

Citrus

Post Harvest Technology

Grading

The fruit are inspected and unripe, immature, undersized, damaged or decayed fruits are discarded.

For local markets, the citrus fruits are graded as per the size into small, medium and large grades. The differences between categories will depend on the type of fruit.

For exports of Nagpur mandarins, the various grades recommended are as follows -

Grade Size (mm)	No. of Fruits/ 10 Kg Packing
50-55	115
50-60	98
60-65	84
65-70	76
70-75	64

Packaging

Citrus fruits are packed in sacks, bags, bamboo baskets and wooden boxes for sending to local markets. For urban markets, citrus fruits are packed in telescopic cardboard boxes. Corrugated trays are equally effective as packaging material while transporting the fruits. Use of such trays is cost effective due to its reusability.

For export of Nagpur mandarin, usually 2 piece, telescopic, corrugated fibreboard boxes of three ply or five ply should be used. The size of the box may vary according to the requirement of the importing country. Normally a box size of 49.5 x 29.5 x 17.5 cm having 10 kg capacity is recommended. The boxes must have 5% area punched as holes for ventilation. To immobilize the movement of fruits inside the box, three ply wax treated dividers having ventilation holes are used.

Storage

After the fruits are harvested, they should be treated with wax to reduce post harvest damage. Treatment of fruits with Bavistin (1000 ppm) can reduce post harvest losses and extend the shelf life to 25-26 days even at room temperature. Shelf life of Nagpur mandarin can be extended by three weeks on wrapping the fruits with heat shrinkable polythene and Cryovate film (D 955 and BDF 2001).

The ideal storage temperatures for Nagpur mandarin is 6-7°C at 85-90% relative humidity while lime & lemon are stored at 10-12°C with 90-95% relative humidity.

Transport

Citrus fruits are transported by rail or road as ordinary cargo and without refrigeration, which often leads to heavy loss due to decay and fungal infections.

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.
8. Refrigerated truck to the customers.