

## Root Crops

### Beet

**Requirements:** Grow cool - spring or fall; neutral or nearly neutral pH; will tolerate light shade; can grow in summer with mulch or shade crop to keep roots cool.

**Planting:** Plant April/May for summer or August for fall, 1" apart in row then thin to 4"; or plant 9 per square foot. Each "seed" is a fruit with 2 to 6 actual seeds. Can be transplanted instead.

**Care:** Feed moderately, emphasis on phosphorus and potassium. Keep evenly moist, especially during germination and from about day 30 or 35 to harvest.

**Harvest, yield, storage:** Greens can be picked, but keep it to a couple leaves per plant if you want to grow on the actual beets. Harvest beets at 50 to 65 days; best at about 2 to 3". Size is determined by spacing. Yield about 1# per row foot or 2.25# per square foot. Store cold and humid - bagged in refrigerator works quite well

**Varieties:** Many good reds - Detroit, Red Ace, Early Wonder. Merlin is famous for high sugar content. Chioggia is a fun "zoned" variety. Bull's Blood and Lutz are great for greens. Flat of Egypt holds well in the ground as a fall variety. Touchstone is a good golden beet

**Notes:** Need deeper soil than you might think - 8"+. Leafminers can be a problem. Spinach family, do not companion or rotate with spinach, chard, or orach. Companions: bush beans, lettuce, onions, radish

### Carrot

**Requirements:** Very fine, loose, deep soils 10"+; moderate acidity; grow year round

**Planting:** Seed March to late July/ early August. In row 4 per inch, thin to 2"; or plant 16 per square foot. Cover seed very lightly with non-crusting soil (sand). Does not usually transplant.

**Care:** Feed lightly; minimal nitrogen/manure or will have "hairy" roots. Keep moist during germination, then water deeply and regularly. Irrigate prior to harvest for easier digging. Thin frequently but lightly over 2 to 3 week period. After thinning, hill about 1" of soil over the "shoulders" to prevent greening

**Harvest, yield, storage:** Depending on variety, harvest 65 to 90 days (220 to 240 overwintered). Gently hand pull, or carefully dig with trowel. Wash clean and air dry. One of the heaviest yielding crops: about 1.5# per row foot or 4# per square foot. Store dark, cool to cold, and humid - refrigerator or in box of moist sand in root cellar or garage/ outbuilding.

**Varieties:** Royal Chantenay, Imperator, Nelson, Baltimore, Bolero are all typical varieties. Danvers have very thick broad shoulders and do better in heavier soils. YaYa is an excellent juicing carrot. Orbit, Tonda di Parigi, Little Finger, and Danvers Half Long are very compact and will grow in heavy or shallow soils. Many different colored strains in red, pink, white, and purple can be fun too. Merida and Autumn King are overwinter options.

**Notes:** Carrot Rust Fly is the biggest problem. The earliest and latest plantings mostly avoid them. For June to August plantings, cover with insect barrier for first 3-4 weeks. Do not interplant or rotate with parsley, celery, or parsnip; companions well with radish, legumes, and alliums

### Garlic

**Requirements:** Few, an easy crop. Not tolerant of competition.

**Planting:** Plant garlic bulbs August to early October for best success, but can be planted later. 5" apart in the row or 8 per square foot.

**Care:** Feed with a balanced fertilizer, with a bit of emphasis on nitrogen. Water until winter rains set in; if we have a dry spring water early only, and let dry out before harvest. Not tolerant of competition- keep well weeded and don't plant too close to each other or to other crops.

**Harvest, yield, and storage:** "Early" varieties harvest as early as late June from Sept planting; "late" varieties harvest mid to late July. Yield can be quite variable, but expect half to one pound per row foot or as much as 2 pounds per square foot. Assume you will get about 5 to 6 pounds of garlic for each pound of bulbs planted. Stop watering at least 2 weeks prior to anticipated maturity. Garlic is ready to harvest when bottom leaves become yellow and papery. Dig carefully and let air dry before brushing off dirt. Dry with tops on for about three weeks, then remove tops and finish cleaning by removing thinnest possible outer bulb layers. Store cool, 35 to 40 degrees; softnecks can store for 8 months, but hardnecks seldom last more than 3 months. All varieties store ok but for shorter durations at room temperature.

**Varieties:** Elephant garlic (actually a type of leek) is very mild, but very large. Plant a richer flavored hardneck type for summer to Thanksgiving use and a bit more of one or two different softneck varieties for longer storage. Early Italian Purple, Italian Late, Silver Rose, Nootka Rose, and Inchelium are excellent softneck types. Spanish Roja, Chesnok, German Red, and German Porcelain are great hardnecks.

**Notes:** Onion maggot can be a problem, best solved by planting fresh certified seed garlic and rotation. Prevent diseases such as white mold the same way. Do not interplant or rotate with other alliums or very high nitrogen demand crops. Companion with beets, carrots, or parsley. Hardneck varieties will try to produce a flower stem, called a "scape". Remove the scape as soon as it begins to curl to improve bulb size; you can throw in the compost heap or stir-fry them.

