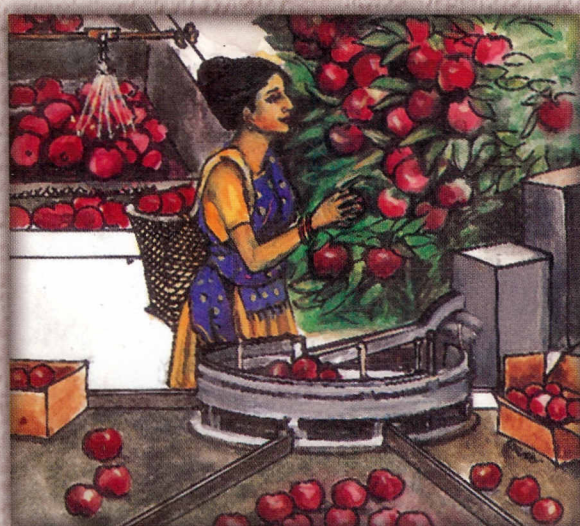




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# Postharvest Management in Agriculture

## SAARC Bibliographical Database



**SAARC Agricultural Information Centre**

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*A S Chandel and R M Kamal*



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**SAARC Agricultural Information Centre (SAIC)**

SAARC Agricultural Information Centre (SAIC)  
BARC Complex, Farmgate, Dhaka 1215, Bangladesh

**Published : 1995**

**Cover design : Mafruha Begum**

**Price :** US\$ 5.00 for SAARC countries  
US\$ 8.00 for other countries

Chandel, A S and Kamal, R M

Postharvest Management in Agriculture: SAARC bibliographical database.

Dhaka: SAARC Agricultural Information Centre, 1995.

ii, 231, xxxv p.

1. Postharvest technology, bibliography. 2. SAARC Agricultural Information Centre. i. Jt. Author.  
ii. Title.

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**Published by :** Director, SAARC Agricultural Information Centre (SAIC)

**Printed at :** Panir Printers, 9 Nilkhet, Dhaka 1205

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**710 SADHU, MK; CHATTOPADHYAY, G. 1989. Effect of a post-harvest fruit dip in ethephon on the ripening of litchi fruits. *Journal of Horticultural Science*, 64: 2, 239-242; 18 ref.**

Green fruits or those just turning red were dipped in an ethephon solution at 0, 1000, 2500 or 5000 mg/litre for 5 minutes. Fruit ripening, as indicated by colour changes of the peel and in the chemical composition of the aril (flesh), was accelerated by all ethephon treatments which enhanced the level of anthocyanins, but reduced the chlorophyll content. TSS, sugar and ascorbic acid levels in the fruits were significantly increased, while acidity was reduced, by all ethephon concentrations. A dip at 2500 mg/litre proved to be the optimum concentration for the uniform ripening of fruits turning red. Although green fruits responded similarly, their market quality was poor.

**711 SINGH, AK; SAHAY, GR; PRASAD, US. 1990. Variation in free and protein amino acid composition in aril of litchi (*Litchi chinensis* Sonn.) during fruit ripening. *Proceedings of the International Congress of Plant Physiology*. V. 2. (New Delhi: 1988: 15-20 February)/edited by SK Sinha; PV Sane; SC Bhargava; PK Agrawal. New Delhi: Society for Plant Physiology and Biochemistry, p. 1361-1365; 19 ref.**

The ripening of Litchi cv. Kasba fruits was accompanied by a fairly rapid qualitative and quantitative turnover of both free and protein amino acids. The presence of methionine at the over-ripe stage and its absence at earlier stages were presumably due to its active involvement in ethylene biosynthesis which is essential for the initiation of ripening. Cycloheximide application to the fruit led to inhibition of protein synthesis at the translation level and a consequent increase in the amino acids in the free pool. Kinetin treatment of the fruits reduced the free amino acid pool indicating that it may protect existing proteins against proteolysis.

