

# Improving Soil Health with Cover Crops in Florida Citrus Groves

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**Effort Statement:** We are now examining how quickly cover crop biomass decomposes in citrus row middles and are starting to test different cover crop species and mixes for winter season planting. Assessment of the impacts of cover crops on newly planted trees has also begun.

**Summary:** Soil health refers to the capacity of a soil to sustain biological productivity, maintain environmental quality, and promote plant health. Cover crops (CC) are one way to improve soil health. We have been

examining the impact of planting CCs in the row middles of commercial Florida citrus groves. Treatments have included two mixtures of CCs (legumes and non-legumes and non-legumes only) and a no- treatment or grower standard. Our first trials were started in groves with trees that are over 35 years old. In these trials, both CC mixtures significantly increased soil carbon availability in the row middles compared to the control after three years. Significant increases in nitrogen availability and the number of microbial genes involved in soil nitrogen transformations were found

in the soil planted with legumes compared to non-legumes and the control, suggesting biological nitrogen fixation contributed to improvement.

#### **Take Home Message:**

- Cover crops can change the soil microbial community and their functions.
- The magnitude of changes to soil microbes due to CC depends on the CC mixes and germination.
- Cover crops can impact the abundance of microbes important to soil nitrogen and carbon cycling.

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