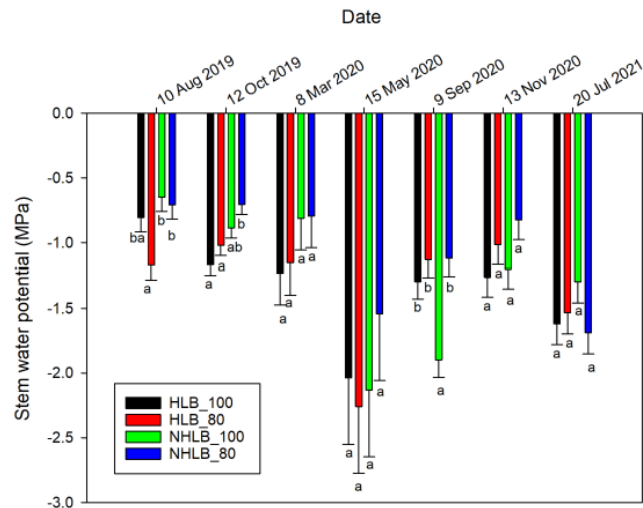


Water Use Assessment of Huanglongbing-affected Trees

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Take Home Message:

- Healthy trees (non-HLB) used about 20% more water than HLB-affected trees, equivalent to 0.5 mm/day.
- Thus, irrigating at 80% ET may be appropriate for achieving water savings in controlled environments for HLB-affected trees without causing water stress.

Effort Statement: This project is now completed.

Summary: Huanglongbing (HLB) is a citrus disease that affects the growth of the fibrous roots of citrus trees. This means that HLB-affected trees may have reduced root volume and may impact water uptake. A greenhouse study was conducted from October 2019 to July 2021 at the UF/IFAS CREC in Lake Alfred, Florida, to evaluate the growth and development of HLB-

affected citrus trees under a deficit irrigation system. The objective was to assess the impact of deficit irrigation on tree growth, water availability, stem water potential (SWP), sap flow, and root growth of HLB-affected 'Valencia' orange trees on Kuharske citrange rootstock using an evapotranspiration (ET)-based irrigation schedule. The study hypothesized that HLB-affected citrus trees require less irrigation water to complete their biological functions than healthy citrus trees because of severe fibrous root loss. A total of 20 potted trees were either HLB-positive or non-HLB-affected, and one-half of the trees were subjected to deficit irrigation (80% ET) and the other half to full irrigation (100% ET). There was no significant difference in tree height in both years between HLB-affected trees irrigated at 80% ET and 100% ET. In

general, there was no difference in SWP between the HLB-affected trees subjected to deficit irrigation and full irrigation. At 80% and 100% ET, non-HLB trees had greater sap flow than HLB-affected trees. Sap flow for the periods of March–April and June–July 2021 was comparable between HLB-affected trees at all irrigation rates. Maximum sap flow occurred between 11 and 16 h for HLB-affected trees during the three measurement periods. HLB-affected trees had an average water use of 1.6 mm/day compared to 2.1 mm/day for non-HLB trees. Healthy trees (non-HLB) used about 20% more water than HLB-affected trees, equivalent to 0.5 mm/day. Thus, irrigating at 80% ET may be appropriate for achieving water savings in controlled environments for HLB-affected trees without causing water stress.

Funding:

