



Growing Grapes in Your Home Garden

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Growing grapes in your home garden can be a wonderful hobby and a challenging experience. You can grow many cultivars (varieties) of grapes; the fruit of each cultivar has an aroma, flavor, and other qualities that make it unique.

You can eat fruit fresh or use it for jellies, jams, dessert recipes, or home-brewed wines. Besides the obvious uses for the fruit, grapevines can be attractive ornamentals in a garden setting.

Grape plant growth

In many ways, grapevines are easy to grow in your home garden. However, you need to give the vines very good care so that high-quality fruit is produced. The most difficult aspect of grape production is pruning and training to achieve a good yield of high-quality fruit. Proper pruning requires that you have an understanding of grape growth.

A number of terms are used to describe portions of the grape plant or its growth:

Trunk. Permanent, aboveground stem of the vine.

Arms. Wood that's 2 or more years old; short branches of the trunk from which canes or spurs develop.

Cordon. A long arm, usually trained along a wire, from which canes or spurs develop.

Cane. A mature shoot after leaf fall.

Spur. A cane pruned back to one, two, or three buds.

Shoot. New green growth with leaves, tendrils, and often flower clusters, developing from a bud of a cane or spur.

Lateral. A branch of a shoot.

Sucker. Also called a "water sprout"; a shoot growing from old wood, often the trunk base, rather than from shoots or canes.

Node. Thickened portion of the shoot where the leaf and lateral bud are located; location of a bud on a cane or spur.

Internode. Portion of the shoot or cane between two nodes.

A dormant grapevine is illustrated in Figure 1A. In the spring, shoots grow from buds on canes, renewal spurs, and sometimes the trunk. Each bud may produce from one to three shoots. As the shoot grows, leaves, flower clusters, buds, and lateral branches often are produced (Figure 1B). Thus, fruit is produced on the current season's growth.

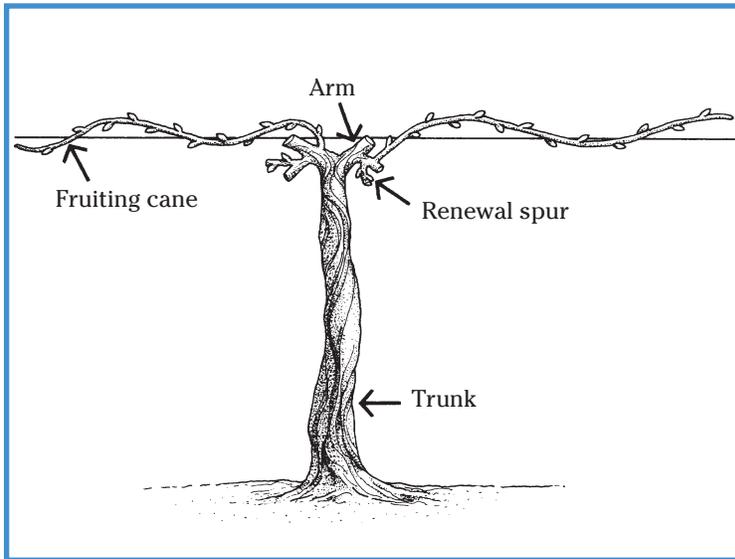


Figure 1A.—Dormant grapevine after pruning.

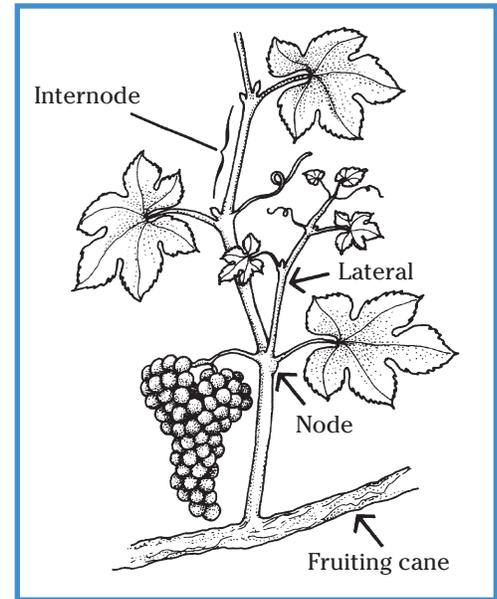


Figure 1B.—Shoot.

