover, E., McCollum, G. USDA-ARS-USHRL, Fort Pierce, FL, USA

There are reports that some citrus scion cultivars are slower to develop huanglongbing (HLB; e.g., Lange et al., 1985; Shokrollah et al., 2009). To evaluate this in Florida, eight groves with four or more diverse cultivars planted in close proximity were surveyed. Twenty trees of each cultivar in each grove were randomly selected to avoid bias and edge effects, and an HLB diagnostic leaf sample was collected from each. CLas 16S rDNA primers (Li et al., 2006) were used in qPCR, all standardized to 3 ng nucleic acid/reaction. No cultivar was low in CLas titer in all groves. Across all groves, 22% of the 760 trees tested had a Ct value <36 (>5.8 CLas genomes/sample). In two groves, there was little HLB. Data on the six groves with high incidence of HLB were subjected to ANOVA, using CT values. Minneola, Sweet Orange, and Murcott displayed the greatest CLas titer, averaging 304, 236, and 168 CLas/sample. In the lowest titer group, Temple, Fallglo, grapefruit, and Sunburst displayed the lowest titers, at 9, 13, 40, and 107, respectively. Minneola and Temple differed 30-fold in CLas titer and were compared adjoining each other in all the same groves. Assessment of Las/HLB in replicated cultivar trials and breeding populations exposed to high disease pressure and controlled psyllid challenges have all been initiated. Since Temple, Sunburst, Fallglo, and their parents are widely used in our breeding program, we hope to identify diverse scion types with greater HLB resistance for near-term deployment.

References