Section B

201/B

Multivariate discrimination of exotic coconut varieties for stem and inflorescence morphology

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Characterization of conserved germplasm is of primary importance for the effective use of genetic resources and refines conservation strategies. Currently, there is a pool of *ex-situ* conserved exotic coconut varieties at Bandirippuwa genebank, Sri Lanka. This research aims to characterize exotic coconut varieties with morphological descriptors as an initial step to incorporate them in the national coconut breeding programme.

Six coconut varieties; namely, Rennell Island Tall, Malayan Yellow Dwarf, Andaman Ordinary Tall, Markham Valley Tall, Indian West Coast Tall, Laccadive Ordinary Tall were studied. Morphological data were scored for stem (girth at 20 and 150 cm) and inflorescence (numbers of female flowers, spikelets with and without female flowers, lengths of central axis and spikelets) as outlined by Bioversity International. Statistical analytical methods; principal components and cluster analyses were performed in Minitab 17.

The first 2 Principal Components (PCs) for stem and inflorescence traits cumulatively explained 98.3% of the variation among accessions. All the scored characters showed more or less equal loadings with positive correlations except spikelets without female flowers for PC1 while female flower distribution recorded the highest loading with a negative correlation for PC2. The dendrogram and the score plot for the accessions indicated the formation of four distinct groups of phenotypes with Rennell Island Tall and Markham Valley Tall grouping together, Andaman Ordinary Tall and Laccadive Ordinary Tall forming one cluster and Indian West Coast Tall and Malayan Yellow Dwarf forming separate individual groups. Accordingly, the dwarf coconut Malayan Yellow Dwarf clearly separates from the rest and tall coconuts with Pacific origin; Rennell Island Tall and Markham Valley Tall grouped together while the tall coconuts from India separated from the rest.

The six exotic varieties show clear diversity for stem and inflorescence morphologies and they have been grouped according to their different origins. Furthermore, the measured traits were informative for describing the stem and inflorescence diversity of the varieties studied. The diversity displayed in the studied coconut germplasm indicates the high potential of these coconut varieties to enrich the gene pool of coconut and thereby provide potential parent varieties for the national coconut breeding programme.

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