

Growing Raspberries in Your Home Garden

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Raspberries are among the most delicious and delicate small fruits. Included are summer- and fall-bearing raspberry, black raspberry (black-caps), and purple raspberry. (“Brambles,” also called “caneberries,” include also blackberries: both trailing—called “dewberries” in the East—including Marionberries, Boysenberries, Loganberries, Youngberries, and Thornless Evergreen; and erect.) All of these are species and hybrids of the genus *Rubus*, and all have similar fruiting habits.

All raspberry plants are perennial; the roots live for many years. The canes are biennial; they grow one year (*primocanes*) and produce fruit the following year (*floricanes*). The floricanes die after they have fruited.

Flower bud formation begins at the tip of primocanes about July, when growth slows, and proceeds down towards the base of the cane. New canes are produced each year from the roots or at the base of old canes. The floricanes need to be removed each year after harvest, but the new primocanes, which will fruit the following year, need to be thinned and trained.

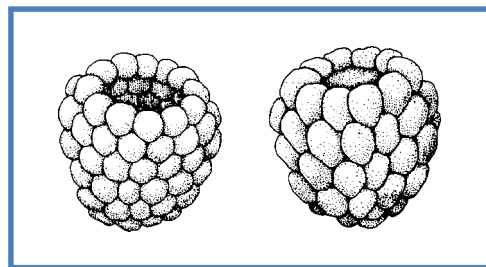
Although all raspberries are grown essentially the same way, you must prune and train black and purple raspberries differently from red; these differences will be outlined.

There are two names for a raspberry cane.

The name depends on whether the cane is in its first or second year of growth:

Primocanes: First year of growth (only fall-fruiting raspberries produce fruit on primocanes in the fall).

Floricanes: Second year of growth; these produce fruit on branches. Both summer- and fall-bearing raspberries produce fruit on floricanes.



You easily can tell a blackberry fruit from a raspberry fruit.

In a raspberry (far left), the fruit receptacle (core of the berry) remains on the plant when you pick it. However, in a blackberry (left), the receptacle is part of the fruit that you eat; the fruit has no opening as raspberry fruit does.



Selecting a site

Areas with cool summers, little rain during harvest, and relatively mild winters are ideal for raspberries. In colder regions, you can get good yields by growing either winter-hardy cultivars (varieties) or fall-bearing raspberries. Roots will tolerate below-zero temperatures, but canes may be damaged by dry winter winds.

Hot, dry, windy weather in the spring or summer may retard cane growth and produce small, seedy, and often crumbly berries.

Raspberries produce best in full sun, but can tolerate partial shade. However, plants don't grow or produce well in heavy shade.

Avoid selecting a site where potatoes, tomatoes, peppers, eggplant, other caneberries, or strawberries have grown within the past 3 years. These crops are susceptible to, or are affected by, many of the same insects and diseases. So it's important that these crops be rotated from one site to another. Caneberry plantings are not rotated often, because they live for a long time.

However, it's best to plant raspberries in a site that has not been planted to any of these crops in the past 3 years. If you don't do this, fungus diseases and insect pests may still be present in the soil; they'll infect the new planting.

Raspberries are sensitive to wet soils. Therefore, drainage is the most important soil factor you must consider when selecting a site. If plants are in waterlogged soils for more than a few days at a time, they normally die a slow death from lack of aeration (oxygen) or from subsequent attack by root diseases.

Raspberry plants grow best in a well-drained, fertile, loam soil with moderate water-holding capacity. Avoid heavy clay soils. Sometimes you can improve a less desirable site by tiling, increasing organic matter content, and building raised beds (see "Preparing the soil," page 4).

Locate your red raspberry planting so there's room to rototill or mow on each side of the row; this makes for easier control of suckers that develop each year.

Selecting a cultivar

Red

Red raspberry cultivars can be divided into two types. Summer-bearing cultivars are the most common. These produce canes that are biennial in habit, growing one year and producing fruit the next.

