

Lime

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Scientific Name and Introduction

Limes are thought to have originated in northeast India. Persian lime (also known as Bearss or Tahiti, *Citrus latifolia* Tan.) is the principal type grown in the United States. Commercial Persian lime production in the United States is now less than 2,000 ha and is limited to south Florida and southern California (Saunt 2000). Persian lime and key lime (*Citrus aurantifolia* Swing.) trees are popular in backyard settings, where they are commonly placed in large pots that are easily moved indoors during cold weather. Persian limes are seedless or nearly so, whereas key limes contain numerous seeds.

Quality Characteristics and Criteria

High-quality limes should be oval and firm with smooth peel and deep green (Persian) or green and yellow (key lime) color. Limes should be turgid and free from decay, splitting, and blemishes.

Horticultural Maturity Indices

High quality, mature limes have a juice content of 30% or higher, by volume (Arpaia and Kader 2000). U.S. consumers prefer a mature, green lime; these have a significantly longer postharvest-life than those picked when yellow. In some other countries, yellow limes are preferred because of their higher juice content (Arpaia and Kader 2000).

Grades, Sizes, and Packaging

Persian limes must attain a size of 4.76 cm (1.87 in) in diameter and a juice content of 42% by volume. There are no size requirements for key lime, but juice content must be 42% by volume (Wardowski et al. 1995). Persian limes are packed in 10-lb (4.5-kg), 20-lb (9.1-kg), and 40-lb (18.2-kg) cartons for storage and shipping (Roy et al. 1996).

Ethylene Production

The typical rate of ethylene production is very low at $<0.1 \mu\text{L kg}^{-1} \text{h}^{-1}$ at 20 °C.

Respiration Rate

Under optimal storage conditions, respiration rate of limes is $<10 \text{ mg CO}_2 \text{ kg}^{-1} \text{ h}^{-1}$ (Arpaia and Kader 2000).

Optimum Storage Conditions

Limes should be cooled and stored at 10 °C (50 °F) with 95% RH. Under optimal conditions, limes can be stored up to 8 weeks. CA storage can retard senescence, but commercial use is very limited.

Physiological Disorders

Stylar-end breakdown can be a significant problem with limes. Stylar-end breakdown begins as an apparent breakdown of tissues at the stylar end of the fruit. Typically the stylar end takes on a wet appearance. Large, mature fruit are more susceptible. Incidence of the disorder can be aggravated by high field heat and rough handling (Davenport and Campbell 1977, Malo and Campbell 1994). Exposing limes to temperatures below the optimum storage temperature can result in chilling injury characterized by peel pitting. Oleocellosis can develop on the peel if hand-harvest begins early in the morning or immediately after rainfall, when the peel is turgid.

Postharvest Pathology and Control

Key lime is very susceptible to stem-end rot caused by *Diplodia natalensis* and anthracnose (*Colletotricum*). Stem-end rot caused by *D. natalensis*, *Phomopsis citri*, and *Alternaria citri* are important postharvest diseases in Persian lime. In addition, green and blue mold (*Penicillium digitatum* and *P. italicum*, respectively) can enter through wounds made during harvesting and handling and appear in storage. Careful handling to minimize mechanical damage can help reduce blue and green mold. Proper sanitation of packing line equipment and use of postharvest fungicides reduce postharvest diseases.

Quarantine Issues

Appearance of citrus canker (*Xanthomonas axonopodis* pv. *citri*) has restricted movement of limes grown in south Florida. Compliance with the Citrus Canker Eradication Program (Florida Department of Agriculture and Consumer Services 2000) is required to market limes from quarantined areas.

Suitability as Fresh-Cut Product

No current potential exists.

References

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