



Vegetables: Growing Carrots in Home Gardens

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS118E

Crop at a Glance

Growing season: Spring, summer, and fall.

Time of planting: Sow seeds in early spring, 2–4 weeks before last spring frost, when soil temperatures are above 50°F. Sow seed in July and August for a fall crop.

Spacing: Plant seeds 1–2 inches apart in rows spaced 12–24 inches apart. Large rooted cultivars should be spaced 2 inches apart.

Days to harvest: 55–80 days (average range) depending on the cultivar.

Average yield: 12 lb per 10-foot row.

Common starting method: Direct seeding into the soil.

Introduction

Carrots are a nutritious, cool season root vegetable that are easy to grow in all regions of the state. Orange carrots are a great source of beta-carotene, a phytonutrient that provides our bodies with vitamin A. More recently, plant breeders have been rediscovering red, yellow, and purple carrots with pigments that provide us with other healthful phytonutrients including lycopene, xanthophylls, and anthocyanins.

Selecting Types to Plant

Carrot cultivars vary in root color, shape, days to maturity, and storage ability. Home gardeners should select a type that is suited to their soil conditions. For example, carrots with longer roots grow best in loose, sandy soil, while short-rooted types will do well in rocky or heavy soils.

Carrot types include:

- **Globe or Oxheart:** These small round carrots have a maximum length and diameter of 3 inches. They are predominantly a short-season cultivar suited

for growing in heavier soils, or when planting a fall crop. These small carrots do not store well. They are a good choice to plant when gardening with children since they are ready to harvest sooner than other carrot types.

- **Baby Carrot:** “Baby carrots” is a term sometimes used to refer to young carrots harvested before they are fully mature (the roots are only 4 to 5 inches long). Young carrots tend to be more tender and sweeter, but they don’t store well. Some short-rooted cultivars are available specifically for growing as “baby carrots.” Baby carrots are another good type to grow when gardening with children.
- **Chantenay:** These thick, blunt-tipped, conical carrots have shoulders that are 2 to 2½ inches in diameter and are 5 to 6 inches long. They grow well in heavy and shallow soils. These carrots store well.
- **Danvers:** These long, conical carrots have a 6- to 7-inch root with a blunt tip, and shoulders 2 to 2½ inches in diameter. They grow best in sandy soils. These carrots store well and are good for processing and juicing.
- **Nantes:** These blunt-tipped, cylindrical carrots are 6 to 7 inches long, with a diameter of 1½ inches. They grow best in sandy soils and should be dug, not pulled, when harvested. Nantes carrots have a sweet flavor and a small core that make them good for fresh eating. They do not store well.
- **Imperator:** These long tapered carrots (up to 10 inches long) are 1½ inches in diameter, and grow best in sandy soil. They are generally less sweet and more fibrous than other types of carrots. They store well.
- **Colored:** While many carrots grown today have orange roots, this hasn’t always been the case. Originally, carrots had roots of red, yellow, white, purple, and orange. Over time the rainbow of colors were “lost” in favor of the color orange. In recent years, plant breeders have reintroduced

This fact sheet is part of the WSU Extension Home Garden Series.

colored carrots—offering gardeners carrots of many colors with a variety of healthful phytonutrients.

Choosing a Planting Site

Because carrots are a root crop, they grow best in soils that are well-drained, high in organic matter, and free of rocks. They are difficult to grow successfully in clay or rocky soils. Carrots prefer slightly acidic soil (pH 6 to 7), but will tolerate slightly alkaline soil (pH of 7 to 8). A soil test will reveal the pH and nutrient content of your soil.

In some areas of the state, soils may contain high levels of lead, arsenic, and other heavy metals that can pose a health risk when gardening or eating vegetables (especially root vegetables like carrots) that have been grown in these soils. If you live in an area where this may be a concern, WSU Extension recommends having the soil tested for heavy metals, in addition to pH and nutrient levels.

Planting Guidelines

Good soil preparation is a key to success with carrots. Work well-rotted compost into the soil and till to a depth of 6 to 8 inches. The finished seedbed should be free of soil clumps and clods. Gardeners using a “no-till” method of gardening may find growing carrots difficult until their soil becomes loosened by other crops or no-till activities that add organic matter to the soil.

Carrot seed is very small, making it hard to plant. To aid in even seed distribution when planting, the seed can be mixed with fine, dry sand and the mixture can then be sprinkled along a row by hand or using a salt shaker. Gardeners may also be able to find pelleted seed or seed tape (seeds glued to strips of biodegradable paper), which make it much easier to plant seed at the recommended spacing of 1 to 2 inches apart.

