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Seasonal Water Relations in Native Shrubs, Northeastern México

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Abstract

The northeastern region of Mexico is characterized by an average annual precipitation that varies from 400 to 800 mm and its main forest ecosystem is known as Tamaulipan thornscrub, which is utilised as a forage source for domestic livestock and wildlife, fuel wood, timber for construction, and medicine. In this region, shrub and tree plants have evolved key morphological and physiological traits suited for adaptation to environmental constraints, especially on drought-prone sites. In this regard, the aim of present study was conducted to relate how seasonal xylem water potential (Yx) in native shrubs such as *Condalia hookeri, Cordia boissieri, Prosopis laevigata* and *Celtis pallida* is influenced by soil water content, evaporative demand components and rainfall. Using a Scholander pressure bomb, Yx was estimated at 15 days intervals between february 21 and june 30, 2017 in five different plants per species at predawn (06:00 h) and midday (14:00 h). During the wettest period, Yx ranged from -0.67 (*C. pallida*) to -0.94 MPa (*C. hookeri* and *C. boissier*i) at predawn, in contrast, during the driest period, Yx varied from -1.52 (*P. laevigata*) to -2.92 MPa (*C. hookeri*) at predawn. At midday, *C. pallida* and *C. hookeri* achieved the highest (-1.07 MPa) and lowest (-3.10 MPa) Yx values, respectively. Yx at predawn and rainfall were significantly and positively correlated with Yx at midday; whereas the soil water content at different depths with Yx values at predawn was weak. *P. laevigata* and *C. pallida* maintained high values in Yx at predawn and midday under water stress conditions, so these species may be considered as drought tolerant species.

Keywords: Drought, soil water content, Tamaulipan thornscrub species, water potential

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