



## Research Paper

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# Cost effective on farm storage : zero energy cool chamber for the farmers of Gujarat

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**ABSTRACT :** An experiment was conducted during the year 2010 to evaluate the efficacy of zero energy cool chamber along with packaging on storability and fruit quality attributes of jamun cv Goma Priyanka. The fruits were examined for physiological loss in weight, spoilage loss, TSS, acidity, ascorbic acid, total sugar and marketable fruits on 1<sup>st</sup>, 3<sup>rd</sup> and 5<sup>th</sup> day of storage. The result revealed that fruits packed in perforated polythene bag and stored in zero energy cool chamber proved to be the best treatment and exhibited 4 days economic shelf -life, while control (under ambient condition) had 1 day economic shelf-life. Increase in physiological loss in weight (PLW), spoilage percentage, total soluble solids, total sugar and reduction in titratable acidity, ascorbic acid with advancement of storage period were general phenomena in all the treatments. Minimum spoilage loss (12.50 %) was recorded in perforated polythene bag and stored in zero energy cool chamber on 5<sup>th</sup> day of storage. In terms of quality parameters, the same treatment was found to be the best. Percentage of marketable fruits was also found to be the highest (82.50 %) on 5<sup>th</sup> day of storage in perforated polythene bag and stored in zero energy cool chamber, while it was only zero per cent under control (ambient temperature). It may be concluded that zero energy cool chamber along with perforated polythene bag is economically viable on farm storage for jamun fruits and may be followed for the benefits of both farmers and processors for Gujarat.

**KEY WORDS :** Zero energy cool chamber, Shelf-life, Physiological loss in weight, Spoilage loss

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The *Jamun* (*Syzygium cuminii* Skeels) is a nutritious fruit with a variety of uses. It is one of the most hardy fruit crops and can easily be grown in neglected areas, where other fruit plants cannot be grown successfully. The fruit is good source of iron, sugars, minerals, protein and carbohydrate etc. Jamun seeds contain alkaloids like jambosin and glycoside, which reduce the diastatic conversion of starch in to sugars. Fruits are used as an effective medicine against diabetes, heart and liver trouble. Though jamun fruits can be transported to the distant market, but due to its poor shelf-life, the potentiality of its storage stability needs to be explored particularly under harsh ecosystem of Gujarat. Due to prevalence of high temperature ( $24 \pm 2^{\circ}\text{C}$  -  $38 \pm 2^{\circ}\text{C}$ ) during the time of harvesting, Jamun fruits start spoilage rapidly. To regulate the marketing and greater remuneration, it is necessary to prolong shelf-life of Jamun fruits. Fruits if stored in zero energy cool chamber, enhanced their shelf life by restricting

the transpiration and respiration (Kumar and Nath, 1993; Dhemre and Wasker, 2003; Singh *et al.*, 2010 in ber). The zero energy cool chamber, designed by Roy and Khurdia (1983) is reported to enhance shelf life of fruits by lowering down the temperature and maintaining high humidity inside the chamber. On farm storage plays a vital role in maintaining quality soon after harvest. Therefore, one trial was conducted during the year 2010 to evaluate the efficacy of zero energy cool chamber along with packaging on storability and fruit quality attributes of Jamun cv. GOMA PRIYANKA.

## RESEARCH METHODS

The fruits of Jamun cv. GOMA PRIYANKA of uniform size, free from pest and diseases, injuries, bruises and blemishes were harvested from the experimental orchard of Central Horticultural Experiment Station, Vejalpur (Godhra) during the year 2010 and subjected to various post harvest treatments.