

Raspberry

The red raspberry is an excellent fruit for the home garden. The fruit has a delightful flavor and is suitable for using fresh, frozen, canned or in jam. Growing red raspberries is a very satisfying pastime. Success depends upon meeting the basic needs of the plant, which are as follows:

Exposure

Take advantage of a windbreak if possible. Cold winter winds dry out the canes and under extreme conditions kill them. Canes too close to a windbreak, however, may be damaged by large snowdrifts.

Soil

Good soil is important. To grow vigorously, raspberries require a deep, well-drained loam or sandy-loam soil, well supplied with humus. Adequate soil moisture is essential for good yields. Poorly drained clay soils are not suitable because raspberry roots will not grow in a continuously wet soil.

Soil Preparation

A raspberry planting should produce fruit for at least 8 -10 years. Therefore, the soil must be well prepared. Organic matter that is worked into the soil provides plant food, improves the physical properties of the soil, and increases the water-holding capacity. If the organic matter content of the soil is low, improve it prior to planting by applying a generous amount of manure or other forms of organic matter such as peat moss. A green-manure crop such as oats or buckwheat, grown and incorporated into the soil the year prior to planting, is an excellent way to add organic matter. If the soil is acidic, apply agricultural limestone prior to planting to raise the soil pH to 5.7 - 6.0.

Time of Planting

Planting in early spring is recommended. This gives the plants the maximum time to become well established before hot dry weather arrives. Raspberries can also be planted in October. The advantage of fall planting is that there is frequently more time for the preparation of soil and the plants are ready to grow as soon as conditions in spring are favorable.

Varieties

The list of recommended varieties is frequently revised so contact your nearest agricultural office before buying. Varieties currently recommended are:

Nova - Midseason. Winter hardy, nearly spineless, erect canes. Good yield. Fruit bright, medium size, good flavor, somewhat acid. Good vigor in the planting year. RESISTANT to late yellow rust (see Diseases). Suitable for the fresh market, pick-your own, and freezing.

Festival - Midseason. Very winter hardy, nearly spineless, erect canes. Good yield. Fruit bright, medium size, good flavor. VERY SUSCEPTIBLE to late yellow rust. Suitable for fresh market, pick-your own, and freezing only if good control of rust is achieved.

Carnival - Midseason to late. Moderately hardy and productive. Canes tall, spineless, susceptible to powdery mildew. Fruit medium size to large with very good flavor. SUSCEPTIBLE to late yellow rust.

Matsoui - Midseason. Winter hardy, moderately productive. Canes short, nearly spineless. Fruit bright, medium size, with good flavor. Susceptible to late yellow rust.

Royalty - (Purple raspberry) Late season. Moderately hardy. Large purple fruit, mild pleasant flavor. Not fully tested but worthy of as malitrial.

Plant Stock

Plant certified stock. Several nurserymen specialize in the production of certified disease-free raspberry plants. They co-operate with the Provincial and Federal Departments of Agriculture in the production of healthy stock.

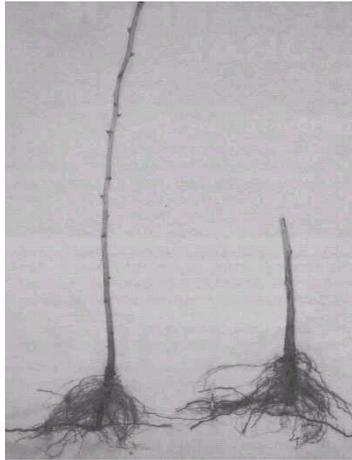


Fig. 1 - A dormant year-old red raspberry plant (left) that is pruned for planting (right).

Type of Plant

Use strong, dormant suckers which have completed one season of growth (Fig. 1). Young suckers that develop early in the growing season can also be used if they are well rooted. If the weather is warm and dry, these young succulent plants will require frequent watering until they start to grow.

Planting

Leave about 2 meters between rows and 60 cm between plants in the row. If you wish to cultivate in both directions, plant in 'hills' instead of rows and space the hills about 2 meters apart each way. Set the plants slightly deeper than they were growing previously. Spread out the roots before covering with soil. Firm with the feet. Do not allow the plants to become dry during planting.

Weed Control and Cultivation

Never plant in soil in which couch grass is growing. Chemicals, available for the control of most weeds (refer to the Atlantic Crops Committee Publication 1013), are not recommended for the home garden. Good weed control can be achieved with organic mulches (see MULCHING) and with the use of garden implements. The important fact to remember is that the raspberry is a shallow rooted plant so the depth of cultivation near the plants should not exceed 5 cm. DISCONTINUE cultivation early in September so that the canes may properly mature prior to cold weather.

Use of Fertilizer

A general guide for the use of commercial fertilizer on an established planting is 1.0 kg of 10-10-10 or 6-12-12 spread over 12 square meters (i.e. along both sides of a 6 m row at 2 m row spacing). If a more concentrated fertilizer such as 17-17-17 is used, reduce the amount proportionately. Fertilize in the spring

when growth commences. To avoid winter injury, DO NOT fertilize late in the growing season.

