

43002263 Sunlight Foraging in Two Tropical S.E. Asian Pioneer Tree Species: *Macaranga Dent.* & *Mallotus Paniculatus*

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Photosynthetic responses to light intensity plus leaf and petiole architectures were compared to determine light gathering strategies in two pioneer tropical tree species, *Macaranga denticulate* and *Mallotus paniculatus* [Euphorbiaceae], in a mixed deciduous forest near Chiang Mai, Thailand. Despite growth in superficially similar habitats, these two species showed marked morphological and physiological differences, supporting the hypothesis that pioneer species utilize a gradient of adaptive characteristics. These trees share the classical pioneer morphology of large leaves and long petioles, but their petiole arrangements differ. *Macaranga* showed a linear correlation between petiole length and leaf area, but *Mallotus* showed no relation between leaf area and petiole length. This result suggests that *Mallotus* may allocate relatively more carbon for leaf growth in full sunlight and also suggests that this species may have a higher light requirement than *Macaranga*. Because the maximum photosynthetic rate was higher for *Mallotus* ($8.5 \mu\text{mol m}^{-2}\cdot\text{s}^{-1}$) than for *Macaranga* ($7.1 \mu\text{mol mm}^{-2}\cdot\text{s}^{-1}$), petiole growth in *Mallotus* is an adaptation to acquire sunlight more efficiently than if petiole growth were linearly related to leaf area as in *Macaranga*.