Citrus Nutrient Management on HLB-Affected Round Orange and Grapefruit Groves on Flatwoods and Ridge Soils

Researcher: Davie Kadyampakeni
Contact: dkadyampakeni@ufl.edu
UF/IFAS CREC

Nitrogen (N) and micronutrients have a key role in many citrus plant enzyme reactions. Although enough micronutrients may be present in the soil, deficiency can develop due to soil depletion or the formation of insoluble compounds. The objectives of this study were to (1) determine the adsorption, distribution, and availability of Zinc (Zn) in a sandy soil; (2) compare the effectiveness of foliar and soil application methods of Zn, Manganese (Mn), and Boron (B) on HLB-affected trees; (3) compare foliar application rates of Zn, Mn and B for HLB-affected trees; (4) determine the effect of N rates on yield, soil inorganic N distribution patterns, and tree growth parameters. Tree rows were supplied with three N rates of 168, 224, and 280 kg·N·ha–1 and Zn, Mn, and B at single and double recommended rates (recommended rate = 5.6 kg·Zn·ha–1) using foliar and soil application methods, in a split-plot experimental design. The results show that Zn and Mn concentration in the 0–15 cm soil depth was three times higher than the 30–45 and 45–60 cm soil depths during the study. An adsorption study revealed high Zn (KD = 6.5) sorption coefficients at 0–15 cm soil depth, while 30–45 and 45–60 cm depths showed little sorption. Leaf Zn and Mn concentration for foliar spray was two times higher than the soil application method. A N level of 224 kg N ha–1 improved canopy volume when compared to other N levels at the expense of reduced fruit weight. Foliar Zn and Mn application at 5.6 or 11.2 kg ha–1 and N rate at 224 kg ha–1 appear to be adequate for improving the performance of HLB-affected citrus trees.

Funding

UF IFAS UNIVERSITY of FLORIDA

CITRUS INITIATIVE
FUNDED BY THE FLORIDA LEGISLATURE