

Growing Raspberries in Montana Gardens

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Just about everything the home gardener might want to know about growing raspberries is explained in this MontGuide: Differences among cultivars, how to choose a good site, preparing the ground, planting, pruning and training, fertilizing and irrigating. It also touches on diseases and their control.



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Raspberries grow best below the 7000 foot elevation in full sun on neutral or slightly acid (pH 7 to 6), well-drained loam soils. Soils with higher pH can be deficient in available iron, resulting in the raspberry leaves turning yellow (becoming chlorotic). The canes are subject to rapid desiccation and breakage, particularly in winter, and benefit from a windbreak.

Of the four color classes (red, yellow, black and purple) and two bearing habits (June-bearing and fall-bearing), June-bearing red raspberries are most common in Montana. Reds are among the most hardy of all raspberries and tolerate winter temperatures of -20° to -25° F. Most yellows are color mutations of the reds and can also be quite hardy. Black raspberries are the least hardy raspberries and usually winter kill in most areas of the state where temperatures drop below about -4° F. Purple raspberries are hybrids of the black and the red and are intermediate in hardiness, tolerating temperatures to about -10° F. We recommend them only in areas with suitable microclimate. They have a strong flavor that is preferred for cooking purposes but they are not highly popular otherwise. Most gardeners plant June-bearing types since the growing season is often not long enough for ever-bearing plants to mature a fall crop. Gardeners in the warmer areas of the state may be successful with black and purple raspberries and with ever-bearing types.



ledge to restrict water drainage. Water table should be at least 6 feet deep at its highest point (usually in spring). Flooding for as little as 24 hours can suffocate raspberry roots and wet sites can encourage crown gall and *Phytophthora* diseases.

Cultivated raspberries can contract a number of diseases transmitted from wild relatives. To reduce disease incidence, select a site at least 300 feet from other cultivated or wild brambles. Also, raspberries have some diseases in common with tomato, potato, eggplant, peppers and petunias, so keep the plantings separated by some distance and never follow one of these crops with raspberries.

Preparing the ground

Land that has been previously cultivated produces the best crops. If your land is in sod or old pasture, turn it at least one year prior to planting raspberries and continue to cultivate it to allow the organic material to decompose and to bring weeds under control before planting. If weeds continue to be a problem, cover the planting area for several months with black plastic to smother seedlings. Some weeds, particularly quack grass, may penetrate the plastic and may have to be controlled with a non-residual, systemic herbicide.

All small fruit crops benefit from additional soil organic matter. Before planting, turn under about 1200 pounds (40 bushels) of rotted manure or compost per 1000 square feet of planting area. Apply about 6 ounces of super phosphate (0-20-0) per bushel of manure to boost soil phosphorus levels.

Planting

Obtain certified disease-free plants from a reputable nursery. Local dealers are often the best source of plants. Old raspberry patches are often infected with numerous diseases. Transplanting from these areas is risky and not worth the few cents you save on plant material.

Plant dormant raspberry plants as soon as the ground can be worked in early spring or in mid fall after plants have lost their leaves.

Site selection

Gently sloping sites protect the plants from some types of cold injury by allowing colder air to drain down-slope, away from the plants. Always plant on the slope and never at the top of the hill, where wind damage is most severe, or at the bottom, which becomes a cold air pocket.

Raspberries need plenty of moisture but do poorly in wet soils. Be sure your subsoil is well drained with no hardpan or

Set the plants as deeply as they grew in the nursery, spaced about 2 feet apart in rows spaced 5 feet apart. Cultivate regularly to control weeds.

Plants of red and yellow raspberries will sucker and grow into a bed about 3 to 4 feet wide. Maintain this width by careful pruning since wider rows make it difficult to harvest fruit from inside plants. Black and purple raspberries do not sucker as do the reds and are maintained in individual hills.

Pruning

Raspberries need regular pruning to keep the planting productive. How you prune them depends upon the type of raspberries you have.

