RASPBERRY CANES

GROWTH HABIT
The canes of raspberries are biennial also called floricanes -- they grow for one year and then produce flowers and fruits during the early summer of the second year primarily in late July and August, depending on variety and location. The second year canes die shortly after harvest, and should be pruned out as soon as harvest is over. If raspberries are one of your favorite fruits either for eating fresh or for freezing or canning, you are best to consider growing your own. However, make sure you have enough room in your garden to make a planting worth while. Yields average about two pints per foot or row and as they do not all ripen at once you should have room for at least a 9 foot row of plants.
All raspberries produce new canes, called primocanes, to replace those that die. Red raspberries produce primocanes from crownbuds and from buds along roots (root suckers). The root suckers come up at random and will eventually result in a thick bramble patch if not controlled.

EVERBEARING RASPBERRIES (AS AUTUMN BEARING)
Some red raspberries are everbearing, such as Heritage. These varieties produce fruit on the primocane tips, usually in September of the first year. The second year they produce berries on lower portions of floricane that had not fruited the previous season. Other raspberry varieties do not produce fruit on new canes until the following summer. If only these fruited tips are removed after harvest the remaining cane will carry fruit in the following summer.

Some growers believe that a better fall crop is achieved by cutting back the cane completely in September. The plant is thus free from the burden of producing a summer crop and can use all the growing season towards the growth of brand new canes that will bear a heavier fall harvest. There is much to be said for this technique, but of course, you will have to grow the other varieties as well, to provide fruit in mid-summer.

If growing only for an autumn crop, cut the canes to the ground after harvest. If growing two crops cut only the fruited tips in fall and cut the July harvest canes to the ground the following season.

Heritage may be annually pruned by simply mowing or cutting off all canes at or slightly below the soil surface late each fall. The following spring, new shoots (primocanes) will begin to grow. These canes will produce fruit on the tops in late summer through early fall.

SITE AND SOIL
Raspberries grow best on deep, sandy-loam soils, in a sunny location, well supplied with organic matter. Heavy silts and clay soils should be avoided because of poor growth and lower yields. Good drainage and an adequate supply of moisture are essential. They may be grown in any good garden soil provided it is well drained to a depth 3 ft and has high moisture holding capacity. Although the pH of the soil is not that critical, a range of 5.8 to 6.5 is considered optimum. Select a site where tomatoes, potatoes, peppers or eggplants have not been grown; raspberries are susceptible to soil-borne diseases that these crops may carry. Also, a planting should not follow directly after a sod but rather the planting should follow a cultivated or cover crop. If the soil lacks organic matter work 1 inch or more of organic residues such as lawn clippings, rotten leaves, or well rotted manure into the top 4 to 6 inches of soil. Before planting mix about 3 pounds of 10-10-10 or equivalent fertilizer per 100 square feet of soil 1 week prior to planting.
Soils should be prepared prior to planting; thoroughly till the soil and eliminate perennial weed problems. For large plantings it is advisable to have the soil pH tested and fertilizer applications should be based on recommendations. Soil fumigation is highly recommended for nematode control as it has been shown that nematodes vector raspberry viruses.

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.

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.

PLANTING

Dormant cane plants are usually obtained and planted in the spring. Work the soil as for garden vegetables, particularly where the plants are to be set. If plants arrive before soil preparation or when the soil is too wet for planting, store the plants--if well wrapped--in a cool place. If unpacked, heel dormant cane plants into the ground in a shallow trench in a cool shady area so roots do not dry out. Plant as early in spring as possible, freezing temperatures do not harm newly set plants (except for green tissue culture plants). Planting in early spring is recommended. This gives the plants the maximum time to become well established before hot dry weather arrives. Set bare root plants 1-2 inches deeper than they were in the nursery, as indicated by the soil line on the stem.
NOTE: The fine root system should not be allowed to dry during the planting process. This can happen very quickly on a warm, spring day.

Red raspberries are planted 2 ft apart in the row with 8-10 ft between rows. At this spacing you would need 2,000-2,200 plants per acre. For home gardeners, 10 plants will fill 20 feet of row space. A trellis to hold canes upright is strongly recommended in the home garden for red raspberries. If the everbearer Heritage red raspberry is to be grown for one crop in late summer, you can also construct a temporary trellis to provide raspberry canes some support for the crop. (See Training & Pruning for trellis information)

PLANT STOCK

Plant certified stock. 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.

