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Preliminary observations on evaluation of selected tree species planted in the Upper Mahaweli Catchment Area (UMCA) in relation to their ecophysiology

The ecophysiological characteristics of seedlings of *Alstonia macrophylla*, *Eucalyptus grandis*, *Swietenia macrophylla*, *Albizia falcataria* and *Artocarpus heterophyllus* grown in similar soil, under a similar light intensity and watering regime were compared to understand their water requirements for growth.

The attributes measured included specific leaf area, leaf anatomy, stomatal index, mid day water potential and shoot hydraulic conductivity using standard methods. Analysis of variance was performed on each measure and the differences among species were examined.

The water requirement for growth was found to be highest in *E. grandis*. This can be attributed to the high stomatal index (25), thin upper and lower epidermis, more negative water potential (-1.5 MPa) than the soil medium and high hydraulic conductivity ($14.09 \text{ m}^2 \text{ MPa}^{-1} \text{ s}^{-1} \times 10^{-8}$) compared to the corresponding values of the other species investigated. *Swietenia macrophylla* required the least amount of water for growth and it is more efficient in terms of water conservation.

From the overall results, the suitability of the species for planting in the Upper Mahaweli Catchment Area can be ranked (in terms of water conservation) as follows: *S. macrophylla* > *A. falcataria* > *A. macrophylla* > *A. heterophyllus* >>> *E. grandis*. Hence, on the basis of this study *E. grandis* is the least preferred species to be planted for conservation of water in the UMCA. However, further studies on finer differences in the water requirements of the other four species should be carried out and their performance under different environmental conditions examined before the most suitable species among them is recommended for planting in specific microhabitats of the UMCA.