Since carrot seed is so small it is important to plant the seed only $\frac{1}{4}$ to $\frac{1}{2}$ inch deep. Seeds are typically planted in rows 12 to 24 inches apart, but they can also be sown by scattering seeds across 3- to 4-foot-wide beds.

Crusting of the top layer of soil can hamper seed germination. To prevent this from happening, cover the seed with fine sand, potting soil, or compost instead of soil. Some gardeners sow radishes in the same row as carrots; since radishes germinate quickly, they help mark the row and prevent soil crusting problems by breaking the surface first. The radishes are removed before they crowd the carrots.

When the carrot roots are $\frac{1}{2}$ inch in diameter, thin the seedlings to 1 to 2 inches apart. Carrots grown in wide beds should be thinned to a spacing of 3-inch centers, so all carrots are 3 inches apart. Pulling out carrot seedlings when thinning can disturb the remaining carrots, so some gardeners like to snip off the tops of the seedlings rather than pull them.

Plant Maintenance

Carrot seedlings are slow growing when young, making it important to control weeds early in the season. Use only shallow cultivation to remove competing weeds until carrot plants are 12 inches high. Be careful not to throw soil onto the top of the plant during cultivation, as this will bury the growing point and prevent further growth. Deep cultivation close to the plants will injure the root system, reducing yield and quality.

Consider mulching your carrots to keep the shoulders from turning green, conserve soil moisture, and help deter weed growth. Mulching in the fall with a thick, but loose, layer of mulch (such as straw) will prevent the soil from freezing and make winter harvesting easier. In the cooler, wetter regions of the state, mulching will attract slugs which can damage the plants. It may be best to avoid the use of mulch in these regions.

Watering

For even and complete germination of carrot seed, keep the seedbed evenly moist until all the carrots have germinated and have started to grow.

Carrots should be watered deeply and frequently enough to keep the soil evenly moist. This provides for good color and root development, whereas uneven soil moisture can lead to poor production, as well as cracked roots, bitter flavor, and woodiness. The frequency and duration for watering carrots will vary with the weather, type of soil, and irrigation system.

Pest Management

Common pest and disease problems for carrots grown in Washington include leaf spot, root-knot nematodes, and phytoplasma disease. Phytoplasma is a plant disease caused by a very small parasitic bacterium. The bacterium is spread from plant to plant by sucking insects, primarily leafhoppers. Carrot rust fly is the major insect pest of carrots. The table below provides a brief description of each problem, along with cultural management recommendations. For management information using chemicals, see the WSU Hortsense database, <http://pep.wsu.edu/hortsense/>.

Common Problems

Root-knot nematode

Photo: Lindsey duToit,
WSU Mt. Vernon

Symptoms: Knobby, hairy, distorted, stunted roots.

Corrective Action: Rotate with crops not susceptible to root-knot nematode damage, such as corn, onions, garlic, and strawberries; or leave the ground fallow for three years or more.



Leaf spot

Photo: Lindsey duToit,
WSU Mt. Vernon



Symptoms: Starts with small spots with yellow halos on young leaves. Older spots become tan or light gray. When severe, leaves may die.

Corrective Action: Plant in well-drained soil. Water early in the day. Remove and destroy infested carrot plant debris. Rotate garden crops, and avoid planting carrots in the same area for 2–3 years in a row.

Powdery mildew

Photo: Lindsey duToit,
WSU Mt. Vernon



Symptoms: Patches of white, felt-like fungus develop on lower leaves first, and then spreads to upper leaves. Leaves eventually turn brown and die.

Corrective Action: Some cultivars, like Nantes and Imperator, are more susceptible than others. Avoid growing susceptible cultivars if mildew is a problem.

Carrot rust fly

Photo: A. Antonelli,
WSU Extension



Symptoms: Roots with surface tunnels filled with rusty colored frass, and the presence of stiff white maggots.

Corrective Action: Control weeds in and around the garden as the rust fly feeds and breeds on a wide range of weed hosts. Do not store carrots in the ground over the winter. Rotate with non-susceptible crops. (Other susceptible crops include parsnips, celeriac, and celery.) After planting carrots, cover with a floating row cover and leave on through harvest.

Aster yellows

Photo: Lindsey duToit,
WSU Mt. Vernon



Symptoms: Roots covered with fine hairy roots, have poor color, and a bitter taste. Center leaves are yellow; older leaves are purple to reddish color. Plants are stunted and deformed.

Corrective Action: Caused by phytoplasma and spread by leafhoppers. Remove infected plants as soon as detected. Control weeds in and around the garden where leafhoppers may reside.