When the vine is dormant once again, you must prune it. The buds that will produce next year's fruit are on 1-year-old wood. Thus, you must keep some of the 1-year-old wood and remove the rest to prevent the vine from overbearing.

Selecting a site

Growing grapes well requires a long-term commitment. Vines require several years from time of planting to first harvested crop, and they normally do not reach full production until the fifth or sixth year. Grape plants can survive for 50 to 100 years, provided you care for them properly. Thus, it's important to consider carefully both site selection and site preparation before you plant.

The first step toward consistent production of high-quality fruit is choosing a sunny location. Avoid frosty areas, as new shoot growth in April and May is very susceptible to frost injury. Sheltered home surroundings and sites usually are warmer. If possible, choose a sloping area, especially a south or southwest slope, because they generally have higher temperatures and are less likely to get frost.

In addition, if you plant in a row that goes in a north-south direction, the fruit and leaves will be better exposed to sunlight than in east-west rows; this way, you'll produce better quality fruit.

Soil

Grapes grow on a wide variety of soil types. An important soil factor is drainage. Your grape plants won't grow well if you have heavy clay soils with poor drainage or soils with an impervious subsoil claypan.

Selecting a cultivar

There are many cultivars (varieties) from which to choose. Some are best for fresh consumption (table grapes); others are suited for wine making. You should select only those cultivars known to perform well in your area; fruit of some cultivars doesn't mature in cool-climate areas of Oregon.

For a description of many cultivars that will grow in most areas of Oregon, see EC 1309.

Planting stock and propagation

Purchase plants from reputable nurseries or garden centers. Vigorous, well-rooted dormant plants are satisfactory. Occasionally, nurseries will have 2-year-old plants or potted plants for sale.

In Oregon, grape plants most commonly are grown on their own roots rather than on a rootstock. Some nurseries may have budded or grafted plants available. These plants most often are European (winegrape) cultivars that are susceptible to phylloxera, among other things (see "Pests," page 16). Therefore, they're grafted onto a rootstock that has insect resistance.

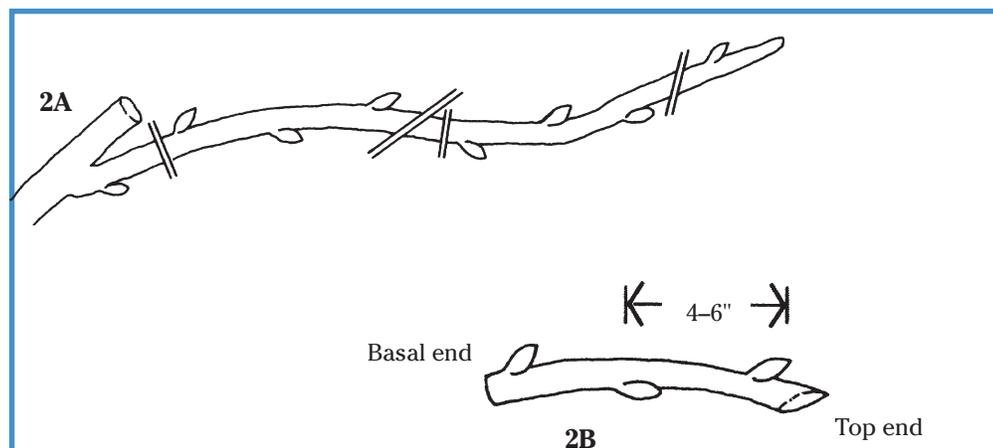
You must propagate grapes from cuttings rather than seeds, because seedlings don't have the same characteristics as the parent plant. Propagating by dormant, hardwood cuttings is simplest.

Hardwood cuttings

When rooted plants are difficult to obtain or when you want to propagate a favorite cultivar, you can grow vines from hardwood cuttings. In February, select 1-year-old dormant canes (those that were new shoots the previous summer).

Choose healthy vines with canes growing in full sunlight. Canes growing in partial shade may be spindly and may not have enough stored food to support the cutting until it has developed leaves and roots.

Select canes of moderate vigor that are from $\frac{1}{3}$ to $\frac{1}{2}$ inch in diameter. Make each cutting long enough to include three buds with 4 to 6 inches between buds. Take cuttings by making a straight cut just below the basal bud (bud closest to trunk) and a slant cut just above the top bud of each cutting (Figures 2A and 2B). This system allows you to identify easily the bottom and top ends of each cutting.



