Cherimoya

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Scientific Name and Introduction

The cherimoya (*Annona cherimola* Mill.) is a heart-shaped fruit having few seeds and a smooth skin that does not break apart during ripening. It is grown in Florida, California, and Hawaii.

Quality Characteristics and Criteria

Quality is determined by fruit size, shape, and skin color, as well as the absence of defects and decay. Fruit are very susceptible to mechanical injury. Sugar levels can vary from 14 to 18%, with moderate acid levels.

Horticultural Maturity Indices

Mature fruit are firm and become very soft during ripening. The skin changes color from dark green to light green or greenish yellow, and is associated with increased surface smoothness. Fruit are harvested when mature and are allowed to ripen during marketing.

Grades, Sizes, and Packaging

There are no U.S. or international standards. Pack fruit in single layers in fiberboard cartons with foam sleeve or paper wrapping to avoid bruising. Carton size is usually 4 to 8 kg (9 to 18 lb) with 12 to 24 count. Fruit weight is from 250 to 600 g (9 to 21 oz).

Precooling Conditions

Fruit should be precooled as soon as possible after harvest to about 12 ºC to 15 ºC (54 to 59 ºF), with room cooling or forced-air cooling used most often.

Optimum Storage Conditions

Store fruit at 10 to 13 ºC (50 to 55 ºF) with 90 to 95% RH for 2 to 3 weeks. If held at 20 ºC (68 ºF), fruit will last 3 to 4 days (Kader and Arpaia 1999). Storage is limited by skin darkening, desiccation, and disease due to chilling injury. Ripe, soft fruit should be held at 0 to 5 ºC (32 to 41 ºF).

Controlled Atmosphere (CA) Considerations

Fruit held in 5% O_2 for 30 days at 10 ºC (50 ºF) ripened in 11 days after removal to air storage at 20 ºC (68 ºF) versus 3 days for fruit held in 20% O_2 (Palma et al. 1993a). Addition of CO_2 at 3% or 6% can also extend storage life beyond that of storage in air (Alique and Oliveria 1994). However, not all results have been positive, and there may be varietal differences (Moreno and

Dela Plaza 1983). O_2 levels under 1% can lead to off flavor.

Retail Outlet Display Considerations

Display at room temperature (approximately 20 to 23 ºC or 68 to 73 ºF) if not ripe. Do not use misting or ice.

Chilling Sensitivity

Fruit are chilling sensitive, especially at temperatures below 10 ºC (50 ºF). The extent of injury depends on duration. Symptoms include skin darkening and a failure to fully soften and develop full flavor.

Ethylene Production and Sensitivity

The cherimoya is a climacteric fruit and has high rates of ethylene production (100 to 300 µL kg^{-1} h^{-1} at 20 ºC [68 ºF]) (Palma et al. 1993b). Exposure to ethylene at 100 µL L^{-1} for 24 h leads to rapid ripening of mature green fruit.

Respiration Rates

Temperature	mg CO_2 kg^{-1} h^{-1}
10 ºC	47 to 190
15 ºC	84 to 280
20 ºC	138 to 460

To get mL CO_2 kg^{-1} h^{-1}, divide the mg kg^{-1} h^{-1} rate by 2.0 at 0 °C (32 °F), 1.9 at 10 °C (50 °F), and 1.8 at 20 °C (68 °F). To calculate heat production, multiply mg kg^{-1} h^{-1} by 220 to get BTU per ton per day or by 61 to get kcal per tonne per day.

Physiological Disorders

Chilling injury is the major postharvest disorder, in which the skin darkens and the flesh fails to soften and can be “mealy” with poor flavor (Palma et al. 1993b). The degree of injury depends on variety and ripeness stage. Mechanical injury is a major problem during handling, which leads to unsightly black blemishes that can be sunken. Splitting can occur during ripening and provide sites for decay. Early-season fruit that frequently develop higher sugar levels are more susceptible to splitting.

Postharvest Pathology

Anthracnose *(Colletotrichum gloeosporioides)* appears as dark lesions and may produce pink spore masses under high RH. Black canker *(Phomopsis anonacearum)* appears as purple spots that become hard and cracked, while *Botryodiplodia* rot *(Botryodiplodia theobroma)* first appears as purple, then black, spots, and the flesh becomes brown and corky. These are preharvest diseases that require good orchard sanitation. Careful handling and sanitation with

cooling, along with fungicides if approved, can minimize the problems.

Quarantine Issues

The cherimoya is a fruit fly host. Other quarantine pests include seed borers and scales. Heat treatments and irradiation are potential treatments.

Suitability as Fresh-Cut Product

The cherimoya is sold as a fresh-cut product, though the shelf-life is unknown. Ripe pieces can be held at 0 to 1 ºC (32 to 34 ºF).

References

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