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Proliferation, rooting and acclimatization of micropropagated papaya cv. RED LADY

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SUMMARY

This study describes a protocol for rapid and large scale *in vitro* propagation of the valuable C*arica Papaya* cv. RED LADY. Culture conditions influencing shoot proliferation, rooting and acclimatization were examined. The *in vitro* shoot proliferation studied by different PGR concentration with different level of light intensity. In that Murashige and Skoog medium with 0.1 mg/l NAA and 1.0 mg/l Kinetin in 3000 Lux light intensity get maximum rate of proliferation. The *in vitro* rooting observed with different level of IBA and MS medium. Rooting treatment consisting of half MS medium supplemented with 1.0 mg/l IBA was found to be the best for early induction of roots (28 days), maximum number of root/shoot and length of root also. For acclimation 5 medium were studied. In that 70 per cent survival of plantlets in Potting mixture containing soil: sand: FYM (1/1/1:: V/V/V) was found to be suitable for hardening *in vitro* raised papaya plantlets.

Key words : Papaya, Proliferation, Rooting, Acclimatizaon

There is tremendous scope of developing fruit industry in India. The Papaya (*Carica papaya* L.) belongs to family Caricaceae. The edible fruit are available with Carica genus (Muthukrishnan and Irulappan, 1990). Papaya is a native of Tropical of North and South America (Litz, 1984).

Papaya is one the principal fruits crops of tropical and subtropical areas of the world. In India, production of papaya in the year 2005-06 was 23, 17, 200 tones obtained from an area of occupying 73,100 ha, having the productivity of 31.7 tones/ha. While Gujarat produced 3,23,000 tones papaya from an area of occupying 7,700 ha having the productivity of 41.8 tones/ha, which ranked second in the production in India. Normally, papaya (Red-Lady) is propagated through seed. No male plant hence all produced fruits. Weight about 1.5-2.0 kg. Flesh is thick, red with 13% sugars content, delicious taste and excellent aroma. It is a cross-pollinated crop, the plant raised from seeds have a mixed inheritance which make them highly variable in performance. The improvement of papaya is hindered by its heterozygosity, dioecious habit and susceptibility to diseases. Although, desirable characteristics of var. Red Lady, the growers are not able to adopt this variety due to vary high cost of seed. The importance of these problems is evident the lack of true-to-type cultivars at present. Clonal propagation is an urgent necessity for improvement of papaya. Similarly, in spite of careful realization of treatments against pest and diseases, bacterial and virus infections can not be prevented totally. The answer of these problems is expected through plant tissue culture techniques (Micro propagation).

Papaya is one of the few fruiting plants of commercial value to be propagated *in vitro* tissue culture. Various attempts have been made to propagate papaya *in vitro* through callus regeneration (Yie and Liaw, 1977), somatic embryogenesis (Litz and Conover, 1982) and shoot proliferation (Rajeevan and Pandey, 1983). Research work on different aspects of papaya tissue culture has been reviewed by Litz (1984).

MATERIALS AND METHODS

The present investigation on "Micropropagation in papaya var. Red Lady" was carried out at Biotechnology and Plant Tissue Culture Laboratory, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari. Shoot tip were collected from 4-6 weeks old papaya seedling var. RED LADY. Shoot tip were washed in running tap water. Surface sterilized in mercuric chloride with 0.1 % in 3 minutes then rinsed three times in sterilize distilled water. Shoot tip established in MS medium with 0.5 mg/l BAP + 0.1 mg/l NAA and multiplication in alternate subculture on basal medium and best of establishment medium.

While standardizing the method of micropropagation

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