Utility of a fertility restorer gene linked marker for testing genetic purity of hybrid seeds in rice (*Oryza sativa* L.)

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The utility of a fertility restorer (*Rf*) gene linked co-dominant STMS marker RM258 was examined for testing the genetic purity of hybrid seeds in rice. DNA isolated from 450 seedlings of a superfine grain aromatic rice hybrid Pusa RH10, was PCR amplified using RM258. Of these, 15 plants were found homozygous for either of the parental type (CMS line Pusa 6A and restorer line PRR 78) allele. The rest 435 plants were heterozygous at the RM258 locus indicating their true hybrid nature. The genetic purity of hybrid seed lot was thus found to be 96.67%. The results of molecular analysis were confirmed by the Grow Out Test (GOT). Further, the efficacy of RM258 was compared with markers, RM201, 206, 216, 228, 247 and 263, which were not linked to *Rf* gene but were polymorphic between the corresponding A and R lines. Some of the plants identified as hybrid, using RM258 appeared as self of the parental lines at certain unlinked marker loci. Similarly, among the 15 plants homozygous for either of the parental type alleles at the RM 258 locus, the distribution of homozygous and heterozygous genotypes at unlinked marker loci was observed in varying frequency. These observations indicated that the assessment of genetic purity of hybrid seeds based on unlinked markers might not be fully reliable. The study suggests that a single *Rf* gene linked co-dominant marker can provide a precise and quick alternative to GOT, for testing hybrid seed purity.