EFFECTS OF ENVIRONMENT, LEAF CHARACTERISTICS AND METHODOLOGY ON STEM WATER POTENTIAL IN AVOCADO TREES

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A research study was developed during 2003 and 2004 on 'Hass' avocado trees grown on Mexicola rootstock, in the V Region. The trees were in productive stage with optimal water and nutritional status. In order to optimize xylem water potential (Ψhx) measurements, several factors affecting this methodology were studied, including vapour pressure deficit (VPD), leaf age, equilibrium of water status of leaf tissues, time between leaf detachment and Ψhx measurement, leaf location on the tree, and the effect of high humidity conditions on a detached leaf prior to measurements. Our results showed that in avocado trees the values of Ψhx were stable between 12:30pm and 5:30pm. The most homogenous measurements were obtained by using 10- to 12-month- old leaves under sun light exposure. We observed that in the pressure chamber, measurements should be conducted after the leaf water potential reached equilibrium with the petiole water potential, which occurred after 15 minutes. Leaf water potential should be measured no longer than 1 minute after detachment from the tree; however, this time could be extended by keeping the leaf under high humidity before measurement.