BERRIES AND GRAPES

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Revised by the Montana Nursery and Landscape Association 2002
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Berries and grapes are traditional garden favorites. Long grown as a source of fresh fruit, they are also becoming popular as ornamentals in edible landscapes.

Strawberries and raspberries are the most common berries produced by homeowners. Grapes, blueberries, and blackberries are also popular where climate and soils permit. Gooseberries and currants, long absent from the scene due to disease problems and government restrictions, are beginning to regain their popularity. Novel fruits, such as serviceberries and hardy kiwi, are also gaining popularity in the market.

Most small fruits are easy to produce on a small scale. Success, however, largely depends upon proper site and species or cultivars selected.

Site Selection and Preparation

Most berries are susceptible to root rots and require well-drained soils. Strawberries require at least 8" of well-drained soil. Bush fruits and grapes have larger root systems and 18" of soil is a good recommendation. Where shallow soils are a problem, berries lend themselves well to raised beds and containers.

Strawberries, raspberries, blackberries, grapes, currants, and gooseberries grow well on soils with pH values between 5.5 and 7.0. When soil pH is much above 7.0, iron chlorosis can become a problem. Blueberries require acid soils with a pH between 4.2 and 5.0. High salt concentrations in the soil can also create problems. Strawberries are somewhat more tolerant of high soil pH and salt content than most other fruits, although certain grape rootstocks are tolerant of alkaline soils. Limestone or dolomite can be used to raise the pH of acid soils. Agricultural grade sulfur applied a year before planting can be used to acidify small areas if the soil does not have high sodium or calcium carbonate levels. Don't add fertilizers or excessive amounts of organic amendments to the planting hole.

Some professionals believe that when planting small fruits, only soil that came from the transplant hole should go back in with the plant. If the soil has a good “loam” texture and there is sufficient soil organic matter, this statement is true. Modest amounts of organic amendments can be of benefit, however, in clayey, sandy, or very rocky soils. A few shovelfuls of peat moss or compost can improve the soil environment for quick establishment of new roots. These amendments need to be thoroughly mixed with the original soil material.

One common problem with berries is verticillium wilt. Wilt diseases damage plants by blocking the water conducting mechanisms in a plant. This fungal disease affects a wide range of plants. Berries should not be planted following tomatoes, potatoes, eggplant, cherries, or other small fruits, all of which could be verticillium hosts. Crop rotations are not very effective in controlling this disease, which can live in the soil without a host for many years. Soil-applied fungicides have little effect upon verticillium, as does solarization. Fumigation can help to control verticillium, but is often not feasible for home gardeners. Over-fertilization with nitrogen may favor the fungus. If a verticillium-free site is not available, production in containers is recommended.

Winter freezes and spring frosts can play havoc with berries and grapes. Selecting cultivars hardy enough to withstand the winters in your area is a good first step.

Avoiding frost pockets is also important since many berries begin growth and bloom early in the spring. Utilize microclimates to enhance fruit production, such as south aspects or wind sheltered sites.

Most berries are relatively tolerant of pests in home gardens. Parasitic nematodes are an exception, however. In areas where parasitic nematodes are a problem, homeowners should have their soils tested for nematodes before planting. If the pests are present, plant elsewhere, since the only truly effective treatment for nematodes is soil fumigation. Crop rotation to a non-susceptible host for several years or solarization may help to reduce populations, but a more effective recommendation would be to grow the berries in containers.

Blueberries

Age to Maturity:	6 to 8 years
Time to harvest:	2 to 3 years
Expected longevity:	More than 50 years
Hardiness:	-10 to -35ºF for half-high types.
Optimum pH:	4.2 to 5.0
Spacing:	High bush types: 4’ to 5’ minimum between plants
	Half-high types and hybrids: 1.5’ to 3' between plants

Blueberries, like rhododendrons, are members of the heath or Ericaceae family. They range in size from 3" high groundcovers to tree-size shrubs 20' tall. The most common cultivars are northern high bush blueberries, which can be kept 5' to 6' tall with moderate pruning. Most blueberry cultivars are self-fertile, however as with many self-fertile fruit crops, cross-pollination between varieties will often improve fruit-set, size, and earliness of ripening.