When you're referred to another OSU Extension Service publication, you'll find additional information in "For further reading," page 16.

Don't bring potted grape plants or cuttings from other states—there are strict quarantine restrictions because of viruses and phylloxera, among other things (see "Pests," page 16); all cuttings must be certified disease-free.

Figure 2A
(top).—Old cane, showing the cuts required to make two cuttings.

Figure 2B
(bottom).—Cutting, three buds long, showing basal and top ends.

You need to pay careful attention to grape cuttings the first year—even then, some may not develop a strong root system. Therefore, it's generally preferable to root and grow grape cuttings for 1 year in a garden area or propagating bed before transplanting them to a permanent location.

Cuttings taken in February can be set directly in the nursery row, provided you protect them from frost if you live in a cold area. Set cuttings 6 inches apart in rows 2 to 4 feet apart in well-drained, tilled soil. You may till a well-balanced fertilizer such as 16-16-16 at a rate of 1 cup per 10 feet of row into the top 3 to 6 inches of soil.

Set cuttings upright in a trench with the basal and center bud covered and the top bud just above the soil surface (Figure 2C). Make sure the cutting is right side up, with the slanted cut at the top. You don't need to use rooting hormones. Press soil firmly around the cuttings.

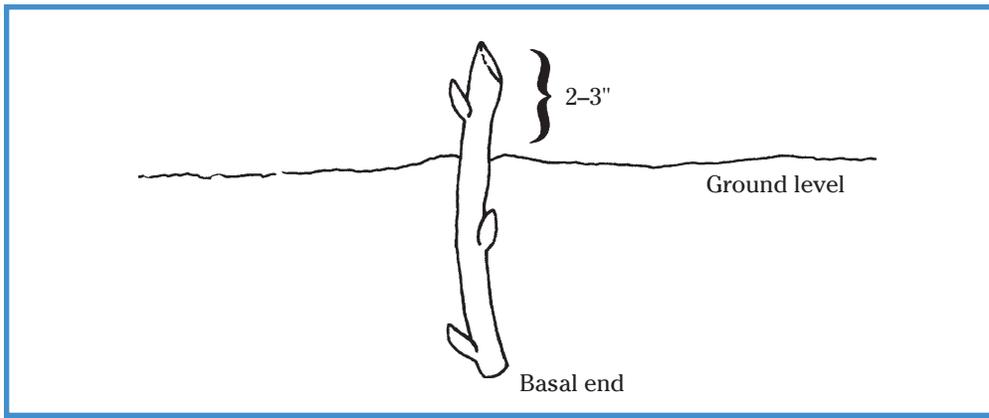


Figure 2C.— Proper way to set a cutting in a propagating bed.

If you live in a cold area, you may protect the cuttings from heavy frost by covering the top of the cutting with soil and mulch; carefully remove this material to expose the top bud once the danger of frost has passed.

Water to maintain adequate and consistent soil moisture levels. Keep the propagation area free from weeds. Rooted cuttings can remain in the nursery row until you transplant them to the permanent location, before growth begins next spring.

You also can easily root dormant hardwood cuttings in a greenhouse if you plant as described above in deep pots. Pots must have drain holes. Transplant well-rooted plants when dormant the following spring.

Establishing your planting

Preparing the soil

The soil should be free of perennial weeds and well tilled before you plant. You can improve the organic matter content of heavy clay soil by incorporating sawdust, manure, or compost; use only well-decomposed (rotted) material.

Don't place compost directly in the planting hole; instead, incorporate it into soil in the whole planting area. You usually don't need to add fertilizer at planting time.

Planting

Plant grapes in early spring as soon as you can work the soil. When you buy dormant, bare-root plants, make sure roots don't dry out before planting. If you're transplanting from a propagation bed or nursery, dig plants carefully to avoid breaking roots.

At planting, prune off all broken roots, trim very long roots, and prune off all but one vigorous cane from nursery-bought plants. Prune the cane back to two buds before planting. Set plants in a hole large enough to spread roots without bending them and to the same depth they were grown in the nursery.

Firm soil well around roots to remove air pockets, and water thoroughly. Leave a slight depression around the base of the plant to make watering easier. Irrigate plants as required.

