Canada-Saskatchewan
Irrigation
Diversification
Centre

Musk Melons - Cantalope - Post-Harvest Handling and Storage

Shika Agblor and Doug Waterer, Department of Plant Sciences, University of Saskatchewan (June, 2001)

Muskmelon is the common name for botanical varieties of Cucumis melo L. This botanical group includes cantaloupe, honeydew, and casaba. Cantaloupe fruit (C. melo var. reticulatus Naud.) are usually characterized by netted surfaces with shallow vein tracts and the flesh is salmon-coloured. Honeydew and Casaba fruit (C. melo var. inodorus Naud.) typically have unnetted surfaces. This group also includes Persian and Crenshaw melons. Honeydew fruit have smooth, white skin with green flesh, while Casaba fruit have yellow, green or white skin, that are usually rough and wrinkled.

Maturity

Cantaloupes harvested at full maturity (i.e. at full slip) are high in sugars, and have good flavour and aroma. At full slip an abscission layer forms allowing the melon to separate from the vine, leaving no stem tissue attached to the fruit. Unfortunately melons harvested at full slip have a short storage life. Cantaloupes harvested prior to full slip are not as high in sugars and flavour but have longer storage potential. To ensure a shelf life of up 2 weeks, a compromise has to be made between harvest dates. Some studies have shown that sugars begin to accumulate in cantaloupe 32 days after flowering, and continue thereon until maturity. Harvesting approximately 36 days after flowering may be a good compromise between maximum flavour and storage potential. Typically full-slip is 42 days after flowering.

The maturity of Honey Dew melons is often difficult to judge since there is no distinct abscission from the vine irrespective of how mature the crop. Maturity is usually determined by the change in skin colour from green to cream. Compared to cantaloupe, the Honey Dew, Crenshaw, Casaba and Persian melons have a longer storage life (2-3 weeks) when stored at 7-10°C and 95% relative humidity. Storing at temperatures less than 7°C will induce chilling injury in these melons. Studies have shown that the flavour of Honey Dew melons is not compromised by an early harvest.

Harvesting, Handling & Storage

Melons should be harvested as cool as possible; i.e. early in the morning or late in the evening. Warm, dry weather just prior to harvest improves fruit flavour. Freshly harvested cantaloupes should be moved as quickly as possible to cool storage or a packing shed. Avoid rough handling, as cut or bruised fruit are susceptible to disease.

To reduce the risk of damage to cantaloupe due to excessive handling, it is preferable to grade, sort, size, and pack the fruit into boxes in the field. Packed fruit can then be transported to a cooling facility.

Any diseased, overripe or damaged fruit should be culled, otherwise the spoiled fruit will contaminate healthy fruit. Cantaloupes are susceptible to fungal rots after harvest. Studies conducted in Israel have shown that dipping melons in hot water at 52-55°C for 2 minutes can effectively control fungal rots in melons. These studies indicated that post-harvest application of fungicides resulted in unacceptably high residue levels.

Any diseased, overripe or damaged fruit should be culled, otherwise the spoiled fruit will contaminate healthy fruit. Cantaloupes are susceptible to fungal rots after harvest. Studies conducted in Israel have shown that dipping melons in hot water at 52-55°C for 2 minutes can effectively control fungal rots in

melons. These studies indicated that post-harvest application of fungicides resulted in unacceptably high residue levels.

After packing, cantaloupes must be cooled as quickly as possible to maintain post-harvest quality. Using fans to force cold air through vents in cartons or pallets rapidly cools the fruit. Using forced air cooling, cantaloupes can be cooled from 34°C to 16°C in 8 hours. Room cooling should be avoided because it takes 24 to 36 hours to cool cantaloupes to about 10°C. Room cooling involves placing fruit in a refrigerated room.

Cooled cantaloupes should be stored at 4°C and 95% relative humidity. Storing cantaloupes at temperatures below 2°C will result in chilling injury. Chilling injury is characterized by pitting, off-flavours, and increased surface decay.

Storage Diseases

Post-harvest losses in cantaloupes are often due to fungal rots. These rots occur on the external surface of the fruit and gradually progress inwards into the flesh. Fungal pathogens of major concern are Alternaria, Penicillium, Cladosporium, Rhizopus, and Fusarium. Alternaria and Cladosporium rots occur frequently in cool storage. Alternaria rot is characterized by dark brown or black lesions; Cladosporium rots are characterized by dark green or black lesions. Fusarium and Rhizopus rots are problems on fruit stored at room temperature. Symptoms of Fusarium rots are white or reddish hyphae on the netted surfaces of fruit. Rhizopus rots are characterized by softening and indentation of large areas of the flesh with little external mycelial growth.

Post-harvest fungal rots can be controlled by:

1. Pre-harvest application of fungicides such as Bravo 500
2. Only harvesting good melons
3. Avoiding wounds during harvest
4. Cooling as soon as possible
5. Post-harvest treatments to control rots, such as hot water dips or fungicide treatments
6. Marketing as quickly as possible

For further information on registered fungicides, contact your Rural Service Centre or the Provincial Vegetable Specialist, Saskatchewan Agriculture and Food.

Further Reading

Boyette, M.D. & J.R. Schultheis. 1993. Forced-air cooling of muskmelons in bulk containers. Paper No. 93-6010, American Society of Agricultural Engineers, Spokane, Washington.

Mayberry, K.S. & T.K. Hartz. 1992. Extension of muskmelon storage life through the use of hot water treatment and polyethylene wraps. HortScience 27(4):324-326.

Morris, S.C. 1977. Post-harvest handling and diseases of rockmelons. CSIRO Food Research Quarterly 37:60-64.

Acknowledgement

This fact sheet was generated from the Agri-Food Innovation Fund (AFIF) Post-harvest Specialist Program. The cost of printing was covered by the AFIF Technology Transfer Program.

Canada SIPA University of Saskatchewan ICDC Saskatchewan