

IDENTIFICATION OF SEX IN *CARICA PAPAYA* L. (PAPAW) USING RANDOMLY AMPLIFIED POLYMORPHIC DNA

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Carica papaya L., the fourth-largest annual fruit producer in Sri Lanka, is polygamous in nature. The sex of dioecious papaya plants, conventionally propagated through seeds, can be deduced only after they attain reproductive maturity (5-8 months after planting). Among seedlings, 50% is composed of unfruitful male plants, which leads to wastage of resources, and these can only be removed at the flowering stage. If the sex of a plant is identified at juvenile stage some resources can be saved.

The sex determination of *Carica papaya* is controlled by a single gene with three alleles, M_1 , for maleness, M_2 , for hermaphroditism, and m for femaleness, with dual dominant zygotes (M_1M_1 , M_2M_2 and M_1M_2) not being viable. This study was conducted to detect a possible marker for prediction of sex types in papaya using the Randomly Amplified Polymorphic DNA (RAPD) technique.

DNA was extracted using the CTAB method from tender leaves, kept stored after transporting from the Fruit Crop Research and Development Center, Horana. DNA samples of 12 individuals; four female, four hermaphrodite and four male papaya plants, were screened using three random decamer primers (OPC-9, OPA-20 and OPJ-5). These primers generated clear DNA profiles with a total of 28 bands and some of them exhibited polymorphic banding patterns. Three sex-specific fragments, OPC-9_{1700bp} (maleness and hermaphroditism), OPA-20_{5500bp} and OPC-9_{5500bp} (maleness) that were not observed with any female plants were detected. OPJ-5 generated a fragment at 800 bp, which was confined to hermaphrodites and males. In addition, a band at 3750 bp for OPC-9 was present only in hermaphrodites. These RAPD profiles indicated the possibility of discriminating the three sex types from one another at the seedling stage.