

Horseradish

Revised 2018

Thermal Properties

	English	Metric
Moisture, %	78.66	--
Protein, %	9.40	--
Fat, %	1.40	--
Carbohydrate, %	8.28	--
Fiber, %	2.00	--
Ash, %	2.26	--
Specific Heat Above Freezing	0.88 Btu/lb*°F	3.70 kJ/(kg*K)
Specific Heat Below Freezing	0.51 Btu/lb*°F	2.12 kJ/(kg*K)
Latent Heat of Fusion	113 Btu/lb	263 kJ/kg

Storage Conditions

Temperature	30 to 32°F (-1.1 to 0°C)
Relative Humidity	98 to 100%
Storage Period	10 to 12 months
Freezing Point	28.7°F (-1.8°C)

Horseradish roots should be firm and crisp with smooth surface and all side roots removed. The most desirable size for fresh market is 6 to 14 inches (15.2 to 35.6 cm) long and at least 1.25 inches (3.2 cm) in diameter. Horseradish can be a difficult product to store, as the roots may have a high rate of respiration if harvested while actively growing, generally before fall frost kills the leaves. Bagging or sacking [50, 75, or 100 lbs. (110, 165, or 220 kg) per sack] is responsible for most storage troubles. When such a considerable mass of highly active product is stuffed tightly into a bag, it becomes practically impossible to remove heat from the fast-respiring mass.

Unless cool or freezing temperatures retard the metabolism of horseradish before harvest, the product is usually highly active physiologically. It is desirable to harvest the roots during cold weather. In general, the smaller the roots, the greater the danger of losses, because small roots tend to pack more tightly together, making them more difficult to cool in storage. The smaller roots may be acceptable for processing.

Horseradish roots are quite susceptible to water loss, which results in limp texture similar to carrots. For best results, horseradish should be stored at 30 to 32°F (-1.1 to 0°C) with a relative humidity as near to

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saturation as possible to prevent loss of moisture; under such conditions, horseradish may be stored for up to 1 year. This very high humidity recommendation does not promote spoilage if the temperature of the product is low. No information is available on storage life at other temperatures. Use of perforated polyethylene bags is suggested as a method of maintaining high humidity. Horseradish also can be stored over the winter in cool cellars or in outdoor pits or trenches, but more uniform storage conditions can be maintained in a refrigerated warehouse. Unlike other root crops, precooling is usually unnecessary because the roots are harvested in the winter. Roots prepared for market have had all lateral roots trimmed off and have been washed.

Do not expose horseradish to light as the roots will turn green and lose value, similar to potatoes. For good storage results use smaller package sizes and select horseradish from good production areas dug properly after fall chilling or freezing has occurred.

Frequent inspection of horseradish in storage is a recommended safety measure. Determine whether the roots in the center of some sacks are sufficiently cool (at least 40°F/4.4°C) or below) and reasonably free from evidence of significant spoilage.

Diseases and Injuries

Bacterial Root Rot	Develops and spreads in storage if air is humid and temperature is high. Central cylinder of root is invaded, water-soaked at first, later yellowing in color, center finally becoming soft and at last hollow. Control: Prompt and continuous refrigeration at 30 to 32°F (-1.1 to 0°C).
Black Root Rot	Attacks the outside cylinder of root, causing roughening and charcoal black discoloration. Within, the tissues are pink or red. Control: Nothing that the warehouse personnel can do. Prompt and adequate refrigeration will retard spread.
Rhizoctonia Root Rot	Rot renders roots light yellow to grayish-tan. The surface mold is creamy white and may be dotted with brownish-black resting bodies (sclerotia). Control: Temperature of 30 to 32°F (-1.1 to 0°C) should retard rot development.

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