Young grapevines can't compete with weeds or established lawn grass for water and nutrients. Keep the planting free of all weeds. Cultivate shallowly, no deeper than 1 to 3 inches, to avoid injuring roots.

Spacing

The spacing between rows depends in part on the training and trellis system you choose. In backyard plantings, 9 feet generally is suitable.

Spacing within the row depends on the cultivar you plant and the training system you use. Space European cultivars (*Vitis vinifera*) 6 to 7 feet apart. You can set American cultivars (*V. labrusca*) 7 to 8 feet apart in the row, because they are more vigorous (have longer internodes).

Trellis

For most of the common training systems you need a trellis. Construction of a trellis is similar to that of a fence. Take care that the trellis is strong and adequately braced, as crop-laden grape plants are very heavy.

It's best to construct the trellis in the first or second growing season so that you can start training vines early.

The type of trellis you need to construct varies with the training system used. However, all trellis systems have certain common characteristics.

End posts should be strong, anchored (a "dead man" is suitable), about 8 feet long, with a diameter of at least 6 inches. Treat wooden posts with a copper-based wood preservative. Concrete posts, steel posts, or sound, used railroad ties also are suitable.

Set end posts about 2 to 3 feet deep and leaning slightly away from the center of the row. Wire(s) should be 12-gauge or heavier. Space the line posts (those in the row between the end posts) 18 to 21 feet apart, or every three plants, and set them 2 feet deep. Line posts should have a minimum diameter of 3 inches. Another option is to use steel fence posts and to place one at each plant.

The number of wires required depends on the training system you use (see "Pruning and training," page 6).

You can head train grapevines to a stake or pole, or espalier them on walls, fences, or arbors for ornamental value (see "Pruning and training").

Training the young vine

The main objective of training the young vine is to develop a well-established root system. Select the strongest shoot that grows from each newly

planted vine and train it to a stake, twine, or wire so that a straight trunk develops. Prune off all other shoots that grow (Figure 3).

Sometimes the shoot won't reach the wire in the first year; if this happens, prune it back the next winter to three or four buds. Train the strongest shoot that grows the following summer and prune off all others.

Once the shoot reaches the wire, cut it at a node (through a bud) when dormant and tie it to the wire.

Further training and pruning depend on the training system you select (see "Pruning and training").

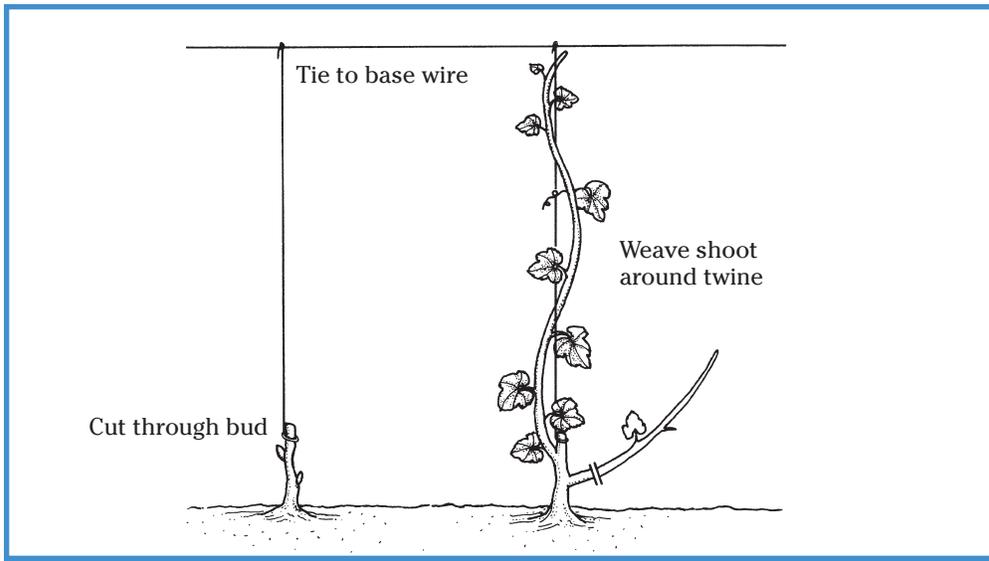


Figure 3.—Training in the planting year. (Short parallel lines show pruning cuts.)

