

## Horseradish

“Worth Its Weight in Gold” – Delphic Oracle to Apollo



### Scientific classification

Kingdom: Plantae  
(unranked): Angiosperms  
(unranked): Eudicots  
(unranked): Rosida  
Order: Brassicales  
Family: Brassicaceae  
Genus: *Armoracia*  
G.Gaertn., B. Mey, & Scherb.  
Species: *A. rusticana*

### History

Horseradish has been used as an aphrodisiac, a treatment for rheumatism, a bitter herb for Passover seders and a flavorful accompaniment for beef, chicken and seafood. Horseradish has been prized for its medicinal and gastronomic qualities for centuries. According to Greek mythology, legend has it that the Delphic oracle told Apollo, “**The radish is worth its weight in lead, the beet its weight in silver, the horseradish its weight in gold.**”

The Egyptians knew about horseradish as far back as 1500 BC. Early Greeks used it as a rub for lower back pain and an aphrodisiac. Horseradish syrup is used by some as an expectorant cough medicine; others were convinced it cured everything from rheumatism to tuberculosis. Horseradish is still used during Jewish Passover seders as one of the bitter herbs.

It's widely believed that Central Europe is the area where horseradish was named. In German, it's called "meerrettich" (sea radish) because it grows by the sea. Many believe the English mispronounced the German word "meer" and began calling it "mareradish." Eventually it became known as horseradish. The word "horse" (as applied in "horseradish") is believed to denote large size and coarseness. "Radish" comes from the Latin "radix" meaning root.

Dioscorides, a 1<sup>st</sup> century Greek physician, pharmacologist, botanist, listed horseradish equally as Persicon sinapi or Sinapi persicum, which Pliny's Natural History reported as Persicon napy; Cato discusses the plant in his treatises on agriculture, and a mural in Pompeii shows the plant. Horseradish is probably the plant mentioned by Pliny the Elder in his Natural History under the name of Amoracia, and recommended for its medicinal qualities. The early Renaissance herbalists Pietro Andrea Mattioli and John Gerard showed it under Raphanus. Its modern Linnaean genus *Armoracia* was first applied to it by Heinrich Bernhard Ruppius, in his Flora Jenensis, 1745, but Linnaeus called it *Coclearia armoracia*.

During the Renaissance, consumption of horseradish spread from Central Europe northward to Scandinavia and westward to England. It wasn't until 1640, however, that the British ate horseradish, then only to be consumed by country folk and laborers. By the late 1600s, horseradish was the standard accompaniment for beef and oysters among all Englishmen. The English, in fact, grew the pungent root at inns and coach stations, to make cordials to

revive exhausted travelers. Early settlers brought horseradish to North America and began cultivating it in the colonies. It was common in the northeast by 1806, and it grew wild near Boston by 1840.

In the mid-1850s commercial cultivation in America began when horseradish farms were started in the Midwest by immigrants. By the late 1890s, a thriving horseradish industry had developed in an area of fertile soil on the Illinois side of the Mississippi River. Smaller centers of horseradish farming were started later in Eau Claire, Wisconsin. After World War II, homesteaders in the Tulelake region of Northern California began cultivating the root in the west; other areas in the country followed suit. Today, approximately 6 million gallons of prepared horseradish are produced annually in the U.S. (history from: <https://horseradish.org/horseradish-facts/horseradish-history/>)

Each May, horseradish is celebrated at the International Horseradish Festival in Collinsville, Illinois. Events include a root toss, a horseradish-eating contest and a horseradish recipe contest. Collinsville and the surrounding area are part of what is known as the "American Bottoms", a Mississippi river basin area carved-out by the glaciers from the ice age that is adjacent to St. Louis. The soil is rich in potash, a nutrient on which the horseradish thrives. The area grows 60 percent of the world's supply. German immigrants to the area began growing horseradish in the late 1800s and passed their growing methods from generation to generation. The area's cold winters provide the required root dormancy and the long summers provide excellent growing conditions.

Horseradish is in the same family as mustard and wasabi also a cousin to broccoli, radish, kale, cauliflower and Brussel sprouts. Leaves are also edible used fresh, dried or powdered. In Central and Eastern Europe horseradish is called *khren*, *hren* and *ren* (in various spellings like *kren*) in many Slavic languages. Horseradish is native to Russia and Hungry and grown throughout history. Horseradish is mentioned in Greek Mythology, Pliny's "Natural History" and Shakespeare (Falstaff says: "his wit's as thick as Tewkesbury Mustard" in Henry IV Part II).

### **Culture** (Zone 2-9)

You can choose from two widely available types of horseradish: common horseradish, which has broad, crinkled leaves, and Bohemian, which has narrower, smooth leaves. Horseradish thrives in full sun but tolerates light shade. Horseradish can take almost any soil except for consistently waterlogged conditions. Cut off the top third to half of the root to use in the kitchen, saving the bottom part to plant. Loosen soil to 12 inches deep and add compost. Plant the root cutting at a 45-degree angle, with the top of the cutting 2 inches below the soil line space and plant them 30 inches apart. Water it once a week during dry spells and mulch around the plant to help conserve moisture.