June-bearing red and yellow cultivars produce vegetative canes (primocanes) the first season. These canes cease shoot growth in late summer and form flower buds from their tips to their bases. These buds bloom and fruit the following spring – flowering canes are called "floricanes". The canes fruit only once and die soon after harvest. While they are fruiting new canes arise from the base of plants and form buds for next year's crop. Remove dead canes during early spring pruning the following year. This is done before the buds swell.

During spring pruning remove all dead, damaged and weak canes (Figure 1A). Thin the remaining canes to stand about 6 inches apart in the row. Let the row width slowly increase to about 3 to 4 feet so that the row becomes a "bed."

Fall-bearing red and yellow cultivars grow similarly to the June-bearing types but produce two crops each season. Vegetative canes grow the first season and set their flower buds in early fall like the June-bearing types. Buds on the lower parts of the canes remain dormant but buds on the upper 6 to 10 inches of cane bloom immediately, producing the fall crop at the tips of current season's wood. This portion of the cane dies after fruiting but the lower portion overwinters and its buds produce the first crop the following year. So, the first crop of the season is produced on the lower parts of one-year-old canes and the second crop of the season is produced on the upper parts of current season canes. After fruiting, the remaining part of the cane dies and is removed during spring pruning. Thin fall-bearing plants as you would June-bearing plants.

June-bearing black and purple raspberries are pruned somewhat differently than red and yellow cultivars because of their different growth habits. In mid summer, pinch the tips of the current season's canes to about 30 to 36 inches in height. This is called "summer topping" and it forces formation of strong lateral shoots. These shoots cease their growth in late summer and form flower buds for next year's crop at that time. During spring pruning, remove all old fruited canes from the previous season and shorten the laterals on new canes to about 16 inches in length (Figure 1B). These will form fruit in summer and the entire cane will die, to be removed the following spring and replaced by new canes arising from the crown.

There are no good, common ever-bearing black and purple raspberry cultivars.

Training

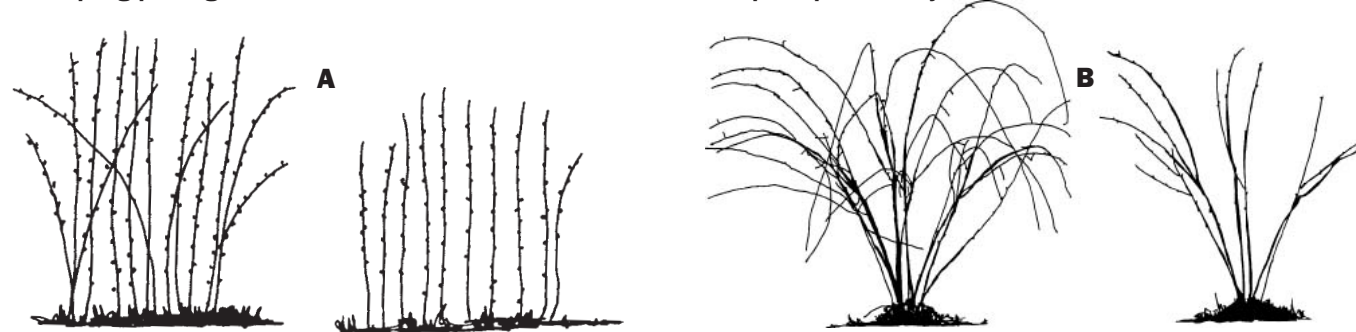
Common red raspberry cultivars grow erect but sometimes droop into the aisles making harvest difficult. Unsupported canes are also prone to damage from wind-whipping. To make a trellis, sink two strong posts into the ground 8 feet apart and attach a cross piece 30 inches long to each post about 40 inches above the soil line (Figure 2). Fasten a strand of electric fence wire to each of the two ends of one crosspiece and run them the length of the row to fasten them to the cross piece on the opposite post. Train the canes to grow up between the wires to keep them from drooping too far out of the row. Loosen one end of each wire at the end of the season to prevent the wires from contracting in winter and pulling the posts out of the ground.

An alternative support is to fasten several canes to a strong stake but this will necessitate removal of the tie during pruning (Figure 3).

