**RESEARCH PAPER** 

# Effect of ethylene absorbent on post-harvest physiology of peach at ambient storage

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#### ABSTRACT

Fruits of Peach cv. SHAN-I-PUNJAB, were pre-treated with 2.0 per cent calcium nitrate spray and harvested at hard mature stage. These fruits packed in corrugated fiber board boxes having paper lining, pre-treated with different concentrations *i.e.* 500, 1000, 1500, 2000, 2500 and 3000ppm of KMnO<sub>4</sub> (ethylene absorbent) and stored at room temperature. The combined effect of calcium nitrate spray and KMnO<sub>4</sub> treatments was observed up to 7days on physiological loss in weight, spoilage, palatability rating, TSS, acidity and firmness. All the concentrations of KMnO<sub>4</sub> on pre-treated calcium nitrate fruits were significantly decreased (p<0.01) the physiological loss in weight, spoilage loss and firmness of the peach fruits while a significant increase was observed in palatability rating and TSS with respect to their respective controls (untreated) at ambient storage but no statistical significant change was noticed on acidity in pre-harvest calcium nitrate spray and post harvest KMnO<sub>4</sub> treated peach fruits as compared to their respective control fruits. All these observations suggested that preharvest spray of calcium nitrate (2.0%) and post harvest potassium permanganate treatments (500, 1000, 1500, 2000, 2500 and 3000ppm) could be better as they reduced the physiological loss in weight, spoilage and firmness and also increased the palatability of peach fruits.

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Key words : Calcium nitrate, Ethylene absorbent (KMnO<sub>4</sub>), Peach, Post harvest physiology, Ambient storage

## **INTRODUCTION**

Peach cv. SHAN-I-PUNJAB is widely planted by farmers of Punjab because of its better fruit quality, firmness and bigger fruit size in comparison to other cultivars. The fruit is perishable in nature and a glut is often seen in the market during its peak harvesting season. Due to a heavy glut, the quality of fruits deteriorates rapidly, causing great loss to both producers as well as consumers.

Hence, there is a need to improve quality and shelf life of fruits by means of chemical treatments. Calcium and potassium permanganate (KMnO<sub>4</sub>) treatments to fruits reduce post-harvest losses have proved effective by delaying fruit ripening (Ishad *et al.*, 2009). Thus, there is reduction in rate of ethylene generation, which increases shelf-life of peach. The efforts of elucidating the ripening mechanism of peach fruits and the maintenance of fruit quality has been based on the modifications taking place in cell wall (Brummell *et al.*, 2004) with calcium having a profound effect on the above changes (Alcaraz *et al.*, 2004, Serrano *et al.*, 2004). Foliar application of calcium nitrate spray reduce post-harvest loss have proved effective in enhancing shelf-life of peach fruit by delaying fruit ripening and degradation (Singh and Arora, 1997). Potassium permanganate was found to extend the storage life of climacteric fruit (Nwufo *et al.*, 1994). Use of KMnO<sub>4</sub> in packing material is known to absorb ethylene produced during storage and has been reported to enhance the shelf-life of banana and peach fruit, respectively (Scott *et al.*, 1970 and Sandooja *et al.*, 1987). Therefore, the present study was undertaken to find out the combined effect of pre-harvest calcium nitrate spray and post harvest potassium permanganate treatments on storage of peach fruits. But so far no study has been made to study the pre-harvest as well as post-harvest treatment on storage of peach fruits.

## MATERIALS AND METHODS

#### **Preparatory operations and collection of sample:**

Six year old trees of peach cultivar Shan-i-Punjab of uniform size and vigour were selected and maintained under uniform cultural schedule. Selected tree were sprayed with 2% calcium nitrate as pre harvest spray when fruits showed appearance of pink color at their blossom end. Hard mature peach fruits were directly harvested from calcium nitrate treated trees with the help of secateurs keeping small intact pedicel with the fruit.

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