



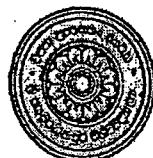
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## Morphological and Molecular markers revealed genetic diversity of Yam *Dioscorea* spp. accessions of Sri Lanka

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Yam (*Dioscorea* spp.), which is a staple food over 100 million countries in the humid and sub humid tropics is a tuberous, monocotyledonous plant, belongs to the family Dioscoreaceae. The yam species have an advantage for sustainable cultivation because of its comparatively good agronomic characteristics. But this crop has been less benefitted by novel techniques. Therefore this study was conducted to assess the genetic diversity of seventeen *Dioscorea* spp. germplasm accessions comprising eleven *Dioscorea alata*, two *D. bulbifera*, two *D. esculenta*, one *D. pentaphylla* and one *D. spicata* conserved at Plant genetic resources centre (PGRC), Gannoruwa, Sri Lanka using morphological markers and SSR markers. Morphological characters were scored using the accepted International Plant Genetic Resources Institute (IPGRI) descriptor for Yam based on 55 stem and leaf characteristics. Molecular characterization was done using 15 SSR markers. Results analyzed using Minitab 16 statistical software revealed that there is a considerable genetic diversity among the selected accessions both in morphological and molecular levels. Mature and young stem colour, twining habit, absence and presence of wings, leaf color and shape showed high genetic variation. Cluster analysis for morphological characters separated *D. pentaphylla* and *D. esculenta* accessions showing a close relationship in between *D. alata* accessions. Molecular analysis based on 15 SSR markers generated total of 55 alleles with polymorphism in 13 SSR markers. Nei's (1983) genetic distance based on SSR analysis ranged from 0.0769 to 0.9231. Phylogenetic tree constructed based on Nei's (1983) genetic distance and UPGMA algorithm consists of 2 major clusters separating most of *D. alata* accessions from other *Dioscorea* spp. accessions and no duplicates were revealed.

Key words: *Dioscorea* spp., genetic diversity, germplasm, SSR , Sri Lanka