FERTILIZATION

Raspberries like good soil fertility for optimum growth and production. For an established bed, home gardeners should apply 10-10-10 at a rate of 1 1/4 lbs. per 100 sq. feet. This should be applied early in the season with additional amounts in early July according to weather and leaching conditions.

Commercial growers may use 500 lbs per acre of 10-10-10, or equivalent.
An additional 1lb of 10-10-10, or equivalent, per 100 sq ft can be applied in July or August and in early spring in following years, or make application according to soil tests. Such assessments and/or testing at grower's expense.

WEED CONTROL AND CULTIVATION

Start with grass and weed free soil. During the growing season, cultivate regularly but not more than 3 inches deep because the root system is quite shallow. Consult a local specialist for recommendations on chemical weed control. Never plant in soil in which couch grass is growing. Chemicals, available for the control of most weeds 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. Mulching during establishment can help control weeds. The important fact to remember is that the raspberry is a shallow rooted plant.

DISCONTINUE cultivation early in September so that the canes may properly mature prior to cold weather.

MULCHING

Newly set raspberry plants, planted in a good soil, will require very little fertilizer during the first growing season. Commercial fertilizer will not 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.

TRAINING AND PRUNING

For productive, healthy canes it is important to properly train and prune all raspberries.

Most red raspberry varieties can be grown in hedgerows. The canes are confined to narrow rows or hedges that are maintained about 15 inches in width. During the growing season, it is desirable to allow root suckers to develop in a row 12-15 in. wide, but it is important to cut off suckers growing up outside the row. Do not pinch or cut off tips of new shoots in summer or fall. Summer tipping encourages growth of side branches which are not desirable on red raspberry plants.

Cane height varies with variety and growing conditions. Floricanes usually need to be cut back to some extent before bearing. Do this in the late winter. Heading back to 5 ft makes a good height for picking and helps keep canes from bending over under the weight of the crop.

Fruiting canes and new shoots occur together in the row from spring to the end of harvest. They compete for light, water, and nutrients. Usually, more canes and shoots occur than are wanted. They must be thinned or the new shoots will be weak, berry size will be poor, harvest will be difficult, and diseases will be more serious.

Thin fruiting canes in late winter or early spring before they start to grow. Remove all weak canes and thin the strong canes so they are 4-6 inches apart over the width of the row; narrow rows if necessary to 15-18 inches wide.

Remove fruiting canes at the end of harvest. Do it soon after harvest, mainly to help control diseases. Make cuts close to the ground, also thin new shoots at this time, leaving 3 or 4 of the sturdiest canes per foot of row. If you use a single wire or one wire above the other type trellis, or stakes, tie the canes loosely to the support structure after summer pruning.

SUMMERBEARING: For the best yields, you must trellis and prune the planting regularly. Directly after harvest, prune out the canes that carried fruit. Thin remaining canes leaving 5-7 strong, healthy canes per running foot of row. The width of the fruiting bed should not be allowed to spread more than 18 inches. (Hedgerow system)

EVERBEARING: To maintain 2 crops the planting must be pruned as a summer bearer. Follow the same instructions as above, after the summer harvest. Most everbearers will produce an even better fall crop if not allowed to fruit in the summer. This is accomplished by mowing off all canes after harvest in the fall. You MUST wait until the canes have dropped their leaves in late fall. It may be best to wait until early spring. Be sure to cut canes as close as possible to soil surface, leaving no stubs. The new, strong suckers which grow again that summer will bear another abundant crop in the fall. For the best performance it is recommended treating these varieties as fall bearers. For fruit in July, use a summer bearing variety.

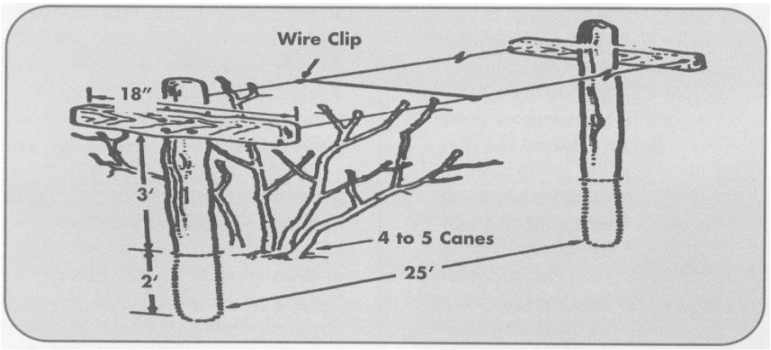
SYSTEMS OF TRAINING

The most common Training system is the 'hedgerow' as outlined above.