In addition to producing fruit, blueberries are becoming increasingly popular in landscaping. Their early bloom, glossy leaves, and deep red fall color make them a valuable addition to an edible landscape. High bush cultivars make handsome specimens, especially when clustered in planting beds. Low bush types and some half high hybrids can serve as attractive groundcovers. Low bush blueberries are generally not found in the market.

Blueberries require acid soil and present cultural problems when grown in areas where soils are alkaline. Soil acidification using sulfur can be done for small areas, particularly where planting beds are made using peat moss or other organic materials. In alkaline areas, regular soil testing for pH is important for blueberries. Be aware, however, that where soils are alkaline-calcareous, irrigation water is also often alkaline and can offset soil acidification practices. Whenever possible, blueberries should be watered with rainwater. Huckleberries, the native western “blueberries”, are not practical for home or commercial production due to specific soil and site requirements not easily replicated away from the forests.

Planting Site

Full sun is necessary to produce vigorous, compact plants and high-quality berries. Late afternoon shade is tolerated. Avoid planting in frost pockets to protect the early spring blossoms. The ripening dates of blueberries vary tremendously. Most
cultivars bloom at about the same time in a hot year, but in a normal year bloom times are spread out and selection of late-blooming cultivars can reduce spring frost damage.

Blueberries make excellent container patio plants. Select smaller high bush cultivars or half high hybrids. Commercial potting mixes in 5-gallon containers work very well, using acidic fertilizers with diligent watering.

Culture

Two or three year old plants in one or two-gallon containers are normally purchased by homeowners, although dormant bare root plants also give good results. Set out bare root bushes as early in the spring as possible. Containerized stock can be planted any time, preferably by early summer.

Remove all flowers the planting year and the following year. The bushes can be lightly cropped the third summer after planting.

Apply fine bark mulch 4" to 6" deep around newly planted bushes. Maintain the mulch permanently to control weeds and protect the roots. Keep the mulch pulled back several inches from the base of the stems. Watch out for rodent damage to the lower stems.

Don't fertilize the year of planting. Normally ammonium sulfate is the material of choice, since it helps to maintain a low soil pH. Acidic compost is beneficial as well. For specific fertilizer recommendations and pruning techniques consult a good reference book. (Some are listed at the end of this chapter.)

Blueberries in home gardens tend to have few serious insect or mite pests. The bushes are attractive to deer, however, and birds can extensively damage the fruit. Protect against bird damage by covering the entire bush, to the ground, with bird netting. Specially constructed fences are the only effective way to prevent deer damage.

Brambles

Expected longevity:	8 to 10 years	
Age to maturity:	3 years	
Time to harvest:	1 year (or less)	
Hardiness:	Blackberries:	+5 to -15°F
	Black Raspberries:	-5 to -10°F
	Purple Raspberries:	-10 to -15°F
	Red Raspberries:	-15 to -20°F
	Yellow Raspberries:	-15 to -20°F

Raspberries and blackberries are closely related members of the rose family (Rosaceae) and are popular garden fruits. The plants are perennial and can live for 40 years, but may have to be replaced every 8 to 10 years due to buildups in pests and diseases.

The canes are biennial, producing vegetative growth the first season and fruiting and dying the second season. Canes produced during the current growing season are referred to as primocanes. During their second growing season, the canes are called floricanes. Fruit is borne on lateral shoots, normally on floricanes. Fall-bearing raspberries bear fruit at the tips of primocanes.

The fruit is an aggregate of about 75 to 125 individual drupelets, which are bound together. Each drupelet contains a single seed. In raspberries, the drupelets separate from the receptacle, leaving a delicate fruit with no core. Blackberry drupelets don't separate from the receptacle, so harvested blackberries are not hollow and are, therefore, firmer and less subject to damage than are raspberries.

Site Selection

Site selection is especially important with brambles because of their susceptibility to root diseases and the limited cold hardiness of some cultivars. All brambles perform best in full sun. Deep, well-drained soils are best. Heavy soils or the presence of hardpans or clay layers often lead to rot or root diseases. High soil organic matter and a soil pH between 6.0 and 7.0 are recommended for brambles.

Winter freezing and desiccation injury is a problem with brambles in many parts of Idaho and Montana. Hardiness ratings are shown at the beginning of this section. Red and yellow raspberries are the most cold hardy of the brambles, followed by purple raspberries, black raspberries, and blackberries. Even if freezing kills the canes, the roots often survive and produce new canes.

