



GROWING RASPBERRIES

ON THE NORTHCOAST

Raspberries are generally best adapted to the cool coastal climates of California. One exception appears to be the Bababerry variety, which seems to tolerate the heat of the southern and central valley portions of California. Raspberries generally require deep, well-drained soils and adequate summer irrigations in order to produce consistent crops.

Raspberry cultivars can be divided into four groups, based on their fruit color. There are red, black, purple and golden colored raspberries. The red raspberry is by far the most common.

Red cultivars

Red fruiting berries can be divided into two types:

1. Summer-bearing cultivars are the most common. These produce canes that are biennial in habit, growing one year and producing fruit the next.
2. Fall-bearing cultivars produce canes that bear fruit on the top portion of the current season's growth in late Summer and Fall. If these canes are left to overwinter, they will bear fruit in the Spring on the lower portions that did not fruit the previous Fall.

Summer-bearing cultivars

Canby

Fruit is medium to large, bright red, and firm. Plant is susceptible to root rot.

Chilcotin

Fruit is large, bright red, fairly firm and is harvested over a long season. Plant is very productive but susceptible to root rot.

Chilliwack

Fruit is large, bright red, firm, excellent flavor, resistant to fruit rot. Canes are vigorous, spine-free, hardy, with some fruit rot resistance.

Comox

Fruit is large, medium red, firm, fair flavor, and resistant to fruit rot. Canes are productive, but highly susceptible to root rot.

Haida

Fruit is medium sized, medium red, firm, good flavor. Canes have some root rot resistance.

Meeker

Fruit is medium to large, medium to dark red, firm, good flavor.

Newburgh

Fruit is large, light red in color, medium firm; canes are resistant to root rot.

Nootka

Fruit is medium sized, medium red, firm, very productive; canes are susceptible to root rot.

Skeena

Fruit is medium to large, bright red, firm, good flavor, has a long harvest season; canes are highly susceptible to root rot.

Sumner

Fruit is medium sized, medium red, firm, sweet, excellent flavor. Most tolerant variety for heavy, poorly-drained soils.

Tulameen

High-yielding, excellent-flavored variety with very large, firm berries. Very long harvest season.

Willamette

Fruit is large, dark red, fairly firm, mild flavor. Canes are susceptible to root rot.

Fall-bearing cultivars

Amity

Fruit is medium sized, medium dark red, very firm, good flavor. Canes are susceptible to root rot and almost spine-free.

August Red

Early maturing. Fruit is medium, bright red, soft, good flavor, self-supporting.

Bababerry

Very large red fruit, soft, good production. Canes tolerant to summer heat.

Fall Red

Fruit is small, red, fairly firm, good flavor. Plants are vigorous and productive, but require support.

Heritage

Large Fall crop ripens in August. Fruit is medium, red, very firm, attractive, very mild flavor. Sturdy canes require no support.

Indian Summer

Fruit is red, very aromatic, crumbles frequently, good flavor, productive and vigorous.

Redwing

Ripens two weeks earlier than Heritage. Medium size, red, firm, good flavor.

September

Fruit is medium, bright red, firm, attractive, good quality.

Summit

Matures about 10 days earlier than Heritage. Fruit is similar in size and firmness, but slightly darker.

Golden-yellow cultivars

These raspberries are simply mutants of red raspberries and except for fruit color, they have all the characteristics of the red raspberry.

Fall Gold

Ripens ten days prior to Heritage. Fruit is yellow, moderately firm, very good flavor, with moderate to poor production. It often is virus infested.

Graton Gold

A sport of Heritage with reddish-golden color.

Black Raspberries (Black caps)

Black cap raspberries produce fruit on arched or trailing canes and new canes are not produced from old roots, they develop only from the base of old canes.

Munger

Fruit is small, blue-black, firm, good flavored and matures in July; canes are intolerant of wet soils.

Bristol

Inferior yield and quality compared to Munger; small black firm fruit - midseason.

Cumberland

Inferior yield and quality compared to Munger. Small black fruit, good flavor.

Purple Raspberries

These are hybrids of red and black raspberries. Their growth habit is most similar to that of black caps. Fruit is excellent for pies because of its distinctive flavor.

