

GROWING FOR MARKET

news, advice and resources for market farmers



Parsnips are easy to grow and reliable

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Parsnips are workhorse root crops that thrive in mild weather, store well and can provide high yields for the time invested. Parsnips are a traditional northern European vegetable that is surprisingly easy to grow in warmer climates, while also being extremely cold-tolerant. Parsnips have similar requirements to carrots and beets - all store well, and have the benefit of providing vegetables for sale after the harvest period is over, giving the farmer time to rest a little or delegate the sales to an intern while taking a vacation. CSA farmers can also use storable crops as the flexible “filler” in the box: more when other crops are in short supply; less in bountiful weeks.

Varieties



Relatively few varieties of parsnips are available in the U.S., and most catalogs offer only two or three. There are two main types, the “hollow crown” types, where the leaves grow from an indentation in the top of the root, and the flat crown kind. Hollow crown parsnips are harder to clean and the top of the root is not easily made usable. Most varieties are open-pollinated (Hollow Crown, Harris Model, Andover, Tender and True, Cobham Improved and Lancer) while a few are hybrids (Albion, Javelin and Gladiator). People say that hybrids are more uniform and higher yielding, but I have not

tested these claims. Whiter varieties are more prone to canker, the main parsnip disease; Tender and True is resistant to it. All take 100–120 days to maturity, but there is no particular market for early parsnips, so that isn’t likely to be a deciding factor. Harris Model, Andover and Tender and True have worked well for us. Cobham Improved is short, so the best choice for heavy soils.

Seed specifications and yield

The viability of parsnip seeds goes downhill fast, so never try to save leftover seed for another year. They are one of the few seeds I always buy fresh each year. Parsnip seeds are 105,000–120,000/lb, 7,000–10,000/oz, 250 seeds/gm. They should be sown at 4,000 seeds ($\frac{1}{2}$ oz.)/100’ or about 3–5 lbs/acre. They will yield 80–120 lbs per 100’. 400’ will provide 3lbs each for 100 sharers. Richard Wiswall rating the net profit per bed in his Organic Farmer’s Business Handbook, finds parsnips more profitable for the space than celeriac, spinach, beets, lettuce, summer squash, bulb onions, cabbage, potatoes, cucumbers, broccoli and winter squash, but less profitable than greenhouse

tomatoes, parsley, basil, kale, field tomatoes, cilantro, dill, peppers and carrots.

Crop requirements

Any decent soil will grow some parsnips, but the best ones grow in deep, loose, and fertile sandy loams with good moisture-holding capacity. They prefer cool temperatures, for best flavor and appearance. Old books warn against using manure before carrots or parsnips as it will make them fork. This refers to uncomposted manure, not to compost. Compost will increase yields, and even reduce the culls with some varieties (research on carrots by Dan Brainard at Michigan State University). Compost not only increases the organic matter in the soil, but also suppresses some diseases and nematodes (which can cause forking). Parsnips do not want an overly rich soil, nor one that crusts easily or is full of rocks. Their ideal pH is 6.0–6.5. Parsnips need a long, cool growing season.

Sowing

Most people sow parsnips just once a year, early in spring, as they are slow-growing. But the exact date in spring doesn't seem to matter — if you have at least 110 days before winter gets too cold for them to grow any more, they are almost guaranteed to be big enough by the end of the season. The minimum germination soil temperature is 35°F. There's nothing to be gained by starting too early, when it's too cold. Parsnip taproots get damaged by transplanting, so don't do it!

The table below shows days to germination as a function of soil temperature. This information (from Knott's Vegetable Growers' Handbook and Nancy Bubel's New Seed Starter's Handbook) is very useful for flame-weeding (see below).

Days to Germinate	50° F (10° C)	59° F (15° C)	68° F (20° C)	77° F (25° C)	86° F (30° C)	95° F (35° C)
Parsnips	26.6	19.3	13.6	14.9	31.6	0

The second table shows the success rate of germination (percentage of normal seedlings) as a function of temperature. Parsnip seed viability starts to decrease at temperatures over 68°F.