Planting

Properly maintained bramble plantings should be pruned yearly, sometimes more. Some brambles require trellising and tying to support the canes. Most red raspberries can be free standing if they don't grow too tall. Late spring snows can damage unsupported plants by bending them to the ground. Because brambles have very shallow root systems mulching is helpful for moisture retention and weed suppression.

Nurseries sell brambles as bare root, tissue-cultured, and containerized plants. Bare root plants provide homeowners with reliable results, as long as the plants are dormant and the roots are never allowed to dry out. Bare-root stock should be planted into weed-free plots during the early spring. Immediately after planting bare-root stock, water and cut all canes off 3" above the ground to force root growth and strong primocane development.

Containerized plants are reliable and can be planted any time (preferably by mid-summer), although best results are obtained in the early spring.

Certified tissue-cultured brambles are often used by commercial growers, primarily because such stock is generally free from pests and diseases. Tissue-cultured stock is expensive, however, and is more delicate and difficult to establish than either containerized or bare-root stock.

Set out red and yellow raspberries 2' to 2.5' apart in rows 8' to 10' apart. These raspberries can be grown in hedgerows by allowing suckers to fill in between the original plants, or can be kept in hills by removing all suckers between the hills during dormant pruning.

Black raspberries, purple raspberries, and blackberries do not spread much by suckering and are usually grown in hills 3' apart.

Fertilization

Brambles require moderate levels of soil fertility. They respond particularly well to additions of organic matter to the soil. Most organic and inorganic fertilizers work well for raspberries.

Shortly after planting, fertilize the rows with 1.5 ounces of actual nitrogen per 10 feet of row or per 3 to 4 hills. Base potassium, magnesium, sulfur, and boron applications on soil analyses if needed.

In subsequent years, apply 2 ounces of actual nitrogen per 10 feet of row or per 3 to 4 hills. For best results when using quick-release fertilizers, apply half of the fertilizer in the early spring, just as growth is beginning. Apply the second half at the beginning of bloom.

Pruning and Training

Most brambles should be pruned at least once a year. After the harvest, prune out all old canes that bore fruit and any weak canes. Remove the cut canes from the planting. During the early spring, thin out red and yellow raspberries to leave 4 or 5 canes per foot or 8 to 10 canes per hill, with hills 2' apart. Cut back the canes to a height of 4' to 5'. This is especially important if plants are not supported.

For information on pruning techniques for the other brambles consult reference materials listed at the end of this chapter. Examples of trellises and training systems are shown in Figure 14-1.

