



## Molecular characterization and genetic diversity analysis using RAPD markers in parental lines of cotton (*Gossypium* spp.)

HARSHAL E. PATIL\*, S.B. THAWARI AND RAVIKIRAN S. MALI

Seed Monitoring Cell, Directorate of Research Office (Dr. Panjabrao Deshmukh Krishi Vidyapeeth)

AKOLA (M.S.) INDIA

(Email : [mailme.harshalpatil@rediffmail.com](mailto:mailme.harshalpatil@rediffmail.com))

**Abstract :** Molecular characterization and genetic diversity of seven CMS, seven maintainers and four restorer lines of cotton (*Gossypium* spp.) was investigated through Randomly Amplified Polymorphic DNA markers. The similarity indices showing the evolutionary similarity varied from a minimum of 0.36 to maximum of 0.90. In case of CMS and maintainers lines, the pairs viz., 1 A and 1 B, 3 A and 3 B, 7A and 7 B exhibited maximum genetic similarities which revealed that these genotype are genetically less divergent or genetically more closure than any other genotypes. The maximum genetic similarity was observed between restorers, RHC 054 and RHC 058 (0.90) followed by RHC 035 and RHC 056 (0.80). The dendrogram tree constructed using Win Boot computational analysis showed two completely distinct groups. The CMS and maintainer pairs viz., 1 A and 1 B, 2 A and 2 B, 3 A and 3 B, 5 A and 5 B, 9 A and 9 B formed a separate cluster, whereas 7 A and 7 B, 10 A and 10 B formed a second distinct cluster. Each CMS and its maintainer line revealed homology with each other. The dendrogram obtained from restorers showed two distinct clusters. Cluster one consisting of RHC 035 and RHC 0056 while, second cluster consisting of RHC 054 and RHC 058. The results revealed that considerable amount of diversity is present among CMS, maintainers and restorer lines of cotton and each genotype is also characteristically indentified by their RAPD marker profile. Moreover, genetic diversity was not only related to the geographic diversity but also natural and artificial selection, exchange of breeding material and genetic drift.

**Key Words :** Genetic diversity, RAPD markers, Cotton, Molecular characterization

**View Point Article :** Patil, Harshal E., Thawari, S.B. and Mali, Ravikiran S. (2013). Molecular characterization and genetic diversity analysis using RAPD markers in parental lines of cotton (*Gossypium* spp.). *Internat. J. agric. Sci.*, 9(2): 610-614.

**Article History :** Received : 14.12.2012; Revised : 11.03.2013; Accepted : 12.04.2013