

Beets *Beta vulgaris*

Entry posted by Yvonne Kerr Schick, Hamilton Horizons student in College Seminar 235 Food for Thought: The Science, Culture, and Politics of Food, Spring 2008.



(Photo from flickr.com)

Scientific Classification¹

Kingdom: Plantae
Division: Magnoliophyta
Class: Magnoliopsida
Order: Caryophyllales
Family: Chenopodiaceae
Genus: *Beta*
Species: *vulgaris*

Binomial name

Beta vulgaris

Etymology

The beet is derived from the wild beet or sea beet (*Beta maritima*) which grows on the coasts of Eurasia.² Ancient Greeks called the beet *teutlion* and used it for its leaves, both as a culinary herb and medicinally. The Romans also used the beet medicinally, but were the first to cultivate the plant for its root. They referred to the beet as *beta*.³

Common names for the beet include: beetroot, chard, European sugar beet, red garden beet, Harvard beet, blood turnip, maangelwurzel, mangel, and spinach beet.

Botanical Description

The beetroot, commonly called the beet, is a biennial plant that produces seeds the second year of growth and is usually grown as an annual for the fleshy root and young

¹ Wikipedia Foundation, Inc., website: <http://en.wikipedia.org/wiki/Beets>.

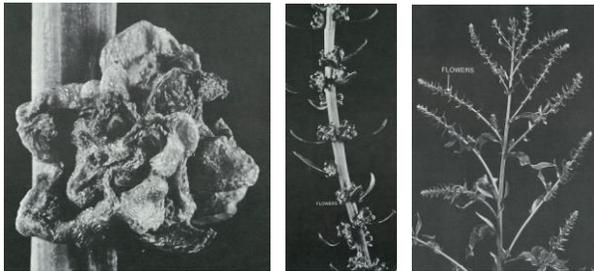
² A Modern Herbal website: <http://www.botanical.com/botanical/mgmh/b/beetro28.html>.

³ Health Diaries website: <http://www.healthdiaries.com/eatthis/25-facts-about-beets.html>.

leaves. The *Beta vulgaris* has three basic varieties: chard, grown specifically for its leaves; beets, grown for its bulbous root, with edible leaves (with varieties in white, yellow and red roots); and sugar beets, grown for making sugar from the long, thick root.

The beet is a root vegetable with purple-green variegated leaves. It has either a round taproot with minimal secondary roots, or in the case of the sugar beet, a long carrot-like root with minimal secondary roots. The young plants, which are generally thinned by hand are good to eat as young leaves (tasting somewhat like spinach).

The beet is propagated by seed (clusters holding from three to five seeds). Therefore, it is necessary to thin the beets when they are young. The seeds will germinate in five to ten days in temperatures from 55°F-80°F.⁴



Pictured are the beet flower, the flowers on an individual stem and the cluster of stems that make up the top of the beet. Photos from *The Carrot and Other Root Vegetables*, by Millicent E. Selsam, 1971.

Origins/History of the Beet

Beets are believed to originate along the coasts of the Mediterranean (sea beets) and were first cultivated for their edible leaves. The Greeks, like the Romans, cultivated beets for their leaves, but ate them as food and called them *teutlon* or *teutlion*, because the foliage resembled squid tentacles.⁵ These beets were white or black and became known as *Roman beets*.

By the end of the 15th century cultivated forms of beets were found throughout Europe and used not only for their leaves, but also for the roots.⁶ Several forms of beets have been cultivated throughout the years. Common varieties are those that are used for livestock fodder – these are called mangels or mangel-wurzel. They originated in the late 1700s from yellow beets. They were too coarse for human consumption.

The sugar beet, also originally a long, pointed white root, was developed in the 1700s by the Prussians for its sugar content. Original sugar beets contained 6% sugar content and today the sugar beet has been cultivated to contain up to 20% sugar content.⁷ The potential source of sugar in beets was discovered in 1747 by German chemist Andreas Maggraf.⁸ By the 1880s sugar beets had been developed with 16-17% sugar

⁴ Ashworth, Suzanne, *Seed to Seed: Seed Saving and Growing Techniques for Vegetable Gardeners*, Seed Savers Exchange, Inc., Iowa, 2002, p. 71.

⁵ Nottingham, Stephen, Beetroot, August 2006, SFN, (Electronic Book):
http://ourworld.compuserve.com/homepage/Stephen_Nottingham/beetroot8.htm.

⁶ Nottingham, Stephen, Electronic Book.

⁷ Ashworth, p. 69.