Royalty

Summer-bearing, very large, soft when fully ripe, fruit that is sweeter than Brandy wine. Highly productive. Suckers are produced from the roots like red raspberries.

Brandywine

Summer-bearing, large, round, reddish-purple, tart. Plant habit is similar to black caps, but more vigorous. No root suckers are formed. One of the best for pies.

Amethyst

Summer-bearing, fruit large, oval, purple with shiny skin, firm, excellent for desserts. No root suckers are formed. Very productive.

Success

Summer-bearing purple, sweet, good flavored fruit; vigorous canes.

FRUITING CHARACTERISTICS OF RASPBERRY CULTIVARS

Cultivar	Yield (T/A)	Size (g)	Firmness	Brix	Titrateable Acids	Seed #/ 5g ^Z	First Pick	Length of Season	Spines? (Y/N)
Amity	2 - 3	2.9-4.6	288	13	1.7	129	8/16	21	N
Centennial	8	3.4-4.2	187	9	?	?	6/25	40	Y
Chilcotin	8-11	3.5	?	9	?	?	6/23	44-77	Y
Chilliwack	7-9	3.7	212	12	2.4	87	6/25	36	N
Comox	13-14	4.5	198	9	2.6	120	6/18	36-39	N
Fairview	8-10	?	?	?	?	?	6/20	30	Y
Heritage	2-3	2.7-3.0	197	12	2.5	169	8/20	28-55	Y
Meeker	9-10	3.5	171	11	1.8	128	6/25	36	Y
Skeena	8-11	3.6	?	11	?	?	6/20	39-42	N
Summit	2-3	3.0	263	13	2.1	150	8/10	35	Y
Tulameen	12-13	5.4	?	11	?	?	6/25	50-56	Y
Willamette	7-8	3.5	194	9	2.5	128	6/20	37-44	Y

^ZNumber of seeds in 5g puree. SOURCE: Bernadine C. Strik, Extension Horticulture Specialist, Oregon State University

