

Random amplified polymorphic DNA (RAPD) markers for detection of sex in *Carica papaya*

In *Carica papaya* L. important agronomic traits are associated with sex with hermaphrodite and female plants being the most desirable. Since the sex of papaya can be deduced only after they attain reproductive maturity, about 40-50% in a plantation remains as unproductive male plants for 6-8 months leading to severe wastage of resources. Therefore, development of an accurate marker for early determination of sex in papaya is a major breakthrough in papaya cultivation.

Initially an assay was conducted with male, female and hermaphrodite DNA pooled from 10 individuals each with 100 Operon primers (Kits A-E) and in the RAPD-PCR. Subsequently 20 most promising primers were picked and individual samples were assayed. Among 100 primers 75 generated clear DNA profiles yielding total of 971 bands of which 89 were polymorphic. The best twenty primers yielded 17 strong polymorphisms upon assay of individuals. The most consistent among them were OPC9, OPE3 and OPE19. Three polymorphisms, OPC9-1.7kb, OPE3-400bp and OPE 19-2.18kb showed a very tight linkage to sex. The former two linked closely to maleness and hermaphroditism while the latter linked to femaleness. These fragments are now being cloned and sequenced for converting them into more convenient sequence characterized amplified regions or SCARS. These three polymorphic bands, OPC9-1.7kb, OPE3-400bp and OPE 19-2.18kb assure great promise in developing a highly authentic molecular marker based package for early identification of the sex of *Carica papaya*.