To control the spread of horseradish after harvesting remove the entire root, with its branches. Then replant only the number of roots you desire for the next season.

You can harvest horseradish one year after planting. Carefully dig away the soil from around the main root, taking care to free up the side roots and remove them at the same time. For the best yields, Oregon State University recommends harvesting after frost kills the foliage. Scrub the main root under running water and dry well. If enclosed in a perforated plastic bag, horseradish root will keep in the vegetable bin of your refrigerator for three months or even longer.

**Newbie hint:** For smoother, straighter, fatter roots, the University of Illinois recommends removing the suckers - leaf-bearing sprouts that form above ground. When the plants are about 8 inches tall, use a sharp knife to cut off the suckers, leaving only three or four at the center of the crown.

### **Culinary Uses**

Horseradish is versatile and can be used for meat and vegetable dishes. Fresh horseradish or a creamy horseradish sauce are often served as a condiment for steak or prime rib.

- In parts of Southern Germany like Franconia, "Kren" (horseradish) is an essential component of the traditional wedding dinner. It is served with cooked beef and a dip made from lingonberry to balance the slight hotness of the Kren.
- In Poland, a dish is made with horseradish AND red beetroot.



Beetroot horseradish

- In Ashkenazi European Jewish cooking beetroot horseradish is commonly served with gefilte fish.
- In Transylvania and other Romanian regions, red beetroot with horseradish is also used as a salad served with lamb dishes at Easter.
- In Serbia, *ren* is an essential condiment with cooked meat and freshly roasted suckling pig.
- In Croatia, freshly grated horseradish (Croatian: Hren) is often eaten with boiled ham or beef.
- In Slovenia, and in the adjacent Italian regions of Friuli, Venezia, Giulia, and nearby Italian region of Veneto, horseradish (often grated and mixed with sour cream, vinegar, hard-boiled eggs, or apples) is also a traditional Easter dish.
- Further west in the Italian regions of Lombardy, Emilia-Romagna, and Piedmont, it is called "barbaforte (strong beard)" and is a traditional accompaniment to bollito misto.
- In the southern region of Basilicata, it is known as "rafano" and used for the preparation of the so-called "rafanata", a main course made of horseradish, eggs, cheese and sausage.
- Horseradish is also used as a main ingredient for soups. In Poland, horseradish soup is a common Easter Day dish.

Add horseradish to make amazing deviled eggs, spicy potato salad, and a homemade mayonnaise that has a great kick. For a bloody Mary cocktail, you'll need "prepared horseradish".

## Preparation

The intact horseradish root has hardly any aroma. When cut or grated enzymes from the now-broken plant cells break down *sinigrin* (a glucosinolate) to produce *allyl isothiocyanate* (mustard oil), which irritates the mucous membranes of the sinuses and eyes.

Isothiocyanate is the compound that gives off the heat when exposed by eating or crushing horseradish. Vinegar neutralizes the reaction and stabilizes the flavor. For mild horseradish, add the vinegar immediately, either right after grinding is complete or during it. If you like stronger flavor, wait three minutes to add the vinegar. Add 2 to 3 tablespoons vinegar and 1/2 teaspoon salt for each cup of grated horseradish.

The heat and fumes begin to rapidly deteriorate once the horseradish is cut or grated and exposed to air. In cooked dishes, horseradish is added at the end of cooking as heat eliminates both the root's aroma and zing.

"Prepared horseradish" is made with grated horseradish root, vinegar, and salt. Store in a tightly-sealed jar. "Horseradish sauce" combines prepared horseradish with cream, sour cream, or mayonnaise, which makes it milder and creamier.

To make "prepared horseradish":

1. Peel the horseradish root. If using a food processor or blender, cut it into cubes. If using a hand grater, cut the piece of horseradish in half lengthwise.

2. In a blender or food processor, pulse the horseradish to your desired consistency. The finer the consistency, the more pungent the horseradish will be. If using a hand grater, grate the horseradish. Grating is when the pungent odor kicks into high gear, so be prepared.
3. Add vinegar and salt to taste. The longer you wait to add the vinegar, the hotter and stronger the horseradish will be. Don't wait too long as grated horseradish root will quickly turn bitter unless it is mixed with vinegar.
4. Store the prepared horseradish in the refrigerator for up to six weeks.

For recipes go to <http://horseradish.org/>

## **Medical Benefits**

**Note:** Before using horseradish to treat any medical condition, please consult a medical professional.

**Cancer:** Horseradish may help increase your ability to fight off cancer and delay the spread of metastasis of cancerous cells. It was found that bioactive compounds, glucosinolates and isothiocyanates, present in horseradish had an inhibitory effect on cancer cells. Some horseradish compounds, such as sinigrin, may also act as antioxidants and fight cell damage caused by free radicals but reactive molecules may increase your risk of diseases, including cancer, when levels become too high in your body.