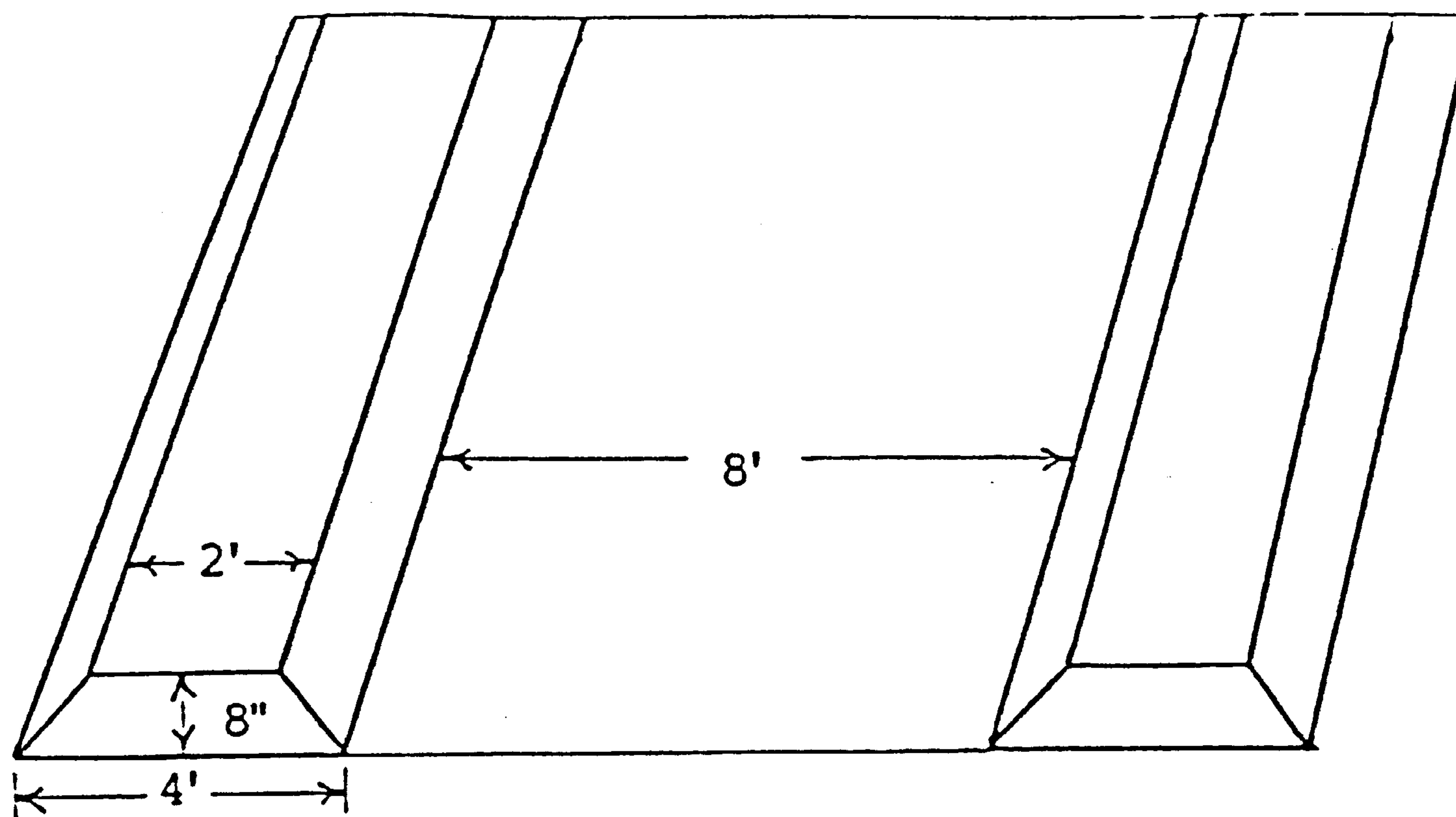
Propagation

Most raspberries develop a proliferation of shoot suckers from the root system. These can easily be broken off to propagate plants. It is best, however, 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.

Soil

Raspberries grow best when the soil pH is between 5.5 and 6.5. A good supply of organic matter in the soil improves aeration and drainage and it increases water-holding capacity. Apply partially decomposed organic matter in the Summer or Fall of the year before you plant, either as manure, compost, chopped hay, straw, peat moss, etc. This material should be worked into the ground at a rate of approximately 1 pound per square foot. All raspberries should be grown on raised beds. Raised beds can be prepared by shoveling soil into a berm and flattening it off into whatever length desired. These berms should be approximately 2 feet wide and 8-10" high. Raised beds help prevent problems caused by poor drainage associated with heavy Winter rains, heavy soils, or too much summer irrigation.

APPROXIMATE DIMENSIONS OF CANE AND BUSH BERRY RAISED BEDS



Planting

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

Plant from late Fall through early Spring. Dig a shallow hole large enough to accommodate the roots. Prune off any damaged root parts. Spread the root mass and set the plant so that the highest point of the attachment of the roots to the cane is 1-2" below ground level. Cover the roots with soil and press firmly to remove air pockets. Water the plants to settle the soil. Cut the canes on newly set plants to 6" at planting. In purple and black raspberries, remove the section of old cane remaining after propagation.

If possible, run rows in a north-south direction to get equal sun exposure to both sides of the row.

Planting Systems

In the hedgerow system, space red raspberry plants 2-3' apart in the row with 6-8' between rows. Allow new primocanes to develop and spread along the row. Don't let them spread wider than 12-15". The hill system refers to a cluster of canes that develops around a single plant. Space plants 3' apart within the row, with 6-8' between rows. Confine hills to a diameter of about 18", removing all suckers that develop between hills or in the aisles.

Black and purple raspberries generally need more space than red raspberries. Set plants 3-4' apart in the row, with 8-10' between rows. Some purple raspberries produce root suckers. Keep plants confined to hills about 2' in diameter.

Trellis Systems

Raspberries need a supporting structure to hold the canes upright in most cases. If you have only a few plants growing in the hill system, tie the canes to a stake 2-4" in diameter with heavy twine. In the hedgerow system, wire is supported between posts placed approximately 20' apart at regular intervals. The posts should extend 6-7' above the ground. A 3 or 4-wire system is usually easiest to manage. The two lower wires are used in both systems approximately 30" above the ground and on each side of the post. These wires prevent the canes from flopping over into the aisle.