⁸ Agronomy website: <http://agronomy.unl.edu/ffa/SugarBeet.htm>.

content and small factories were found in France, Belgian, Germany and Austria. Sugar beets provide almost half of the worlds sugar today.⁹

History of the Beet in early 19th Century America

The beets, like most vegetables, were brought to American by the European immigrants. By 1800 the long pointed root that was familiar to Europe had developed into the round bulbous root or flat-bottom root vegetable that we are familiar with today. Another notable change was the color of the beet. In Greek and Roman times, the beets were black or white and today the beets are more commonly deep red, although there are white and yellow varieties available.¹⁰

The Shakers were among the first commercial seed growers in our area. They sold seeds in “papers” and started a tradition of commercial seed growing and selling. As home gardening became popular and necessary in the early 19th century, seed catalogs and mail order became an economical way to buy seeds.

Specific Beet Varieties for 1812 Garden

Beet varieties of the early 1800s are still available today. The *Victory Seed Catalog* lists *Early Wonder Tall Top* that was introduced to the U.S. in 1811.¹¹

The *Heirloom Vegetable Garden* bulletin from Cornell Cooperative Extension lists *Early Blood Turnip-rooted Beet* as a turnip-shaped beet that was sold in the U.S. before 1840.¹² It was a deep purplish- red and was noted for being sweet and tender. It is available online from the Jefferson Monticello store.¹³ The *Long Season* or *Winter Keeper* is another variety that is mentioned in the *Heirloom Vegetable Garden* bulletin. It’s a large, late storage beet that it not good-looking, but is superior in quality. It is tender, sweet and good for fall use and storage.

Several catalogs in the Nursery and Seed Trade Catalog Collection of the USDA¹⁴ list various beet varieties. Among them are *Beta vulgaris* in the Herbaceous Exotics category in the *Catalogue of Trees, Shrubs and Herbaceous Plants* by John Bartram and Son, Philadelphia, 1807 and the *Bartram’s Botanical Garden Catalogue of Trees, Shrubs and Herbaceous Plants of Philadelphia*, 1814.

William Booth, Baltimore, listed red, white marbled and mangel wurtzel beets in his 1810 *Catalogue of Kitchen Garden Seeds and Plants* (under the heading of Physical Seeds and Plants and Seed to Improve Land and Fruit Trees and Fruit).

⁹ Ashworth, p. 69.

¹⁰ Wikipedia website.

¹¹ Victory Seed Company, *Descriptive Catalogue of Rare and Interesting Seeds*, Victory Seed Company, Oregon, 2008, p. 10.

¹² Kline, Roger A., Robert F. Becker and Lynne Belluscio, *The Heirloom Vegetable Garden: Gardening in the 19th Century*, Cornell Cooperative Extension Information Bulletin 177, 4-H Leaders’ Guide L-10-13, New York State College of Agriculture and Life Sciences, a Statutory College at the State University at Cornell University, Ithaca, New York.

¹³ The Jefferson Monticello website: <http://monticellostore.stores.yahoo.net/631080.html>.

¹⁴ Nursery and Seed Trade Catalog Collection: <http://www.nal.usda.gov/speccoll/collect/nursery.html>.

Nutritional Aspects

1 Cup of raw beets¹⁵

58 Calories

Protein 2g

Carbohydrates 13g

Total Fat 0g

Fiber 4g

Sugars 9g

Sodium 106mg

Beets contain a significant amount of vitamins A and C and also calcium, iron, phosphorus, potassium, protein and carbohydrates. Beets are also high in folate, dietary fiber and antioxidants. They are high in betaine which is prescribed to lower toxic levels of homocysteine (Hcy) (which contributes to the development of heart disease, stroke and peripheral vascular disease).¹⁶ The highest levels of vitamins and other nutrients are available when the vegetables are eaten raw. The beet greens are high in vitamin A.¹⁷

Culinary

The beet remains flavorful, tender and juicy even when the root is large. Some have a slightly clove-like aroma and are sweet, while others have an apple-like astringent flavor when shredded in salads. They all have a complex flavor that can be described as rich and earthy.

They are good boiled, baked and raw. They are famous as pickles and in a Russian soup called *Borscht*. Borscht has been an important winter staple since the 14th century.¹⁸ Borscht was originally made with a base of cow parsnip, but apparently was not very tasty.¹⁹ The leaves are also excellent when cooked by themselves or with baby beets attached. The beet greens taste similar to spinach. The older leaves are tasty when stir-fried. Some say they taste like taro leaf. Beet juice is a popular health food.

Borscht (Recipe)²⁰

1 onion, chopped

1 pound beets, peeled and chopped

1 large cooking apple, chopped

2 celery stalks, chopped

1/2 red pepper, chopped

4 oz. Mushrooms, chopped

2 T. butter

2 T. sunflower oil

8 cups stock or water

¹⁵ Foods Database website: <http://www.foodsdatabase.com/LinkedLabel.aspx?FoodId=20387>.

