Regulation of water use in crowns of emergent trees in two dipterocarp species in a tropical rain forest, Sarawak, Malaysia

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Diurnal changes of leaf water potential; photosynthesis and stomatal conductance were measured to monitor the difference in the water relation of different crown position. Two tropical emergent trees (*Shorea beccariana*, *Dryobalanops aromatica*) were measured in Lambir Hills National Park, Sarawak, East Malaysia. This study was carried out with use of a canopy crane in a LHNP. For both species, stomatal conductance of upper crown was lower than that of lower crown even though the two positions were exposed to full sunlight. Maximum photosynthesis is higher in the lower position than that of upper position. Clear mid-day depression was observed for maximum photosynthesis especially in upper crown of both species. Those results suggest that the top of the crown in the tropical tree was exposed to a water deficit as compared with the lower crown. In other words, hydraulic limitation is occured in the upper position of a crown of both species.