Rutabagas

Revised 2018

Thermal Properties jealous

	English	Metric
Moisture, %	89.66	--
Protein, %	1.20	--
Fat, %	0.20	--
Carbohydrate, %	8.13	--
Fiber, %	2.50	--
Ash, %	0.81	--
Specific Heat Above Freezing	0.94 Btu/lb*°F	3.96 kJ/(kg*K)
Specific Heat Below Freezing	0.46 Btu/lb*°F	1.92 kJ/(kg*K)
Latent Heat of Fusion	129 Btu/lb	299 kJ/kg

Storage Conditions

Temperature	32°F (0°C)
Relative Humidity	95 to 100%
Storage Period	4 to 6 months for fresh use 6 to 9 months for processing
Highest Freezing Point	30.1°F (-1.06°C)

Rutabagas store best at 32°F (0°C) and very high (95% or above) relative humidity (RH). They lose moisture and shrivel readily if not stored under high RH conditions. Moisture loss can also result in a brown surface discoloration called 'storage burn'. The optimum RH for rutabagas is 98 to 100%, or as close to saturation as possible. Weight losses are less with 98 to 100% RH than with 90 to 95% RH, and decay is not increased.

Although room-cooling is most commonly used for rutabagas, they can also be forced-air cooled, hydrocooled, or package-iced. Wash and hydrocooler water should contain 50 to 100 ppm chlorine at pH 7.0. Rapid cooling after harvest, especially when field temperatures are 77°F (25°C) and above reduces shrivel, storage burn, and decay in storage.

Hand pre-peeled rutabagas packaged in consumer-sized film bags keep in good condition for 4 weeks at 34°F (1.1°C). Abrasive pre-peeled rutabagas last only 1 week.

Losses in stored rutabagas are often serious. Rough handling of the roots when harvesting and filling bins or other containers may increase storage losses. Rutabagas are often hot-waxed just before

being marketed to improve their appearance, keep them clean, and prevent undue moisture loss and shriveling during the marketing period. Too heavy a wax coating may inhibit gas exchange to support respiration and produce internal breakdown. Waxing may not be necessary if in high (98%) RH storage, especially if marketed in perforated polyethylene bags. Waxing of rutabagas that will be stored longer than 2 months is not recommended due to risk of internal breakdown.

Diseases and Disorders

Diseases of rutabagas resemble those of turnips and carrots.

Bacterial Soft Rot	Often follows bruises, cracks or other injuries on roots. In later stages, infected areas turn brown to black, often with a foul odor. Disease spreads rapidly in warm, humid weather. **Control**: Care in handling to avoid cuts, bruises and other injuries. Prompt cooling and storage at 32°F (0°C), not above 35°F (2.2°C), and avoid freezing temperatures. Aeration to increase drying of infected areas may partially prevent spread of decay.
Black Rot	Caused by *Phoma lingam* and results in dry, corky, dark brown or blackish lesions with a sparse superficial growth of white mycelia. Lesions can occur on cut surfaces, where discoloration frequently spreads into the vascular tissue, and as small craters on undamaged skin. **Control**: Store at 32°F (0°C) because black rot does not spread or develop appreciably in storage under refrigeration.
Brown Heart	Irregular streaks and patches in the inner tissues and water-soaked areas. Also called water core, mottled heart, and dark center. **Control:** Apparently due to some condition in growing environment, such as boron deficiency. Not due to cold storage or disease organism.
Gray Mold Rot (Botrytis Rot or Brown Soft Rot)	Infection usually occurs at injury sites. Decayed tissues are fairly firm to semi-watery, water-soaked and grayish-tan to brownish in color. Grayish-brown velvety spore masses are conspicuous. **Control:** Use sanitation practices during harvesting and packing. Avoid wounds as much as possible. Use storage and transit temperatures as near as practical to 32°F (0°C).
Freezing Injury	Rare because rutabagas can stand slight freezing without injury. Severe freezing causes water-soaked and light browning of the flesh, odor of mustard, and fermentation. **Control:** Avoid repeated slight freezing or severe freezing.

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