



## Analysis of genetic variability in scented rice varieties using RAPD marker

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**Abstract :** Molecular marker technology is the genetic tool for assessing genetic diversity and relationships among scented rice and other varieties of rice. In the present study, a random amplified polymorphic DNA technique was used for genetic diversity analysis among 45 genotypes of scented rice with 9 primers. A total of 57 bands were amplified by 9 pre screened polymorphic decamer primers at an average rate of 6.33 bands/primer and 83.17 were polymorphic. The data of 45 genotypes of scented rice were used to generate pair-wise matrix based on Jaccard's co-efficient. The similarity co-efficient ranged from 0.423 in between Sugandha-2 and 3231 to maximum of 0.932 in between IR106 and IR-253U. It indicated the closeness of these genotypes. The UPGMA cluster analysis showed similarity between most of the cultivars. The information of the genetic diversity will be useful for the selection of the parents for breeding rice variety.

**Key Words :** Scented rice, RAPD, Genetic diversity, Genotypes

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### INTRODUCTION

Rice is an economically important crop and due to its good nutritive value and storage quality it is a staple food for more than one-third of the world's population (Anonymous, 2008). Rice is grown in almost all the states of India but its cultivation is mostly concentrated in river valley, deltas and low lying coastal areas of North-Eastern and Southern India (Richharia and Govindswami, 1990). The increase in supply must mainly be met by increasing crop yields through better crop, nutrient, pest and water management and the use of germplasm with a higher yield potential. Aromatic rice is one of the best variety of other rice varieties, a large number of such varieties were collectively known as Basmati (*bas* = aroma). They are highly demanded in global market due to their pleasant aroma, superfine long-slender grains with delicate curvature, remarkable linear elongation, excellent flaky soft texture on cooking (Bhasin, 2000.) On the other hand, the small and medium grain aromatic rices are being regarded as a

separate class *i.e.* non-Basmati type aromatic rice (Singh *et al.*, 2000).

Genetic diversity studies on rice using traditional morphological and biochemical markers are common and routinely used (Kato *et al.*, 1928; Glaszmann, 1987). Supplementing to above parameters, PCR based molecular markers are considered more suitable for analysis of genetic diversity and varietal identification since there is little effect of stage of development, environment and management practices.

A wide range of research work has been done on rice applying molecular markers *viz.*, Restriction Fragment Length Polymorphism (Bostein *et al.*, 1980), Random Amplified Polymorphic DNA (Ravi *et al.*, 2003; Baishya *et al.*, 2000), Simple Sequence Repeats (Bligh *et al.*, 1999; Jain *et al.*, 2004), Amplified Fragment Length Polymorphism (Cho *et al.*, 1996; Saini *et al.*, 2004) and Inter Simple Sequence Repeats (Blair *et al.*, 1999; Nagaraju *et al.*, 2002). All these molecular techniques have the common objective of assessing the relative diversity

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