Another system of training is the 'stool' or 'hill' 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. 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. This 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.

TRELLIS

A trellis to hold canes upright is strongly recommended in the home garden for red raspberries. A crossbar trellising is recommended for most upright red raspberries. If you string two wires at the same height, place them 4 ft above the ground level. Place the canes between the wires to eliminate tying. If you use a single wire, or one wire above the other, tie the canes loosely to the wires after pruning. We suggest all raspberries be supported by a trellis. We have been successful using a T-bar system that supports 2 wires, 12 inches apart at 3 feet above ground. This keeps fruit off the ground and maintains good aeration of the planting for good disease control. (See diagram) There are several other trellis designs which can be used.



If the everbearer Heritage red raspberry is to be grown for one crop in late summer, you can also construct a temporary trellis to provide raspberry canes some support for the crop. A simple method is to set stakes in the row at 15 to 20 ft intervals. Tie binder twine to the end stake and then fasten to each stake down the row. Repeat on the opposite side of the row. If canes are very heavy, tie the two lines of twine together at intervals. These varieties will have two crops.

CARE OF PLANTING
Blossom Removal (Heritage and other everbearing): After planting, remove blossoms which appear the first summer. This helps plants become well established.

Weed Control, Cultivation and Mulching: Keep plants in rows free of weeds by hand weeding, hoeing and cultivation or with a mulch. Raspberries may be grown under clean cultivation, sod or permanent mulch. Mulch is the more widely preferred weed control method. The average homeowner has many organic residues around the home such as lawn clippings, leaves, or shredded vegetation. A raspberry planting is an ideal place to use these materials.

If you grow raspberries under clean cultivation, the area between rows is cultivated to a depth of 1 to 2 inches at intervals of 2 weeks from early spring to end of harvest. This controls weeds and red raspberry suckers in the row. If you use sod culture, mow the area between one row like a lawn throughout the summer to control growth of weeds, grasses and suckers. If a permanent mulch is used mow at timely intervals to control raspberry suckers between the rows.

Highest yields will likely be obtained with permanent mulch. Clean cultivation is next highest yield, and sod usually results in the lowest yield, but is easy to maintain for a homeowner.

WATERING
Water plants thoroughly after planting. Plants need about 1” - 2" of water a week from bloom time to end of harvest. Plants should also be watered during prolonged dry periods after harvest as well. When watering, add enough water to wet the soil to a depth of 6 to 8 inches.

HARVESTING
During warm weather, pick every other day. Cup a few berries in the hand at a time then carefully place them in the container. Freshly harvested berries stored immediately at 33 – 38 degrees F (1.5 - 4.5 degrees C). At this temperature they will keep well for 4 or 5 days.

DISEASES AND INSECTS
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 yard (3 feet) of hedgerow).
These measures, in many cases, will give adequate disease control for the home garden.
You can avoid many pest problems by:
- Planting only quality nursery stock.
- Keeping plants well spaced with a narrow wall of foliage well exposed to light.
- Removing diseased or sick plants and all canes that have fruited, either burning them or removing them.
- Replanting with quality stock every 5-7 years.
- Removing wild brambles in vicinity of your garden.

If you have disease or insect questions you should first call your local Department of Agriculture. They have the experience and research to help at the local level. We do have a general facts sheet we are able to supply, but it is very general information and is targeted for commercial growers.

PLANTING TABLE
Number of plants per row / acre

Row spacing	Plants spacing	Plants/100 ft. row	Plants per acre
(feet)	(inches)	Strawberry Plants	
4'	18"	67	7,200
4'	20"	60	6,500
4'	22"	55	5,900
4'	24"	50	5,400
5'	20"	60	5,200
5'	24"	50	4,300
Everbearing Strawberry Plants			
4'	12"	100	10,800
5'	*6"	200	17,400
* Note: 6” spacing is staggered in double rows			
(feet)	(inches)	Raspberry Canes	
8'	18"	67	3,600
10'	24"	50	2,150

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