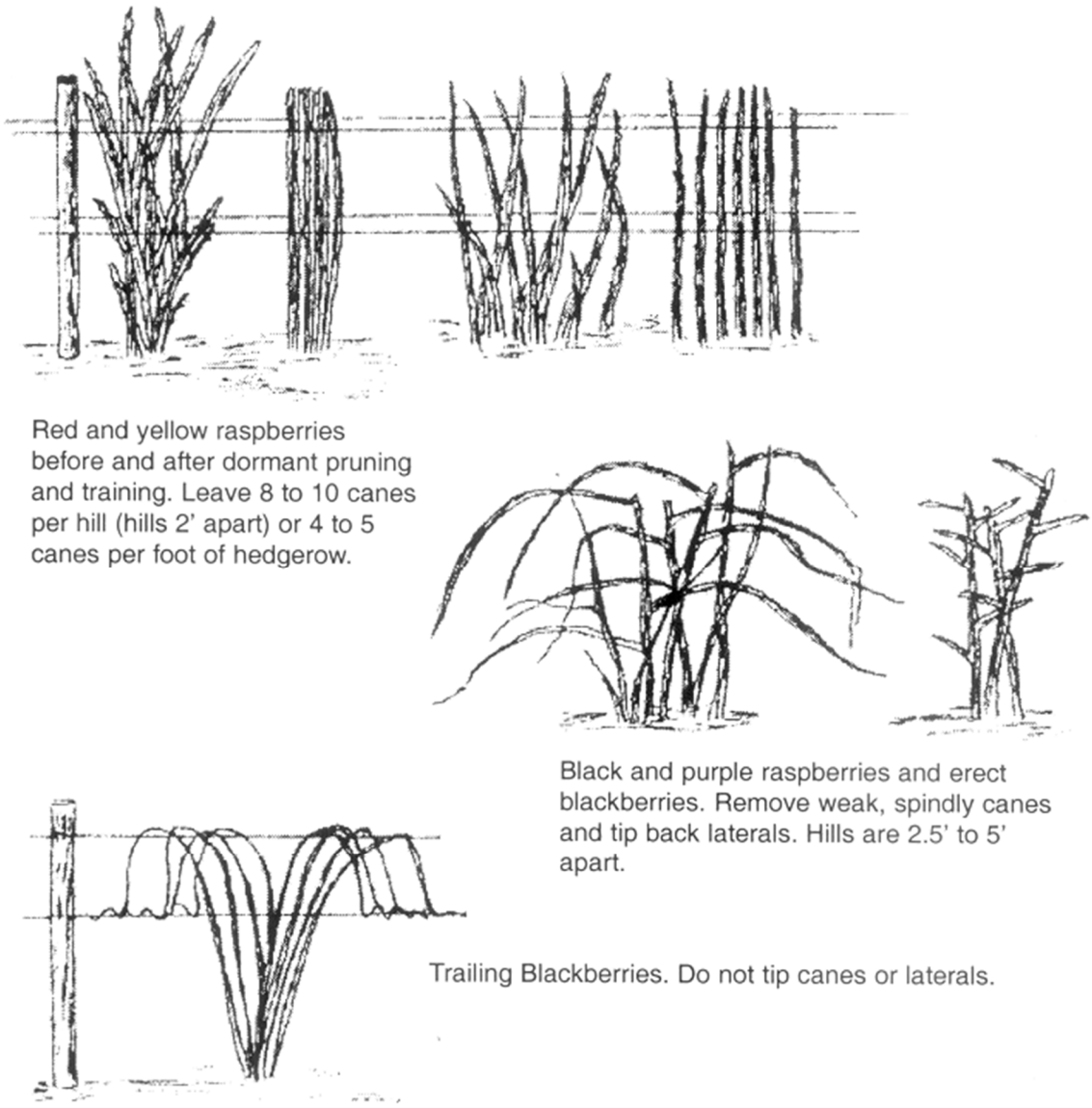


Figure 14-1. Trellises and support systems for brambles

Strawberries

Expected longevity:	3 to 4 years
Hardiness:	+25 to -35°F
Optimum pH:	5.5 to 6.5
Spacing:	Matted row - set plants
	18" to 24" apart in rows 3' to 4' apart
	Hills - set plants 12" to
	18" apart in double rows 3' to 4' apart
Fruiting Year:	
June-bearing:	second
Ever-bearing:	second
Day-neutral:	first

Strawberries are among the easiest fruits to grow in home gardens and containers. The same general soil considerations apply as for raspberries.

Strawberries are members of the rose family (Rosaceae), and are not berries at all! The "fruit" is actually a swollen receptacle. The true fruits are the straw-colored achenes or seeds on the outside of the receptacle. These achenes are very important for the development of the strawberry fruit because they produce the growth regulators, which control the growth of the receptacle. Poor pollination, frost, and insects can damage the developing seeds, leading to small, distorted strawberries.

Climate considerations are important when planning for strawberries, since cold hardiness varies from +25 to -35ºF, depending upon the cultivar. Strawberries bloom very early in the spring and are susceptible to spring frost damage. Avoid planting in a frost pocket or provide frost protection.

There are three types of cultivated strawberries: June-bearing, ever-bearing, and day-neutral. June-bearing strawberries make up the majority of home plantings. These cultivars develop flower buds during the long days of summer and bloom early the following spring. They bear heavily in June. Ever-bearing strawberries initiate flower buds both during the spring and summer. These cultivars bear two light crops each year, in the late spring and fall. Yields are generally less than for June-bearing types. Day-neutral strawberries initiate flower buds regardless of day length, and will produce berries spring through fall. Overall yields are about the same as or slightly less than June-bearing plants. On average in a well-managed planting, each strawberry plant will produce about one pound of fruit per year.