### Packaging and storage

**712 BHULLAR, JS; DHILLON, BS; RANDHAWA, JS. 1983. Extending the post-harvest life of litchi cultivar Seedless Late. *Journal of Research, Punjab Agricultural University*, 20: 4, 467-470; 9 ref.**

Fully ripe fruits, untreated or treated in different ways, were packed in normal or perforated polyethylene or paper bags and stored at 0 to 3.3°C for 35 days. Dipping in 6% wax emulsion for 1 minute and packing in perforated polyethylene bags gave the best results with regard to fruit colour and taste at the end of

storage. Physiological weight loss was also very low (3.5%) in fruits stored thus compared with loosely stored fruits (27%) in open crates (control).

**713 GAUR, GS; SINGH, RP. 1987. Postharvest storage studies in litchi (*Litchi chinensis* Son.) fruits. *Symposium on Himalayan Horticulture in the Context of Defence Supplies*. Tezpur, India. p. 70.**

Reductions in fruit length, diameter, weight and moisture content were greatest with storage in open baskets and least with storage in polyethylene pouches containing shredded paper, but in the latter fungal infection was severe. The best results were obtained where fruits treated with sodium hypochlorite were stored in perforated polyethylene pouches; specific gravity and TSS content were greatest and flavour and aroma were best.

**714 SANDHU, SS; RANDHAWA, JS. 1992. Effect of post-harvest application of methyl-2-benzimidazole carbamate and in-pack fumigant on the cold storage life of litchi cultivars. *International Horticultural Congress: Tropical Fruits*. (Florence: 23th: 1990: 30 Aug)/edited by HD Tindall; FG Dennis, Jr.; R von. Alvensleben. Wageningen: International Society for Horticultural Science, p. 185-189.**

**715 YADAV, GR; PRASAD, B; UPADHYAYA, J. 1984. Effect of post harvest treatments on storage rot of litchi fruits. *Progressive Horticulture*, 16: 3/4, 351-352; 4 ref.**

In 3-year trials, fruits dipped for 10 minutes in solutions of several fungicides were stored in perforated polyethylene bags at 3.8-5.5°C for 6 weeks. Good control of *Geotrichum candidum* was obtained with nickel chloride at 0.1%, nickel sulphate at 0.1% or Difolatan [captafol] at 0.2%.

## CITRUS

### Postharvest handling

**716 ANAND, JC; MAINI, SB. 1983. Post harvest problems of citrus industry. *Green Power*, 21: 3, 13-15.**

**717 LADANIYA, MS; NAQVI, SAMH. 1993. Post-harvest handling of Nagpur mandarin. *Indian Horticulture*, 38: 2, 24-29.**

**718 MAINI, SB; RAO, DVS; GROVER, RP. 1990. Possibilities of utilization of galgal for processing. *National seminar on production, processing marketing***

and export of untapped indigenous fruits and vegetables. Delhi. p. 106-108.

**719 SIKKA, BK; SWARUP, R. 1985. Economics of citrus production in Himachal Pradesh.** Agro-Economic Research Centre, Himachal Pradesh University, Shimla, India. 117 p.

The study examines the cost of production and the economics of citrus orchards; estimates the economic viability of citrus orchards; examines the existing marketing system and efficiency of grading and packaging; and lists the problems of citrus growers. Primary and secondary data were analysed using various statistical techniques. It was found that orange orchards give significantly more incremental income per farm, as well as per ha, than field crops or other citrus fruits. The maximum pay-back period for oranges was found to be 6 years. In addition to higher profitability, the orange orchards also generate additional employment. Rise or fall in producer's share is disproportionate to rise or fall in the price level because several cost components are not based on value.

**720 KATOLE, SR; KHIRATKAR, SD; CHARTHAL, SG; HOLEY, NR. 1992. Post harvest treatments improve the quality of mould affected mandarin fruits.** *Journal of Soils and Crops*, 2: 1, 21-25; 25 ref.

Post harvest treatment with 10 p.p.m. KMnO<sub>4</sub> solution followed by 0.1% carbendazim reduced the incidence of sooty mould on mandarins, without affecting the quality of the fruit, and was more effective than bleach solution.

**721 RAO, NNR. 1984. Effect of post-harvest fungicidal treatment of citrus fruits against the control of green mold rot.** *Jrl. of Food Science and Technology, India*, 21: 1, 25-28; 7 ref.

