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# Postharvest Management in Agriculture

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*A S Chandel and R M Kamal*



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sium on Temperate Fruits. Dr. Yashwant Singh Parmar University, Department of Horticulture and Forestry, Solan. p. 345-347.

## PRUNUS DOMESTICA (Alubukhara)

702 KRISHNAIAH, J; SATYAPRASAD, C; GIRIDHAR SINGH, T; THIRUPATHAIAH, V; DAVE, BHALCHANDRA. 1985. Decco food grade fruit coatings for control of post harvest decay of alu-bukhara fruits. *Indian Journal of Mycology and Plant Pathology*, 15: 3, 274-278; 6 ref.

Post harvest applications of these coatings containing the fungicide orthophenylphenol as the active ingredient controlled rots in these *Prunus domestica* [plum] fruits caused by *Aspergillus niger*, *Geotrichum candidum*, *Monilinia fructicola*, *Rhizopus stolonifer*, *Trichoderma* and *Penicillium digitatum*.

703 KRISHNAIAH, J; THIRUPATHAIAH, V. 1990. Effect of environment on post-harvest fruit rot of alubukhara caused by fungi. *Acta Botanica Indica*, 18: 1, 95-96.

Infection of stored plums by *Aspergillus niger*, *Monilinia fructicola* and *Trichoderma viride* was most severe at high temp. (32°C) and RH (90-100%).

## CHERRIES

704 BADYAL, KUSUM; SUMBALI, GEETA. 1990. *Aspergillus* rot of cherry fruit. *Indian Journal of Mycology and Plant Pathology*, 20: 3, 280.

*A. fumigatus*, *A. versicolor*, *A. terreus*, *A. niger* and *A. flavus* were isolated from dark brown, flat spots on the surface of cherries in local fruit markets in Jammu. Pathogenicity was confirmed experimentally.

705 DAIVASIKAMANI, S; KANNAN, N. 1986. Studies on post-harvest mycoflora of coffee cherry of *Robusta*. *Jrl. of Coffee Res.*, 16: 3-4, 102-106.

Incidence of *A. niger*, *A. ochraceus*, *Cladosporium* sp., *Mucor* sp., *Pencillium*, *Trichoderma* sp., a pink yeast and actinomycetes following incubation for 2-9 d is tabulated. These are associated with drying cherries are involved in coffee quality deterioration.

## LITCHI CHINENSIS

### Cracking

706 KANWAR, JS; NIJJAR, GS. 1984. Comparative

evaluation of fruit-growth in relation to cracking of fruits in some litchi cultivars. *Punjab Horticultural Journal*, 24: 1/4, 79-82.

Fruit growth pattern in the cultivars Dehra Dun (highly susceptible to cracking), Calcuttia (moderately) and Hong Kong (resistant) was examined over 2 years. Diametrical fruit growth had a greater effect on cracking than longitudinal growth. A higher fruit diametrical growth rate from mid-May to early June, when the temperature was high and RH low, made Dehra Dun more susceptible to cracking than Calcuttia or Hong Kong, in which diametrical growth rates were much lower during this period. Effect of NAA, GA and 2,4,5-T on preventing fruit cracking was not appreciable, with NAA at 15 p.p.m. having the best effect.

707 SHARMA, SB; RAY, PK. 1987. Fruit cracking in litchi - a review. *Haryana Journal of Horticultural Sciences*, 16: 1 & 2, 11-15; 27 ref.

The factors considered were cracking stage and pattern, varietal susceptibility to cracking, temperature and humidity, anatomical factors, irrigation and rainfall, physiological factors, chemical composition of the fruit, control measures, supply of nutrients, use of growth regulators, and breeding of crack resistant cultivars.

### Ripening

708 AJAY SINGH; ABIDI, AB. 1986. Studies on the variation in protein, amino-acids and ash content of different litchi (*Litchi chinensis* Sonn.) cultivars during ripening and post-harvest storage. *Narendra Deva Journal of Agricultural Research*, 1: 2, 149-154; 14 ref.

Variations in protein, tryptophan, methionine and ash contents in the cultivars Early Large Red, Calcuttia, Muzaffarpur and Bedana were studied on different harvesting dates and during storage. Fruit samples were taken after 80, 87, 94 and 101 days from fruit set. At ripening the fruits were harvested, packed in polyethylene bags and stored at ambient temperature. Protein, tryptophan and ash contents increased continuously, whereas methionine content decreased in the beginning and thereafter increased slightly as ripening approached. A reverse trend was noticed in protein, tryptophan and ash contents during storage. Methionine content did not show any definite trend throughout the storage period.

709 NAGAR, PK. 1994. Physiological and biochemical studies during fruit ripening in litchi (*Litchi chinensis* Sonn.). *Postharvest Biology and Technology (Netherlands)*, 4: 3, 225-234.

**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*