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The Reproductive Phases, Anthesis Stages and Stigma Receptivity of Malayan Red Dwarf (MRD) and Malayan Yellow Dwarf (MYD) Coconut Varieties

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The development of superior coconut hybrids with enhanced productivity and resilience against diseases and environmental stresses is crucial, particularly given the constraints on agricultural land and the high demand for coconuts. Successful hybrid coconut production relies on the precise timing of controlled pollination to maximize hybridization success and seed set. To obtain genuine F1 hybrids, controlled pollination must prevent self-pollination, necessitating emasculation before female flowers on the inflorescence become receptive. This research pinpointed the reproductive phases, anthesis stages, and stigma receptivity of the commonly used female parents, Malayan Red Dwarf (MRD) and Malayan Yellow Dwarf (MYD) coconut varieties in hybrid production. A total of 75 MRD and MYD inflorescences were observed throughout the male and female phases, with stigma receptivity tested using 6% hydrogen peroxide. The female phase of both MRD and MYD extended up to 14 days, averaging 8 days, while the male phase typically lasted 15-17 days. Due to the overlap of male and female phases, emasculation should be conducted soon after spathe opening, ideally within 5 days for MRD and 3 days for MYD. Six anthesis stages were identified for both varieties, with peak stigma receptivity occurring when the stigma was fully opened, appearing white or light brown, and moist. Observation revealed that the female flowers of both MRD and MYD exhibited anthesis on varying days throughout the female phase, displaying no consistent pattern. Thus, predicting the peak female flower receptivity involved identifying the day when the highest percentage of palms exhibited most of their female flowers becoming receptive. The results indicated that the peak flowering time for MRD occurred between 3-7 days after anthesis (DAA), whereas for MYD, it occurred between 4-8 DAA. These findings offer practical guidance and reference for achieving timely emasculation and pollination in hybrid coconut production.

Keywords: Anthesis stages, coconut, male and female phases, stigma receptivity