

## Pre-harvest spray of different sources of calcium to improve the bio chemical qualities of sapota fruits (*Manilkara achras* (Mill) Fosberg) cv. KALIPATTI

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### ABSTRACT

Among the all pre-harvest treatments, non-reducing sugar, total sugar was observed significantly maximum on all days of storage in pre-harvest treatment of calcium chloride 1.0 per cent. While reducing sugar was observed maximum in pre-harvest treatment calcium nitrate 0.5 per cent. Considering to the acidity and ascorbic acid it was found at par to all pre-harvest treatments during the storage period.

**Key words :** Sapota, Sugar, Pre-harvest treatment, Calcium chloride

India is considered to be the largest producer of sapota in the world. Sapota was introduced from Mexico to Asian countries like India, Srilanka, Indonesia and Myanmar etc. It reported that for the first time the sapota cultivation was started during 1898 in a village called Golwad in Maharashtra. The several varieties are grown in India, of which Kalipatti is one of the most popular and commercially important variety grown in Maharashtra, Karnataka and Gujarat states. South Gujarat is a horticultural belt which Kalipatti variety is grown on large area. However, sapota is highly perishable, the post harvest life is very short. Being a climacteric fruit, sapota ripens within 4 to 7 days after harvest and soon after full ripened stage, rapid bio-chemical changes reduced the shelf life. To increase the shelf life through pre-harvest treatment is considered one of the major attempts in sapota cultivation. The effect of pre-harvest treatments on post-harvest life of sapota fruit was studied by several workers with promising results. However, under South Gujarat agro-climatic conditions of moderate to high temperature and relative humidity (RH), different pre-harvest treatments of calcium was carried out to study on post harvest life of sapota fruits cv. KALIPATTI.

### MATERIALS AND METHODS

A field experiment was conducted on sapota at the Regional Horticultural Research Station, ASPEE College of Horticulture and Forestry Navsari Agricultural University, Navsari in Randomized Block Design with three replications. An aqueous spray was done on uniform sapota trees with different sources of calcium viz., calcium chloride ( $\text{CaCl}_2$ ), calcium sulphate ( $\text{CaSO}_4$ ) and

calcium nitrate ( $\text{Ca}(\text{NO}_3)_2$ ) at 0.5, 1.0 and 1.5 per cent levels of each substance before 21 days of expected harvest. The fruits were harvested at proper maturity stage and subjected to bio-chemical analysis in the Pomology Laboratory (PG) of ASPEE College of Horticulture and Forestry Navsari Agricultural University, Navsari, during the year 2007.

### RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarised under following heads:

#### Total soluble solids (%) :

TSS content increased initially and was peak on 6<sup>th</sup> day of storage in all the treatments and control except  $\text{CaCl}_2$  @ 0.5 and 1.5 % treatments, and later on declined upto end of storage. The maximum TSS was retained in fruits treated with  $\text{CaCl}_2$  1% treatment (24.70%). The increase in TSS during storage was due to the breakdown of complex polymers in to simple substances by hydrolytic enzymes, which at later storage period got utilized during respiration. Similar findings have been reported by Gupta *et al.* (1987), Saran *et al.* (2004) and Siddiqui *et al.* (1989) in ber.

#### Total sugar (%) :

There were gradual increases in total sugar up to 6<sup>th</sup> day of storage with pre-harvest spray of different calcium sources except  $\text{CaCl}_2$  1.5% increased upto 9<sup>th</sup> day (Table 1). While, calcium chloride ( $\text{CaCl}_2$ ) 1.0 per cent showed most significant result (9.52%) closely followed by  $\text{CaCl}_2$