Care of established plantings

Watering

Irrigate young plants as required. However, you need to water mature grapevines only if you live in an area with low annual rainfall. Avoid overhead irrigation during the fruiting period, as it promotes fruit rots.

Fertilizing

Grapes don't require a high level of fertility. In general, fertilize sparingly; more problems occur from overfeeding than from underfeeding. Apply 10 ounces of 10-20-20 per vine (or equivalent rate of a similar fertilizer) in the spring. You also may use manure or compost, but avoid heavy applications of mulch—it delays fruit maturity.

Cultivation

Cultivate shallowly to control weeds.

Pruning and training

Proper pruning and training is essential for the production of a good yield of high-quality fruit and to maintain a balance between vegetative growth and fruiting. Prune vines when they're dormant, from January through March 1. There are two methods, cane pruning and spur pruning. Once you understand these methods, you'll be able to prune a vine no matter what training system you use.

The most common problem in home garden grape production is that vines aren't pruned hard enough. When you prune, you must remove the majority of wood produced the previous season—*about 90 percent is pruned off!* Relatively little wood is left to produce the following season's crop.

Cane pruning

In the first growing season, train the young vine to the wire (first winter); remove any lateral shoots that developed (Figure 4A). In the second growing season, shoots will develop from buds on the trunk. Retain two shoots that grow 2 to 6 inches below the wire. Train these shoots, one on each side of the trunk, along the wire. These shoots will form fruiting canes or arms. Remove all shoots, other than the two you selected, while they're still small. Remove any flower clusters and suckers that develop (Figure 4B).

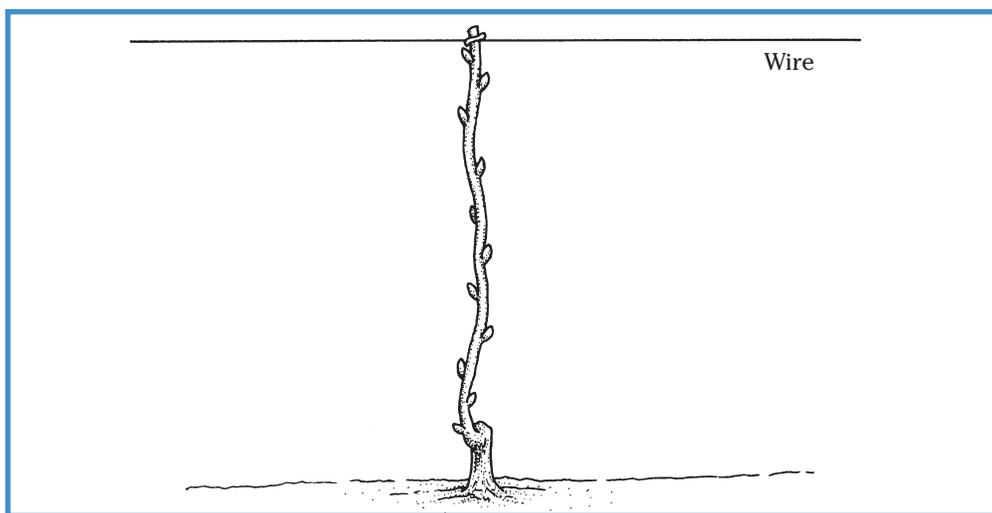


Figure 4A.—Cane pruning, first winter.

