Identification and Analysis of Genetic Variation among Rose Cultivars Using Random Amplified Polymorphic DNA

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Identified germplasm is an important component for efficient and effective management of plant genetic resources. Traditionally, cultivars or species identification has relied on morphological characters like growth habit or floral morphology like flower colour and other characteristics of the plant. Studies were undertaken for identification and analysis of genetic variation within 34 rose cultivars through random amplified polymorphic DNA (RAPD) markers. Analysis was made by using twenty five decamer primers. Out of twenty five, ten primers were selected and used for identification and analysis of genetic relationships among 34 rose cultivars. A total of 162 distinct DNA fragments ranging from 0.1 to 3.4 kb was amplified by using 10 selected random decamer primers. The genetic similarity was evaluated on the basis of presence or absence of bands. The cluster analysis indicated that the 34 rose cultivars form 9 clusters. The first cluster consists of eight hybrid cultivars, three clusters having five cultivars each, one cluster having four cultivars, two clusters having three cultivars each and two clusters having one cultivar each. The genetic distance was very close within the cultivars. Thus, these RAPD markers have the potential for identification of clusters and characterization of genetic variation within the cultivars. This is also helpful in rose breeding programs and provides a major input into conservation biology.

Key words: Polymerase Chain Reaction (PCR), Random Amplified Polymorphic DNA (RAPD)