

Tomatillo

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Scientific Name and Introduction

The tomatillo, or husk tomato, (*Physalis ixocarpa* Brot. ex Hornem) is a warm-season vegetable of the Solanaceae family. The small, spherical, green or green-purple fruit is surrounded by an enlarged calyx, or “husk.” As the fruit matures, it fills the husk and can split it open by harvest time. Tomatillo is the key ingredient in fresh and cooked green salsas and other Latin American dishes. Tomatillos are available year-round. In the United States tomatillo are produced mainly on small acreages in California, but large volumes are imported from Mexico (Smith et al. 1999).

Quality Characteristics and Criteria

The freshness and greenness of the calyx (husk) are quality criteria. Fruit should be firm and bright green, since the color and acidic flavor are the main culinary contributions of tomatillos (Moriconi et al. 1990, Bock et al. 1995).

Horticultural Maturity Indices

Tomatillos can be harvested at various stages of development. For commercial marketing, they should be harvested when fruit are well formed and have substantially filled the husk but are still bright green. Overmature fruit that are light green or yellowing should be avoided, since they are sweeter and undesirable for most uses.

Grades, Sizes, and Packaging

There are no U.S. Grades. Fruit are not usually sized before packing. They are packed in 18-kg (40-lb) crates (Mexican fruit) or in 4.5-kg (10-lb) cartons (U.S. fruit).

Precooling Conditions

Forced-air cool or room-cool to retain fresh appearance of the husk.

Optimum Storage Conditions

Tomatillos can be stored under a wide range of conditions. At ambient temperatures, the husks will dry, but the fruit will remain in good condition for about 1 week. The freshness of fruit and husk can be extended by storage at 5 to 10 °C (41 to 50 °F) with 80 to 90% RH. Chilling injury can occur after 3 weeks at 5 °C (41 °F).

Controlled Atmosphere (CA) Considerations

No information is available.

Retail Outlet Display Considerations

Tomatillos should be kept cool to reduce water loss and minimize superficial decay. They should not be misted.

Chilling Sensitivity

Tomatillos can be stored for 1 mo at 10 °C (50 °F) without developing chilling injury symptoms. Fruit begin to show symptoms (surface pitting and decay) after 3 weeks at 5 °C (41 °F); symptoms become more pronounced at 2.5 °C (37 °F).

Ethylene Production and Sensitivity

Immature tomatillos produce low amounts of ethylene: 0.5 to 2.0 $\mu\text{L kg}^{-1} \text{h}^{-1}$ at 10 to 20 °C (50 to 68 °F). More mature fruit produce greater amounts: 1 to 10 $\mu\text{L kg}^{-1} \text{h}^{-1}$. Ethylene production can be high, 20 to 40 $\mu\text{L kg}^{-1} \text{h}^{-1}$ at 20 °C (68 °F), in overmature fruit (that is, fruit showing color changes due to ripening). Exposure of mature fruit to ethylene causes undesirable color changes (Cantwell et al. 1992).

Respiration Rates

Respiration rates remain relatively constant during storage at 5 and 10 °C (41 to 50 °F); rates decrease during storage at 20 °C (68 °F). Respiration rates of developing fruit are about 25% higher than those of mature fruit.

Temperature	mg CO ₂ kg ⁻¹ h ⁻¹
5 °C	12 to 14
10 °C	13 to 19
20 °C	27 to 36

Data for mature-green fruit from Cantwell et al. (1992).

To get mL CO₂ 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 ton⁻¹ day⁻¹ or by 61 to get kcal tonne⁻¹ day⁻¹.

Physiological Disorders

See *Chilling Sensitivity*.

Postharvest Pathology

Chilling injury can encourage the development of black mold caused by *Alternaria alternata*, the same organism often found on chill-injured red tomatoes. Superficial molds occur on the husk during storage under high RH, but they have not been identified. Washing in chlorinated water reduces superficial mold growth, but this may be difficult to implement commercially since it is difficult to remove all moisture inside the husk.

Quarantine Issues

There are no known quarantine issues.

Suitability as Fresh-Cut Product

Not suitable for fresh-cut product at this time.

References

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