



Early daily trunk shrinkage is highly sensitive to water stress in nectarine trees

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The sensitivity to water stress of different plant water status indicators was evaluated during two consecutive years in early nectarine trees grown in a semi-arid region. Measurements were made post-harvest and two irrigation treatments were applied: a control treatment (CTL), irrigated at 120% of crop evapotranspiration demand to achieve non-limiting water conditions, and a deficit irrigation treatment (DI), that applied around 37% less water than CTL during late postharvest. The plant water status indicators evaluated were midday stem water potential (Ψ_{stem}) and parameters derived from trunk diameter fluctuations (TDF): maximum daily shrinkage (MDS), trunk daily growth rate (TGR), early daily shrinkage measured between 0900 and 1200 h solar time (EDS), and late daily shrinkage (LDS) that occurred between 1200 h solar time and the moment that minimum trunk diameter was reached (typically 1600 h solar time). The most sensitive (highest ratio of signal intensity (SI) to noise) indicators to water stress were Ψ_{stem} together with EDS. The SI of EDS was greater than that of Ψ_{stem} , although with greater variability. EDS was a better indicator than MDS, with higher SI and similar variability. Although MDS was linearly related to Ψ_{stem} down to -1.5 MPa, thereafter MDS decreased with increasing water stress. In contrast, EDS was linearly related to Ψ_{stem} , although the slope of the regression decreased as the season progressed, as in the case of MDS. Further studies are needed to determine whether EDS is a sensitive indicator of water stress in a range of species.