

RASPBERRIES

Raspberries belong to the Rose family (*Rosaceae*) and to the genus *Rubus*, as do blackberries, and other caneberries. The plants have perennial roots, many living 40 or more years, while the upright canes are biennial. Fruiting canes die after harvest, but new canes (primocanes) have been growing from the root system to be next year's fruiting wood. The fruit is borne on lateral fruit spurs that are produced on 1-year-old canes.



SITE SELECTION

Plan to control weeds and build up soil tilth a year before planting. Hoe and dig or use a glyphosate product on perennial weeds. Consider planting a cover crop of cereal rye or barley in the planting site. This will both control weeds and add organic matter. Use between 2 to 2½ pounds of seed per 1000 square feet.

Plant raspberries in full sun. Plants grown in shade will remain small and produce tart fruit. Raspberries grow best in loam or sandy soil at least 24 inches deep. Dig in organic matter (compost or manure) 2 feet deep before planting

The soil should be well drained. Excessive soil moisture during the late winter when new roots are growing leads to root rot. To check drainage, dig a small hole and fill with water. The water should be gone within 2-3 hours. If your soil is heavy and has a tendency to remain wet you may have a problem with raspberries. Consider using raised beds at least one foot high.

BUYING, PLANTING AND FERTILIZING NEW RASPBERRIES

Purchase dormant, certified plants at a garden store or nursery. Sucker plants dug from an established planting during the winter when plants are dormant often have virus diseases that can survive during transplanting.

Plant raspberries early in the spring as close to April 1st as possible. Do not use any planting stock that has started to bud out appreciably; it generally does not perform well.

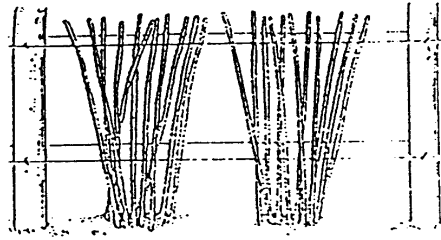
Space plants 2-3 feet apart along a fence or trellis as described under training. Cut canes back to 2-inch stubs after planting. New canes will begin growing from the roots. (Containerized raspberry and blackberry canes do not need to be cut back)

Soon after the roots begin growing, apply 1 pound of ammonium sulfate (21-0-0) per 25-foot row, or 4 pounds of (5-10-10) or (5-10-5) fertilizer. Apply in bands 6 inches from the plants and water in well.

TRAINING

There are three methods of training raspberries: trellis, staked hill, or free standing.

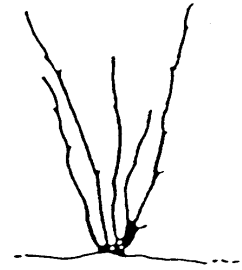
1. **Trellis** - Select sturdy posts and set them no more than 25 feet apart. Attach a #12 galvanized wire on both sides of posts 4½ feet from the ground. Attach two more wires to hooks on each side of the posts about 2 feet from the ground. All canes high enough to reach the upper wires should be tied in the fall of the first year.



2. **Staked hill** - Raspberries can be trained on a single post. Choose five or six of the sturdiest canes and tie to a post. Cut the smaller canes to ground level. Top when the canes reach the top of the post.



3. **Free standing** - Red raspberries can be left free standing by choosing 5 to 7 canes and heading back below 4½ feet.



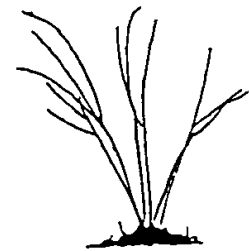
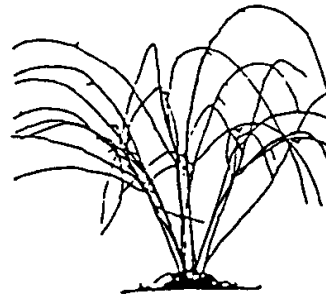
TRAINING FALL BEARING RED RASPBERRIES

Fall-bearing raspberries bear fruit on the ends of new canes in late summer and fall, as well as on the lower portions of these canes the following year. However, fall-bearing red raspberries produce the largest fruit and are the easiest to manage if they are treated as a single crop in the fall. Mow the canes off at ground level each year after the fall crop is picked.

BLACK RASPBERRIES

Black raspberries do not send up suckers between plants. New shoots arise from the base of each plant, and are stockier than red raspberry cane. Set plants 2 feet apart. Plant and fertilize as for red raspberries.

New canes should be encouraged to branch and form laterals by tipping when 30 inches high. The lateral shoots that develop after tipping will form many fruit buds.



Remove old canes soon after harvest each year. Lateral shoots on the new canes should be shortened in March to 6 to 12 inches.

PURPLE RASPBERRIES

Brandywine - Train as black raspberries.

Royalty - Train as red raspberries.

CULTURE IN SECOND AND FOLLOWING YEARS

Pruning

Consistent pruning each year will keep plants from becoming tangled and will produce better fruit. Raspberries bear fruit on young new canes. After bearing fruit, canes become brown and dry and will not produce fruit again.

Cut old canes to ground level as soon as possible after berries are picked. This allows sun to reach the new canes. Keep 4-5 of the thickest new canes per hill and cut weakest canes (under pencil size) to the ground. Cut undesired suckers to ground level. Keep a maximum of 4 to 6 canes to a plant if trained as a hedge.

Before winter, tie the canes up to trellises or stakes. Cut the tops back enough to keep them from whipping in the wind. Cut these tips back to 5½ feet in March.

