



## Atemoya: Postharvest Quality-Maintenance Guidelines

Robert E. Paull and Nancy Jung Chen  
Department of Tropical Plant and Soil Sciences

Atemoya is a hybrid between *Annona squamosa* L. (sweetsop) and *A. cherimola* Mill. (cherimoya). Fruit can vary in their external appearance, reflecting the different parents (Nakasone and Paull 1998). Favorable characteristics for the cherimoya include heart shape, few seeds, and smooth skin that does not break apart during ripening. There are about six varieties, with 'African Pride' and 'Gefner' being the most common. Atemoya are grown in Florida and Hawai'i.



Atemoya ready to harvest

### Quality Characteristics and Criteria

Heart-shaped fruit are preferred, preferably with a smooth cherimoya-like skin rather than a bumpy, sweetsop-type skin. Beyond shape, size, and skin texture, the fruit should be free of blemishes and mechanical injury, which can lead to skin blackening.

### Horticultural Maturity Indices

Fruit skin color changes from darker to lighter green and can be greenish-yellow. During ripening, skin splitting occurs and the skin darkens (Paull 1996).

### Grades, Sizes, and Packaging

Sold in single-layer 4.5 kg (10 lb) or 9 kg (20 lb) fiberboard boxes with foam sleeves or paper wrapping. Fruit weight 250 to 500 g (9 to 18 oz) are used.

### Pre-Cooling Conditions

Room or forced-air cooling to 10 to 13°C (50 to 55.4°F).

### Optimum Storage Conditions

Store at 10 to 13°C (50 to 55.4°F) with 90 to 95% RH.

### Controlled Atmospheres (CA) Consideration

No published information. Atemoya may have similar potential to cherimoya.

### Retail Outlet Display Considerations

Ripe fruit can be held at 2 to 5°C (36 to 41°F). If unripe, display at room temperature. Ripe fruit, if split, can be over-wrapped.

### Chilling Sensitivity

Very sensitive; shows skin darkening and loss of aroma and flavor.



### Ethylene Production and Sensitivity

Climacteric fruit production rates of ethylene are high, at up to 100 to 300  $\mu\text{L kg}^{-1} \text{h}^{-1}$  at 20°C (68°F) (Brown et al. 1988). Ripening is accelerated by exposure to 100  $\mu\text{L L}^{-1}$  for 24 h.

### Respiration Rates

See Table 1. To get  $\text{mL kg}^{-1} \text{h}^{-1}$ , divide the  $\text{mg kg}^{-1} \text{h}^{-1}$  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  $\text{mg kg}^{-1} \text{h}^{-1}$  by 220 to get BTU per ton per day or by 61 to get kcal per metric ton per day.

### Physiological Disorders

Very susceptible to bruising. Pre-harvest russetting can be a problem.

### Postharvest Pathology

As with cherimoya, anthracnose, *Phomopsis* rot, and *Rhizopus* have been recorded (Sanewski 1988).

### Quarantine Issues

Atemoya is a fruit fly host; irradiation and heat treatments are potential treatments.

### Suitability as Fresh-Cut Product

Possible, as pieces, before it becomes too soft.

### Special Considerations

None.

*An earlier version of this article was originally published at the USDA website: [www.ba.ars.usda.gov/hb66/contents.html](http://www.ba.ars.usda.gov/hb66/contents.html)*

### References

- Brown, B.I., L.S. Wong, A.P. George and R.J. Nissen. 1988. Comparative studies on the postharvest physiology of fruit from different species of *Annona* (custard apple). *J. Hort. Sci.* 63:521–528.
- Nakasone, H.Y. and R.E. Paull. 1998. *Tropical fruits*. CAB Intl., Wallingford, UK, 445 pp.
- Paull, R.E. 1996. Postharvest atemoya splitting during ripening. *Postharv. Biol. Technol.* 8:329–334.
- Sanewski, G.M. 1988. Growing custard apples. *Queensland Department of Primary Industries Information Series*. QI 87014, Brisbane, Australia.

**Table 1. Respiration Rates**

Temperature	$\text{mgCO}_2 \text{kg}^{-1} \text{h}^{-1}$
10°C	47 to 190
15°C	54 to 281
20°C	40 to 460