% of Normal Seedlings	50° F (10° C)	59° F (15° C)	68° F (20° C)	77° F (25° C)	86° F (30° C)	95° F (35° C)
Parsnips	79	85	89	77	51	1

We sow parsnips between March and mid-April, or even late April. Further south than us, growers can sow in the late summer, in August or early September. The soil temperature needs to be below 70°F. Parsnips are slow to germinate, even under ideal conditions, so we dot radish seeds occasionally along the row to enable us to hoe between the rows before the parsnips germinate. The emerging radishes can also help prevent soil crusting. Aim for a depth of 0.25"–0.8", in rows 8" or more apart. We usually "station sow" our parsnips, putting several seeds at each spot, 1.5"–4" apart. Alternately, sow and thin to this spacing later. Root crops do well on raised beds, because the soil stays loose and the roots can easily grow deep. Hard rain in the first 3–4 days after planting can create a crust which could stymie the emergence. To prevent this, irrigate for half an hour each day until the parsnips come up. Keep the soil surface moist. Some people use shade cloth to help with this. Old books recommend covering the rows with boards, though clearly that isn't practical on a large scale.

I read in Growing for Market in 2004, of a very successful innovation that solved the problem with soil crusting and poor carrot emergence for one small-scale grower. This could perhaps work well for parsnips too. She used a soil erosion control blanket, made from excelsior wood product quilted between layers of plastic. For \$44 (in 2004) she covered a 300' bed, until the carrots germinated,

then she rolled the blankets for reuse. They are available from American Excelsior in Rice Lake, Wisconsin: americanexcelsior.com/erosioncontrol/products/clblankets.php.

Fluid sowing

Some growers like to use fluid sowing of pre-germinated parsnip seeds, to get better emergence and earlier harvests. Pre-sprouted seeds are sown in a jelly that protects them from damage. This method reduces the attention needed by slow-germinating seeds such as parsnip. Emergence will be earlier, spacing will be more even, and crops can get to maturity quicker, which can be an advantage if the winter arrives too soon after the summer in your region or you are sowing late. First soak the seeds, then drain off the water that has not been absorbed, and put the seeds to sprout. Rinse twice a day, draining off the water. We use plastic one-gallon (4-liter) jars from catering sizes of mayonnaise and mustard. A pasta strainer or a sieve held upside down closely in the mouth of the jar can be used to strain them. Usually it's best to sprout the seed just until you see it has germinated. Seeds with long sprouts are hard to plant without snapping off the shoot. For most crops 0.2" is enough. If your pre-sprouting has got ahead of the weather or the soil conditions, slow down growth by putting the seed in the refrigerator.

Once the shoots are 0.2" long, rinse and strain them gently. Make up a starch or cellulose paste. A cup of thick cornstarch paste is easily cooked up by making a smooth slurry with 1–2 tablespoons of cornstarch and an equal amount of cold water. Heat a cup of water, then stir in the slurry and boil for one minute to activate the cornstarch, stirring gently. If the paste is becoming too thick, stir in a little more water. Possible substitutes for cornstarch include the same quantity of xanthan gum, pectin, agar, gelatin, arrowroot, potato starch or tapioca. Or use regular flour at twice the rate. Allow the paste to cool, then gently stir in the seeds. They should not sink when the mix is allowed to stand. If they do, the mixture was not thick enough. Start again and decant the seed layer to mix into a thicker paste.

Pour the mixture into a plastic bag, and when you get to the garden, snip a small corner off the bag. Ideally the mixture should squeeze out into a damp furrow at about one tablespoon per foot of row (15 ml/30 cm), and should contain the number of seeds you want to plant in that distance. It may be worth experimenting on the kitchen counter first! After sowing, cover the seeds with soil in the usual way. The Complete Know and Grow Vegetables by J. K. A. Bleasdale, P. J. Salter et al. has a good description of this method, which is also used to speed emergence in cold spring weather.