Fall-bearing cultivars produce canes that bear fruit on the top portion of the current season's growth in late summer and fall (usually late August to early October). If you leave these canes for next year, they'll bear fruit on the portions that did not fruit the previous fall. Therefore, this type can produce fruit in both June-July (base of last year's cane) and late summer-early fall (top of current season's cane), although the June crop is usually small.

If you live in an area with extremely cold winter temperatures, it may be best to grow fall-bearing raspberries, as you can cut the canes low to the ground each winter after you have harvested the fall crop. New canes will develop the following spring and produce a fall crop. If you grow fall-bearing raspberries by this method, you won't get a summer crop.

There are also yellow- or amber-colored raspberries available. These are mutants of red raspberry and, except for fruit color, they have all the characteristics of red raspberry.

Raspberry cultivars differ in fruiting habit, tolerance to pests and heavy soils, fruit characteristics, etc. Thus, it's important to choose a cultivar adapted to your needs and to the site you have available. Buy only certified, disease-free plants from a reputable nursery.

For information on recommended summer- and fall-cropping raspberries, see EC 1310. Summer-bearing red raspberries include: 'Willamette,' 'Meeker,' 'Newburgh,' 'Sumner,' 'Skeena,' 'Nootka,' 'Chilcotin,' 'Chilliwack,' and 'Comox.'

Fall-fruiting raspberries include: 'Heritage,' 'Amity,' 'Redwing,' 'September,' 'Summit,' 'Fallred,' and 'Fallgold.'

When you're referred to another OSU Extension Service publication, you'll find additional information in "For further reading," page 10.

Black

Oregon is the leading state in commercial production of blackcaps, which have a distinctive flavor. Plants have arced canes rather than the more upright canes of red raspberry. New canes are not produced from roots; they develop only from the base of old canes.

Munger. This is the main cultivar grown in Oregon. *Season:* Mid (July). *Fruit:* Small-medium, blue-black, firm, good flavor; suitable for freezing, flavors, and preserves; soils must be well-drained.

Other cultivars that you may find in nurseries include 'Bristol' and 'Cumberland.' However, grower experience has indicated that 'Munger' is superior in yield, fruit quality, and plant characteristics.

Purple

Purple raspberries are hybrids of red and black raspberries. Their growth habit is most similar to that of blackcaps. The fruit is excellent for pies because of its distinctive flavor. One or more of the following cultivars may be available:

Royalty. Summer-bearing. *Fruit:* Very large, sweet, soft when fully ripe; highly productive; suckers are produced from the roots like red raspberry.

Brandywine. Summer-bearing. *Fruit:* Large, round, reddish-purple, firm, but tart; plant habit is similar to blackcaps, but more vigorous; no root suckers are formed; fruit may be too tart for eating fresh.

Amethyst. Summer-bearing. *Fruit:* Large, oval, purple with shiny skin, firm; fruit excellent for dessert, pies, and jams, and has good freezing quality; no root suckers are formed; plants are very productive.

How do you choose a raspberry cultivar (variety)?

There are two types of red raspberry: summer-bearing and fall-bearing. There are numerous cultivars available for each.

- If you want to produce both a good summer crop and a fall crop, choose both a summer- and a fall-bearing cultivar.
- If you like black or purple raspberries that bear fruit in the summer, choose from cultivars that are available.
- If you find a cultivar you think you'll like, but it's not mentioned in this publication or EC 1310, try only a few plants to see if they grow well and if you like the fruit.

Establishing your planting

Preparing the soil

You should be able to keep your raspberry planting productive for 8 to 12 years, so choose and prepare a good site before you establish the planting.

In the year before you plant, eliminate all perennial weeds. Don't permit weeds to go to seed.

A good supply of organic matter in the soil improves aeration and drainage, and it increases water-holding capacity. You may apply organic matter the summer or fall of the year before you plant; manure applied at 2 to 3 bushels per 100 ft² is a good source.

You also can use decomposed (rotted) compost, leaves, chopped hay or straw, peat moss, sawdust, etc. Use only materials that you think are free from insects and weed seeds.