Fertilizer

Raspberries need ample amounts of the major nutrients to produce good crops, since larger diameter canes yield more fruit. Broadcast a complete fertilizer such as 10-10-10, or another fertilizer with equivalent nitrogen, to your patch early each spring at the rate of about 6 to 8 pounds per 100 linear feet of row. Should you prefer to use an organic fertilizer be sure to apply it at rates equivalent to those given above. Do not fertilize later than mid June.

FIGURE 1. A) Red and yellow raspberry plants before and after pruning. B) Black or purple raspberry plants before (left) and after spring pruning. Note that laterals have been shortened for best plant productivity.



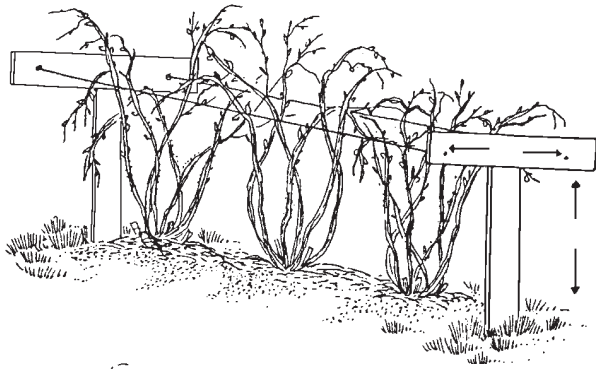


FIGURE 2. (above) Red and yellow raspberries can be supported by a simple trellis. Be sure to loosen wires in fall to reduce post heaving in winter.

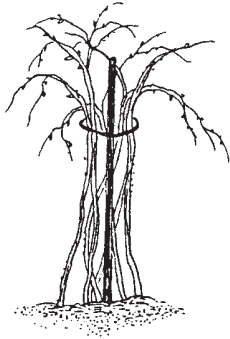


FIGURE 3. (left) Several canes of red or yellow raspberries can also be supported by a single stake.

Iron deficiency can be a problem in much of Montana. Though the soil may contain enough iron, the compound is chemically bound and unavailable for plant use. Iron deficiency symptoms appear as normal-sized yellow leaves. Often, the mid vein and lateral veins remain green while the tissue between the veins yellows. If this appears in your patch, apply an organic mulch and use an acid fertilizer such as ammonium sulfate to reduce the alkalinity. If the problem persists apply chelated iron according to directions on the label.

Irrigation

Irrigated plants are usually more vigorous and productive than those not irrigated. Begin seasonal irrigation when you begin to irrigate your vegetable garden and apply about 1 to 2 inches of water every week through harvest. Adjust your irrigation to provide more water, up to perhaps 2 to 2.5 inches per week, during hot, windy weather. Adequate moisture will keep the soil moist (not soaked) to a depth of 10 to 12 inches, where 70 percent of the raspberry root system is located. Irrigate the soil, not the foliage. Wet fruit will rot rapidly before harvest.

Supplying adequate water is particularly critical during bloom and fruit formation. Inadequate amounts at these times can cause poor fruit set, malformed fruit and crumbly fruit.

Strongly decrease or eliminate irrigation between the end of harvest and autumn leaf fall to allow the canes to harden for winter. After leaf fall and before the soil freezes, supply the plants with 1 inch of water per week to fill their internal water reserves and decrease the amount of damage from winter desiccation.

Harvest

Raspberry harvest usually begins in early July and continues through early August, depending upon the cultivar and location. These fruit are the most delicate of any small fruit. Ripe fruit can deteriorate in a few hours if weather is hot and humid. Harvest the fruit early in the morning and cool it immediately to protect quality. Holding raspberries in containers larger than a half pint results in the fruit on the bottom being crushed by the weight of the fruit above it.

Winter damage

Late fall watering as described above will help reduce the incidence of winter drying, especially in the tips of the canes.

Raspberry canes will dehardening and can become active in late fall and mid to late winter if the air temperature remains above about 41 degrees F for several days. The sudden hard freezes that usually follow kill the active tissue. Because the upper parts of the cane break dormancy first they are the most susceptible to this type of injury. Winter-damaged canes often produce undersized yellow leaves and small fruit. Later in the summer these leaves become "bleached." You can reduce the chances of this happening in your patch by wrapping the canes with burlap (if you have only a few) or by building a temporary fence to shade and cool the plants. This keeps the canes cold and the soil near them frozen, both of which reduce injury. Remove the burlap plant wraps and the fence by late March or early April.

