

Mango

Post Harvest Technology

Grading :

If the fruits are graded according to their size, weight, colour and maturity, both the producer and consumer are benefited. It has been observed that bigger size fruits take 2-4 days more time in ripening than smaller ones. Hence, packaging of smaller fruits with larger ones should be avoided to achieve uniform ripening. Immature, overripe, damaged and diseased fruits should be discarded.

For exports, the stem of the fruits is cut approximately at a length of 1 cm from the fruit with the help of sharp scissors. Then the fruits are kept up side down for two hours so that the latex flows out from the fruit completely. For this operation special knitted pallets should be prepared to keep the fruit up side down. Utmost care should be taken while cutting the stem of the fruit so that latex drop does not fall on the fruit.

The export quality mangoes are categorised into three grades according to the fruit weight viz., Category-I (200-250 g), Category-II (251-300 g) and Category-III (300-350 g).

Mangoes do not normally need any post-harvest treatment for local marketing. It is a general practice to harvest fruits early in the season (premature stage) to capture early market. These fruits do not ripen uniformly without any ripening aid. Such fruits could be ripened uniformly by dipping in 750 ppm Etherel (1.8 ml/litre) in hot water at $52\pm 2^{\circ}\text{C}$ for 5 minutes within 4-8 days under ambient conditions. Mature fruits can similarly be ripened with lower doses of Etherel for uniform colour.

Fruits for urban supermarkets may need to be washed if they are heavily contaminated with latex or dust. On a commercial scale, mangoes for export are sometimes dipped in hot water containing fungicide for the control of this disease. The treatment is not appropriate for small-scale operations.

The post harvest losses in mangoes have been estimated in the range of 25-40% from harvesting to consumption stage. If proper methods of harvesting, transportation and storage are adopted, such losses could be minimized

Packaging :

Usually, fruits are placed in layers one above the other, with a straw padding in-between. Temperatures between $19-21^{\circ}\text{C}$ during ripening improve the quality of fruits.



Wooden boxes are commonly used for packaging and transportation of mango fruits. Central Institute for Subtropical Horticulture, Lucknow has designed and developed CFB Boxes of 5 kg and 10 kg capacity for packing and shipping of mango fruits successfully as an alternative to traditional nailed wooden boxes. The use of CFB boxes for packaging for the domestic market is also the need of the hour due to scarcity of the

wood and environmental concerns of the country. For export purposes, CFB boxes are already in extensive use. Paper scraps, newspapers, etc., are commonly used as cushioning material for the packaging of fruits which prevent them from getting bruised and spoiled during storage and transportation. Polythene (LDPE) lining has also been found beneficial as it maintains humidity, which results in lesser shrinkage during storage. Wrapping of fruits individually (Unipack) with newspaper or tissue paper and packing in honeycomb nets helps in getting optimum ripening with reduced spoilage.

Storage :

Storage is essential for extending the consumption period of fruits, regulating their supply to the market and also for transportation to long distances. The mature green fruits can be kept at room temperature for about 4-10 days depending upon the variety.

For exports, the harvested fruits are pre-cooled to 10-12°C and then stored at an appropriate temperature. The fruits of Dashehari, Mallika and Amrapali should be stored at 12°C, Langra at 14°C and Chausa at 8°C with 85-90% relative humidity. The fruits could be stored for 3-4 weeks in good condition at low temperature.

Controlled atmosphere (CO₂ 3-4 % and O₂ 4-5%) storage of Alphonso mango, under a continuous flow system held at 13-15°C indicated that Alphonso could be kept for 30 days with a post storage ripening period of 4 to 5 days.

Transport :



For local market the harvested fruits are packed in wooden boxes/CFB and transported by trucks.

Cool Chain :

Cool chain is essential during the transport of export quality commodity all the way from the farm to the customer. This helps in maintaining the temperature inside the box at the same low level as in the cold storage.

The various stages of the cool chain are :

1. Coldstore at the farm.
2. Refrigerated truck from farm to the airport
3. Coldstore at the airport.
4. Building up of the pallet in a coldstore at the airport.
5. Loading the aircrafts directly from the coldstore in a short time.
6. Cargo aircraft maintains coldstore temperature in hold.
7. Off loading direct into a coldstore in the receiving country.

Refrigerated truck to the customers.