AVOCADO TREE WATER USE IN NEW ZEALAND

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Adequate soil water supply is important for avocado crop production. However, the level and timing of irrigation needed for optimal avocado productivity under New Zealand conditions are unknown. The goals of this research are to produce region specific crop factors for avocado irrigation management, and to investigate the effect of crop load and soil properties on the tree water balance.

To quantify water use of avocado trees and to identify a relationship between water consumption of avocado plants and crop load, the experiment was set up in the main avocado growing regions; Bay of Plenty, Whangarei and the Far North. In 2017, at each site, a weather station was set up, and daily reference Penman-Monteith evapotranspiration (ET_o) was calculated using the weather record. Sap flow probes were installed on the main trunk of the five experimental trees at each site, and plant water uptake was monitored every 30 minutes. Based on sap flow measurement, daily plant transpiration was calculated. Fruit yields were recorded and soil moisture levels were monitored at three depths.

The results of the first year of the experiment showed a strong relationship between seasonal variation in reference ET_o and plant transpiration. Transpiration was influenced by leaf area and crop load, as a clear reduction in plant transpiration was observed after harvest and pruning at all three sites. Avocado trees typically have a variable crop load with an alternate bearing cycle. A second year of monitoring is underway to further investigate the influence crop load has on water use.