Measuring Soil Health in Florida Citrus Groves

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Take Home Message:

- The sandy sub-tropical soil of Florida requires calibration and assessment of soil health indicators, as most previous soil health indicator work has been conducted in other parts of the United States.
- There is a wide range of indicators that can be used to measure soil health, but variations in methodology can make comparisons difficult.
- We hope to provide growers with a short list of indicators that can be easily used to monitor soil health in their citrus groves.

Effort Statement: We are almost finished with the first two years of the project and are just beginning to explore the comparisons between indicators for these trials. However, there do seem to be changes in soil carbon with cover crop treatments, as well as differences in soil microbial communities at different depths.

Summary: Soil health, similar to soil quality, is not a new concept, but it is receiving increased attention because of its impact on crop production. Healthy soils have greater water-holding capacity, nutrient availability, and microbial activity, all of which can impact root growth and nutrient uptake. Several management practices are associated with soil health improvements, including cover cropping and compost inputs. To assess changes in soil health, growers and researchers can measure different indicators. However, over 20 different indicators can be used to measure soil health, ranging from relatively simple measurements of soil pH to more complicated measurements of soil microbes. Most of the research on soil health indicators has been conducted in annual crops and soils that are very different from Florida citrus systems, and not all soil health indicators may be appropriate for the sandy sub-tropical soils of Florida. For example, soil organic matter is a common soil health indicator, but increases can occur slowly. Other indicators of soil carbon might provide a faster assessment of changes to that aspect of soil health. Therefore, we are conducting a farm-scale study to identify indicators that will provide short- (months) and long-term (years) assessments of changes to soil health in Florida citrus groves. In addition to making our own measurements of these indicators, we are comparing our results with those of soil health testing services provided by commercial labs. We plan to provide growers and researchers with a list of indicators that are appropriate for assessing and monitoring soil health in Florida citrus.

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