D 212

Physiological and anatomical responses of four Syzygium species in relation to different light intensities and to their spatial distribution in a lowland rain forest, Sri Lanka

Water potential and gydraulic architecture are closely linked with the distribution of species and they can be used to characterize species to their microhabitat.

This study compares the stem and root water potential and hydraulic architecture of four Syzygium species (*S.firmum, S. lissophyllum, S.makul, S. operculatum*) grown under different light intensities (350, 800,2000 µmols $m^{-2}s^{-1}$) and examines whether the above parameters could be related to the natural microhabitat in which each species may be found.

For the water potential (Ψ) measurements Scholander's pressure bomb technique and for the conductivity measurements, procedure described by Tyree and Ewers (1991) were used. Conductance K_h ($m^{4}Mpa^{-1}\ s^{-1}$) and examines whether the above parameters could be related to the natural miccrohabitat in which each species may be found.

For the water potential (Ψ) measurements Scholander'spressure bomb technique and for the conductivity measurements, procedure described by Tyree and Ewers (1991) were used. Conductance K_h ($m^4\ Mpa^{-1}s^{-1}$) and gydraulic conductivity Ks ($m^2\ Mpa^{-1}s^{-1}$)and vessel diameters of 30 randomly selected vessels were measured for each root and shoot segments.

Analysis of variance was performed on each data set using the Statistical Analysis System. Analysis tested for differences and interactions among species and light. At 2000 µmols $m^{-2}s^{-1}$ S.firmum had high K_s and low $\Psi_{mid\text{-}day}$. S. firmum showed a relationship with vessel diameter and root and shoot K_s.

Less vulnerability to cavitation and greater plasticity responses indicates that *S. firmum* can tolerate high light and drought conditions. *S. makul* (grows in mid slopes) can tolerate drought and low light intensities with higher K_s *S. lissophyllum* (grows in valleys and foot hills) and *S.operculatum* (grown near streams) does not tolerate drought or high light with low K_s and more vulnerable to cavitation.