The effectiveness of Benlate [benomyl], Bavistin [carbendazim], thiabendazole, imazilil SP and imazilil EC was evaluated for the control of green mould rot of *Coorg mandarin* and seedless lime artificially inoculated with *Penicillium digitatum*. All fungicides showed a gradual loss of protective ability with time. Comparatively imazilil (SP and EC formulations) was highly effective during a storage period of 36 days. Thiabendazole was markedly ineffective. It failed to protect fruits fully even for 24 h after treatment.

**722 ULLASA, BA. 1986. Identity of *Phytophthora* species associated with post-harvest rotting of citrus fruits.** *Indian Phytopathology*, 39: 3, 477-478; 9 ref.

In extensive surveys in citrus growing areas of Karnat-

aka and fruit markets in Coorg and Bangalore, isolates from different citrus spp., causing root rot, gummosis, leaf fall, fruit rot and post-harvest decay, were all similar and identified as *Phytophthora nicotianae* var. *parasitica*.

**723 VIR, D. 1984. Post-harvest spoilage of citrus fruits and their control.** *Green Power*, 3: 1, 24-27; 26 ref.

A brief account of the damage during transport and storage caused by mechanical injury, physiological factors and various fungi, including *Penicillium italicum*, *P. digitatum*, *Aspergillus niger*, *Geotrichum candidum* and *Botryodiplodia theobromae*, and control using both physical and chemical methods.

**724 WADIA, KDR; MANOHARACHARY, C. 1982. New post-harvest diseases of jambolan fruits.** *Indian Phytopathology*, 35: 4, 707-708.

Previously unrecorded diseases of the fruits of *Syzygium cumini* include anthracnose (*Pestalotiopsis palmarum*), soft rot (*Penicillium expansum*), brown rot (*Rhizopus stolonifer*), *Fusarium* rot (*F. semitectum*), black rot (*Aspergillus niger*), and rots due to *Curvularia lunata* [*Cochliobolus lunatus*] and *Colletotrichum gloeosporioides* [*Glomerella cingulata*].

## Storage and storage decay

**725 ARORA, R; PANDEY, GN. 1984. Effect of essential oils on citrus decay pathogens.** *Biological Memoirs*, 9: 1, 69-72; 11 ref., 4 tab.

When tested in vitro against *Penicillium digitatum*, *P. italicum*, *Diplodia natalensis* [*Botryodiplodia theobromae*] and *Alternaria tenuis* [*A. alternata*], calamus and dillseed oils were most effective against all 4 postharvest decay organisms.

**726 BABU, KJ; REDDY, SM. 1986. Aeromycoflora of store house of citrus fruits.** *Indian Journal of Mycology and Plant Pathology*, 16: 3, 355-358; 4 ref.

Tables show the occurrence of different fungi in the air of a lemon storehouse, Dec. 1981-Apr. 1982 and the incidence of diseases on lemon fruits in Warangal market over the same period. The storehouse atmosphere appears to be a potential source of fruit rot pathogens.

**727 GUPTA, V; KHARA, HS. 1983. Some metabolic changes induced by *Botryodiplodia theobromae* in mandarin fruits.** *Journal of Research, Punjab Agricul-*

tural University, 20: 2, 226-227; 3 ref.

Total soluble ascorbic acid, acidity, total phenols, sucrose, glucose and fructose, and several amino acids decreased considerably in infected fruit in storage, while cysteine and leucine increased. Alanine was not detected in healthy fruit but appeared in traces in infected fruit.

**728 SURENDER, SINGH.** 1991. **Studies on the effect of pre and post harvest factors on the storage life of lemon (*Citrus limon burm*) cv. *Baramasi* (Ph.D : thesis).** Haryana Agricultural University, Hisar.