If you have recently moved into a home with raspberries and are not sure if the plants are June or fall bearing, leave the plants alone until the following spring. Fall bearing raspberries will produce fruit on the lower portion of the cane during the spring.

Fertilizing

In March, apply bands of ½ pound ammonia sulfate (21-0-0) or 2 pounds fertilizer (5-10-10) per 25-foot row. Apply again at the same rate near the end of April. If using other formulations or fertilizer, consult the label for rates for berries.

Harvesting and storage

Pick dry firm fruit as it reaches the peak of color and sugar development. Pick into very shallow containers early in the morning, when the berries are coolest but after the dew is off. Avoid picking wet fruit, as it will deteriorate quickly. Raspberries have a shelf life of only 2 - 3 days in the refrigerator. Wash or rinse just before using, serving or processing.

VARIETIES

A. Summer fruiting:

Canby	Hardest, very sensitive to wet soil, susceptible to virus.
Sumner	Hardy, tolerates wet soil, slightly sour, good cooked.
Meeker	Least hardy, higher in sugar, best for flavor. Not suitable for poorly drained sites.
Willamette	Hardy, dark red fruit, tart but good, excellent cooked.
Skeena	Hardy, sensitive to wet soils, very good fresh or cooked.
Newburgh	Hardy, fair quality.
Latham	Very hardy, poor quality and virus susceptible, not recommended.
Goldenwest	Sweet, golden fruits.

B. Fall bearing red raspberries (double-cropping):

Heritage	Very good, berries are large, firm, bright red. Vigorous canes need support
Amity	Large firm fruit ripens earlier than heritage.
Fallgold	Not very productive, soft but sweet yellow fruit.

C. Purple raspberries:

Brandywine	Large seedy fruit, fair to good.
Royalty	Large seedy fruit.

D. Black raspberries:

Hardier than reds.
Munger is the most widely grown.

RASPBERRY DISEASES

Anthracnose

Anthracnose is a fungal disease. It occurs primarily on raspberry canes, but affects leaves and fruit. Canes show small, circular, sunken spots that are initially reddish to purple, but enlarge and turn gray with raised purple margins. Severe infections may girdle canes, causing dieback.

Leaves and leaf stems may show various degrees of purple spotting and abnormally small berries may ripen unevenly. The fungus is spread by splashing water and it overwinters on infected canes. Black raspberries are susceptible, as are some varieties of red raspberries.

Select resistant red raspberries varieties such as 'Chilcotin', 'Heritage', 'Meeker', 'Nootka', and 'Willamette'. Space plantings, prune and train to provide good air circulation and reduce humidity. Do not over fertilize as excess nitrogen promotes growth of succulent, susceptible tissues. Remove old fruiting canes and all dead or damaged canes after harvest. Do not compost diseased materials.

A late dormant or delayed dormant application (lime sulphur) just before buds open may be adequate to control the fungus.

Verticillium wilt

A fungus disease contracted from the soil. The best control is to avoid planting berries in sites where the disease is apt to be a problem, such as old raspberry or strawberry beds, or places where potatoes, tomatoes and asparagus have grown. If Verticillium wilt is currently or is expected to be a problem, use raised beds with new, non-infested soil. One may also "solarize" the site prior to planting, covering the ground with clear plastic tarp during mid-summer for a period of several weeks.

Viral diseases

Several viruses with leaf symptoms of stunting, crinkling, mottling and vein banding infect raspberry plants. Many are transmitted by the common strawberry aphid. Plant certified stock and choose cultivars that are resistant to viruses. Control aphids because they can carry virus diseases from one plant to another. Renew beds if virus becomes an obvious problem. Avoid setting out new plantings next to old virus-infected plants.

Botrytis (Gray Mold)

Fruit rot is caused by a fungus that attacks many plants. Raspberry leaves, stems, flowers buds and fruit may be attacked. The worst damage is to the fruit, which often develops a powdery-gray fungal growth.

Plant varieties that show resistance to gray mold. Among these are 'Shuksan', 'Totem', and others with erect fruiting habits. Space plants to provide good air circulation and reduce humidity. Avoid overhead watering. Pick off diseased fruit and clean up plant debris. Do not compost plant debris.

PESTS

Aphids

Aphids are small bodied, pear-shaped insects. Aphids on raspberries are typically found on the young growing tips of canes or on the undersides of leaves. Aphids produce honeydew, which attract ants. Plants may also become covered with a dark growth of sooty mold. Honeydew and sooty mold reduce the quality of the berries. Raspberry aphids also transmit raspberry mosaic virus.

Plant certified, virus-free stock. Encourage natural enemies including lady beetles, lacewings and parasitic wasps. Control ants, which may protect aphid colonies from predators. High levels of nitrogen in the foliage encourage aphid reproduction. Switch to a slow-release or low nitrogen fertilizer when practical. Aphids can be controlled with a strong spray of water or with insecticidal soap.

Spider Mites

Spider mites are tiny, eight-legged mites. Several species may attack raspberries, including the spotted spider mite. Spider mites typically feed on the undersides of leaves, causing a yellowish speckling of the leaf. Adults overwinter in plant debris or on canes. Mite problems are worse in hot, dry, dusty conditions. Healthy plants are more tolerant of damage, while drought stressed plants are more susceptible.

Predatory mites and insects help control mites. Avoid use of broad-spectrum insecticides that also kill beneficials. Hosing mites from plants with a strong stream of water provides good control. High levels of nitrogen in the foliage encourage mite reproduction. Switch to a slow-release or low nitrogen fertilizer when practical.

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