Parsnips

Revised 2018

Thermal Properties

	English	Metric
Moisture, %	79.53	--
Protein, %	1.20	--
Fat, %	0.30	--
Carbohydrate, %	17.99	--
Fiber, %	4.90	--
Ash, %	0.98	--
Specific Heat Above Freezing	0.89 Btu/lb*°F	3.74 kJ/(kg*K)
Specific Heat Below Freezing	0.48 Btu/lb*°F	2.02 kJ/(kg*K)
Latent Heat of Fusion	114 Btu/lb	266 kJ/kg

Storage Conditions

Temperature	32°F (0°C)
Relative Humidity	98 to 100%
Storage Period	4 to 6 months
Highest Freezing Point	30.4°F (-0.9°C)

Parsnips should be promptly cooled after harvest to 41°F (5°C) or below by hydrocooling or package icing then placed into storage at 32 to 34°F (0 to 1.1°C) with 98 to 100% relative humidity (RH). Parsnips should keep for 4 to 6 months in those conditions. Rapid cooling minimizes decay and moisture loss. Only sound, healthy roots should be stored, never bruised or damaged roots. Parsnips are not injured by slight freezing while in storage but should be protected from hard freezing and should be handled with great care while in a frozen condition. Early-harvested parsnips held at 32 to 34°F (0 to 1.1°C) attain a sweetness and high quality within 2 weeks that is equal to that of later-harvested roots subjected to fall frosts for 2 months in the field.

Parsnips dry out easily in storage; hence, it is essential that humidity be kept high. Ventilated polyethylene box or basket liners will aid in preventing moisture loss. Waxing is not particularly effective in preventing wilting. Parsnips should be stored in a RH as close to saturation as possible.

Parsnips, like carrots, may increase in phenolic content and acquire a bitter flavor when exposed to ethylene. Therefore, parsnips should not be stored with ethylene-releasing fruits such as apples, pears, or peaches.

The major storage diseases are gray mold, bacterial soft rot, and watery soft rot. Parsnips commonly undergo a color change from white at harvest to a dull yellowish-brown during storage, which is associated with abrasion and bruising damage during harvest. This surface browning is due to enzymatic oxidation of phenolic compounds. Recommended low temperature and high RH will retard both the discoloration and decay.

Freezing

The parsnips are washed, peeled, trimmed, and sliced or diced, depending on intended use. They may need to be covered with a 5% salt brine to prevent darkening prior to blanching. The cooled pieces are then packaged dry, frozen, and stored at 0°F (-17.8°C) for 1 year or longer.

Diseases and Injuries

Canker	Commonly occurs on the shoulder. Black or dark brown oblong region, slightly sunken. **Control:** Crop rotation, sterilized seed. No warehouse control.
Black Rot	Small to large black areas, initially superficial and dry. Mostly on side of root. A definite black margin separates healthy and diseased tissue. **Control:** Use sterilized, treated seed. No postharvest control. Will grow even at 32°F (0°C).
Bacterial Soft Rot	Commonly occurs at the crown and at other injury sites. Soft, watery lesions are gray to brown. A putrid odor develops in advanced stages. **Control:** Avoid injury and grade out injured roots. Sanitation and maintenance of temperature below 36°F (2.2°C).
Gray Mold	Usually occurs at injuries. Lesions are light brown, spongy, water soaked with gray to brown spores. Nesting occurs, spreading the rot from infected to sound roots. **Control:** Avoid injury and store at 32°F (0°C).
Watery Soft Rot	Infections occur in the field before harvest and are promoted by cool, rainy weather. Affected tissues are water soaked with fluffy, white fungal mycelium. Spores develop later and are bluish to black. **Control:** Grade out infected roots before storage. Promptly market remaining roots.

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