## **Parsnip**

**Requirements:** Loose nearly neutral soil, very deep (15"+), and rich with organic material

**Planting:** Seed late March to late April or mid June to mid July. In row 1/2" apart, then thin to 4", or plant 9 per square foot. Cover thinly with non-crusting soil (sand)

**Care:** Rather hungry; unlike most root crops, likes substantial amount of nitrogen. Keep evenly moist during germination, water deep and regular up to harvest.

**Harvest, yield, and storage:** Harvest spring plantings before heat sets in, about 100 days. For summer plantings, harvest after a frost or two. Yields about 3/4# per row foot, or 1.15# per square foot. Store at room cool, humid, and dark - refrigerator or moist sand in garage or outbuilding.

**Varieties:** The only one you are likely to find is Cobham Improved Marrow

**Notes:** Though much less likely than carrots, Carrot Rust Fly can be a problem. One of the very few winter harvest vegetables - plant late and harvest November-December. Do not rotate with carrot, parsley, celery or celeriac. Alliums and legumes are good companions.

## **Onions**

**Requirements:** Few, one of the easier crops. Grow all year round.

**Planting:** Seed April to August. In row 3 per inch, thin to 2 or 3"; or plant 5 per square foot. Transplant green "bunches" of some varieties March to June at thinned spacing. Transplant from seeded trays March to September for many varieties, in small bunches at thinned spacing, and then thin to single best in 2-3 weeks. Plant hard storage onion "sets" (bulbs) March to June or August to October.

**Care:** Hungrier than many root crops, feed balanced fertilizer. Rather small root systems, so keep well watered; but dry out for 1 to 2 weeks before harvesting. Not tolerant of competition - don't plant anything too close, and keep well weeded.

**Harvest, yield, and storage:** Days to harvest varies tremendously by variety, and by time and method of planting; 90 to 120 days, or overwintered at 220+ days. Wait for tops to die down, then dig carefully. Brush off soil, and dry on screens or braided. Sweet types store a little while in refrigeration; storage types when well dried store well at or near room temperature in a dry environment. Yield about 3/4# per row foot or 1.15# per square foot.

**Varieties:** WallaWalla Sweets are large, mild, and sweet, but don't store very long. For a top quality storage onion try Copra or Patterson from seed or bunch, or Yellow Rock, White Ebenezer, or Red Wethersfield from sets. Talon is a very tough and easy to grow variety for soils with poor structure or fertility. Ringmaster is a compromise between the mild sweet flavor of a WallaWalla and the durability of storage varieties. Candy and Red Candy are new, quick-maturing day neutral varieties, both are somewhat zoned red and white. Cipollini types are small flat and flavorful varieties.

**Notes:** Onion maggot and white mold are sometimes problems. They are photoperiodic- their growth is determined by day length. Grow only long-day or day-neutral varieties in this area. Do not interplant or rotate with other alliums - chives, garlic, or shallots. Companion with beet, carrot, parsley, or peppers.

## Radish

**Requirements:** Will grow under most conditions.

**Planting:** In row seed 1/2" apart, then thin to 2", or plant 16 per square foot; as early as late February (if you are brave) through as late as late September. Plant small amounts every 2-3 weeks for constant supply. Do not transplant.

**Care:** Feed moderately with a balanced fertilizer. Because of small root systems, keep consistently moist.

**Harvest, yield, and storage:** Gently dig by hand or with trowel, before they have time to get "hot"  
Yield is about 1# per row foot or 2.5# per square foot. Don't overplant, they have short useful storage life.

**Varieties:** Cherry Belle, Red Heart, Champion, Sparkler, and Crimson Giant are common. French Breakfast, Dragon, and Daikon are very mild cylindrical varieties. There are also many color variations: Amethyst, Watermelon (white with red center), Purple Plum, etc.

**Notes:** Flea beetles are common pests - so much so that radishes are used as a "trap crop" to keep them out of other vegetables. Radishes make great quick fill-in crops, and mature so quickly they are sometimes sown with carrots to "break the crust" - the radishes will ease thinning, and will be harvesting by the time the carrots are needing some room. Members of the brassica family, they can get cabbage root maggot, and should not be planted near nor rotated with other brassicas.

## Potatoes

**Requirements:** Few - loose somewhat acid soil with good organic matter

**Planting:** Plant pieces of "seed potatoes". Cut a seed potato into several pieces, each having 2-3 "eyes", then let callus in warm dry location for a few days. In row 1 foot apart, or plant 3 per square foot. If soils are heavy or shallow, don't dig too deep - you can layer on compost, soil, or even straw as they develop. Plant as early as late March/ early April

**Care:** Feed moderately, some but not too much nitrogen; focus on phosphorus. Though they like acid soils, they may need lime to prevent or reduce scabbing. Low water requirement - water consistently, let dry out some between waterings, but a little bit heavier when flowering.. Stop watering about 2 weeks before harvest. Hill up by shoveling soil or layering straw over the developing shoots, leaving only the topmost leaves exposed.