Mulching

Newly set raspberry plants, planted in a good soil, will not require fertilizer during the first growing season. Little commercial fertilizer will be required if a good layer of compost is annually applied after the growing season (late October) or in the spring. The compost will also serve to control weeds and conserve moisture in summer, which are keys to good production. Alternative mulches such as sawdust or wood chips, applied over moist soil to a depth of 10 cm, will be beneficial as long as spring fertilization is not neglected.

Systems of Training

The most common system of training is the 'hedgerow', in which the rows are kept to a width of 40 cm. In the fall or early spring the old canes are removed and the young canes are thinned to about 10 cm apart, removing the weakest.

The recommended system is the 'stool' system, a modification of the hedgerow that allows better control of weeds, diseases, and insects. The planting distances are the same but suckers are not allowed to fill the row. Only 6 or 8 strong canes are kept at each planting point (Fig. 2). These are renewed each year from the leader buds that form at the base of the old canes. The renewal canes developing early in the season generally produce the largest crop the following year. Remove all other suckers.

The 'hill' system is useful in a small garden plot where a small power cultivator is used. Plants are spaced 6 feet apart both ways and each one is allowed to develop into a clump of 8 to 10 canes, usually supported by a stake. With this system, very little hand hoeing is needed and the fruit is easy to pick.

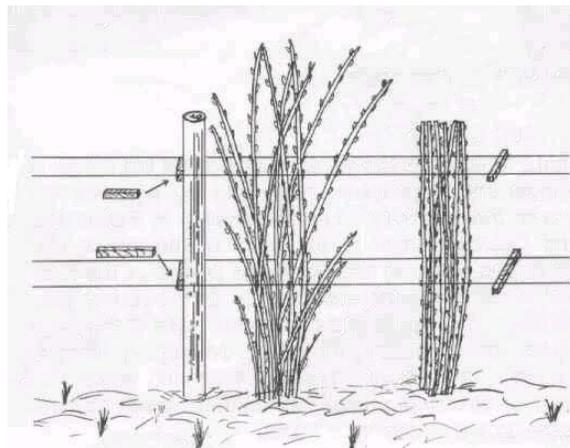


Fig. 2 - Pruning and support for the stool system of growing red raspberries.

Supports for Canes

Most varieties of red raspberries require support to prevent cane breakage and to make harvesting easier. There are many training systems involving posts, galvanized wire or synthetic cord (Fig. 2).

Use a wooden post every 6-9 m in the row and attach 0.6 m long spreaders, made of 2 x 4 inch wood, at heights of 0.7 and 1.3 m. Galvanized wire or synthetic cord is attached to the ends of the spreaders. This system is suitable for either the hedgerow or the stool system of training. In the fall, tie the canes in bunches for further support. Untie the canes in the spring. In the summer, just prior to fruiting, tie the canes to the wires to make harvesting easier and to allow the new canes freedom of growth in the center of the row.

Pruning

The red raspberry root system is perennial. Each year it sends up new shoots which are biennial. These shoots (canes) complete their vegetative growth the first season, bear fruit the following summer, then die. New shoots arise from leader buds at the base of old canes and from buds on the underground stems.

Remove the old canes, at ground level, as soon as harvesting is completed. Their removal helps to control cane diseases by improving air circulation and by getting rid of a possible source of infection.

Head back the canes in the spring. Head back just far enough to make harvesting easy. If you have the canes supported, there is no advantage in excessive heading back.

Harvesting

During warm weather pick every other day. An inexpensive harvesting aid such as the one shown in Fig. 3 is easy to construct and will free both hands for the picking operation. Cup a few berries in the hand at a time then carefully place them in the container. Freshly harvested berries stored immediately at 1.54.50C will keep well for 4 or 5 days.

Pest Control

A good measure of insect and disease control can be attained through proper pruning and sanitation. The removal and disposal of old canes following harvesting removes a primary source of pests and improves air circulation and growth of the new canes. Improved air circulation hastens the drying of plants after dew or rain and prevents the long wetness periods that favor disease development. Of great importance is preventing the planting from becoming dense; prune to the proper number of canes (6 - 8 canes per stool, or 10 - 12 canes per meter of hedgerow).

These measures, in many cases, will give adequate disease control for the home garden. For chemical controls, consult the Home Garden Protection Guide for Raspberries - ACC Pub. 1003.

Diseases

Mosaic (Virus)

Causes a mottling of the foliage especially in spring. Tissue along the veins of leaves becomes yellowish and the area between the veins puckers. Infected plants become more and more stunted each year the fruit is small and crumbly. Spread by aphids. Dig out and destroy infected plants.

Leaf Curl (Virus)

Causes the foliage to become small, tightly curled and slightly yellowed. Fruit are small and crumbly. New canes are stunted and have many branches. Spread by aphids. Dig out and destroy infected plants.