Forking

Photo: Tim Waters,
WSU Extension,
Franklin-Benton



Symptoms: Roots forked, twisted, or deformed.

Corrective Action: Caused by a number of factors, including rocky or clumpy soil and close cultivation. Soil diseases, such as pythium, can also cause forking. Plant carrots in raised beds with loose soil, or sift the soil to remove rocks. Before planting, cultivate the soil to break up large clumps. When controlling weeds after planting, avoid cultivating too deep or too close to the plants.

Sunburn or Green Shoulders

Photo: Tim Waters,
WSU Extension,
Franklin-Benton



Symptoms: Shoulder or top of carrot is green.

Corrective Action: Mulch carrots or use a hoe to carefully pull a shallow layer of soil over the exposed shoulders or tops of carrots. Be careful not to cover the growing point.

Cracking

Photo: Tim Waters,
WSU Extension,
Franklin-Benton



Symptoms: Roots develop longitudinal cracks.

Corrective Action: Uneven watering or wide fluctuations in soil moisture can lead to cracking. Certain cultivars are more prone to cracking than others.

Harvest and Storage

Carrots can be harvested for fresh eating any time they reach a desirable size. However, if carrots are to be stored, they should be harvested when they are fully mature. When thinning or harvesting carrots, pull out baby types by their tops and dig out longer types. Longer carrots frequently break if pulled, so it's best to use a digging fork to loosen and lift the carrots out of the soil.

Wash soil off the carrots with clean water and trim off the tops. Carrots can be stored for several months at 32°F to 36°F with high humidity (95 to 100%); although their flavor and nutrition is best if not stored for long periods. Some gardeners like to “store,” or keep, their fall-planted carrots in the garden, covered by a layer of mulch, and harvest them when needed over the winter. This can work well in the dryer regions of the state; however in regions where winters are wet, carrots left in the garden may rot. Also,

leaving carrots in the ground may lead to higher levels of carrot rust fly damage in following years.

Further Reading

- Andress, E. and J. Harrison. 2006. So Easy to Preserve. *The University of Georgia Cooperative Extension Bulletin* 989. <http://setp.uga.edu/>.
- Cogger, C. 2012. Raised Beds – Will They Benefit Your Vegetable Garden? *Washington State University Extension Publication* FS075E. <http://cru.cahe.wsu.edu/CEPublications/FS075E/FS075E.pdf>.
- Craig, S. 2011. Food Preservation Resources. *Washington State University Extension Publication* C1117E. <http://cru.cahe.wsu.edu/CEPublications/C1117E/C1117E.pdf>.
- Craigmill, A. and A. Harivandi. 2010. Home Gardens and Lead: What You Should Know about Growing Plants in Lead-Contaminated Soil. *University of California Agriculture and Natural Resources Publication* 8424. <http://anrcatalog.ucdavis.edu/pdf/8424.pdf>.
- Drost, D. and W. Bitner. 2010. Carrots in the Garden. *Utah State University Cooperative Extension*. http://extension.usu.edu/files/publications/publication/HG_2004-12.pdf.
- Foss, C. and A. Antonelli. 2011. Hortsense. *Washington State University Extension*. <http://pep.wsu.edu/hortsense/>.
- Miles, C., G. Sterrett, L. Hesnault, C. Benedict, and C. Daniels. 2013. Home Vegetable Gardening in Washington, (Home Garden Series). *Washington State University Extension Publication* EM057E. <https://pubs.wsu.edu/ItemDetail.aspx?ProductID=15566&SeriesCode=&CategoryID=&Keyword=em057>.
- Pacific Northwest Vegetable Extension Group. 2012. Photo Gallery of Vegetable Problems. Washington State University, Oregon State University, and University of Idaho. http://mtvernon.wsu.edu/path_team/diseasegallery.htm.
- Parker, J., C. Miles, T. Murray and W. Snyder. 2012. How to install a Floating Row Cover. *Washington State University Extension Publication* FS089E. <http://cru.cahe.wsu.edu/CEPublications/FS089E/FS089E.pdf>.
- Simon, P.W. 2004. Carrots with Character. USDA Agricultural Research Services Vegetable Crops Research Unit. <http://www.ars.usda.gov/is/ar/archive/nov04/carrot1104.htm>.
- University of Illinois. Watch Your Garden Grow—Carrot. *University of Illinois Extension*. <http://urbanext.illinois.edu/veggies/carrot.cfm>.



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Header photo by M.C. Ophardt.

Use pesticides with care. Apply them only to plants, animals, or sites as listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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