Planting

Strawberries produce the most fruit when planted in a full sun location with at least 8" of well-drained soil. Day neutral types will tolerate afternoon shade. If poor soil drainage or verticillium wilt is a problem, plant strawberries in containers.

Soil pH should be between 5.5 and 6.5 for best results, although strawberries can be grown in soils with pH values near 7.5 with relatively few problems.

Weeds are a very serious threat to strawberries, and should be eradicated from a site before strawberries are planted. Strawberries are shallow rooted, so weed with caution. Strawberries are also very sensitive to herbicide residues. Thus mechanical weed control is preferable.

Strawberries are susceptible to many fungal and viral diseases. Plant only new, certified disease free stock.

Incorporate 0.1 pounds of actual nitrogen per 100 square feet before planting. Apply P, K, S, Mg, and B according to soil test results. During the growing season, apply 0.5 ounces per 100 square feet of actual N as a side dressing soon after the harvest of June-bearers or after the first crop of ever-bearers.

Set dormant, bare-root plants out as soon as the soil can be worked in the spring. Dormant plants must be kept refrigerated until planting, and the roots must never be allowed to dry out. Set the plants with the crown at soil level. Spread the roots out in a fan-like pattern across your finger when setting the plants into the holes. Containerized strawberries can be planted any time, preferably by mid-summer.

Most homeowners choose to plant strawberries in either matted rows or in a hill system. Matted rows provide the most efficient use of plants, while the hill system maximizes yields one year after planting. Examples of each system are shown in Figure 14-2.

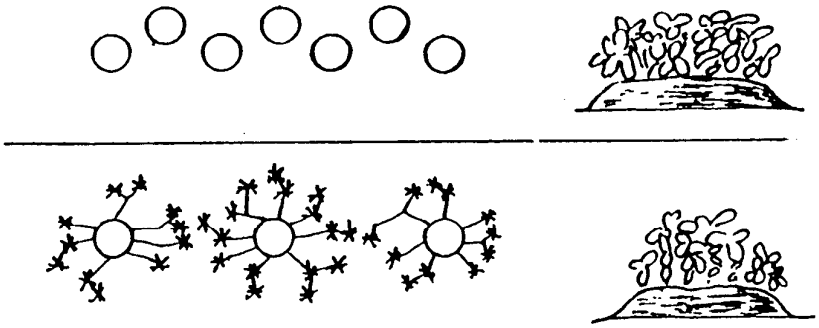
Mulching is often used to control weeds and keep fruit clean. Clean straw or pine needles are excellent for strawberry mulch. Black plastic or weed barriers may be used, though they make irrigation or fertilization more difficult.

For June-bearing and ever-bearing strawberries remove all blossoms during the planting year to strengthen the plants and develop strong root systems. Remove flowers from day-neutral plants through mid-August of the planting year.

Winter Protection

Strawberries can be mulched during the winter to reduce freezing injury. One option is to apply 4" to 6" of clean straw to the strawberry rows in the late fall or early winter, following several hard frosts. In March or April of the following year, rake the straw into the alleyways to control weeds.

Floating fabric row covers also provide reasonably good protection, and can be kept on longer in the spring to protect from late frosts and improve yields. To avoid heat buildup under the row cover, always use white fabrics. Many gardeners don't cover their strawberries at all and still get good production most year



Hill system. Plant strawberries 12" to 18" apart in double rows. Remove all runners as they develop. Pairs of rows are 3' to 4' apart.

Matted Row System, Plant strawberries 18" to 24" apart in rows 3' to 4' apart. Keep rows narrowed to 24" wide. Allow runners to root within rows.

Figure 14-2. Strawberry planting systems

Renovation

Renovation is a cultural practice that helps keep strawberries vigorous and productive, while also controlling some diseases. Disease and pest buildups usually limit the productive life of strawberry plantings to three or four years in commercial production. It is at this time they are renovated.

After harvest in the third year, mow off all leaves using a lawn mower. Set the mower high enough so that the blades do not damage the strawberry crowns. Rake the leaves out of the strawberry patch and dispose to reduce disease problems. Remove the old woody crowns and leave the younger, newer plants to fill in. Topdress the renovated patch with compost and sand to encourage rooting.

Homegrown plantings can last up to 8 or 10 years before production declines. The best yields are generally obtained during the first fruiting year. Remove old plantings and rotate to a non-small fruit crop.