Flaming

Parsnips, like carrots, are ideal crops for pre-emergence flame-weeding. The goal is to flame the bed the day before the expected emergence of the crop. Use a soil thermometer and the table above to figure out which day to flame. For carrots it's possible to sow a few "indicator beets" at one end of the bed; as soon as you see the red loops of the beet seedlings breaking the surface, flame the carrots. Beets are always a bit quicker than carrots in germinating. Parsnips, however, take twice as long as beets to germinate, so this system is not useful. Another way to get an alarm call is to put a piece of glass over part of a row. The theory is that the soil under the glass will be warmer and the crop there will come up sooner than the rest. I tried this once with carrots, but the soil under the glass dried out, and those carrots came up later than the rest! Nowadays we have a "no glass in the garden" rule, for safety, so I use the thermometer and the chart.

We use a handheld flamer attached to a propane cylinder that is in a wheelbarrow pushed by a second person behind the first. This person also acts as a "fire warden." Some growers mount the propane on a backpack frame. Walking along the aisle between beds, wafting the wand diagonally back and forth across the bed, takes about ten minutes for a 100' (30 m) bed. Flame-weeding alone can reduce hand-weeding to one hour/100' (30 m).

Caring for the crop

Parsnips start slowly, so try to put them in a bed that had only light weeds the year before. Get to the

initial thinning as soon as you can, spacing to about one inch apart, weeding at the same time. We usually take a scuffle hoe between the rows the day before the hand-weeding, to save time. It's important to weed during the first month of growth, as young parsnip seedlings can get crowded out by weeds. Tools should be kept shallow or damage to developing feeder roots can happen. We do a second thinning, to three inches, and one more round of weeding and thinning to the final spacing, before leaving to grow till harvest.

Optimal Spacing

The Complete Know and Grow Vegetables has good information on researched crop spacing for maximum yields, among other gems. Parsnips give their highest total yield at 3 plants/ft² for large varieties and 6–7/ft² for small varieties. The roots will be relatively slender: 1.5"–2".

For larger roots, but lower total yield, plant large varieties at 2 plants/ ft² .

This book recommends that the ratio between row spacing and in-row spacing not be greater than 2.5:1. For example, to achieve 2 plants/ft², the maximum row space would be 13.4" and the in-row spacing 5.5". In rounder numbers, this could be 12" × 6".

Here are some sample spacings:

12" 6" 2 plants/ft²

For high yields of large roots

7.5" 3" 6.4 plants/ft²

For smaller roots.

Pests and diseases

Parsnips can suffer from two kinds of canker, Iterosonilia canker and Phoma canker. Crop rotation can help avoid these diseases.

Carrot pest insects can also damage parsnips, so take precautions when thinning and harvesting if the carrot rust fly is present. (Remove all thinnings and damaged foliage from the field.) Carrot rust fly and carrot weevil both tunnel in the roots. The rust fly usually tunnels in the lower third of the root, and the weevil (with wider, more open tunnels) works on the shoulders. We also have the colorful striped parsley worm, but not in high enough numbers to cause economic damage. This white, yellow and black worm can be identified by (gently!) pressing down on its back. It projects a pair of orange "horns" and emits a "fake strawberry flavor" smell. Other pests of parsnips include cutworms, flea beetles, leaf hoppers, nematodes and spider mites. Some areas struggle with wireworms, which can be caught by burying carrot slices, and daily removing the captives. If necessary, row cover can be used to exclude flying pests. Garden Insects of North America by Whitney Cranshaw is a good resource (available from Growing for Market). The Ontario Ministry of Agriculture, Food and Rural Affairs has good fact sheets on the carrot insects. Some research has been done at Washington State University, using pathogenic nematodes and other possible parasitoids and predators.

