SERVICE IN ACTION

COLORADO STATE UNIVERSITY EXTENSION SERVICE

Vegetable root crops for the home garden

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Quick Facts

Root crops are among the first and last vegetables to mature.
With proper home storage facilities, a supply can be available all winter and into spring.
They are well adapted to gardens in short-season areas because they do not have a definite stage of maturity, but can be consumed when very small.
They are particularly useful in small gardens because they take up little space.
Most root crops are frost tolerant and the edible portion is somewhat protected by the soil.

Root crops have a place in every vegetable garden. Among them are the first and last vegetables to be harvested, and under proper storage conditions they will be available year round. They are ideal crops for small gardens because they take up little space, and since they have no definite stage of maturity which must be reached before they are edible, they are ideal for short season areas or areas where the length of season is unpredictable.

They may be consumed at any size. Most species are frost hardy and will continue to grow if an early fall frost is followed by warm weather. The edible portion is somewhat protected by the soil from frost damage.

General Recommendations

Fertilizer—Root crops require more phosphorus and less nitrogen than nonroot crops. Therefore, an application of one pound (.45 kilograms) of nitrogen (N) and two pounds (.91 kg) of phosphate (P_2O_5) per 1,000 square feet (92.9 sq meters) is a good rule of thumb. When starting a new garden, and every five years thereafter, it is a good idea to have a soil test run.

Soil—Root crops do best in a sandy soil well supplied with organic matter. Rocky and clay soils make root expansion difficult and result in misshapen roots. The stones should be removed and the clay made more friable by the addition of decayed organic matter. Fresh manure may burn the root hairs causing misshapen roots, and new organic matter depletes the nitrogen supply in the soil.

Temperature—A root is a storage organ which expands to accommodate the food which is being manufactured in the plant top. The faster the food is produced in the tops, the greater will be the root expansion. Warm, bright days and cool nights are the conditions which produce maximum root expansion and best color.

High temperatures, particularly at night, produce high respiration rates which burn off sugars and inhibit root expansion and pigment formation which produces bright colors.

Light—The amount of food produced by the tops and stored in the roots is directly related to the amount of light the plant receives. Root crops are very responsive to sunlight and the more they receive the better they perform.

Planting—Root crops generally are directly seeded into furrows ½- to 1-inch (1.3 to 2.5 centimeters) deep in rows one to three feet (30.5 to 91.4 cm) apart. The seed spacing in the furrow is from one to three inches (2.5 to 7.6 cm). As the seedlings emerge they are thinned to the desired spacing which is determined by the diameter of the root at harvest. A root to be harvested at two inches (5.1 cm) in diameter will be thinned to two inches (5.1 cm). Beets and turnip tops which are thinned may be eaten, and are often planted thicker than normal for this reason.

Root crops seldom are transplanted because this usually breaks the tap root causing misshapen and forked roots to develop. If this can be avoided, they may be transplanted.

Pesticides—Root crops are often ravaged by maggots which attack the roots. In most cases they can be controlled by Diazinon 14G at the rate of ½ to one ounce per 100 square feet (14.2 to 28.4 grams per 9.3 sq m) applied to the soil and worked into the top three inches (7.6 cm) prior to planting.

Foliage insect pests may be controlled by a general garden spray of malathion using two teaspoons (10 milliliters) of the 55-percent liquid in one gallon (3.8 liters) of water. Most foliage diseases will be controlled by Dithane M-45 at the rate of 9 grams per 3.8 liters (approximately one heaping teaspoon per gallon).

All chemicals should be used with caution and in accordance with the directions on the label. If questions arise in regard to pests or pesticides and their use, consult the local extension agent.

Storage—Any root crop can be stored for a while before being consumed. In general, root crops store best at 32°F (0°C) and 95-percent relative humidity. Those crops which are to be stored should be left growing in the garden as long as weather permits, then dug and stored in a root cellar, pit storage, or refrigerated storage. For more detail on storage, see Service in Action sheet 7.601, *Storage of home-grown vegetables.*

Root Crop Varieties

Beets—Recommended varieties: Crosby's Egyptian—early, red, flat globe; Ruby Queen and Detroit Dark Red—red globes; Golden—golden color.

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Beets usually are harvested at two inches (5.1 cm) in diameter, although they will grow much larger if left all season. While larger beets are a little tougher, they are also sweeter and will store better in a root cellar. If diced before cooking, the toughness is not objectionable.