Anthraxnose (Fungus)

Small grayish, circular spots with purple borders appear on young canes in July and August. Spots may become numerous, vary in size, and run together to form large spots. Similar spots appear on foliage. Severe infections cause the bark to crack. Fruiting laterals, fruit stems and green berries may also become infected. Severely infected canes weaken and die.

Spur Blight (Fungus)

Purplish to chocolate brown areas on young canes directly below the point where the leaves are attached. Infections may spread to cover the developing bud, leaf stem and leaves. Leaves in the infected area drop off. As canes mature and become dormant, lesions turn grayish and are peppered with minute black fruiting bodies of the causal fungus. Infected plants are weakened and susceptible to winter killing.



Fig. 3 - A convenient picking tray for raspberries that can be constructed to support 12 pint containers.

Botrytis Cane Blight (Fungus)

This disease is most destructive in wet seasons in plantings where growth is too dense. Large purplish lesions develop on young canes and as the canes mature, the lesions become nearly white in color and exhibit a 'watermark' symptom. Thin, black *Botrytis sclerotia* (hard resting bodies) develop just under the bark. In the spring and summer, sclerotia produce spores that are capable of infecting the new canes.

Powdery Mildew (Fungus)

Infects young leaves and the tips of developing canes. Infected leaves curl upward and become deformed; infected tips become stunted and twisted. A powdery white fungal growth covers the diseased leaves and stems.

Late Yellow Rust (Fungus)

Clumps of orange-colored spores on the undersides of leaves and on the fruit. If severe, infected leaves become yellow and drop off and infected fruit become unmarketable. One stage of the disease occurs on white spruce, so proximity to this species should be avoided. Some varieties (e.g. Nova) are highly resistant to the disease while others, particularly Festival, are highly susceptible.

Crown Gall (Bacterium)

Galls, or knots, ranging from the size of a pea to that of an apple, on the roots and crown. The galls turn from cream to brown and take on a blackish warty appearance with age. Plants become stunted and the fruit is small. There is no effective treatment for plants with this disease although proper feeding to promote good growth will partly offset the effects. Crown gall is effectively prevented by using certified plants, planting in soil where the disease has not been previously noted, and only cultivating shallowly to avoid injuring the roots and crown.

Verticillium Wilt (Fungus)

Appears during warm dry weather. Leaves wilt, turn yellow and drop. Leaf drop progresses from the bottom upward until only a few leaves are left at the top. The cane usually becomes dark blue or purple. Avoid planting raspberries after other susceptible crops such as potatoes, tomatoes, and strawberries.

Fruit Rots (Fungi)

Infected fruit develops a watery soft rot which may become overgrown by a dark grey fungal mass. Warm wet weather at harvest time favours its development. Develops rapidly on overripe berries. Frequent and thorough picking is very important in control.

Insects

Crown Borer

Moths which look like wasps come out of the canes in August and September, mate and lay eggs on the leaves the next day. Larvae develop in September and October, crawl to the base of the canes and spend the winter in blisters on the portion of the cane that is just below the soil surface. In the spring, they burrow into the bark and on into the base of the cane where they destroy the new developing shoots. Larvae remain in their burrows a second winter. In July, 2 cm long caterpillars tunnel upward before pupating and emerging as adults.

White Grubs

Larvae of June beetles. They feed on roots and thus kill the plant. Large, curved, legged, whitish grubs 2.5 cm or more long. Frequently found in land that was in sod the previous season.

Wireworms

About 2.5 cm long, thick as a pencil lead, rather hard, yellowish-brown larvae of the click beetles. Feed on raspberry roots, and when numerous seriously stunt newly set plants.

Cane Borer

A 1.5 cm long female beetle that girdles the tip of a raspberry cane with two rows of holes between which she lays an egg. The wilted tip is the typical sign. The larva bores into the cane pith and overwinters near the point of girdling. During the next season the larva bores down the length of the cane and spends the winter there. Adults emerge from the basal portion of the cane in June.

Raspberry Fruit Worm

Yellowish-brown beetles 4 mm long feed on the foliage and flowers, and lay eggs near the blossom clusters and on the green berries. Young larvae, 6 mm long, light yellow in color, enter the blossom or young fruit and feed on the fleshy core.

Two-Spotted Spider Mite

The two-spotted spider mite feeds on the undersides of raspberry leaves. Adults are 0.5 mm long and their color varies from pale greenish yellow to dark crimson. They are usually marked with two dark spots. Heavily infested foliage has a tangle of silken webs on the underside and is coppery bronze in appearance. Large numbers can defoliate raspberries leaving them in a weakened state.

Weevil

The adult is a reddish-brown or blackish snout beetle about 2.5 mm long. The female lays an egg in the fruit bud and then cuts the stem just below the bud so it either falls or is left hanging by a bit of tissue. The larvae develop in the buds.

For further information contact your local agriculture office.