Harvest

The sweet nutty flavor of parsnips doesn't develop until the roots have been exposed to temperatures near freezing for a few weeks. At these low temperatures the starches in the root are converted to sugars. They are the last root crop we dig up, as they are tolerant of air temperatures down to 0°F. I haven't checked soil temperatures at that point – you'll want to harvest before the soil freezes solid, if that happens in your climate. Parsnips will survive winter here in zone 7. According to the Ontario MAFRA, parsnips freeze if the flesh reaches 29°F. The core of frozen parsnips may become water-soaked with a reddish brown cambium layer. The outside of the root may become dark brown after freezing and thawing. I've not seen this happen, and I hope I never will!

To harvest by hand, dig or pull up the parsnips, collecting them in a cart or wheelbarrow. We then take the parsnips into the shade, cut the tops off (leaving a short length of greens if for storage). As

we cut, we put the roots into buckets of water. When a bucket is full we give the parsnips a quick rub over and put them into clean rinse water. Then we lift them out of the water and drain them in buckets with holes in the bottom, before transferring to perforated plastic bags for the walk-in cooler. Growers dealing with a larger volume might mow the tops off first, then undercut the roots, making them easier to pick from the loosened soil. See below for information on root washers. Harvest of parsnips is a simple manual job for us, as we only grow a small quantity. There may be a market for large quantities of organic parsnips for baby food manufacturers, if you fall in love with growing this crop. Then you'll need the undercutters and barrel washers. Modified potato diggers are sometimes used. Some people have skin that is sensitive to parsnip foliage and roots, and will need to wear gloves and long sleeves to avoid problems. Parsnips contain a photosensitive chemical that can cause a condition known as phytophotodermatitis - a type of chemical burn, not an allergic reaction.

Storage

With traditional storage methods, where root crops are buried in sand or ashes in a root cellar, unwashed roots store better than washed ones. They also keep well in perforated plastic bags under refrigeration, and washed roots store as well this way as unwashed ones, with the advantage of avoiding the discoloration that can happen to unwashed roots in storage. Store in humid conditions at near-freezing temperatures (not below), for up to six months. Don't store roots with fruits (such as apples or squash) as ethylene emitted by the ripe fruits can turn the roots bitter. Parsnips can be stored for six months, if close to freezing point, with high humidity (90%–95%). Temperatures above 45°F cause sprouting.

If your winters are mild enough, and you don't have voles, you can store parsnips in the ground until late winter/early spring, perhaps covering the bed with loose organic mulch (straw, tree leaves, spoiled hay). They should be dug before growth resumes in the spring, as these biennial plants will become woody – they consume the root in producing flowering stems.

Another alternative storage method for suitable climates, is to dig the roots and make an insulated outdoor storage mound, or clamp. The roots are piled on a layer of straw, covered with more straw and then soil. It's important to make sure the clamp will shed rain and has a drainage moat around it.

Rotations

To prevent blights, practice three-year crop rotation. Parsnips are umbelliferae, along with carrots, celery, celeriac and fennel.

Seed saving

As biennials, parsnips are more complicated crops to grow for seed than annuals. It is usually recommended to harvest and store the roots over the winter, then select the best to replant in spring, setting out at least 200 to avoid inbreeding depression. Minimum isolation distance is ¼ mile for home use, ½–1 mile for pure seed for sale. Also, carrots and parsnips can and do cross with each other and with Queen Anne's Lace, so these are only worth trying for areas that don't have that wild plant. Likewise, avoid wild parsnip.

Resources

The Ontario Ministry of Agriculture, Food and Rural Affairs:

Commercial Parsnip Production in Ontario, omafra.gov.on.ca/english/crops/facts/parsnip.htm

Carrot Insects, omafra.gov.on.ca/english/crops/facts/93-077.htm

Washington State University, Carrot Rust Fly Study, agsyst.wsu.edu/CRFreport03.pdf

Pam Dawling is the garden manager at Twin Oaks Community in Virginia. Her book, Sustainable Market Farming: Intensive Vegetable Production on a Few Acres, has just been published and is available from www.sustainablemarketfarming.com

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