



Research Paper

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Effect of pre-harvest application on nutrients and growth regulator on fruit quality of sub-tropical peach

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ABSTRACT : The present investigation was carried out in order to examine the efficacy of three levels nutrients like calcium chloride, boric acid, potassium nitrate at 1 per cent, 2 per cent and 3 per cent each and growth regulator such as gibberellic acid at 20ppm, 40ppm and 60 ppm as a pre-harvest spray two weeks and one week before harvesting with a objective to study the effect on quality of peach cv. Shan-i-Punjab at the time of harvest. The results revealed that potassium nitrate sprays increased the fruit weight *vis-s-vis* their dimensions. Potassium nitrate treatment at 2.0 per cent level also increased pulp: stone ratio but reduced the firmness and acidity of fruits. Application of 2.0 per cent sprays of potassium nitrate increased the TSS and TSS: acid ratio.

KEY WORDS : Calcium chloride, Potassium nitrate, Peach, Quality, Firmness, TSS

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Shan-i-Punjab is a potential cultivar of peach because of its high yield, excellent fruit size, colour, taste and flavour and performs very well under subtropical condition of Punjab. It is harvested in first week of May but it has shelf life of 2-3 days at ambient temperature. Peach is one of the important temperate fruit of India and quality of peach fruits depends upon various pre-harvest factors. So, there is a great role of pre-harvest cultural methods to increase quality of fruits. One such cultural method has been reported to be use of plant nutrients like calcium, boron and potassium as pre-harvest foliar sprays during the period of fruit growth. Potassium ions are believed to play an important role in the interplay of metabolic events involved in fruit ripening and senescence. Potassium is reported to increase peach fruit firmness (Matzner and Maurer, 1975). Foliar sprays of K have been successfully tried to improve fruit quality in peach. Foliar application of potassium sulphate in 'Royal Glory' peach increases soluble solids content and fruit appearance (Ben *et al.*, 2009). Mineral nutrition is reported to influence the storage quality of fruits in many ways. Of particular importance is calcium, a deficiency of which may induce a range of post-harvest disorders in several fruits and vegetables (Shear, 1975).

Calcium has been reported to maintain the cell wall structure in fruits by interacting with pectins in the cell wall to form calcium pectate which assists molecular bonding between constituent of the cell wall (Dong *et al.*, 2000), calcium also increases cell turgor pressure and stabilizes the cell membrane (Hernandez *et al.*, 2006). Calcium is known to strengthen the structure of cells by maintaining the fibrillar packaging in the cell walls thus reinforcing the cell to cell contact which is related to the formation of calcium pectate and counteracts the pectin methyl esterase activity as observed in calcium treated pear fruits (Alandes *et al.*, 2009). It is also known to bind with the free carboxylic group released during degradation of cell wall component (Degraeve *et al.*, 2003) by pectin methyl esterase and polygalacturanase and thus improves the fruit firmness. Boron functions include sugar transport, cell wall synthesis and lignifications, cell wall structure and decrease respiration which, are all reflected on basic fruit quality (Blevins and Lukaszewski, 1998). Sprays of GA₃ have been widely adopted in commercial orchards because they have consistently been shown to increase fruit firmness and size (Clayton *et al.*, 2006, Ozkaya *et al.*, 2006). Therefore, the present investigation was undertaken to find out the effects of pre-