Test-tube studies suggest that horseradish compounds may prevent the growth of colon, lung, and stomach cancer. Peroxidase, an enzyme found in horseradish, helps activate and boost a powerful anticancer compound that targets human pancreatic cancer cells. While these results sound promising, more research is needed.

<https://www.lifeextension.com/magazine/2009/11/Horseradish-Protection-Against-Cancer-And-More/Page-01>

**Blood Pressure:** A deficiency of potassium, an essential element of the body that regulates the flow of cellular fluids, can result in higher blood pressure, and means a higher risk of contracting cardiovascular diseases and conditions like atherosclerosis, heart attack, tension of blood vessels, and stroke. Horseradish is rich source of potassium thus improving your heart health by lowering your blood pressure and regulating the passage of fluids and nutrients between cellular membranes.

**Digestion:** Some elements in horseradish act as gastric stimulants and the plant is known to have a sizable impact on digestion and nutritional absorption. The phytochemicals in the root stimulate various glands in the body, including those for salivation, gastric, and intestinal juices. When combined with the fiber content of the plant that bulks up bowel and stimulates peristaltic motion of the smooth intestinal muscles, horseradish can ease any digestive issues and regulate bowel movements, while decreasing the occurrence of constipation and diarrhea.

[https://dx.doi.org/10.1016/S0960-0760\(02\)00021-3](https://dx.doi.org/10.1016/S0960-0760(02)00021-3)

**Diuretic Property:** Horseradish has a diuretic quality that stimulates urination. This is good for a number of reasons, including the regular release of dangerous toxins from the body, cleanliness of the kidney, and a reduction in weight, since 4% of urine is actually composed of body fat!

**Bone Health:** There is a modest amount of calcium in horseradish, which forms an essential part of bone health, growth, and repair. Adding a significant amount of calcium to your diet can keep your stronger and younger, while also reducing your chances of developing debilitating conditions like osteoporosis.

[https://www.organicfacts.net/osteoporosis.html?utm\\_source=internal&utm\\_medium=link&utm\\_campaign=smartlinks](https://www.organicfacts.net/osteoporosis.html?utm_source=internal&utm_medium=link&utm_campaign=smartlinks)

**Pregnancy:** The high levels of folate found in horseradish mean that it protects mothers and infants from pregnancy issues, and also stimulates the development of the fetus, thereby eliminating the chances of neural tube defects. However, too much of the spicy condiment can be dangerous for pregnant women, so restrict your intake.

**Metabolism:** Horseradish is packed with proteins, vitamins, and minerals, but lacks fat and calories. This means that the protein can directly be metabolized into useful energy, new tissue, muscle matter or cellular material that can be used to repair and bolster defenses against toxins and illness. Your energy levels can increase and the pungent sinigrin in it can make you aware and focused, raising your concentration level.

[https://www.organicfacts.net/home-remedies/11-ways-to-improve-concentration.html?utm source=internal&utm medium=link&utm campaign=smartlinks](https://www.organicfacts.net/home-remedies/11-ways-to-improve-concentration.html?utm_source=internal&utm_medium=link&utm_campaign=smartlinks)

**Antibacterial Agent:** Studies have shown that the powerful, natural chemical, allyl isothiocyanate, in horseradish can be a great defense against microbes and bacterial infections, including *Listeria*, *E. coli*, *Salmonella*, and *Staphylococcus*. Add it on your sandwich or steak and protect yourself against these undesirable, infection-bearing bacteria. Test-tube studies noted that isothiocyanates extracted from horseradish root killed six types of oral bacteria also found that these isothiocyanates prevented the growth of four types of fungi that may lead to chronic nail infections.

**Respiratory Conditions:** The defining odor of horseradish that makes our nose curl up and our eyes water can help to clear the mucus secretions in the sinus and respiratory system. Taking a strong sniff or inhalation of pure horseradish can stimulate the secretion of various juices that help to clear out congestion developed due to a cold, illness or allergy. Consuming horseradish is known to cause a burning sensation in your sinuses, nose, and throat. For that reason, it's often used to relieve colds and breathing issues. Tea brewed from its flowers can be used to fight the common cold. One study in over 1,500 people found that a supplement containing 80 mg of dried horseradish root and 200 mg of nasturtium was as effective as a traditional antibiotic at treating acute sinus infections and bronchitis.

***Word of Caution: Horseradish is quite high in sodium and the calories that are in it, come from sugar. Although it is usually consumed in small amounts, it is still important to remember that sodium can be detrimental to people struggling with obesity, as are calories derived from sugar. Also, horseradish has a slightly diuretic quality, which can exacerbate problems for people with kidney disorders, and for those with peptic ulcers or inflammatory bowel disease, the intense power of horseradish can make these conditions worse. Finally, if you suffer from hypothyroidism, some studies have shown that horseradish exacerbates this condition as well, so avoid it.***

Other than these warnings, spread some horseradish on your next burger, sandwich, steak or salad and enjoy!

Compiled by John Clark, Goochland-Powhatan Master Gardener