



## Zion Farmers Market Veg-u-cation

### Horsing Around



People have been grinding the peppery roots of horseradish into a condiment for more than 3,000 years. This tradition should be kept by more gardeners, because few plants are as easy to grow as horseradish (*Amoracia rusticiana*). A distant cabbage cousin, horseradish is a hardy perennial capable of surviving winter temperatures to -20°F (-28°C).

The whitish root is a member of the mustard family which includes horseradish's milder cousins including cauliflower, kale, Brussel sprouts and the common radish. The root is harvested in the spring and fall and sold to processors who grate the root releasing the oil responsible for its distinctive aroma and bite. Ground horseradish is mixed with vinegar to stabilize the heat. Salt or sugar, cream or vegetable oil may be added. But generally speaking, horseradish and vinegar are the primary ingredients in prepared horseradish on the market.

Horseradish is native to the Eastern and Mediterranean regions of Europe from where it spread to Americas during colonial times. The plant is a small perennial herb, but can be grown as an annual field crop for its thick, rough, fleshy roots in many parts of Europe, America, and Asia, including Germany, USA, England, Hungary, Japan, and China.

*A. rusticana* plant features broad, crinkled leaves. It grows best under cool climates with good sunlight conditions. In general, the rootlets (root sections) planted in the spring and harvested by autumn. It measures about 6-12 inches long with few round knots at the root-end. Fresh root has rough, gray-brown outer surface.

Wasabi (*Wasabia japonica*) is a Japanese variant of horseradish but has more intense, and stronger flavor. Its interior features delicate apple green color flesh.

#### **Health benefits of horseradish**

- Horseradish is low in calories and fat. However, it contains good amounts of dietary fiber, vitamins, minerals, and anti-oxidants. Certain active principles in it found to have been anti-inflammatory, *diuretic* (increase urine output), and nerve soothing effects.
- The root contains many volatile phyto-chemical compounds, which give its much-famed biting character. Some of the major constituents in the root are *allyl isothiocyanate*, *3-butenyl isothiocyanate*, *2-propenylglucosinlate (sinigrin)*, *2-pentyl isothiocyanate*, and *phenylethyl isothiocyanate*. It has been found that these compounds have been known to carry anti-oxidant and detoxification functions.
- Some of the volatile phyto-chemical compounds in the root stimulate secretion of salivary, gastric, and intestinal digestive enzymes, and thereby facilitate digestion. It thus, works as a potent gastric stimulant which increases appetite.
- Horseradish has good amounts of vitamin-C, which is a powerful water soluble anti-oxidant. 100 g fresh root holds 29 mg or 41% of daily-recommended values. Vitamin-C helps alleviate viral infections by boosting immunity. In addition, it helps remove harmful free-radicals from the body and may help protect it from cancers, inflammation, infections, etc.
- This root-spice has some of vital minerals in moderation like sodium, potassium, manganese, iron, copper, zinc, and magnesium. Iron is an important co-factor for cytochrome-oxidase enzymes during cellular metabolism. It is also required for red blood cell production in the bone marrow. Being an important component of cell and body fluids, potassium helps control heart rate and blood pressure. Manganese is used by the body as a co-factor for the powerful antioxidant enzyme, *superoxide dismutase*.
- In addition, the root has small amounts of essential vitamins such as folate, vitamin B-6 (pyridoxine), riboflavin, niacin, and pantothenic acid.

### **Selection and storage**

Generally, horseradish root is harvested during the late fall when its leaves killed by the frost. You may also want to buy fresh roots from the markets during this season. Select fresh, stony hard root that is devoid of sprouts, mold, or soft spots. Avoid green-tinged roots, as they are very bitter. Furthermore, avoid overmature, old, and larger roots, as they tend to be excessively fibrous and thus, off-flavored.

Once at home, store the root in loose paper pack and place it inside the refrigerator where it will remain dormant for next 6-9 months. Commercially prepared horseradish products can be readily available in the stores all around the year.



### **Preparation and serving methods**

Fresh root has beige outer color. Clean it using moist cloth to remove surface dirt as you do it for ginger. Wash gently in cold water and mop it dry. Cut the root from the tip end as much part as you may require for your family that should last for 2-3 days. Keep the unused root inside a loosely wrapped plastic bag inside the refrigerator to prevent it from drying out.