In the 3-wire system, a single wire is placed approximately 5-6' above the ground where canes can be attached. In the 4-wire system, an 18"-wide crossarm is used to maintain canes within the row.

Fertilizing

Apply manures, composts, or other organic fertilizers in the late Fall or early Winter at a rate of approximately 25 pounds per 100 feet of row. Apply fertilizers from a bag in early Spring when new growth is starting, at a rate of 4-6 pounds of 10-20-20 per 100 feet of row.

Fall-bearing raspberries have a requirement for an additional fertilizer application before fruiting. When new canes start to bloom, spread 1-2 pounds of ammonium nitrate, blood meal, or fish meal per 100 feet of row.

Irrigation

Raspberry plants require about one inch of water per week from June through September, and about half that amount early in the Spring or in the Fall when the weather is cooler. Extremely warm and windy conditions make greater amounts of water necessary. Essentially, raspberries should be kept moist at all times without saturating the soil and causing the roots to rot.

If raspberries are fruiting during warm weather, daily irrigations may be required. Generally, however, irrigations are applied two times per week. Overhead irrigation is not the best for raspberries because it promotes fruit rot. The best systems are mini-sprinklers, bi wall, T tape, or double drip lines that have numerous emitters (spaced 6-12" apart) to wet an entire band underneath the foliage.

Pruning

Summer-bearing red raspberries

After harvest, remove all floricanes on which fruit was borne.

These canes will die soon. Do not tip or pinch primocanes as you would with purple and black raspberries. In the dormant season, remove all weak, broken, and disease- 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 15" wide and thin canes to about 4-5 strong canes per foot of row. Again, in the dormant season, shorten the remaining canes in both planting systems to about 6'. Tie the canes to the trellis system if necessary.

Fall-bearing varieties

You can grow fall-bearing raspberries for a fall crop only. For this method, cut all canes to the ground level when plants are dormant, usually in the early Spring before growth begins. When the new primocanes emerge, maintain a row width of 12-15" by removing excess suckers that grow outside of the row. These canes will develop a crop in the Fall on the tips of those primocanes.

If you would like to have an early summer crop from those same canes, they can be left to overwinter and will fruit the following Spring on the lower portion of the canes that did not fruit last year. In the dormant season, remove weak or damaged canes and the tips that fruited last fall. Again, thin them to 4-5 strong canes evenly spaced per foot of row.

Black and purple raspberries

Tip the primocanes by removing 3-4" of new growth during the late Spring or early Summer. Top black caps to a height of 2' and purples to 2-1/2'. This usually needs to be done two or three times during the summer. Primocanes produce many laterals.

During the dormant season, remove all damaged canes and those less than 1/2" in diameter. Lateral branches should be shortened during the dormant season also to approximately 8-10" for black caps and 12-14" for purple cultivars. Cut unbranched canes to 2-1/2 - 3 feet. After harvest next Summer, remove all floricanes down to the ground.

Pests (Weeds, Insects, and Diseases)

Weeds

In the year before you plant, eliminate all perennial weeds and don't permit weeds to go to seed. This can be accomplished either through a combination of herbicides or by very diligent cultivation.

The best method to control weeds in raspberries is to apply a heavy layer of mulch, approximately 2-4" deep surrounding the plants and maintain this mulch throughout the life of the planting. Good materials to use include sawdust, shredded bark, bark or wood chips, newspaper, grass clippings, etc. Raspberries must be maintained totally weed-free in order to grow and fruit properly.

Insects

Spider Mites - extremely small creatures that cause the leaves to turn stippled or yellow,

eventually becoming totally yellow, then dry and brown, which reduces the vigor of the plant and fruiting capabilities. Control: overhead irrigation or a spray of water on the foliage will remove some mites but also will remove the dust that contributes to their build-up. Eliminate dust around the plants that accumulates on the leaves and causes mite colonies to develop. Apply insecticidal soaps or miticides that are registered for home use.

