

Reproductive biology of the most-at-risk mangrove species (*Rhizophora annamalayana*) and its parental species

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Abstract

Rhizophora annamalayana is a natural mangrove hybrid, derived from *Rhizophora apiculata* and *R. mucronata*, and it is the only endemic species of Indian mangroves confined to Pichavaram mangrove forest of Tamil Nadu. This species is extremely poor in producing propagules, thereby making its propagation difficult. There is an urgent need to recover the species from fast disappearance. Hence, further research is at progress to find out the causes for the extremely poor fruit setting and the ways to overcome the difficulty. Daily growth of floral bud was 40 μ m in *R. mucronata*, 30 μ m in *R. annamalayana* and 20 μ m in *R. apiculata*. From bud initiation to flower, the time taken was 28 days in *R. apiculata*, 24 days in *R. annamalayana* and 21 days in *R. apiculata*. From flower opening to fertilization, the duration took 59 days in *R. annamalayana*, 55 days in *R. mucronata* and 47 days in *R. apiculata*. From fertilized flower to produce mature hypocotyls, the time taken was 45 days in *R. apiculata* and 110 days in *R. mucronata*. The period taken for development from bud primordium to maturation of the hypocotyls was 178 days in *R. mucronata* and 128 days in *R. apiculata*. Hypocotyls elongated at 1.62 mm day⁻¹ in *R. mucronata* and 4.1 mm day⁻¹ in *R. apiculata*. Anthesis and anther dehiscence took up to 5 days in all three species. Stigma receptivity peaked during anthesis; receptivity was lost within 8h in *R. annamalayana* and *R. mucronata*. *R. annamalayana* exhibited only 3% of viable pollen and it was 100% in *R. mucronata*, 53% in *R. apiculata*. *Lucilia caesar* is the most probable pollinators of *R. mucronata*. Flies such as *Monobia quadridens* and *Vespa tropica* and butter fly like *Ocybadistes walkeri* are confined to flowers of *R. annamalayana* facilitating cross-pollination. In *R. apiculata*, anthesis occurred inside the flowers, confirming the condition of cleistogamy.

Keywords

Rhizophora annamalayana, mangrove hybrid, endemic species, phenology, pollination