Abstract

In Coffea arabica (arabica coffee), the phenotypic as well as genetic variability has been found low because of the narrow genetic basis and self fertile nature of the species. Because of high similarity in phenotypic appearance among the majority of arabica collections, selection of parental lines for inter varietals hybridization and identification of resultant hybrids at an early stage of plant growth is difficult. DNA markers are known to be reliable in identifying closely related cultivars and hybrids. Sequence Related Amplified Polymorphism (SRAP) is a new molecular marker technology developed based on PCR. In this paper, sixty arabica hybrid progenies belonging to six crosses were analyzed using 31 highly polymorphic SRAP markers. The analysis revealed seven types of SRAP marker profiles which are useful in discriminating the parents and hybrids. The number of bands amplified per primer pair ranges from 6.13 to 8.58 with average number of seven bands. Among six hybrid combinations, percentage of bands shared between hybrids and their parents ranged from 66.29% to 85.71% with polymorphic bands varied from 27.64% to 60.0%. Percentage of hybrid specific fragments obtained in various hybrid combinations ranged from 0.71% to 10.86% and ascribed to the consequence of meiotic recombination. Based on the similarity index calculation, it was observed that F1 hybrids share maximum number of bands with the female parent compared to male parent. The results obtained in the present study revealed the effectiveness of SRAP technique in cultivar identification and hybrid analysis in this coffee species.

Keywords

Coffea arabica, SRAP molecular marker, hybrid analysis, genetic inheritance.