¹⁶ Wikipedia website.

¹⁷ Foods Database website.

¹⁸ Wikipedia website.

¹⁹ The American Heritage Dictionary of the English Language, Fourth Edition, 2000.

²⁰ Garden Guides.com website: <http://www.gardenguides.com/how-to/recipes/soupstewchili/borscht.asp>.

1 t. cumin seeds
pinch dried thyme
1 large bay leaf
fresh lemon juice
salt and ground pepper
2/3 cup sour cream
sprigs of fresh dill for garnish

Place all chopped vegetables into a large saucepan with butter, oil and 3 T. of stock or water. Cover and cook gently for 15 minutes, stirring occasionally. Stir in cumin seeds and cook for an additional minute. Add remaining stock or water, thyme, bay leaf, lemon juice and seasoning. Bring to a boil, reduce heat, and simmer for 30 minutes.

Strain vegetables and reserve liquid. Process in a food processor or blender until smooth and creamy. Return the vegetables to the pan with the reserved stock and reheat.

Serve topped with swirls of sour cream and sprigs of dill.

Pickled Beets (Recipe)²¹

Prepare three quarts of vinegar, half an ounce each of horseradish, ginger and mace. Having peeled and fashioned the beets (one peck) into any shapes you may fancy, boil them for one hour, then pour the liquor on them in glass jars. Close the jars well, when cold.

Cultivation of Beets

Climate Requirements:

As soon as the soil can be worked in early spring (approximately May 20), beet seeds can be planted. They can be planted successionaly at two-week intervals until early July, for a continuous crop of beet greens and fresh beets. They enjoy a warm, open, sunny area. The soil temperature should be at least 45°F for germination.

Soil/Moisture Requirements:

Because beets have a long taproot, they like well worked loam soil that's free of large stones. It should be well drained with an abundant amount of organic matter. If the soil is too rich, beets may produce forked roots or plants that bolt (go to seed).²² If the weather is dry for long periods of time, the beets become stringy and tough.

Beets grow well in soil with a pH of 6.5-7.5 and will do well with a boron supplement added to the soil – pelleted borax with 10% elemental boron.²³ They need constant moisture or they may split. Adding a layer of clean straw for mulch can insure moisture.

²¹ Recipe from *Sweet Home Cookbook*, 1888, p. 197 via the *Heirloom Vegetable Gardening* by Cornell Cooperative Extension.

²² Victory Seed Company Catalogue.

²³ Coleman, Eliot, *The New Organic Grower: A Master's Manual of Tools and Techniques for the Home and Market Gardener*, Chelsea Green Publishing Company, Vermont, 1989, p. 298.



Seeding:

Beet seeds should be planted one-half inch deep at three to five-inch intervals and the rows should be eight inches apart. The seeds are actually multi-germ clusters with two to five seeds. They are slow to germinate, so pre-soaking the seeds for 12 hours will encourage rapid and more even germination.²⁴



(Photo from flickr.com)

Life Cycle:

Beets are biennial plants that produce seeds during the second year of growth. Flowers are surrounded by leaf-like bracts and grow on a four-foot tall spike-like structure.²⁵ They will not flower until their roots mature and live one month at cold temperatures.²⁶

Seed germination takes from five to ten days. According to the Federal Germination Standard in commercially grown seeds there are approximately 2,800 seeds per ounce and germination rate is 75%. They hold a germination rate of 50% for six years.²⁷

The plants will cross breed with other beets and chards. They are wind pollinated so isolation or seed stalk bagging is necessary to ensure purity.²⁸

Beets can be dug starting early October and can be harvested early for their greens. They can be harvested when the roots are two and one-half to three inches in diameter.²⁹ Beets can be stored for long periods of time if they are very cool and very damp.

Insects/Pests:

²⁴ Ashworth, p. 71.

²⁵ Agronomy website.

²⁶ Ashworth, p. 70.

²⁷ Ashworth, p. 71.

²⁸ Ashworth, p. 71.

²⁹ Topoleski, Leonard D., *The Home Vegetable Garden*, Cornell Information Bulletin 101, New York State College of Agriculture and Life Sciences, a Statutory College at the State University at Cornell University, Ithaca, New York, 1981, p. 24.

