Eggplant

Revised 2008

Thermal Properties

	English	Metric
Moisture, %	92.41	--
Protein, %	1.01	--
Fat, %	0.19	--
Carbohydrate, %	5.70	--
Fiber, %	3.40	--
Ash, %	0.70	--
Specific Heat Above Freezing	0.96 Btu/lb*°F	4.02 kJ/(kg*K)
Specific Heat Below Freezing	0.44 Btu/lb*°F	1.83 kJ/(kg*K)
Latent Heat of Fusion	132 Btu/lb	307 kJ/kg

Storage Conditions

Temperature	50 to 54°F (10 to 12°C)
Relative Humidity	90 to 95%
Storage Period	1 to 2 weeks
Chilling Temperatures	Below 50°F (10°C)
Highest Freezing Point	30.6°F (-0.8°C)

High quality eggplants should be firm with a shiny, deep purple skin, and the calyx and stem should be a fresh green. A dull skin, particularly if slightly wrinkled, is a sign of excess water loss and aging. Forced-air cooling and hydro-cooling are the best methods for removing field heat from eggplants. Keep the storage relative humidity in the range of 90 to 95%. Eggplants should never be held in contact with ice.

Storage of eggplants at 50 to 54°F (10 to 12°C) is optimal, since eggplants are chilling sensitive. If eggplants are held at 41°F (5°C) for 6 or more days, they will develop surface pitting, scald, tissue browning and collapse, seed darkening, and typically Alternaria Rot upon removal from storage. If prepackaged in perforated film to minimize moisture loss, eggplants may be stored up to 2 weeks at 50°F (10°C), but increased decay may be a problem with longer storage. Prepackaging also can delay the appearance of pitting due to chilling by retarding drying of the injured tissue. Exposure to ethylene gas for 2 or more days hastens deterioration, evidenced by calyx browning and abscission, flesh softening and browning.

Research has shown that eggplant storage life at a given temperature also depends on the variety and temperature during growth and development. Eggplants grown during cool weather are more tolerant of chilling temperatures. For example, fruit harvested in July were injured by 5 days of storage at 50°F (10°C), whereas those harvested in October showed no pitting or decay after 10 days at 43°F (6°C). In another study at the University of California, Davis, no chilling was observed in summer eggplants stored at 50°F (10°C); 12 days were required for chilling to appear at 45°F (7.5°C); 6-7 days at 41°F (5°C); 4 days at 36°F (2.2°C); and only 1-2 days at 32°F (0°C).

Controlled atmosphere (CA) storage has not been used commercially to extend the storage life of eggplants. However, in laboratory studies, storage in 1% O_2 for 2 weeks at 50°F (10°C) reduced carbohydrate losses and decay over that occurring in air. Elevated CO2 levels do not extend eggplant storage life and CO_2 levels above 10% are injurious.

Diseases and Injuries

Alternaria Rot	Chill-injured fruit are the most susceptible. Decay usually develops around the calyx and over the surface of the fruit without visible skin breaks. The decayed flesh is spongy and tan to grayish tan. Surface mold often develops on the old spots. The mold may be dark gray or, if the fungus is sporulating heavily, the mass will appear olive green and velvety. **Control:** Maintain a temperature of 50 to 54°F (10 to 12°C). Avoid shipping eggplants in mixed loads of vegetables with top ice. Avoid prolonged holding and chilling temperatures.
Bacterial Soft Rot	Lesions are a dingy, grayish brown with tender skin. The rot is soft and watery and does not have foul odor. **Control:** Careful handling and rapid cooling to about 50°F (10°C).
Cottony Leak	Especially noticeable during wet seasons. Only fruit that come in contact with the soil or are spattered with soil are affected. Bleaching of purple skin color, especially at blossom end, watery and light brown; pressure causes a brownish liquid to flow freely from diseased tissues. Abundance of white, cottony fungus growth finally covers surface. **Control:** Decay progresses rapidly, so no fruit showing brownish discolorations of any kind should be stored. Decay will spread from diseased to healthy eggplant. Keep storage temperature between 50 and 54°F (10 and 12°C).
Fruit Rot (Phomopsis)	Numerous somewhat circular, tan to light brown, slightly depressed spots. Decay is soft and spongy. Very common decay of eggplant. **Control:** Nothing that warehouseman can do except keep temperature between 50 and 54°F (10 and 12°C). Move fruit promptly if decay is evident.
Gray Mold Rot	Fruit harvested following cool, moist weather may develop the decay through wounds or old blemishes. But if the fruits are held at 45°F (7°C) for 10 days or longer, they may develop gray mold rot anywhere on the fruit without the aid of skin breaks. Decayed tissues are bleached from dark purple to medium brown with a grayish cast. Actively developing lesions usually have a reddish purple margin. The decayed tissues separate

	readily from the healthy flesh**.** **Control:** Move eggplant fruit rapidly through the market channels. Avoid delays at less than 50°F (10°C)
Chilling Injury	Symptoms of chilling injury are pronounced but usually do not develop until after fruit are removed from low temperature. Symptoms include scald (flush or sunken brown spots on the skin with a cooked appearance), pitting at skin breaks, and marked internal browning of the flesh and seeds. The calyx also turns brown. Severely chilled fruit may have so many pits that they appear pebbly. As in other vegetables subject to chilling injury, Alternaria rot may develop in the scalded or pitted areas. **Control:** Do not allow transit or storage temperatures to drop below 50°F (10°C). Eggplants may tolerate up to 4 days at lower temperatures, but this is not advisable as some fruit may be injured. Do not use top ice.

Freezing

Eggplant freezes well, but it is usually prepared as a cooked item for freezing. It may be sliced, dipped in batter, and fried in deep fat. It may be baked, boiled, scalloped, sautéed, creamed, prepared as eggplant Creole, or cooked in many other ways. Package well and then freeze rapidly.

WFLO is indebted to Dr. Jeff Brecht, Institute of Food and Agricultural Sciences, University of Florida, for the review and revision of this topic.