Phosphorus/Potassium Soil Test Calibration and Effects on Citrus Tree Growth. (S08-obreza130258-Poster)

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Abstract:

We are calibrating Mehlich 1 and Mehlich 3 soil test P to help guide Florida citrus fertilization and are determining if a soil test for K is feasible. We applied a range of P and K fertilizer rates in a factorial design to a newly planted citrus grove that was very low in soil-test P and K, and measured growth and yield response to fertilizer rates and soil test values. P fertilizer retention by the soil was reflected by a large increase in soil test P, but soil test K increased only slightly. Citrus leaf P increased from 1.3 to 1.8 mg/g as M-1 P increased from 5 to 100 mg/kg, and leaf K increased from 5 to 17 mg/g as K fertilizer rate increased from 0 to 372 kg K/ha. Grapefruit tree canopy volume increased from 11 to 15 m³, yield increased from 8.1 to 55.5 kg/tree, and fruit diameter increased from 91 to 98 mm as K fertilizer rate increased from 0 to 186 kg K/ha. Canopy volume, fruit yield, and external/internal fruit quality failed to respond to soil test P. The continued failure of K to accumulate in the soil supports the practice of annually applying K fertilizer. The lack of tree response to P was surprising considering the very low soil test P in the control plots.

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