



Development of RAPD marker related to fruit cracking in jackfruit (*Artocarpus heterophyllus* Lam)

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ABSTRACT

An investigation was conducted in the orchards of Department of Horticulture, of University of Agricultural Science, GKVK, Bangalore and State Forest Department Farm, Tamaka at Kolar district, Karnataka. Study employed morphological identification and development of molecular marker for differentiating cracking and non-cracking genotypes of jackfruit. The RAPD analysis identified OPC-07 as the polymorphic primer showing band size of 810 bp as the polymorphic marker for identification of cracking genotypes of jackfruit. These identified RAPD marker can be used as a tool for identification of cracking free genotypes of jackfruit in the future.

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Key words : Fruit cracking, Jackfruit, PCR, RAPD marker

Jackfruit (*Artocarpus heterophyllus* Lam.) is popularly known as the poor man's food in the eastern and southern parts of India and also known as money jack due to its importance (Gupta and Naik, 2009). The fruit are the largest tree-borne fruit in the world and borne primarily on the trunk and interior part of main branches usually weight 4.5-30 kg, although a weight of 50 kg has been reported (Craig and Harley, 2006). The fruit are rich source of vitamin A, C and minerals, it also supplies carbohydrates. Tender jackfruits are popularly used as vegetable. The skin of the fruit and its leaves are excellent cattle feed. It is believed indigenous to the rain forests of Western Ghats (Jagadeesh *et al.*, 2007) and now has spread throughout the tropics. Today, it is under cultivation in many Asian, African and Southern American countries. In India, mainly two types viz., soft flesh and firm flesh are available. Some types with local names like 'Gulabi' (rose-scented), 'Champa' (flavour like that of *Michelia* sp.), 'Hazari' (bearing large number of fruits), 'Rudrakshki' (Roundish fruit) are also available. Due to its abundant availability during the monsoon in the coastal regions and non-availability of vegetable during that season has earned the name for Jackfruit as poor Man's food

(Sarkar *et al.*, 2005). However, this gaining popularity of the fruit crop is reported to be suffered from the fruit cracking a physiological disorder. In the present study, RAPD marker was used to develop the markers linked to fruit cracking in jackfruit genotypes.

MATERIALS AND METHODS

The present investigation was carried out at Plant Molecular Biology Laboratory, Division of Horticulture, Gandhi Krishi Vigyan Kendra, University of Agricultural Sciences (UAS), Bangalore, Karnataka during the period of 2006-2008. Orchards growing jackfruit were randomly selected around Bangalore and Kolar districts. A total of seven (7) cracking cultivars were collected and they were compared with the control (non-cracking) plants as shown in Table 1 along with its sites of collection.

A modified CTAB extraction protocol described by Simon *et al.* (2007) was used to isolate genomic DNA from jackfruit young leaves. The DNA samples were quantified using a UV absorbance spectrophotometer and diluted with 1x TE buffer to a final concentration of 30 µg/µl. The PCR amplification was followed the protocol of Williams *et al.* (1990) with minor modification. RAPD