Abiotic problems

Abiotic problems are those not caused by a living pathogen or animal. They are also called physiological diseases because they arise following an alteration of the physiology of the plants. Table 1, below, lists symptoms and some possible causes.

TABLE 1. Abiotic problems of raspberries

| Plant part affected | Possible cause |
|---|---|
| Canes | |
| Death of whole cane or individual buds before spring leaf out | Low temperature |
| Sudden death after leaf out | Low temperature damage to vascular tissue |
| Breakage, abrasion, desiccation | Wind |
| Wilt | Excessive heat, drought, or wind |
| Fruit | |
| Brown, dry | High sunlight or high temperature |
| Crumbly | Drought |
| Off-colored, white | Sunscald, high UV exposure |
| Leaves | |
| Torn, shredded; no insects apparent | Wind, hail |

Weed control

Weeds compete with the raspberry canes for water, nutrients and sometimes sunlight. Home gardeners control weeds by careful hoeing. A 4-inch layer of organic mulch controls many weeds and keeps the soil frozen in winter, reducing the incidence of plant heaving. Clean straw, wood chips, saw-dust or leaves insulate the roots from extreme cold and conserve soil moisture as well. However, rodents sometimes burrow through the mulch in winter and damage the raspberry canes.

Cultivars

June-bearing Red Raspberries

Boyne: A mid-season berry originated in Manitoba, Canada. It is extra hardy and bears large fruit on dwarf canes. Boyne is an excellent plant maker and a heavy cropper, bearing a week or ten days before Latham. The fruit are succulent, large and dark red.

Canby: A moderately hardy, mid-season, vigorous producer. It is very productive but makes fewer canes per hill than most reds. Canes are nearly thornless and the fruit are light red, high-capped, firm and non-crumbling.

Gatineau: A very hardy, very early raspberry from Ottawa. The berries are larger than many early red types. Plants are low-yielders, and fruit lack flavor.

Hilton: A vigorous, productive and usually winter-hardy cultivar. The canes are semi-erect and produce medium red, very large, mid-season fruit. Hilton is one of the largest of all red raspberries. Berries are difficult to pick unless fully ripe.

Killarney: Another Canadian cultivar similar to Madawaska, this one is a very hardy mid-season cropper with large, excellent quality fruit. It may develop pollination problems after three to four years, resulting in crumbly fruit.

Latham: One of the most popular and dependable mid-season raspberries. The canes are very vigorous, productive and cold-hardy. Latham is a late-season cultivar with a fairly long harvest season. Berries are extra large and fair quality for fresh use and/or freezing.

Madawaska: A very early berry, this is one of the hardest cultivars. The berries ripen about one to two weeks earlier than Latham. Madawaska is a moderate producer of fair-flavored fruit.

Newburgh: This cultivar bears a good quality light red berry. Plants are very productive, resist root rot and are relatively hardy. The mid season berries are firm.

Fall-bearing Red Raspberries

Fall-bearing raspberries are becoming more popular. Because they produce fruit on current growth, the gardener need not be so concerned about cane hardiness. The canes can be pruned to the ground in the fall, mulched and left for the winter without additional protection. They must be grown where there is a moderate to long growing season to ripen the fall crop.

Fall Red: This bears a small crop in summer with a large crop in the fall. Berries are large and have excellent flavor. The fruit are good fresh, frozen or canned.

Heritage: An excellent fall-bearing red raspberry. It is very vigorous and suckering is prolific. Canes usually do not require support. The fall-crop berries are medium-sized and very firm.

September: This is one of the best fall-fruiting cultivars. Berries are medium size and bright red. The spring crop ripens early and has fair quality.

Black Raspberries

Blackhawk and **Cumberland** are two types that may be grown in the warmer areas of the state.

Purple Raspberries

Brandywine, **Sodus** and **Royalty** are some common purple raspberries, again for the warmer areas of the state.



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