

Post-Harvest Management Protocols

MANGO

Indian mangoes come in various shapes, sizes and colours with a wide variety of flavour, aroma and taste. The Indian mango is the special product that substantiates the high standards of quality and bountiful of nutrients packed in it. A single mango can provide up to 40 percent of the daily dietary fibre needs - a potent protector against heart disease, cancer and cholesterol build-up. **Total production of Mango for the year 2019-20 was 20529 ('000 MT)** and Uttar Pradesh, Andhra Pradesh, Karnataka, Tamil Nadu and Gujarat are the major state in India to produce mango.



Varieties of Mango in India

State	Varieties grown
Andhra Pradesh	Banganapalli, Suvarnarekha, Neelum and Totapuri
Bihar	Bombay Green, Chausa, Dashehari, Fazli, Gulabkhas, KishenBhog, Himsagar, Zardalu and Langra
Gujarat	Kesar, Alphonso, Rajapuri, Jamadar, Totapuri, Neelum, Dashehari and Langra
Haryana	Chausa, Dashehari, Langra and Fazli
Himachal Pradesh	Chausa, Dashehari and Langra
Karnataka	Alphonso, Totapuri, Banganapalli, Pairi, Neelum and Mulgoa
Madhya Pradesh	Alphonso, Bombay Green, Dashehari, Fazli, Langra and Neelum
Maharashtra	Alphonso, Kesar and Pairi
Punjab	Chausa, Dashehari and Malda
Rajasthan	Bombay Green, Chausa, Dashehari and Langra
Tamil Nadu	Alphonso, Totapuri, Banganapalli and Neelum
Uttar Pradesh	Bombay Green, Chausa, Dashehari and Langra
West Bengal	Fazli, Gulabkhas, Himsagar, Kishenbhog, Langra and Bombay Green

MATURITY INDICES OF MANGO

- Mango fruits need 120 to 140 days after fruit set to mature
- When a few semi-ripe fruits fall from tree –traditionally it is considered as maturity stage
- Fruits should be harvested when firm at the mature green color stage.
- Harvesting of the fruits should be done, late in the morning as in the early morning oil glands of the fruits are full, causing discoloration of the fruits if pressed accidentally.

POST-HARVEST HANDLING

Normally, Mangoes do not need any post-harvest treatment for marketing in local markets, except simple washing with water to remove the latex and dust. On a commercial scale or for export purpose, they are sometimes dipped in hot water, containing fungicide for the control of diseases.

The cut to cool time period is 12 hrs



GRADING

Practice of systematic grading of mangoes based on scientific standards is not that prevalent in India, especially for the domestic market. Only efforts are taken to sort the damaged and diseased fruits and grading is done by traders according to size and variety in order to fetch better prices¹

PRE-COOLING

After harvesting mango fruits should be pre-cooled at 10-12 °C and then stored at appropriate temperature. Most appropriate method of pre-cooling for mango are Hydro-cooling for 30 Mins to 1 Hr, forced air cooling for 2-6 hours and Evaporative forced air cooling for 2-6 hours²

RIPENING

To ripen the early harvested fruits, in order to capture the market early traders, follow the method of unscientific ripening and use carbide treatment for artificial ripening of the fruit. Use of chemical is extremely toxic and Hazardous. Such fruits do not ripen uniformly and quality of fruits remain inferior.

¹Agmarknet

²Technical standards for fruits and Vegetables, NHB

STORAGE

The mature green fruits can be kept at room temperature for about 4-10 days depending upon the variety. After ripening mangoes can be stored at 10-13°C temperature

Recommended Temperature (in degree Celsius)

10-13



Recommended Relative Humidity (%)

85-90



Shelf Life

2-3 weeks



Product Loading Density (in Pound/cu.ft)	-
Initial Freezing Point (in degree Celsius)	-0.9
Specific Heat Above Freezing Point in (kJ/Kg.K)	3.55
Specific Heat Below Freezing Point (in kJ/Kg.K)	1.85
Latent Heat of Fusion (in kJ/Kg)	270

Thermal Properties of Mango

Initial Freezing Point (in degree Celsius)	-1.1
Specific Heat Above Freezing Point in (kJ/Kg.K)	3.65
Specific Heat Below Freezing Point (in kJ/Kg.K)	1.89
Latent Heat of Fusion (in kJ/Kg)	278