

SENSITIVITY AND VARIABILITY OF WATER STATUS INDICATORS IN HASS AVOCADO TREES

R. Ferreyra¹, G. Selles², P. Maldonado¹, J. Celedón¹, P. Gil¹, C. Barrera¹, J. Haberland³ and M. Martínez³

¹ Instituto Investigaciones Agropecuarias, Centro Regional V Región, Chorrillos 86, La Cruz; Chile. Correo electrónico: rferreyr@inia.cl

² Instituto Investigaciones Agropecuarias, Centro Regional La Platina. Santa Rosa 11610, Santiago, Chile.

³ Escuela de Agronomía U de Chile. Santa Rosa 11315 Santiago, Chile.

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In February 2006, in a commercial avocado orchard located in Quillota, central zone of Chile, a trial was conducted in order to evaluate the sensitivity and variability of water status indicators in avocado trees (maximal daily contraction amplitude, DCA, of the trunk, stem water potential (SWP) and stomatal conductance (SC). Twelve Hass avocado trees on Mexicola rootstock planted in year 2000 and grafted on Mexicola rootstock were selected. They were irrigated on a daily basis by microsprinklers. Six trees were not irrigated for 13 days (no irrigation treatment), while the rest were normally irrigated (control).

In the control treatment the average DCA was 69.15 μm and the average SWP was -0.55 Mpa. Later the treatment with no irrigation reached DCA values of 285 μm and SWP of -0.95 MPa. Six days after the beginning of the trial, there were significant differences in DCA between control trees and non-irrigated trees, which occurred before the other indicators. When SWP increased to 100%, DCA increased 236%. Thus, DCA is a more sensitive and an earlier indicator of soil water deficit. DCA showed the greatest variability in relation to other indicators of plant water status. DCA measurements had approximately 40% variation coefficient, whereas for SWP and SC had 12% variation coefficient.