



Effect of packaging and cushioning materials on shelf life of custard apple fruits under different storage conditions

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ABSTRACT

An experiment was undertaken at Department of Horticulture, Dr. P.D.K.V., Akola (M.S.) during 2006-07. The custard apple fruits packed in different packaging materials were stored at room temperature and zero energy cool chamber. It was found that the physiological loss in weight (PLW), blackening and decaying of fruits increased with increase in storage period regardless of packaging material and storage conditions. There was an increase followed by subsequent decrease in TSS, total sugar, reducing sugar, acidity, ascorbic acid content with corresponding decrease in tannin upon prolonged storage under both the storage conditions irrespective of packaging materials. The rate of change of physico-chemical constituents was found to be slower in fruits stored in ZECC than those stored at ambient storage. The fruits could be stored upto 6 days under ambient storage, when wrapped with tissue papers and kept in cardboard boxes. However, the shelf life of custard apple fruits was 9 days when wrapped with tissue papers and kept in cardboard boxes when stored in zero energy cool chamber. Moreover zero energy cool chamber has the added advantage of easy construction, low cost and less maintenance.

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Custard apple (*Annona squamosa*) is a climacteric fruit and highly perishable in nature. Hence, it is mostly utilized or preferred for fresh market. Due to its climacteric nature, it ripens fast and spoiled easily. Therefore, development of technique for extending the shelf life of fruits is the only answer for getting the remunerative profit from it. Ripening of custard apple fruits occurred earliest at high temperature and delayed at low temperature.

Post harvest life of fruits is primarily dependent on storage temperature. The temperature regulates all the physico-chemical changes of the fruits during storage. The harvested fruits continue to loose moisture and rapidly become shriveled. High humidity and low temperature have major effects on storage life of climacteric fruits. By using zero energy cool chamber, temperature can be reduced upto 17 to 18°C throughout the year with high humidity (Roy and Khurdiya, 1986). Effective use of zero energy cool chamber to extend shelf life of fruits have been reported by Baviskar *et al.* (1995) for ber and Raut (1999) for sapota.

With the advancement of post-harvest technology the various kinds of packaging and cushioning materials are being developed for packing of fruits. The loss of water and gaseous exchange occurred after harvest of the fruits if prevented, by adopting the proper packaging and cushioning materials. The present study was, therefore, undertaken to investigate the possibilities of extending shelf life of the custard apple fruits in ambient and zero energy cool chamber storage with different packaging and cushioning materials.

MATERIALS AND METHODS

The experiment was carried out at University Department of Horticulture, Dr. PDKV, Akola (M.S.) in a Factorial Completely Randomized Design (FCRD) with three replications. Custard apple fruits were obtained from the University Farm of proper maturity stage. The fruits were wrapped individually and packed as per the treatments and kept at ambient storage (S_1 : 22 to 26°C and 40 to 55°C RH) and in zero energy cool chamber (S_2 : 17 to 23°C and 75 to 85% RH) with treatments T_1