

## INTERMITTENT ABOVE CANOPY WATER APPLICATION TO HASS AVOCADOS

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Two field trials with adult trees were established to test the effects of above canopy intermittent applications of water from June to September when the evaporative demand was highest.. All trees, including controls, were drip irrigated every morning.

In the first experiment leaves were wetted approximately every 15 minutes, normally in the 11 h – 18 h period when evaporative demand was highest. In the second an automatic system, operated by leaf placed thermocouples, kept leaf temperatures at 30.5, 34.5 or 39 ° C in the different treatments.

The first experiment was established in a hot area, where daily maximum temperatures were normally above 30° C in the summer period. The water had a low content of bicarbonates. In the second experiment maximum temperatures were rarely above 30° C and its water was high in bicarbonates.

Around midday of sunny days, which were the most, stomata were more open in the intermittently wetted trees. Differences with the dry control trees were large in periods of high evaporative demand. Usually there were no differences in leaf water potential. In the first experiment, the intermittently wetted trees had 25 % higher yield, 26 % bigger increase in trunk cross sectional area and 10 % in fruit size above controls in the 3 years. Only the fruit size differences were statistically significant.

In the four years of the second experiment there were no differences in mean yield and small but significant in fruit size (6 %) and increase in trunk cross sectional area (8 %). The contrasting results in the two experiments could be due to different air temperatures and bicarbonate contents in water. With high contents, in the second experiment, leaves were increasingly whitewashed along the Summer, probably reducing the photosynthetic rate in the following Autumn, Winter and Spring.