Dig, plow, or rototill the material into the soil to ensure that it will be well decomposed by planting time the following spring. If you incorporate large amounts of non-decomposed material, add ammonium nitrate (33 percent nitrogen) at 1 lb per 100 ft² to aid in decomposition.

If your garden is slow to drain, or if the water table is high, you can improve the situation by installing a drain tile at least 25 inches deep near the row, or by planting in raised beds. Mix organic matter and fertilizer (see below) with the soil.

Raspberries grow best when soil pH is between 6 and 7, although you can get satisfactory growth if the pH is between 5 and 6. Test the soil pH the year before you plant. If the soil is too acidic (pH below 5), add lime as recommended by an analysis.

Fertilizing

Before you plant, spread 1 lb of 12-12-12 per 100 ft² (or equivalent rate of another well-balanced fertilizer). Till the fertilizer into the soil so that roots of newly set plants do not burn.

If you can't till in the fertilizer before planting, wait until 4 to 6 weeks after plant establishment; then apply 1 tablespoon of 12-12-12 (or equivalent) per plant. Make a circular band 6 to 8 inches out from the new shoots, then incorporate it shallowly. If you used manure to improve soil structure, decrease the rate of fertilizer applied by one-half.

Planting

It's best to purchase certified disease-free raspberry plants from a nursery. Plants from a neighbor's planting could introduce root rot organisms or viruses into your garden.

It's important that you plant raspberries at the proper depth. Primary roots of red raspberry grow mainly in a horizontal direction; it's these roots that give rise to the new shoots or primocanes. If the primary roots are much more than 2 inches below the soil surface, the new shoots frequently don't have enough energy to push up to the soil surface.

Plant as early as you can work the soil in the spring. If you can't plant immediately, heel plants into the soil to prevent the roots from drying. Dig a shallow hole, large enough to accommodate the roots. Prune off any damaged root parts.

Raspberry plants grow best in a well-drained, fertile, loam soil with moderate water-holding capacity.

Spread the root mass and set the plant so that the highest point of attachment of roots to cane is 1 to 2 inches below ground level. Cover roots with soil and press firmly to remove air pockets.

Water the plants to settle the soil.

Cut the cane(s) on newly set plants to 6 inches at planting; this may have been done by the nursery. Don't produce fruit the first season—this will weaken the plants. Be patient! If you wait, you'll get more fruit the year after planting.

In purple and black raspberries, nursery plants often have a "handle," a section of old cane remaining after propagation; remove this at planting.

Planting systems

The hedgerow and hill planting systems are most popular for the home garden. In the hedgerow system, space red raspberry plants 2 to 3 feet apart in the row with rows 6 to 8 feet apart. Allow the new primocanes that develop to spread along the row, but don't let them spread wider than 12 to 15 inches (see "Cultivation," page 7). Wider rows are more difficult to weed and prune and promote the development of diseases that thrive in damp, slow-drying conditions.

You also can grow red raspberries in the hill system. "Hill" refers to the cluster of canes that develops around a single plant—it doesn't mean setting the plants in a mound of soil. Space plants 3 feet apart within the row, with 6 to 8 feet between rows. Confine the hills to a diameter of about 1 to 1½ feet; remove all suckers that develop between hills or in the aisles (see "Cultivation").

Black and purple raspberries generally need more space than red raspberries. Set plants 3 to 4 feet apart in the row with 8 to 10 feet between rows. Some purple raspberries produce root suckers; keep plants confined to hills about 2 feet in diameter (see "Pruning," page 8).

Trellis

Red raspberries need a supporting structure to hold the canes upright. If you have only a few plants growing in the hill system, tie the canes to a stake, 2 to 4 inches in diameter, with heavy twine. However, as your planting may last 12 years, it's often preferable to establish a more solid, permanent trellis.

