

MORPHOLOGICAL AND MOLECULAR DIVERSITY OF INTERMEDIATE COCONUT TYPES OF SRI LANKA

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Coconut germplasm in Sri Lanka is classified into three distinct varieties: *Tall*, *Dwarf*, and *Aurantiaca*, each with distinct forms. The forms under the variety *Aurantiaca* exhibit intermediate characteristics between *Tall* and *Dwarf* regarding plant size and breeding behaviour, causing classification uncertainties. Though rare, intermediate types can be made into potential cultivars. The present study compared the intermediate coconut types; *King coconut*, *Rathran-thembili*, *Bothal-thembili*, *Yellow semi-tall*, *Mirishena semi-tall*, *Bodiri*, and two coconut hybrids; *Red Dwarf*×*Tall* and *Brown Dwarf*×*Tall* respect to *Tall*, *Red Dwarf* and *Brown Dwarf* as controls. Samples were collected from 5–7 trees per each coconut form identified. Twenty-four morphological traits from the International Plant Genetic Resources Institute (IPGRI) descriptors, along with genotypic information from five microsatellite markers unique to coconut were used. Principal component and general linear models in Minitab were employed to analyse morphological data, while the shared allele method in Powermarker was utilized to cluster analysis of genotypic data. Clear differences were not observed for leaf, inflorescence, and fruit traits among the tested coconut forms. However, the stem and crown morphological traits were significantly different between *Bothal-thembili* and *Tall*, while it was similar to *Dwarf*. Two coconut hybrids and the *Yellow semi-tall* did not differ significantly from the *Tall*. In contrast, *King Coconut*, *Rathran-thembili*, and *Bodiri* showed intermediate stem and crown morphological traits, while *Mirshena semi-tall* revealed no apparent grouping concerning morphological traits. The four distinct groups identified from the cluster analysis showed slight variation in stem and crown morphology traits. *Bothal-Thembili* with *Red Dwarf* and *Brown Dwarf* formed one cluster, *Yellow semi-tall*, *Mirishena semi-tall* and hybrids formed the second cluster, *Bodiri*, *King coconut*, and *Rathran-thembili* formed the third cluster, while *Tall* formed a separate cluster. A comprehensive and accurate understanding of the breeding behaviour along with the findings of this research is recommended to confirm and revise the existing coconut classification.

Keywords: Coconut forms, Coconut germplasm, Coconut variety, Microsatellite markers