To prepare, fresh grated horseradish root is mixed with white vinegar in a desired manner to control (stabilize) its hotness. The preparation, however, gradually loses its flavor with time and turns off-white to brown color even if you keep it in the cold storage.

The pungency and hotness of horseradish may not be appreciable in the intact root. As in onion and radish, crushing or grating the root releases volatile allyl-isothiocyanate compound that can cause irritation to eyes, skin, mucus membranes of nose and throat. Vinegar or citric acid neutralizes pungency and stabilizes its flavor. Generally, 2 to 3 tablespoons of white vinegar and 1/2 teaspoon of table salt added to one cup of grated horseradish. Add vinegar 1-2 minutes later to get milder preparation.

Like in many other spices, horseradish too loses its flavor instantly. In order to keep the fragrance and flavor intact, it is generally grated just before preparing dishes and added to the cooking recipes at the final stages.

Here are some serving methods:

- Horseradish is one of the traditional spices that is relished even today in the countryside. Fresh root grated directly on the recipes to add special zest.
- The root is used in many preparations, including dips, dressings, salads, and sauces as an accompaniment with meat, chicken, and seafood.
- Horseradish sauce with cream is a perfect accompaniment to steak, venison, and fish like mackerel, tuna, and smoked trout.

### **Safety profile**

Horseradish can cause irritation to skin, mucus membranes, and eyes. This is due to release of *allyl sulphide* gas (allyl-isothiocyanate) while chopping, crushing, or grating the root. Disruption of the cell wall activates enzyme myrosinase which when reacts with glucosinolates to form allyl isothiocyanates. Lemon citrus or vinegar stops this reaction and stabilizes the flavor. Its effect can be minimized by using blender/mixer in well-ventilated place and wearing protective gloves and mask.



### **21 Fun Facts About Horseradish**

The horseradish is a root riddle wrapped in a mysterious vegetable wrapped inside an enigmatic name. All people usually know about the horseradish is that it's hot, white and it makes a great cocktail sauce!

So we came up with some interesting and fun facts you didn't know about horseradish to help educate you for the next time you go to dollop some on top of your raw oysters!

1. The leaves and roots of a horseradish were used for medicinal purposes during medieval times.
2. Approximately 24 million pounds of horseradish roots are processed every year to make 6 million gallons of prepared horseradish each year in the United States.
3. July is National Horseradish Month every year!
4. Horseradish is considered the cousin to broccoli and cauliflower, which are in the same plant family.
5. Grated horseradish can tarnish silver, so don't serve it in anything fancy!
6. Isothiocyanate is the compound in grated horseradish that creates the heat that affects your sinuses.
7. The city of Collinsville hosts the International Horseradish Festival in the first weekend in June every year in America. The city is in Southern Illinois, but it's really about 10 miles northeast of St. Louis. It also has the Brooks Catsup Bottle Water Tower, which is considered the world's largest ketchup bottle.
8. During the Jewish celebration of Passover, horseradish is commonly used as one of the five "bitter herbs."
9. Raw horseradish isn't that spicy, but when it's grated or sliced, the root cells are crushed, releasing the spicy oil inside.
10. "Horseradish" is an English word derived from the term "horse," which refers to "coarse." And "radish" is from the Latin term for root.
11. Eau Claire, Wis., and Tulelake, Calif., and Collinsville have all made claim to being the horseradish capital of the world!
12. Nicknames for horseradish through the years include, "redcole" and "stingnose."
13. Horseradish peroxidase is an enzyme found in horseradish root that is used in biochemical research.
14. "Prepared horseradish" is the raw grated root, mixed with salt and vinegar, to stabilize the heat.
15. Horseradish isn't a type of radish at all! It's in the same mustard family of plants, though.
16. One tablespoon of prepared horseradish has just seven calories.
17. Ironically, horseradish is toxic to horses!
18. A jar of prepared horseradish will keep fresh for 4-6 months in your refrigerator, and it'll keep even longer in the freezer.
19. The sooner vinegar is introduced to fresh grated horseradish, the milder it tastes.
20. The very first written reference to horseradish was in 1597, in botanist John Gerarde's *Generall Historie of Plantes*, also known as *Herbal*.
21. The International Horseradish Festival names a new Little Miss Horseradish every summer, choosing between girls ages 4-6 years old, living in nearby counties.