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RESEARCH PAPER

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Study on pre-cooling treatments for extending ripening in mango (*Mangifera indica* L.) cv. KESAR

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● ABSTRACT ●

Pre-cooling is one of the important treatment in entire cold supply chain of fruits. It is not only removing the field heat but also enhance the shelf life by slowing down the metabolic activity of fruit during storage and ripening. The mango fruits cv. Kesar were harvested at its maturity stage (specific gravity 1.00-1.02) with 1 cm pedicel followed by desapping. The fruit were pre-cooled as per treatments at 6, 8, 10 and 12^{0}C for 2, 5 and 8 hour time combinations with subsequent storage at ambient condition (25-35^{0}C ± 2^{0}C and 60-80 ± 2% RH) along with control (without pre-cooling). 8^{0}C temperature pre-cooling of Kesar mango for 8 hours was found to be the most significant as compared to other treatments. The treatment tended to reduce the weight loss and total soluble solids which helped in increasing the shelf life of Kesar mango.

KEY WORDS : Kesar-mango, Pre-cooling, Shelf-life, Storage, Temperature

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● INTRODUCTION ●

Mango (*Mangifera indica* L.) is grown almost in 87 countries around the world but, this fruit occupies a unique place among the different fruit crops grown in India. Mango belongs to family Anacardiaceae genus *Mangifera* and is reported to contain 41 species in 793 countries (Kalra *et al*., 1995). Many efforts have been made to enhance fruit production and area under cultivation but, no systematic work has been made for post harvest handling of the produce of India, which is resulting in 20 to 30 per cent post harvest losses. The loss is due to the lack of proper infrastructure facilities like packing house for sorting, grading pre-cooling and packing of the harvest produce, non availability of commercial low temperature store houses, lack of cool chain during transport and storage (Krishnamurthy and Rao, 2001). Reduction of these losses both quantitatively and qualitatively could be achieved by proper post harvesting cold supply chain management. Shelf life of mango fruit is one of the most important aspects of marketing. It influenced considerably by fruit maturity and storage environment. Most of the work on storage of mango has been carried out at cold storage conditions. However, pre-cooling is the first most important treatment in entire cold supply chain management of fruits, because it not only remove the field heat but also increase the shelf-life of fruits. The individual effect of pre-cooling on increase in shelf life of fruits needs to be evaluated. Therefore, an experiment was planed at Centre of Excellence on Post Harvest Technology, NAU, Navsari to identify the best pre-cooling temperature-time combination for extending the shelf life of Kesar mango fruit at ambient storage.

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● MATERIALS AND METHODS ●

The experiment was laid out in Completely Randomized Design (CRD) with two repetitions and thirteen treatments. The fruits of mango cv. KESAR were harvested with the help of Dapoli improved mango harvester (*Vedi*) in the morning hours from farmer's field. Fully matured fruits (specific gravity 1.00-1.02) were uniform in size and shape, free from any bruising and mechanical injury were selected from harvested lots and carried in the carats to the Centre of Excellence on Post Harvest Technology, Navsari Agricultural University, Navsari and cleaned by washing under cold tap water