Limes

Revised 2018

Thermal Properties

	English	Metric
Moisture, %	88.26	--
Protein, %	0.70	--
Fat, %	0.20	--
Carbohydrate, %	10.54	--
Fiber, %	2.80	--
Ash, %	0.30	--
Specific Heat Above Freezing	0.94 Btu/lb*°F	3.93 kJ/(kg*K)
Specific Heat Below Freezing	0.48 Btu/lb*°F	2.03 kJ/(kg*K)
Latent Heat of Fusion	127 Btu/lb	295 kJ/kg

Storage Conditions

Temperature	50°F (10°C)
Relative Humidity	85-90%
Storage Period	6-8 weeks

Limes are a cold-sensitive fruit that can be held for 6-8 weeks at 50°F (10°C) with 85-90% relative humidity (RH) if they are harvested from groves with good cultural practices. During postharvest handling it is important to always avoid rough handling and to protect the fruit from excessive moisture loss, sometimes by using an approved wax. Tahiti or Persian limes should be placed in storage while still green but in a fully mature condition with a smooth peel. Mexican, West Indian or Key limes are preferred with yellow color but can be similarly cold-stored.

Limes from Florida and the West Indies are subject to stem end rot and should be frequently inspected while in storage. Incoming fruit should be inspected carefully to avoid storing fruit that is obviously infected.

The range of freezing points of Persian limes is 27.1 to 28.9°F (-3 to -1°C).

Diseases and Injuries

Anthracnose	Anthracnose, characterized by water-soaked, brown, and slightly sunken areas that later turn flesh-colored and with raised corky scabs, is a preharvest disease of Mexican or Key limes; other varieties are apparently not affected. **Control:** Copper fungicides give some control but control is difficult in humid areas. Field sanitation is recommended.
Blue Mold and Green Mold	These rots are identified by characteristic soft, watery, discolored areas or spots, which later produce easily distinguished blue or green spores. Infections usually begin at wound sites created during harvesting, handling, and packing. **Control:** Use of postharvest fungicides and careful handling to minimize injury is the primary means of control.
Freezing Injury	In frozen fruit, membranes between segments are water-soaked. Rind may be discolored brown or gray in severe cases, or both rind and flesh may become soft and mushy. Grapefruit may taste bitter for a time after defrosting. Fruit frozen on the tree is soft and light in weight, exhibits woodiness in pulp, and has cavities within or between segments. **Control:** Avoid freezing temperatures.
Oil Spotting (Oleocellosis)	Caused by the release of oil from oil glands when turgid fruit receive even slight bumps and abrasions. The oil is toxic to the surrounding cells. Symptoms appear as irregularly shaped green, yellow, or brown areas. **Control:** Avoid harvesting turgid fruit, such as when dew is present or immediately after rain or irrigation.
Rind Breakdown	Both Tahiti (Persian) and Mexican (Key) limes are subject to spotting and collapse of rind, more often on sides of the fruit. It is sometimes called scald. Diseased areas are sunken with distinct margins and tan- to rusty-pink color, often caused by chilling at temperatures of 40°F (4.4°C) or below, but limes held in long storage at 48°F (9°C) or above may also be affected. At low temperature, immature fruit are more susceptible than riper limes. **Control:** Careful handling and storage at 50°F (10°C), with an RH of at least 85%, are recommended.
Stem End Rot	Usually caused by infection with either *Lasiodiplodia* or *Phomopsis*, the principal decay organisms in areas with abundant summer rainfall. Decay develops primarily from preharvest infections of the button at the stem end of the fruit. Infected areas soften and turn tan or brown. Affected fruit do not shrivel and usually show no

	surface fungus growth. Affected fruit taste flat and bitter; affected tissues have a rancid odor. **Control:** Use of postharvest fungicides. Rapidly reduce fruit temperature and store fruit at the lowest safe temperature.
Stylar End Breakdown	Stylar end breakdown is characterized by collapse of rind at the blossom end of Persian limes as the fruit matures; the area is firm, dark, and sunken. Although the disease is physiological in nature, secondary decay invasion may occur. **Control:** Avoid rough handling during harvest and postharvest handling. Warm temperatures may also exacerbate the disorder; rapid cooling is recommended. Picking should be avoided early in the day when the fruit is turgid.

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