The fruit harvested at mature green stage was found the best in terms of physiological loss in weight, decay loss, organoleptic acceptance, qualitative and biochemical parameters. Winter season fruits were found the best in respect of all the above parameters. Post-harvest treatments maintained supremacy over preharvest spray in extending the storage life of *Baramasi* lemon and maintained quality of fruits in better way. Zero energy chambers were found very effective in reducing the physiological loss in weight and decay loss, and extended the shelf-life of the fruits upto 56 days. Physiological loss in weight, decay loss, total soluble solids, carbohydrates, amino acids, colour development and shrinkage increased with increasing period of storage, while respiration rate of the fruits decreased with increasing period of storage. Ascorbic acid, acidity and organic acids increased at the initial stage of storage and then decreased upto end of the storage at room temperature. Fruits stored under modified storage condition showed less physiological loss in weight due to more relative humidity. Diphenyl impregnated paper as a cushioning material was found very effective in reducing the decay loss in zero energy chambers. Among the pre-harvest sprays, GA2 and topsin-M were found effective in reducing the decay loss and physiological loss in weight. But among the various post harvest treatments, GA2 in combination with topsin-M and captan was found effective in reducing the physiological loss in weight and decay loss.

## ORANGES

### Storage and storage decay

**729 BABU, KJ; REDDY, SM.** 1987. **Some new post-harvest diseases of mosambi (*Citrus sinensis* L. *Osbeck*).** *Indian Journal of Mycology and Plant Pathology*, 17: 1, 44-45.

Brief notes are given of the symptoms on sweet orange caused by *Cladosporium cladosporioides*, *Curvularia* [*Cochliobolus*] *pallescens*, *Cochliobolus spicifer*, *Fusari-*

*um oxysporum*, *Macrophoma* sp., *Nigrospora* [*Khuskia*] *oryzae*, *Phoma sorghina* and *Syncephalastrum racemosum*.

**730 CHATTOPADHYAY, N; HORE, JK; SEN, SK.** 1992. **Extension of storage life of sweet orange (*Citrus sinensis osbeck*) CV. *Jaffa*.** *Indian Journal of Plant Physiology*, 35: 3, 245-251.

**731 DASHORA, LK; SHAFAT MOHAMMED; MOHAMMED, S.** 1988. **Effect of 2,4-D, wax emulsion and their combination on the shelf life of sweet orange (*Citrus sinensis Osbeck*) cv. *Mosambi*.** *South Indian Horticulture*, 36: 4, 172-176; 7 ref.

Fully ripe fruits were dipped for 2 minutes in solutions of 2,4-D at 100 or 250 p.p.m. or in 4 or 8% W-12 wax emulsion or in a combination of the 2 substances. The fruits were then held for 40 days in polyethylene bags with 3% of the surface perforated. No fruit decay, the least physiological weight loss and good fruit quality were obtained in batches treated with 100 p.p.m. 2,4-D + 8% W-12.

**732 PETHE, P.S.** 1988. **Studies on effect of levels of nitrogen, phosphorus and potassium on quality and storage behaviour of Nagpur santra (M.Sc: thesis).** Punjabrao Krishi Vidyapeeth, Akola, 81 Pages.

To evaluate the effect of varying levels of fertilizers on quality and storage behavior of Mrig Bahar fruits of Nagpur mandarin, the present investigation was undertaken during 1986-87. The design adopted was 3-3 factorial partial confounding with three replications. The 27 treatments included in the experiment were : three levels each of N, P and K i.e. 200, 400 and 600 g/tree, 0, 100 and 200 g/tree and 0, 200 and 400 g/tree, respectively. The fruits were stored at room temperature, and storage behaviour was studied for 15 days. Average weight and size, juice content, TSS, acidity, ascorbic acid content of Santra fruit was not significantly influenced by any of the fertilizer levels or their interaction. Average fruit weight was in the range of 143 to 157 g, while fruit shape was nearly round in different treatments. Juice content was between 45 and 46.26 per cent. Ascorbic acid content was in the range of 45.50 to 50.47 mg/100 ml of juice. There was no clear trend in these quality attributes due to levels of fertilizers, except in acidity and ascorbic acid content. Increase in acidity from 0.613% in No to 50.03 mg/100 ml of juice in N2 treatment. Similarly, there was no significant effect of these fertilizer treatments on storage behaviour of fruit. However, in all the treatments, decrease in fruit weight and acidity and peel thickness, and increase in juice per