

## Post harvest degreening, storage and quality of sweet orange (*Citrus sinensis* Osbeck.) as influenced by ethephon and carbendazim

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(Accepted : March, 2008)

For degreening of sweet orange fruits post-harvest application of ethephon (2-chloroethyl phosphonic acid) was tried alone and in combination with carbendazim (fungicide) 0.05%. Ethephon 0.2% degreened the fruits in 3-5 days, while the untreated fruits remained green. There was no effect of ethephon on T.S.S., ascorbic acid, acidity and juice content. Higher rate of ethephon increased the storage rot as compared to lower rate. The storage rot was effectively controlled when ethephon was applied along with 0.05% carbendazim. Use of carbendazim with ethephon neither increased the efficacy for degreening nor, had adverse effect on the fruit quality.

Key words : Degreening, storage, quality, sweet Orange ethephon, carbendazim.

### INTRODUCTION

The sweet orange (*Citrus sinensis* Osbeck.) is harvested during September to December. The fruits do not develop colour even though the fruits attain minimum maturity requirement resulting in poor acceptability by the consumer. The poor colour development is probably prevented by unfavorable environmental conditions. The colour development of rind is characterized by a rapid loss in chlorophyll and rise in carotenoid pigments. The post harvest application of ethylene results in substantial development of colour associated with the synthesis of specific carotenoid (Steward and Wheaton, 1971).

The post harvest degreening of citrus species have been found to increase the decay (Mc Cormack and Brown, 1970) and the inclusion of fungicide at the time of degreening has been found to check the decay. Therefore, the present study was undertaken to find out the suitable concentrations of ethephon along with carbendazim for post harvest degreening as well as internal quality of sweet orange fruits.

### MATERIAL AND METHODS

Three trials were carried out during the month of October, November and December 2000, in the laboratory

of Horticulture, Allahabad Agricultural Institute, Deemed University, Allahabad. Fresh, mature and uniform fruits of sweet orange were collected from the orchard. In each trial four concentration of ethephon viz. 0, 0.1, 0.2 and 0.4 per cent in all possible combinations with and without carbendazim (fungicide) 0.05% were tried. The fruit after sampling were washed by water, wiped, dried with cloth and were dipped in solution of various treatments for one minute. Then they were stored under laboratory condition (60°-98°F). There were eight treatments replicated four times, each replication consisted of six fruits. The experiment was laid out in complete randomized design.

The observations were recorded for colour developments, physical and chemical characters and decay of fruits till the colour changes remained static (4-5 days). The colour changes were referred to colour dictionary by Maerz and Paul (1930). The fruits were analyzed for juice content, acidity, ascorbic acid, T.S.S. and TSS/acidity ratio by standard procedure (A.O.A.C., 1990). Physiological loss in weight and decay loss were estimated on weight basis as suggested by Srivastava and Tondon (1968). The juice of the fruit was extracted by cone electric juice extractor. It was trained, weighed and expressed on percentage basis.

### RESULTS AND DISCUSSION

Ethephon at 0.2 per cent was found to be optimum (Table 1) for degreening in sweet orange and this is within the range

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