

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

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Take Home Message:

- Use both foliar and soil application of micronutrients for better uptake.
- Zinc can be applied at about 10 lbs per acre for better uptake.

Effort Statement: The project continued but no yield was collected due to fruit drop in 2023.

Summary: 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 determine the adsorption, distribution,

and availability of zinc (Zn) in a sandy soil; compare the effectiveness of foliar and soil application methods of Zn, manganese (Mn), and boron (B) on huanglongbing (HLB)-affected trees; compare foliar application rates of Zn, Mn, and B for HLB-affected trees; and 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 150, 200, and 250 lbs N per acre and Zn, Mn, and B at single and double recommended rates (recommended rate = 5 lbs Zn per acre) using foliar and soil application methods, in a split-plot experimental design. The results show that Zn and Mn concentration in the 0-6-inch soil

depth was three times higher than the 12-18 and 18-24 inch soil depths during the study. An adsorption study revealed high Zn ($K_d = 6.5$) sorption coefficients at 0-6-inch soil depth, while 12-18 and 18-24 inch 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 200 lbs N per acre improved canopy volume when compared to other N levels at the expense of reduced fruit weight. Foliar Zn and Mn application at 5 or 10 lbs Zn per acre and N rate at 200 lbs N per acre appear to be adequate for improving the performance of HLB-affected citrus trees.

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