

EFFECT OF WATERLOGGING ON PLANT WATER STATUS, LEAF GAS EXCHANGE AND BIOMASS OF AVOCADO (*Persea americana* Mill)

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Avocado trees are highly sensitive to soil waterlogging. An early physiological response of avocado trees to soil waterlogging is reduced stomatal conductance which limits transpiration. The objective of this study was to determine the effect of waterlogging on plant water relations, leaf gas exchange, and biomass of avocado and to relate stomatal conductance and stem water potential to stomatal closure in response to soil waterlogging. In August, 2006 in Homestead, Florida, USA, one-year-old 'Beta' and 'Hass' avocado trees, grafted onto Waldin seedling rootstocks were either continuously flooded for 11 days or not flooded (control plants). Net CO₂ assimilation (A), stomatal conductance (gs), transpiration (T) and stem water potential (SWP) were measured every two days during the waterlogging period and periodically for 21 days after such period. During that period, stomatal impressions were made for plants in each treatment, while stomatal closure was related to leaf gas exchange and SWP. There was a significant reduction in A, gs and T after 9 days of waterlogging, whereas SWP was significantly reduced 14 days after waterlogging was initiated. 'Beta' plants were more susceptible to waterlogging and had less leaf and root biomass at the end of the study period than 'Hass'. Stomatal closure as a result of waterlogging occurred when gs values decreased to 50 mmol m⁻² s⁻¹. However, there was no correlation between SWP and the percentage of stomatal closure under waterlogging conditions.