**Harvest, yield, and storage:** Days to maturity varies by variety - from very early varieties at 60-85 days to very late and fingerling varieties over 120 days. Under ideal conditions, potatoes will yield about 10 pounds for each pound of seed planted - and fingerlings sometimes produce 20 pounds per pound planted. When they flower, you may begin selective harvest of baby potatoes on thin-skinned varieties. Several weeks post bloom, foliage will begin to yellow - that is time to stop watering. Dig tubers carefully to avoid bruises or cuts that will shorten storage life. Thin skinned varieties have short storage life - a month or two at most. Some of the better storage varieties will last all winter. Store dark and reasonably dry, about 45-50 degrees. If stored potatoes get sweet and mealy, they were stored too cold; if shriveling they are stored too warm.

**Varieties:** *Early* - Yukon, Russet Norkotah, Cal White, Purple Viking  
*Mid season* - Dark Red Norland, LaSoda, Kennebec, Red Pontiac, Chieftan, Russet Burbank, Purple Majesty, Allred  
*Late* - Yellow Finn, Desiree, German Butterball, All Blue  
*Fingerling (all late)* - Austrian Crescent, Princess LaRatte, Russian Banana, French Fingerling, Rose Finn Apple

**Notes:** Flea beetles and cucumber beetles are frequent pests. Slug control is essential. Do not rotate with other nightshades, like tomato, pepper, or eggplant in order to reduce risk of very damaging fungal blights. Companion with legumes - even interplant with climbing peas!

## Rutabaga and Turnip

**Requirements:** Very few - loose soil that is neutral to slightly acid. For rutabagas, make sure soil drains in winter rainstorms.

**Planting:** Plant turnips in April-May or July-August; plant Rutabagas mid July to early September.

In row seed 1/2" apart, then thin to 3" (turnips) or 7" (rutabagas); or plant 12 turnips or 8 rutabagas per square foot.

**Care:** Feed moderately, with emphasis on phosphorus and potassium, but some nitrogen. Water evenly and consistently (at least until the fall rains)

**Harvest, yield, and storage:** Turnips are ready at 3" diameter - 40 to 50 days from spring sowing or 50 to 60 from July.

Rutabagas take about twice as long - around 95 days - but get more than twice the size - about 8". Mid July rutabaga plantings will mature in November, and can often hold in the ground into January. Both yield about the same: 1/2# per row foot or 1.1 # per square foot. Both store cool, dark, and moist, in refrigerator or moist sand in garage or outbuilding.

**Varieties:** Turnips - Purple Top White Globe is the all around favorite.

Rutabags - Marian is still the most widely used, but Joan has better texture

**Notes:** Like all brassicas, insects are the common problem. Cover to prevent Cabbage Root Maggot. Do not plant with or rotate with any other brassicas. Carrots, parsnips, and bush beans make good companions.

## Shallots

**Requirements:** Well drained soils, plenty of fertility

**Planting:** In fall plant bulbs in prepared site 4-5" apart, with 15-18" between rows. Plant shallow, even leaving the tip just barely visible, then mulch lightly.

**Care:** Water consistently through the late spring, and keep well weeded. Fertilize at planting and again in March. Will shoulder up - let them.

**Harvests, Yield, and storage:** Will droop and yellow late spring to early summer. Lift or dig gently, do not wash or trim, and cure warm and dry for 2-3weeks. Store cool, dry, and dark - they hold very well. Yield variable, about 5# per pound planted.

## Sweet Potatoes

**Requirements:** Not very particular about soil, but needs lots of heat.

**Planting:** Prepare planting site by forking or tilling in compost, then cover with clear plastic, 2 weeks before planting.

Plant in "slips" in June, 18 inches apart and with two leaves visible above the soil.

**Care:** Feed well with balanced fertilizer. Water deeply and consistently all summer, but don't keep saturated. Handle carefully, avoid injury to vines.

**Harvest, yield, and storage:** Sweet potatoes should be ready to harvest in late September or early October, ideally before soil temperature drops too much or the heavy rains set in. Dig gently to avoid bruising, in late morning. Set out in the sun to begin drying process. Expect a yield of 12 to 15 pounds per slip. Cure in a warm and well ventilated area for 3 to 4 weeks to develop best flavor and storability. After curing, they keep best warm (60 degrees) and not too dry.

**Varieties:** The earlier the better - try to find varieties with maturations under 110 days. Georgia Jet, Covington, and Murasaki Purple have done well for me.

**Notes:** A relatively difficult crop for our area - like watermelons, they prefer longer and hotter growing season. Very viney and aggressive, allow lots of space; at least that reduces weeding. Can remove plastic before planting, but often more successful by slitting or perforating the plastic and planting through it. Avoid injuring stems during growing, or your sweet potatoes may start sprouting.