Currants and Gooseberries

Expected Longevity:	10 to 20 years or more
Time to first harvest:	1 year
Optimum pH:	5.8 to 6.8
Hardiness:	-25 to -31 degrees F

Currants

Age to maturity:	3 to 5 years
Spacing:	3' to 5'apart

Gooseberries

Age to Maturity:	5 to 7 years
Spacing:	3' to 5' apart

Because of their association with white pine blister rust disease problems early in the 1900s, currants and gooseberries were long absent from most home gardens. Many states even banned their production and sought to eradicate all wild and cultivated Ribes.

Because eradication efforts failed and rust-resistant white pine species have been developed, federal restrictions on Ribes production have been rescinded.

Currants and gooseberries are members of the family Grossulariaceae. During the late 1800s and early 1900s, they were widely grown in the United States and are still grown widely in commercial European plantations.

The fruit consists of true berries that are borne in clusters called strigs. Currants are harvested by picking off an entire strig at once. Currants are smaller than gooseberries and the fruits have no spines. Red currants, in particular, are tart and make excellent preserves.

Gooseberries are generally harvested individually. The berries can be eaten fresh, but are more often used in preserves and juices. Gooseberries resemble grapes in size, shape, and flavor. They may be white, green yellow, or red. They make excellent preserves and pies. Sharp spines make picking gooseberries somewhat difficult.

Culture

Ribes are generally easy to grow if a few simple precautions are taken. Site selection is about the same as for raspberries, although currants and gooseberries are adaptable to both full sun and partial shade. They perform best in cooler areas. Gooseberries are more tolerant of high heat than currants. In warmer areas, plant these fruits in partial shade or on east-facing slopes. Currants and gooseberries bloom very early in the spring and frost protection may be necessary.

Because they bloom very early, bare root currants and gooseberries are normally fall planted. For retail sales to homeowners, containerized stock and spring planting are recommended. Containerized stock can be planted any time. During the planting year, strip off all flowers and fruits that may develop. Begin cropping one year after planting.

Gooseberries and currants can survive on relatively infertile soils, but vigorous plants and good fruit production requires good nutrition. Apply 4 ounces of 10-10-10 per bush after the planting year. Currants and gooseberries need occasional pruning. Most fruit is borne on two-year-old wood. In general, thin out the oldest stems. For specifics on pruning currants and gooseberries refer to one of the references listed at the end of this chapter.

Blister Rust

Several diseases and pests affect Ribes; one of the most notorious is white pine blister rust. Blister rust is a serious problem where 5-needled pines and currants are found. The blister rust organism must have both a Ribes and a five-needled pine host in order to survive. Affected Ribes develop yellow rust pustules on their leaves, may be somewhat stunted, and may suffer from premature defoliation. Five-needled pines develop cankers, which quickly girdle and kill trunks and branches. This rust disease is one of the most serious diseases affecting 5-needled pines.

Red and white currants, gooseberries, and jostaberries (hybrids between black currants and gooseberries) are relatively resistant to the blister rust organism. Many wild currants and most cultivated black currants are susceptible to the disease. At least three rust-resistant black currant cultivars are now available. If native or introduced 5-needled pines are located in your area, don't plant black currants or plant only blister rust resistant cultivars. Plant at least 1000 feet (preferably 3/4 mile or more) away from any 5-needled pine.

Grapes

Expected longevity:	30+ years
Age to maturity:	4 years
Optimum pH:	6.0 to 7.0
Hardiness:	depends upon cultivar
Spacing:	5' to 8' apart

Grapes require both a relatively long, warm growing season (150-180 frost-free days) to develop and mature a crop, and a cool winter to meet chilling and dormancy requirements.

In the United States, California is the leading producer of grapes, with New York and the Pacific Northwest following. The climates in these locations are excellent for grape production largely due to the influence of large bodies of water that serve to moderate winter temperatures.

With a few exceptions, the climate in Idaho and Montana does not favor grape production, and growers must generally utilize only the most cold hardy and earliest maturing cultivars. Production will be marginal, and requires special cultural practices.

