



Early and uniform ripening of mango cv. ALPHONSO with ethrel treatment

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ABSTRACT

Now a day to meet the market demand mango traders use calcium carbide for ripening. Calcium carbide contains impurities of arsenic and phosphorous hydride, which are toxic to human health. A study conducted during 2007 at Horticultural College and Research Institute, revealed that the post harvest dipping of ethrel (750 ppm) for 5 minutes at 52°C and storage at ambient conditions, induced early and uniform ripening as against six days in control, with pleasant flavour, desirable texture and acceptable quality, which not only in mature fruits but also in early harvested mango fruits. The quality attributes viz., TSS (19° Brix), titratable acidity (0.31%) and ascorbic acids (33.59mg/100g of pulp) in cv. Alphonso at 750ppm ethrel dipped solution, while in control TSS, acidity and ascorbic acid were 15°Brix, 0.34% and 33.33 mg/100g of pulp, respectively.

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Key words : Mango, Alphonso, Ethrel, Early and uniform ripening

Mango (*Mangifera indica* L.) is the most popular fruit and ranks first in production and consumption in India. Mango fruits ripen unevenly on the tree and the natural ripening process can be very slow and unpredictable. To overcome this problem, fruits can be ripened artificially by exposing the fruits to certain chemicals, which initiate the ripening process. Campbell and Malo (1969) found that ripening of mature-green mangos was accelerated in response to ethylene released from 2-chloroethylphosphonic acid (Ethepon). Ethepon/Ethrel is an ethylene-releasing chemical, which can be used to improve fruit color development and stimulates ripening process of the fruit. Fruit ripening is a genetically programmed stage of development overlapping with senescence (Watada *et al.*, 1984). Calcium carbide treatments are extremely dangerous as commercial calcium carbide contains impurities of arsenic and phosphorus hydride, which are toxic to human health. Acetylene is generated from calcium carbide by the addition of water or by contact with moisture in air and act on fruits causing them to ripen in a similar manner to ethylene. Ethepon/Etherl has been successfully used to improve and enhance red colour development in fruits (Knavel and Kemp, 1993; Batal and Granberry, 1982). The ethepon treated fruits improve the peel colour and accelerates the mango fruit ripening (Lakshminarayana *et al.*, 1975). The benefits of ethylene-induced ripening

were recently reported for 'Ataulfo' Mangoes (Mantalvo *et al.*, 2007). The rate of ripening in mangoes can be accelerated by treating the fruit with ethylene (Kader and Mitcham, 2008).

MATERIALS AND METHODS

Enhancing the mango ripening by feasible treatments under ambient conditions, the experiment was carried out with ethrel treatment at room temperature for early, uniform ripening and quality with Mango cv. Alphonso at Horticultural College and Research Institute, Coimbatore, Tamil Nadu Agricultural University, Tamil Nadu. The experiment was laid at Complete Randomized Design with four replications. The treatment were: T₁:Ethrel @ 250 ppm–Hot water (52°C) for 5 min, T₂:Ethrel @ 500 ppm–Hot water (52°C) for 5 min, T₃:Ethrel @ 750 ppm–Hot water (52°C) for 5 min, T₄:Ethrel @ 1000 ppm–Hot water (52°C) for 5 min, T₅:Calcium carbide–2.5 g/kg, T₆:Control. The data recorded (after 2, 4 and 6 days) were physiological loss of weight (PLW), days taken for commencement of ripening, complete ripening of fruits, TSS, acidity, ascorbic acid (A.O.A.C.1990), colour, taste, flavour, texture and over all acceptability for organoleptic characteristics were determined using 0 to 5 hedonic scale score with a panel of ten judges. 70% and 80% mature sound fruits free from bruises and blemishes were harvested from orchard. The matured fruits were