

# Influence of Groundcovers on Citrus Yield and Water Use for Commercial Applications

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In Florida citrus, black fabric mulch groundcovers have been used for the control of the invasive insect, *Diaprepes abbreviatus* (root weevil). However, these groundcovers can also serve as a best management practice (BMP) to optimize tree water uptake and maintain nutrients around the root system. A three-year study from 2019 to 2021 assessed the effects of fabric mulch groundcovers in the water, plant root growth, and yield of lemon trees in a commercial setting. Our lab collected and analyzed real-time soil moisture sensor data, and environmental data (including rain,

soil temperature, solar radiation, and wind velocity) to provide daily irrigation recommendations for covered and uncovered beds. Then, we contrasted the total water applied per treatment with physiological variables such as root and canopy growth, trunk diameter, and yield to assess the impacts of these fabric groundcovers. We found that by using the groundcovers the overall fruit weight was 30% higher for the ground-covered treatment than for the uncovered treatment. Similarly, canopy growth and trunk diameter increased with the groundcover. In terms of water use, we found that

by using both soil moisture sensor-based irrigation and groundcovers the water savings can be as much as 20%. However, our study found that the soil type could also be an influencing factor as some locations along the experiment presented higher benefits than others. In addition, the frequency and timing of an irrigation event influences the beneficial effects of these kinds of BMPs. Then, more frequent irrigation but with less time and early in the morning (before 8:00 am) could provide the biggest benefits.



Figure 1: The influence of groundcovers on young tree growth. The red line indicates differences in tree height. Credits: Eduart Murcia

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