There are three types of grapes that are of commercial importance in northern climates. The native North American grapes (ex. Vitis labrusca) are characterized by skins that 'slip' easily from the pulp when squeezed between your fingers. This group, represented by the Concord cultivar, is quite cold hardy and fruits tend to have strong flavors, which are well suited to juice and processing. Certain cultivars have been used commercially for wine. Both seeded and seedless cultivars are suitable for table use. 'Beta' and 'Valiant' are two very hardy cultivars derived from native species.

European wine grapes (Vitis vinifera) are the most widely grown grapes in the world. They tend to be less cold hardy than American grapes. Commercially, they are used for wine production, table grapes, and raisins.

French hybrid grapes were produced by cross breeding North American species and European cultivars. These hybrids are generally used for wines, are intermediate in cold hardiness, and tend to have small berries.

Grape species and varieties vary in their ability to self-pollinate. Be aware of this trait when selecting varieties, as many are self-sterile and will therefore require cross-pollination from another variety to set fruit.

Cultural Practices

The cultural practices that are used for grapes are far more sophisticated and complex than those for any other small fruit. Correct site selection and preparation, cultivar selection, pruning, and training are critical for production. A complete guide to grape production is beyond the scope of this publication, and anyone considering or actually involved in grape production should refer to more detailed guides (several references are listed at the end of this chapter.)

Soil Preparation

Soil pH should be between 5.5 and 6.5, although grapes can tolerate a wider range of pH values. Where soils are alkaline and calcareous, grapes usually don't grow well. Special rootstocks are available which are adapted to such sites. American grapes are susceptible to damage from alkaline soils. For site preparation, follow the procedures listed for brambles.

Fertilization

Nitrogen is the most commonly limiting nutrient in grapes, as well as most other small fruits. The best indication of nitrogen status is to look at how vigorous the vines are. Vine vigor will be affected both by pruning and by nutrition. Heavy pruning and excessive fertilization both cause a great deal of shoot growth.

For moderately vigorous mature vines, apply 1 ounce of actual nitrogen per vine in one or two spring applications. For weak vines, apply 1.5 to 2.0 ounces of actual N. Leaf appearance and tissue analysis are the best guides to the need for other nutrients. As a general rule, don't fertilize during the planting year.

Irrigation

Grapes are deeper rooted than most small fruits, but irrigation is normally required into mid-summer. Irrigation should not be continued much past mid-summer in order to slow vine growth and allow the vines to acclimate for the winter. Drip irrigation is the method of choice, because overhead irrigation increases the likelihood of botrytis fruit rot.

Planting

The spacing between vines depends upon the vigor of the cultivars. Vigorous cultivars, such as Concord should be spaced about eight feet apart in rows. Less vigorous cultivars or those that are less hardy may be spaced closer (five feet apart).

Grape plants are sold by grade and age, as bare-root plants or containerized. Plant early in the year and mulching with 4" to 6" of fine bark or compost in the fall to improve the odds for success.

Plant vines to the same depth that they were in the nursery. After planting bare-root stock, prune off the shoot so as to leave two or three healthy buds, with no branches.

Pruning

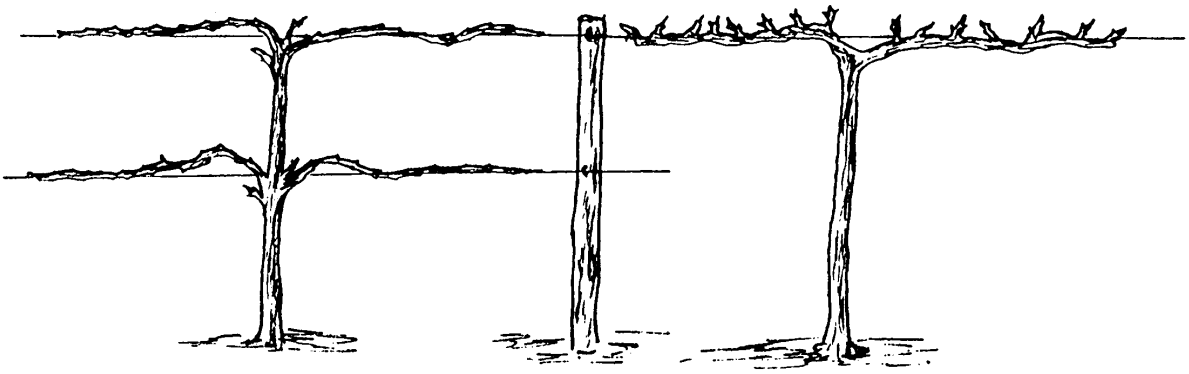
Many pruning systems have been used for grapes. Usually the amount of wood removed is determined by the amount produced the previous season, and varies according to grape type and cultivar.

