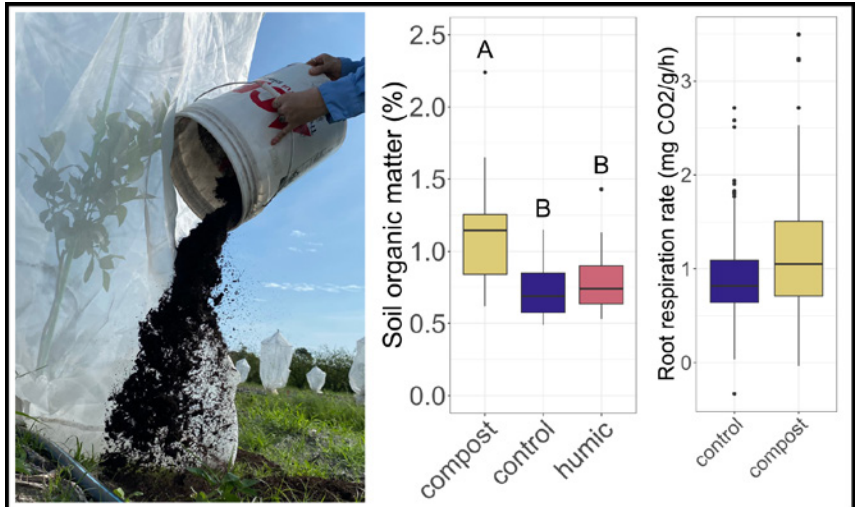


Practical Solutions for Florida Citrus Using Compost for Soil and Root Health

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Summary: Florida citrus production is challenged by the state's sandy soils, which are characterized by low soil organic matter (SOM) and poor water and nutrient retention capacity. Increased compost applications have been suggested to improve soil properties, enhance plant growth, and mitigate the negative consequences of huanglongbing (HLB), especially the loss of fibrous roots. Compost is widely used within agricultural systems and can help increase SOM, nutrient availability, and water holding capacity. Compost applications can also influence the citrus rhizosphere microbiome composition and diversity, which has been linked to reduced incidences of Phytophthora and other soil borne pathogens. We conducted two large field trials in a commercial

citrus grove in southwest Florida. A plant-based, certified compost was applied by broadcast spreading at rate of five tons per acre twice per year. We found that repeated compost applications increased the soil nutrient content and improved soil physicochemical properties such as pH, cation exchange capacity (CEC), SOM, and water holding capacity. Repeated compost applications over a two-year period also led to alterations in the abundance, diversity, and predicted functions of bacterial communities within the citrus rhizosphere, but results were rootstock-specific. In addition, compost applications promoted changes in the fibrous root metabolic composition and increased the fibrous root respiration rate, indicating a

higher prevalence of metabolically active, fibrous roots. Although we did not measure any improvements in yield and fruit quality during the two years of the study, compost may be used to maximize benefits imparted by the rhizosphere to promote root health and nutrient uptake and improve productivity in the long-term.

Take Home Message:

- Effects of compost in Florida citrus depend on soil properties, climate, and rootstock variety.
- Multiple years and repeated applications of compost are usually needed to see changes in soil and root health.
- Compost applications may be useful to promote root health and nutrient uptake to increase the life span of HLB-affected trees in the long term.

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