Beets are almost trouble-free. Birds may eat young seedlings as they emerge from the soil, but this can be avoided by covering the plants with netting. Weeds can also be a problem if not taken care of – they will crowd out the beets and take over. This, too, can be handled easily – add a layer of clean straw (which will also help to hold in moisture).³⁰

Beets are sensitive to boron deficiency. It causes blackspot, sickly growth and poor taste.³¹

Companion Plants:

Beets and kohlrabi make great companion plants because they both have the same kind of culture, but get soil nourishment and different levels.³² Beets also like to grow next to bush beans and onions. Another plant, Amaranth (or rough pigweed) is beneficial to beets. This common weed loosens the soil for the roots of beets.³³

Medicinal

The juice of white beets has been used for cleansing digestive quality to “open obstructions of the liver and spleen – good for headache and all affections of the brain.”³⁴ The juice is also good for “blisters and blains of the skin and as a decoction in water and vinegar cleanses the head of dandruff and relieves running sores and ulcers.” White beet juice is also helpful for preventing baldness and shedding of hair.³⁵

Red beet juice is known to help with yellow jaundice and when the juice is put in the nostrils, it is helpful for ringing in the ears and toothaches. It was used to treat illnesses relating to digestion and blood.

The Romans used beets as an herb for treatment of fever and constipation. Beet leaves were used as binding for wounds.³⁶ Since Roman times the beet has been considered an aphrodisiac because they contain high levels of boron.

In folk medicine a decoction from seeds was used as a remedy for tumors of the intestines and seeds boiled in water were a cure for genital tumors. When uridine is isolated from sugar beets it can be used with omega-3 to alleviate depression.³⁷

Today beets are used as a universal cure-all and are used in the treatment of AIDS. Beets are recommended as a general tonic and help disorders of the blood, are an effective detoxifier and recommended to relieve constipation because of their high fiber content.³⁸

³⁰ Nottingham, Stephen, Electronic Book

³¹ Garden Guide.com website.

³² Riotte, Louise, *Carrots Love Tomatoes: Secrets of Companion Planting for Successful Gardening*, Storey Publishing, Mass., 1975, p. 7.

³³ Riotte, p.50.

³⁴ A Modern Herbal website.

³⁵ A Modern Herbal website.

³⁶ Wikipedia website.

³⁷ Wikipedia website.

³⁸ Wikipedia website.

Ritual Significance of Beets

Because beets were “so appreciated by the ancients,”³⁹ they are recorded to have been offered on a silver tray to the Greek god, Apollo in his temple at Delphi, and eaten by Aphrodite to retain her beauty. According to legend, 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.*”⁴⁰

Miscellaneous Beet Information

- Beetroot may be used for other things besides eating the greens and roots. Included are beetroot wine, beetroot crisps, and coloring for pasta.⁴¹ A pleasant wine and domestic ale can be brewed from Mangolds. They contain a considerable amount of alcohol when distilled. Sugar from sugar beets is also used to make “rum” (known as *tuzemak* in Switzerland) and a rectified spirit and vodka.⁴²

- Beets contain a pigment called *betalains* that is used for dyes. Betalains are a combination of a purple pigment (betacyanin) and a yellow pigment (betaxanthin).⁴³ The dyes have been used for industrial red food colorants for improving the color of sauces and tomato paste, jams and jellies, and desserts and breakfast cereals.⁴⁴

- Borscht, soup made from beets, was served by the Soyuz 19 cosmonauts to the Apollo 18 astronauts in the 1975 Apollo-Soyuz Test Project. Like other foods prepared for space travel, the Borscht was squeezed from tubes.⁴⁵

- You can minimize the “bleeding” of beets while they cook if you twist the leaves off, leaving one to two inches of the leaves.⁴⁶ It also helps to leave the skin on while cooking beets to hold in the red pigments. Pickled beets are popular, not only because they taste good, but the pigment stabilizes in acidic conditions (such as vinegar) and the beets retain their bright red color.⁴⁷

- There are plans in the United Kingdom by BP and Associated British Foods to produce biobutanol (an alternative fuel) from surpluses of agricultural sugar beets.⁴⁸

³⁹ Herbal Extracts Plus Website: <http://www.herbaextractsplus.com/beet-root.cfm>.

⁴⁰ Horseradish: A Root with Roots Website: <http://www.horseradish.org/history.html>

⁴¹ Nottingham, Stephen, Electronic Book.

⁴² A Modern Herbal website.

⁴³ Health Diaries website.

⁴⁴ Self Sufficientish Website: <http://www.selsufficientish.com/beetroot.htm>.

⁴⁵ Health Diaries website.

⁴⁶ Bird, Richard and Christine Ingram, *Growing Root Vegetables: A Dictionary of Varieties and How to Cultivate them Successfully*, Anness Publishing Lit., London, 2003, p. 11.

⁴⁷ Self Sufficientish Website.

⁴⁸ Wikipedia website.

Additional References

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