Cane pruning is the simplest pruning system and well suited to most homeowners needs. Normally, four long canes and four short renewal spurs are left after pruning each spring. Cut the renewal spurs to leave two buds each.

Spur pruning is somewhat more difficult than cane pruning, and generally requires that permanent cordons (branches) be established along a trellis. Instead of several long canes, many short spurs are kept after pruning. Cordons tend to be more susceptible to freezing injury and other disorders than cane-pruned vines. For more information on pruning consult reference materials.

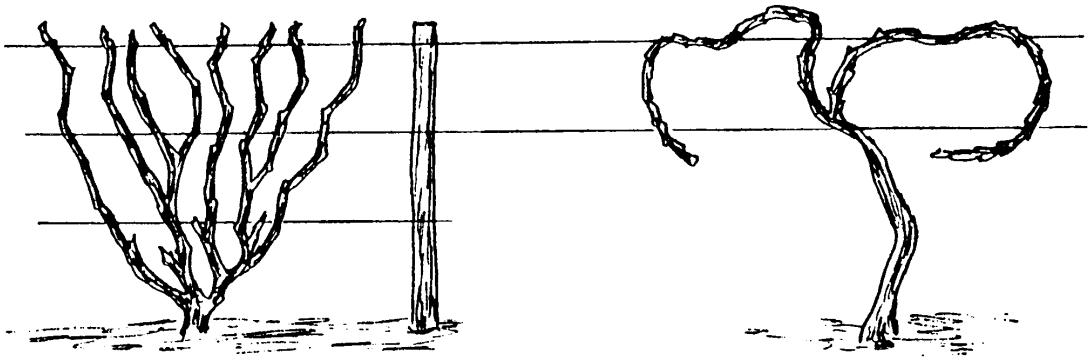
Training

With few exceptions, grapes require support on trellises or arbors. Many trellis systems are used around the world, but the basic purposes of each are to provide solid support and maximize light exposure. Several simple training systems, which are suitable for home production, are shown in Figure 14-3.



Four-Arm kniffen system
Keep 4 canes and 4 renewal spurs. Tie canes to trellis wires about 3' and 5' above ground.

Cordon System
Train permanent cordons along trellis wire about 5' above ground. Fruit is produced from 3- to 4-bud spurs. Select up-pointing spurs to keep when pruning.



Fan System
Especially suitable for European grapes in cold areas. Tie canes to 3 or 4 wires up to 5' above ground. Keep head of vine about 12" above ground and mulch during the winter to protect from freezing injury.

Hudson River Umbrella System
Provides better light exposure and crops than four-arm kniffen system. Arch canes over and tie them to trellis wires about 3.5' and 5' above ground.

Figure 14-3. Typical grape training systems

Frost Protection

Frost protection in grapes is most important at the end of the season to protect the fruit. Grapes bloom late and usually escape spring frosts. When the fruit is ripening late in the season, protect from frost with frost fabric. Irrigation is not recommended as a form of frost protection because of the increased risk of fruit rot. In areas with cold winter temperatures, protect grapes with mounded soil and mulch at the base of each plant.

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Review

A. A customer wants to plant raspberries. He has had 8 inches of topsoil spread over the heavy, clay soil that is native to the site. The topsoil pH is 7.0. What recommendations would you make to your customer to enable them to grow the berries?

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B. Explain what verticillium wilt is and how to prevent it in berry plantings. _____

_____

C. Explain the terms primocane and floricane. What crops do these terms apply to?

_____

_____

D. Rank the following brambles in order of relative cold hardiness.

blackberries__ black raspberries__ red and yellow raspberries__ purple raspberries__

E. Explain to a customer how to prune red raspberries. _____

_____

F. Describe an optimum site for strawberries, considering soil type and depth, pH, air drainage, and previous crops.

_____

G. Briefly describe the three types of strawberries.

1. _____

2. _____

3. _____

H. Which type of grape is most cold hardy for northern gardens?

_____