

# Wax Apple

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## Scientific Name and Introduction

Wax apple (*Syzygium samarangense* [Blume] Merrill & L. M. Perry) is the main species in this Southeast Asian genus that is consumed fresh. Other species with similar fruits are *S. aqueum*, rose water apple; *S. aimini*, java plum; *S. jambos*, rose apple; and *S. malaccense*, Malay apple. The spice clove is *S. aromaticum*.

The fruit is broad, bell-shaped or sometimes oval, 5 to 6 cm (2 to 2.5 in) long, and 4 to 5 cm (1.5 to 2 in) wide. It has one to four seeds. The skin can be green to light red to dark red and has a waxlike high gloss sheen. The low-acid flesh is white and juicy (Nakasone and Paull 1998).

## Quality Characteristics and Criteria

Criteria are skin color; waxy glossy appearance; large size with small seeds; crunchy, watery, sweet taste; and subtle flavor.

## Horticultural Maturity Indices

Wax apples are ready for harvest when the blossom-end is fully expanded and the skin shows desired market color. Green-skin varieties are harvested when they reach full size.

## Grades, Sizes, and Packaging

There are no U.S. or international standards. Fruit are generally graded by size and color. They are generally marketed in single-layer fiberboard cartons of 2.25 kg (5 lb) with padding, sometimes in trays.

## Precooling Conditions

Room-cooling is normally used because of the risk of excessive moisture loss with forced-air cooling.

## Optimum Storage Conditions

Storage at 2 to 10 °C (36 to 50 °F) is recommended. However, chilling injury is a problem at these temperatures. A conservative recommendation would be 12 to 14 °C (54 to 57 °F) with 90 to 95% RH, which should result in a shelf-life of 10 to 14 days.

## Controlled Atmospheres (CA) Consideration

No CA studies have been reported. MAP in sealed polyethylene film bags reduces chilling injury

and decay (Horng and Peng 1983). Waxing is less effective, partly due to RH control.

### **Retail Outlet Display Considerations**

Fruit should be displayed in overwrapped trays or closed polystyrene clamshell containers with no perforations at 10 °C (50 °F). They should not be misted.

### **Chilling Sensitivity**

Wax apples show pitting and skin scald after 4 days at 2 °C (36 °F), while slight injury occurs after 4 days at 10 °C (50 °F) (Horng and Peng 1983).

### **Ethylene Production and Sensitivity**

Wax apples produce very low ethylene. It is a nonclimacteric fruit (Akamine and Goo 1979). There are no reported responses to ethylene, but ethylene treatment may lead to premature senescence.

### **Respiration Rates**

Respiration declines after harvest (Liao et al. 1983).

Temperature	mg CO <sub>2</sub> kg <sup>-1</sup> h <sup>-1</sup>
10 °C	4 to 5
20 °C	8 to 11

To get mL CO<sub>2</sub> kg<sup>-1</sup> h<sup>-1</sup>, divide the mg kg<sup>-1</sup> h<sup>-1</sup> 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<sup>-1</sup> h<sup>-1</sup> by 220 to get BTU ton<sup>-1</sup> day<sup>-1</sup> or by 61 to get kcal tonne<sup>-1</sup> day<sup>-1</sup>.

### **Physiological Disorders**

Chilling injury, mechanical injury, and water loss are the three major disorders. Chilling injury symptoms are pitting and scalding of the skin, while mechanical injury (impact and abrasion) leads to development of sunken areas and some darkening of affected flesh. Though fruit have a bright waxy coating, water loss is rapid, leading to shriveling on the skin and loss of crisp texture. At 2% moisture loss, fruit become slightly shriveled; and at 6%, fruit are shrunken and lose turgidity (Horng and Peng 1983).

### **Postharvest Pathology**

There are no published reports. Wax apple may be susceptible to anthracnose.

### **Quarantine Issues**

This is a fruit fly host; irradiation at 300 Gy may have potential for disinfestation.

## **Suitability as Fresh-Cut Product**

Wax apple is often available as a fresh-cut product in Southeast Asian markets in trays with overwrap. It has some potential as a fresh-cut product.

## **References**

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