Raspberry Horntail - an S-shaped segmented worm up to 1" long with a white body and dark brown head. It has 3 pairs of legs near the head end and a short spine on the tail end. Tips of young shoots wilt during the Spring, canes may suffer die-back by Summer. Cutting open the affected portion of the cane reveals a thick white worm or a tunnel containing brownish granular material. There is one generation per year; adult emerges through the hole cut in the side of old canes in April or May and lays eggs inside new canes, causing pronounced swelling. Control: Remove and destroy infested canes. If this insect has been a problem in past years, apply Carbaryl immediately after bloom.

Crown Borers - Worms up to 1" long, whitish body and brown head. Plants lack vigor; portions become stunted and weakened, lateral growth in the Spring wilts and the entire cane may later die. Cutting open lower canes or the crown area reveals worms tunneling through plant tissue. Raspberry Crown Borer requires two years to complete one generation. Adults emerge from the crown area in late Summer and lay eggs on leaves and stems. Larvae penetrate the bark and remain there through winter. Feeding occurs inside canes in the crown area during the next two growing seasons. Control: keep plants properly irrigated and vigorous, since borers are attracted to stressed plants. Prune out and destroy infested shoots and canes.

Raspberry Saw Fly - Worm up to 2/3" long with smooth pale-green body and dark brown stripes down its back. Small holes appear in leaves and increase in size in May and June until only the veins remain. The leaves become skeletonized. One generation per year. Adults emerge from the soil in April or May and insert eggs in leaf tissue. Larvae feed until June, then drop to the ground and pupate in the soil. Control: no control necessary unless plants become completely defoliated. Apply Carbaryl or Diazinon, spraying undersides of leaves thoroughly when insects are present.

Raspberry Aphid - Small green pear-shaped insects up to 1/16" long that may or may not have wings. They sometimes cluster on new growth or along the stem. Damage is not serious unless the total plant becomes covered with insects. Apply a strong spray of water or insecticidal soap mix.

Rose Leafhopper - Small, narrow, whitish insects up to 1/8" long that flutter and may be confused with whiteflies, but look more like tiny grasshoppers. Tiny white spots appear on leaves in the Spring through Fall. When numerous they may coalesce, resulting in bleached-looking foliage. Undersides of leaves inhabited by small whitish insects which crawl forward or jump quickly. Damage is rarely serious enough to justify treatment.

Diseases

Verticillium wilt - Fungus survives in the soil, building up on other hosts. Leaves turn yellow, wither and fall, beginning at the base of canes and progressing upward. Fruiting canes may take on a bluish-black cast and die during the Summer, as fruits are maturing. Small groups of plants may be affected. Control: no cure. Remove and destroy infected plants. Avoid planting cane fruits in soils formerly planted to other hosts of the fungus.

Amellaria root rot - Fungus survives for many years in diseased roots in the ground. Entire plant weakened or killed at any time. Often a group of plants affected. Plants generally die suddenly. Control: no cure. Remove diseased plants and those adjacent to them. Remove and destroy as many roots as possible. Do not replant in affected spots.

Phytophthora root rot - a fungus that infects weakened roots due to excess soil moisture. Plants in the Spring fail to leaf out fully, small leaves turn yellow, and the entire plant dies. Control: plant on raised beds in deep well-drained soils and never stress the plant.

Cane and leaf spot - Only a minor problem on raspberries.

Crown gall - Bacteria that survives in the soil. Spread by splashing water, pruning or cultivating tools. Wart-like growths appear on the roots and the crown area of canes. Severely affected plants may become stunted. Cut and dig out infected canes during hot, dry weather and destroy plants. Do not plant plants with symptoms.

Viruses

There are several viruses that affect raspberries, mostly transmitted by aphids when they feed. Weak, spindly canes develop; leaves cup downward and redden prematurely in the Fall; plants become unproductive in 2-3 years; berries crumble. Control: no cure. Remove infected plants immediately. Purchase virus-free plants from a nursery.

Spring die-back - A physiological disorder. Canes and laterals wilt and die back at the tips in early Spring as first leaves are unfolding. Associated with delayed leafing-out. Cause is not yet determined, but may be associated with freezing injury, Winter drought or insufficient chilling. Control: maintain adequate irrigation for plants until winter rains take over.

SOURCE: Paul Vossen

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