Carrots—Recommended varieties: Nantes Coreless—cylindrical; Chantenay—wide shoulder, heavy; Danvers Half-long—old garden favorite; Imperator—long, slender, not for clay.

Carrot seed are tiny and should be planted only ½ inch (1.3 cm) deep. The roots are edible at any stage. They will continue to develop until the ground freezes. The exposed shoulders will be damaged by freezing and thawing and should either be mounded over with soil, or the crop should be harvested before weather gets too cold.

Celeriac—Recommended varieties: Giant Prague, Early Paris.

A type of celery which develops a turnip-like root. It is more common in Europe than America. Its primary use is as a flavoring in soup, although it can be eaten like any other root crop. The seed is quite small and requires a finely prepared seed bed, shallow planting and meticulous moisture control until seedlings emerge.

Horseradish—Recommended varieties: Maliner Kren, Improved Bohemian.

Rootlets are purchased and planted vertically with tops just below surface. The roots are dug before the ground freezes. Sideroots then are removed, with the larger ones stored for planting in the spring. The main roots, after sideroots are removed, are stored for consumption.

Jerusalem Artichoke—Recommended varieties: Brazilian White, Brazilian Red.

It does well on poor soil and may become a weed. Whole tubers are planted in the spring and the crop is dug before the ground freezes. The tubers have a thin skin and shrivel readily in a dry atmosphere. They store best in the soil but will keep well in a root cellar if packed in moist sawdust.

Kohlrabi—Recommended varieties: White Vienna, Purple Vienna.

Actually a swollen stem and not a root. It is sown in rows and harvested at two or three inches (5.1 to 7.6 cm) in diameter. Kohlrabi has a tendency to become woody if allowed to grow over three inches (7.6 cm). Because of this, Kohlrabi grown for storage should not be planted until July 1.

Onion—Recommended varieties: red—Southport Red Globe; yellow—Early Yellow Globe; white—Southport White Globe; transplant—Yellow Sweet Spanish, White Sweet Spanish; sets—Ebenezer.

Actually a bulb and not a root. Onion seed should be planted in April to obtain maximum vegetative growth before warm weather initiates bulbing. On the other hand, sets and transplants should not be planted until May because cold weather may induce seed stock development instead of bulbs. When 80 percent of the tops fall over, the onions are ready to harvest. The bulbs should be pulled and left in place until the tops are dry. In a few days, they may be topped, crated, and stored in a cool dry place.

Parsnip—Recommended varieties: Improved Hollow Crown, All-America.

This crop should be planted in April because the seed germinates slowly and the crop requires 100 or more days to mature. This is one of the few root crops which can be overwintered in the garden. Many believe this enhances its eating quality. If this is done, soil should be hilled over the crown. They may also be fall dug and stored like carrots.

Radish—Recommended varieties: Early Scarlet Globe, Cherry Belle, White Icicle.

Radishes are planted in April as a spring crop or in August as a fall crop. When planted in summer, they generally go directly to seed without producing edible roots. The fall crop can be stored in moist sawdust but generally they are planted for a garden-fresh relish.

Winter varieties require about twice as long to mature as the spring varieties and are usually grown for storage. China Rose and Black Spanish are winter radish varieties.

Rutabaga—Recommended varieties: American Purple Top.

This crop is similar to the turnip; however, it does not become strong flavored and fibrous when grown to large size and, therefore, it is grown to four to six inches (10.2 to 15.2 cm). The seed is sown in April or May and the roots harvested before the ground freezes. It is stored like carrots.

Sweet Potato—Recommended varieties: Maryland Golden, Orlis.

Sweet potatoes may be grown in the warmer areas of Colorado on a trial basis. A sweet potato root is buried in a pot or deep pan of moist sand, six weeks prior to the last frost date. The pan should be kept in a warm window and as the sprouts arise, more sand should be added to encourage deeper rooting. These shoots are detached from the root and transplanted into the garden. Black plastic film may be used to advantage in this case because of its warming effect on the soil. The potatoes should be dug immediately after frost kills the vines and the roots cured for five days at 85°F (29.4°C) and high humidity. After this treatment they should be stored at 60°F (15.6°C) and 85-percent relative humidity. Curing might be done in crates covered with black plastic film and storage might take place in a heated basement while packed in moist sawdust.

Turnip—Recommended variety: Purple Top White Globe.

Turnips are harvested at two inches (5.1 cm) in diameter and, therefore, three successive plantings may be made to provide a continuous table supply. The last planting may be stored like carrots. When allowed to grow to large sizes they develop fiber and a strong flavor.