Molecular Diversity Analysis of Peanut Mini Core Collection using RAPD Markers

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ABSTRACT

Twenty nine accessions of groundnut minicore collection belonging to different botanical types along with five cultivars viz., GPBD-4, M 28-2, TAG 24, JL 24 and MN 1-35 were selected for RAPD assay to assess the molecular diversity through twenty primers. Out of the twenty primers used, the primers namely OPK 14, OPA 19, OPC 15, OPC 09, OPC 13, OPB 11, OPF 09, OPJ 06, OPV 16, OPA 15, OPA 20, OPA 12 and OPF 10 have shown high polymorphism across all four botanical types. The polymorphism per primer ranged from 57.14% to 100%. The dendrogram revealed six distinct clusters but the accession in each cluster could not associate with subspecies or botanical types, even cluster did not show any association with geographical origin. This indicated independence of molecular diversity with morphological diversity. The similarity coefficient ranged from 0.63 to 0.93 indicating substantial diversity present in the mini core collection. Accessions with the most distinct DNA profiles are likely to contain greater number of novel alleles as revealed by RAPD assay. Substantial genetic diversity exists in the mini core that could be exploited in crop improvement programme.

Key words : Dendrogram, Groundnut, Mini Core collection, RAPD polymorphism, Similarity Coefficient.