A simple trellis system of wire supports strung between posts is preferred. Posts for the trellis may be wood or metal. Treat wood posts with a copper-based preservative. Use heavy end posts 5 to 6 inches in diameter with lighter posts spaced 15 to 20 feet apart in the row. About 4½ to 5 feet of post should show above ground.

A three- or four-wire system (12-gauge or heavier) is usually easiest to manage (Figures 1 and 2). Attach two wires with hooks or bent nails to the post 30 inches from the ground; you then can lift these bottom wires out over new primocanes to pull them into the row and prevent breakage.

In the four-wire system, nail or bolt a cross arm about 18 inches long near the top of each post (Figure 1). Attach a wire at the ends and on top of the cross arms. Wire clips between posts will keep the two top wires from spreading. Train primocanes between the wires.

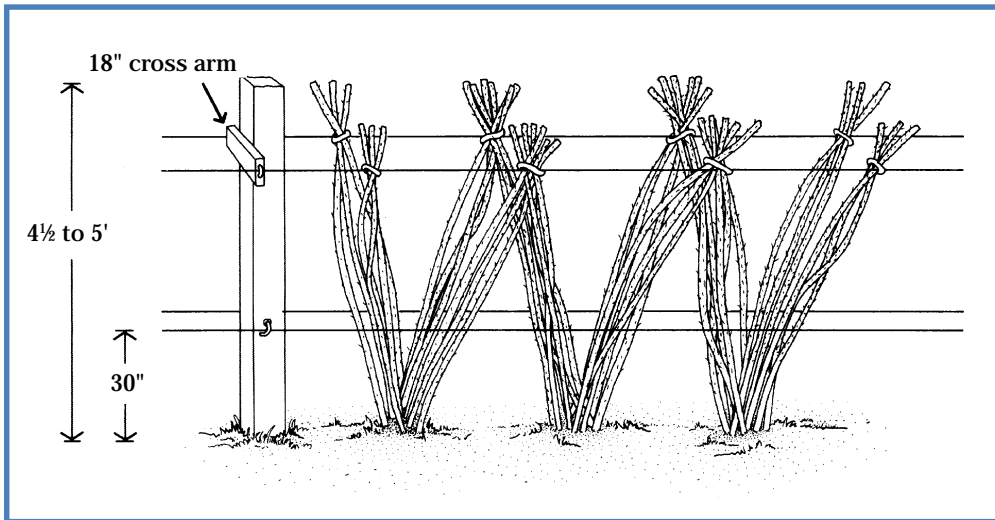


Figure 1.— Four-wire trellis with crossarms. Crossarms for the top two wires spread out the fruiting canes and leave room for new primocanes to grow between the wires.

In the three-wire system, nail a single wire to the tops of the posts and tie the canes to this wire (Figure 2).