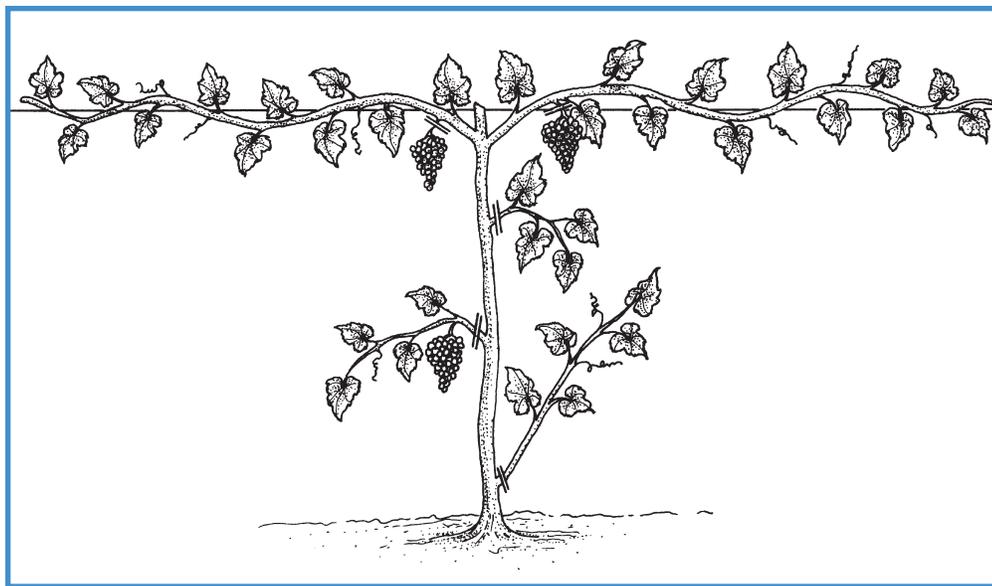


Figure 4B.—Cane pruning, second growing season (double lines show pruning cuts).

In the second winter, prune back the two canes to seven or eight buds each (14 to 16 buds per plant, Figure 4C). Fruit will be produced from these buds, and it's important not to allow young vines to overproduce.

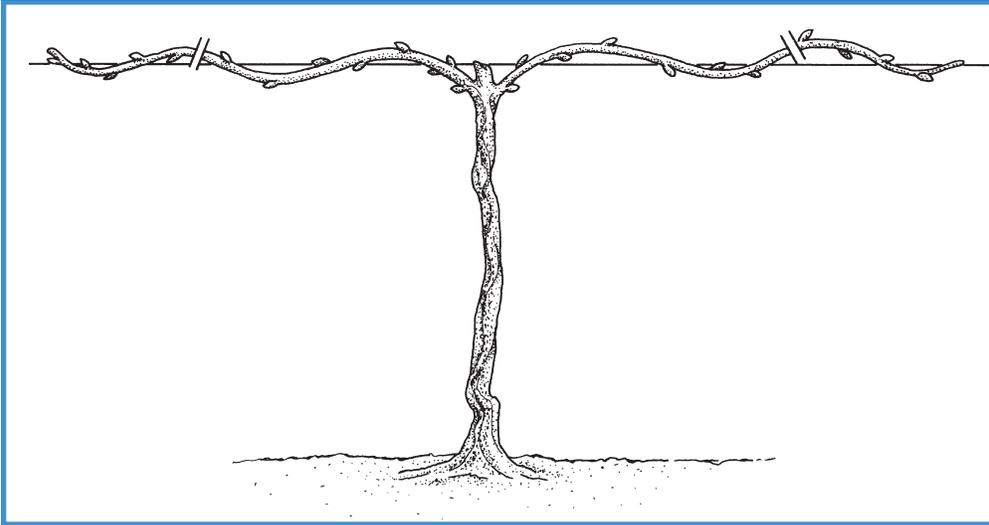


Figure 4C.—Cane pruning, second winter (double lines show pruning cuts).

In the third growing season, shoots grow from buds on 1-year-old canes; fruit is produced on these shoots (Figure 4D). If an average of more than one fruit cluster is produced per shoot, thin the remaining clusters to prevent the young plant from overbearing (see “Fruit thinning,” page 15).

