

Morphological Characterization of Tall Coconut (*Cocos nucifera* L.) Germplasm Conserved in *Ex-situ* Field Genebanks in Sri Lanka

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Abstract

Germplasm characterization is very important to identify novel traits which are essential for the breeding process to develop improved hybrids. Germplasm characterization can be achieved in three means as morphological, molecular and biochemical characterization. Through the characterization of different coconut varieties, diversity among them can be comprehended which is a pre-requisite for genetic improvement.

A total of 157 coconut accessions were conserved in the four main *ex-situ* field genebanks in Sri Lanka namely; Raddegoda, Lenawa, Pallama and Pottukulama. Out of these 157 accessions 95 accessions are belonging to the tall variety. This contains unidentified duplicates and closely related accessions which are not necessary to rejuvenate in future, hence, can reduce the cost of rejuvenation. The study focuses on identifying morphologically, the most diverse accessions among 95 tall coconut accessions conserved *ex-situ* field genebanks in Sri Lanka. Previously collected morphological data i.e. stem, leaf and inflorescence characters, during the past two years was analyzed using statistical software (MINITAB 14) to select most diverse 42 tall accessions out of the above 95 accessions available in *ex-situ* field genebanks. These were selected by observing their grouping pattern at 66.67% similarity level of the dendrograms.

Results revealed the diversity of morphological data among tall accessions indicating the potential of them to be utilized in breeding programmes. The study also unveiled the duplications among accessions with respect to stem, leaf, inflorescence, nut count and fruit components which will help in formulating future conservation strategies and conservation of true genetic diversity. Further, all these grouping patterns revealed that the variation is not explained by the geographical regions. Thus the observed variation is attributed to the specificity of each population.

Table 1: selected 42 accessions

LENAWA	RADDEGODA	PALLAMA	POTTUKULAMA
Sitrakala	Dadella	Kalawewa	Moorock
Kivulakelle	Galenbundunuwewa	Galenbidunawewa	Pitiyakanda
Thammenna	Medagama	Wanathawilluwa	Clovis
Yatawatta	Mahakumbukkadawara	Ihalakagama	Namalwatta
Mirishena	Beliatta	Blackstone	St. Anne's
Ambakelle tall	Alutwatta	Lanlib	Margret
Dickwella	zoyzawatta	Hangiliyagama	Kasagala
Namalwatta	Heediwatta	Diddenipotha	Debarayaya
Debarayaya	Adikarigoda	Kalagedihena	Malsiripura
	magama	Kirulapona	Mangala eliya
			Keenakelle
			Maliboda
			Walahapitiya

Keywords: Coconut; Germplasm conservation; Morphological characterization; Gene bank; Accessions