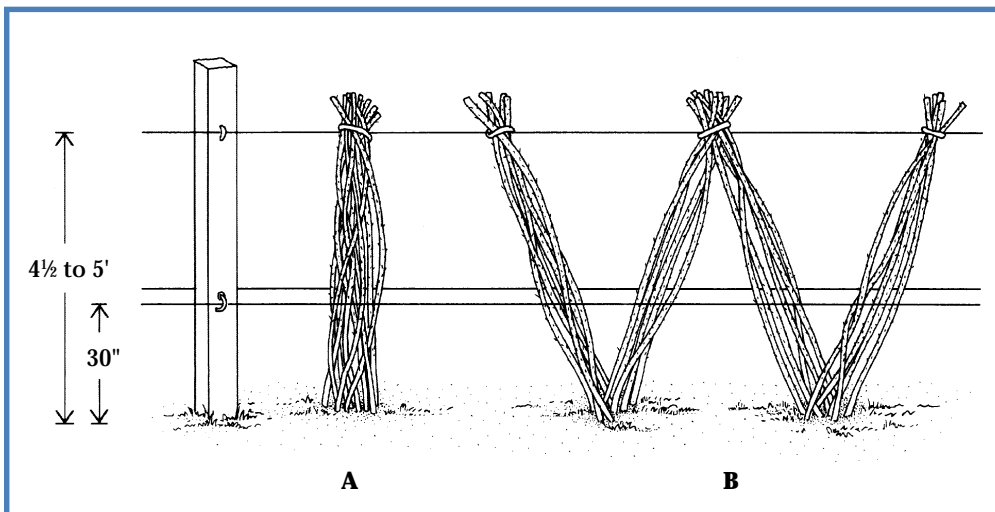


Figure 2.— Three-wire trellis with wires fastened directly to posts. Single top wire is stapled to post, two bottom wires are on hooks or bent nails so they can be lifted and swung out over primocanes to pull them in. Hills with up to 6 or 7 canes are tied in a single bundle (A). Hills with more canes (B) can be split, with part going halfway to the next plant in the row.

In fall-bearing raspberry, you can use a temporary support system if the plants are cropped only in the fall. Place a short stake beside each plant and tie the canes to the stake using twine.

Purple and black raspberry plants have sturdier canes, so they don't usually require a support structure. However, if you use a trellis, you may get higher yields as longer canes can be grown.

Checklist for establishing your planting and care in the first year:

1. Choose a good site.
2. Eliminate all perennial weeds.
3. Choose a cultivar(s) suitable for your needs.
4. Prepare the soil by applying organic matter, installing a drain tile, and forming raised beds, if necessary.
5. Apply fertilizer and till the soil.
6. Purchase certified disease-free plants.
7. Plant in spring.
8. Remove excess primocanes (suckers):
 - In the hedgerow (red raspberry), keep the row confined to a width of 12 to 15 inches
 - In the hill system (red and purple raspberries), confine hills to 1 to 1½ feet in diameter
9. Irrigate as required.
10. Build a trellis (especially for summer-bearing red raspberry).

Care of established plantings

Fertilizing

Apply fertilizer in early spring when new growth is starting. You can apply fertilizer as a broadcast application (spread over the surface of the soil in the row) or as a band application in a shallow trench 1 foot on each side of the row and 3 to 4 inches deep. Apply 4 to 6 lb of 10-20-20 fertilizer per 100 feet of row (or equivalent rate of a similar fertilizer).

Fall-bearing raspberries have a requirement for an additional fertilizer application before fruiting. When new canes start to bloom, spread 1 to 2 lb of ammonium nitrate (33 percent nitrogen) per 100 feet of row.

If you use manure, apply it in the late fall or early winter. Reduce the rate of nitrogen fertilizer applied by one-half. Manure applied early in the fall may cause raspberries to grow later in the season and make them more susceptible to winter injury.

A good guide for fertilization is to observe plant growth. Leaves should be a healthy green; a pale green or yellow color may indicate nitrogen deficiency. Also, canes of established red raspberry plants should reach 7 to 8 feet high. Reduce the annual application of fertilizer if canes become too tall, are too small in diameter (less than ⅜ inch), or the internode length (distance between leaves on the cane) is long.

Cultivation

Cultivation is necessary to control weeds and primocanes that develop between hills and in the row aisles. Cultivate no deeper than 1 to 2 inches to prevent root damage. Check with your county office of the OSU Extension Service or a garden supply store for herbicides registered for raspberries in the home garden.

You may apply a mulch once plants become established. You can apply sawdust (*not cedar*) or bark mulch in a 3-inch layer over the row. Additional nitrogen may be required to assist in breakdown of organic mulches.

Watering

Raspberry plants require about 1 inch of water per week. Irrigate when rainfall doesn't provide this amount. Extremely warm and windy conditions make greater amounts of water necessary. Ample soil moisture is essential from the time the fruit begins to show color to the end of the harvest season.

In summer-bearing raspberry, avoid irrigating after mid-September. Water fall-bearing raspberries adequately throughout the fruiting period, usually until the end of September.

Overhead irrigation is simplest, but this may promote fruit rots during the harvest period. If possible, try to get only the base of the plants wet during this period by using trickle irrigation or hand watering.

