

43002269 Photosynthetic Capacity in Thai Conifers

Natural History Bulletin Vol.49 No.2

pp10

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Ecophysiological studies were carried out to determine photosynthetic capacity and associated gas exchange characteristics of seven species of conifers growing under common garden conditions in the Queen Sirikit Botanic Garden in the Mae Sa Valley near Chiang Mai, northern Thailand. Rates of net photosynthesis under conditions of non-limiting light and water availability ranged from a high-of 7.9-8.0 $\mu\text{mol m}^{-2}\cdot\text{s}^{-1}$ in *Pinus kesiya* and *P. merkusii* to a low of 2.0 in *Podocarpus wallichianus*. Carbon isotope ratios (δ) of -24.1% in this latter species indicated a high degree of water use efficiency (WUE), while the two pines, *Cephalotaxus griffithii* and *Dacrydium elatum*, showed low WUE with δ values of -29.3 to 30.4% . Thai conifers appear to have ecophysiological traits of photosynthetic capacity, stomatal conductance, and water use efficiency comparable to those of in North American temperate conifers. Our data suggest that inherent limitations in the structural characteristics of the photosynthetic and water transport systems in conifers are equally applicable to tropical as well as temperate conifers in mainland Southeast Asia.