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Molecular characterization of traditional mango (*Mangifera indica* L.) varieties of Kerala

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ABSTRACT : Investigations were done with the objective to characterize the traditional mango varieties/ accessions of Kerala based on Randomly Amplified Polymorphic DNA (RAPD) markers. Thirty accessions/ecotypes were subjected to RAPD analysis. DNA was extracted from young leaves using CTAB method with slight modification. A total of 157 RAPDs (average of 3.74 bands per primer) were generated on PCR amplification using 42 decamer primers, of which 96.18 per cent (151 bands) were polymorphic. Of these, ten primers yielded 92 scorable bands with an average of 9.2 bands per primer. The pair wise similarity coefficient values ranged from 0.217 to 0.833. In the dendrogram, the thirty accessions were observed to group into seven clusters. The largest cluster contained 20 accessions. Four table varieties, Kappa manga, Mylapore manga, NeendaKarpooram and Kandiyoor Local were grouped together. All these were soft fleshed. Muthalamookan and Kolambi manga clustered together. Puliyan, Perakka manga, Kalluketty and ChampaVarikka formed four separate clusters. These ecotypes with desirable traits can be used to develop molecular markers so that a particular gene of interest can be identified and transferred to a desirable cultivar through genetic engineering.

KEY WORDS : Mango, *Mangiferaindica* L., RAPD, Molecular characterization

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Mango (*Mangiferaindica* L.), the most important as well as the national fruit of India has been cultivated in India for over 4000 years. There are at least 1000 named cultivars in India (Kumar *et al*., 2001). In south India, over 350 varieties are being cultivated (Naik, 1963). Mango is cultivated in an area of 63,751 ha with a production of 3,73,168 tonnes (FIB, 2012) in Kerala. Previously, there were vast areas of land under mango cultivation in Kerala. ChenkaVarikka, Chandrakaran, Koonan, Kalkandamanga, Karakka manga, Chappikudiyan and Kilichundan are some of the traditional mango varieties of Kerala. The importance of these mango varieties to the people of Kerala is indicated by the multitude of uses of the various parts of the trees. However, due to the changes in socio-economic situation and land use pattern and the shrinking homesteads, the area under mango cultivation has been reduced. This has resulted in the genetic erosion of traditional mango germplasm of the state.Therefore, there is an urgent need to catalogue and conserve at least the available traditional genetic resources, which are on the verge of extinction. Apart from this, the nomenclature of *Mangifera* sp. and mango cultivars is complicated by the use of synonyms. Proper assessment of existing genetic diversity is important in view of the emerging patent rules. Efforts in this regard are not appreciable. However, in North and Central Kerala, attempts have been made to collect, maintain and conduct variability studies in mango varieties (Radha and Manjula, 2000; Naik*et al*., 2000).

Molecular markers are direct manifestations of genetic content (Weising*et al.*, 1995). They serve as reliable indices of genetic variation.Randomly amplified polymorphic DNA (RAPD) is a quick, reliable and widely accepted molecular marker. There are many reports on the use of RAPD in mango (Schnell *et al.*, 1993; Bally *et al*., 1996; Valenzuela *et al.*, 1997; Ravishankar*et al*., 2000; Kumar *et al*., 2001; Karihaloo*et al*., 2003; Jena *et al.*, 2010;Bhargava and Khorwal, 2011). In the present study, an attempt has been made with the objective to characterize the traditional mango varieties of Kerala based on RAPD profiles.