Pruning

Summer-bearing red raspberry

After you have harvested the last fruit, remove all old floricanes on which fruit was borne; these canes are branched and will die. Don't summer-tip or pinch the new canes (primocanes), as you would with purple and black raspberries.

From January through early March, when plants are dormant, remove all weak, broken, diseased, and insect-damaged canes. In the hill system, leave 10 to 12 of the strongest canes in each hill. In the hedgerow system, narrow the row to 12 to 15 inches wide and thin canes to about four to five strong canes (largest diameter), evenly spaced, in each foot of row.

Shorten the remaining canes in both planting systems to about 5½ feet tall. The canes can be tied to the trellis as shown in Figure 1 or Figure 2.

After fruit harvest, remove floricanes once again.

Fall-bearing raspberry

If you're growing plants for both an early summer and a fall crop, remove old canes (floricanes) after the summer crop has been harvested. The fall crop will be borne on the tips of primocanes that grew that season.

When plants are dormant, remove weak or damaged canes and the portion (tips) of canes that fruited last fall. Thin canes as for summer-bearing raspberry.

The summer crop will be borne on the base of canes that fruited the previous fall. Remove these 2-year-old floricanes after harvest in July.

You can grow fall-bearing raspberry for a fall crop only. For this method, cut all canes to ground level when plants are dormant. When the new primocanes emerge, maintain a row width of 12 to 15 inches by removing excess suckers by pruning or cultivation.

Black and purple raspberry

Remove the top 3 to 4 inches of primocanes (new shoots) of these types during the late spring or summer. Top blackcaps to a height of 2 feet and purples to 2½ feet. You usually have to go over the planting several times during the summer. This topping causes the primocanes to produce laterals (branches).

When plants are dormant, remove all damaged canes and those less than ½ inch in diameter. Most plants have at least five canes larger than ½ inch.

Red raspberries:

Don't top the primocanes!

Black and purple raspberries:

Top the primocanes in the spring or summer.

However, if all canes are smaller than ½ inch, remove all but the two or three largest ones.

Lateral branches also should be shortened during the dormant period. Shorten laterals to 8 to 10 inches for blackcaps and 12 to 14 inches for purple cultivars. Cut unbranched canes to 2½ to 3 feet.

After harvest remove all floricanes (2-year-old canes).

Pruning schedule for red raspberries

Summer-bearing

- *Spring/summer.* Remove all primocanes that grow between hills or in row aisles by pruning or cultivation.
- *Summer.* Prune out the floricanes after you've picked all the fruit.
- *Winter.* Remove weak canes. Thin remaining canes to 10–12 per hill or 4–5 per foot of hedgerow. Top the canes to 5½ feet tall.

Fall-bearing

- *Summer and fall crop.* Prune as for summer-bearing, except rather than topping at 5½ feet, top canes in winter by removing the portion that fruited the previous fall.
- *Fall crop only:*
 - *Winter.* Cut all canes to ground level.
 - *Spring/summer.* Remove excess primocanes by pruning out or cultivating in row aisles.
 - *Late summer/fall.* Harvest fruit.

Harvest

Pick fruit every 3 to 4 days. When the berries are ripe, they can be pulled off the receptacle or plug (portion that remains on the plant) quite easily. Pick into a shallow container to prevent the fruit from crushing. To extend shelf life, avoid picking when berries are wet and refrigerate as soon as possible.

Pests

If any diseases or insect pests become a problem—such as anthracnose, powdery mildew, *Verticillium* wilt, fruit rot, or root weevils—check with your county office of the OSU Extension Service for control recommendations.

Use pesticides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
- **Read** the pesticide label—even if you've used the pesticide before. **Follow closely** the instructions on the label (and any other directions you have).
- **Be cautious** when you apply pesticides. **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

For further reading

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Strik, Bernadine C., *Red Raspberry Cultivars for Oregon*, EC 1310 (Oregon State University, Corvallis, revised February 1998). \$1.00

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Published April 1989. Reprinted February 1998.