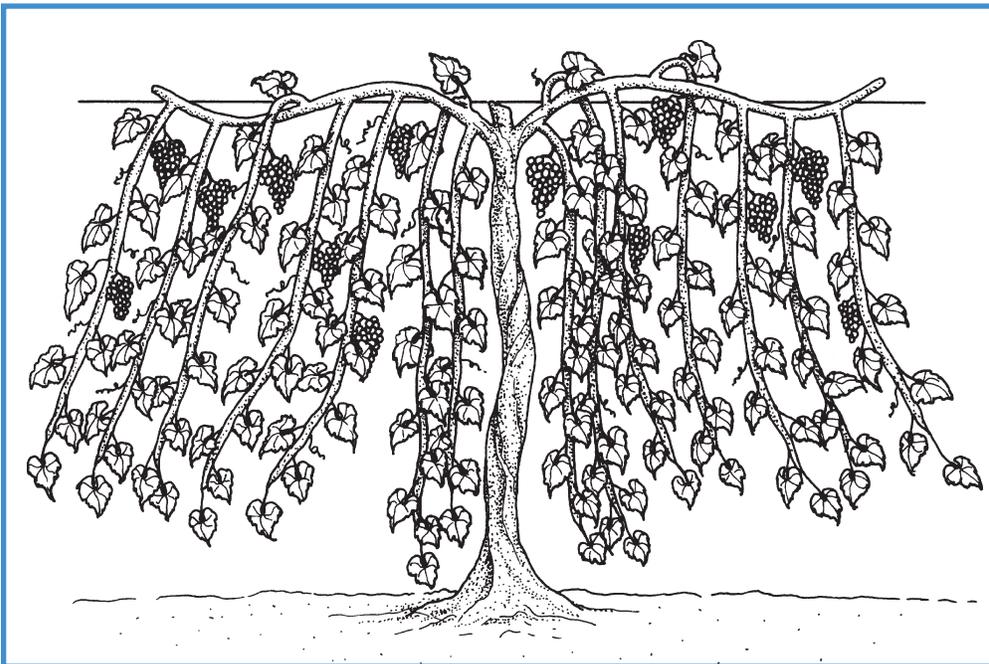


Figure 4D.—Cane pruning, third growing season.

The grapevine before and after pruning in the third winter is illustrated in Figures 4E and 4F. You must select new fruiting wood and remove the rest (*about 90 percent*) of the canes. When you're selecting fruiting canes, be aware that canes differ in fruitfulness.

The most fruitful canes are those that were exposed to light during the growing season, are not less than pencil width in diameter, and have an average internode length. (Long internodes indicate too much vigor.) It's most desirable to keep the fruiting area as close to the trunk as possible.

Select two new fruiting canes (indicated by shading in Figure 4E) and cut back each to about 15 buds (or 30 per plant, Figure 4F); keep fewer buds on plants that are low in vigor. Wrap the canes around the wire and tie at the end.

Leave a one- or two-bud spur near the base of each arm (Figure 4F). These renewal spurs will supply the new fruiting canes the following year and thus maintain fruiting close to the trunk.

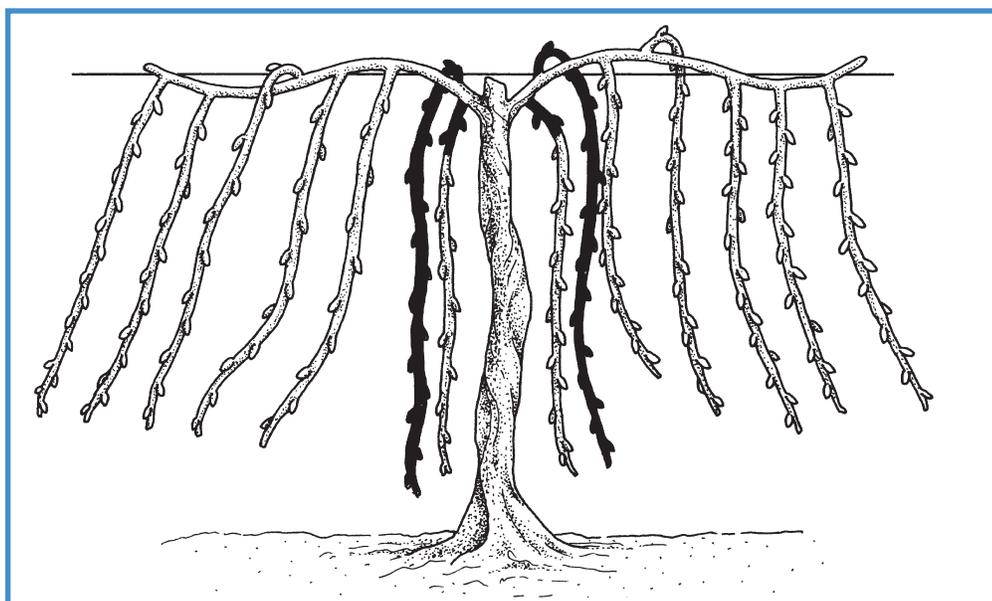


Figure 4E.—Cane pruning, third winter before pruning (shaded canes will be retained for next season's fruiting wood).

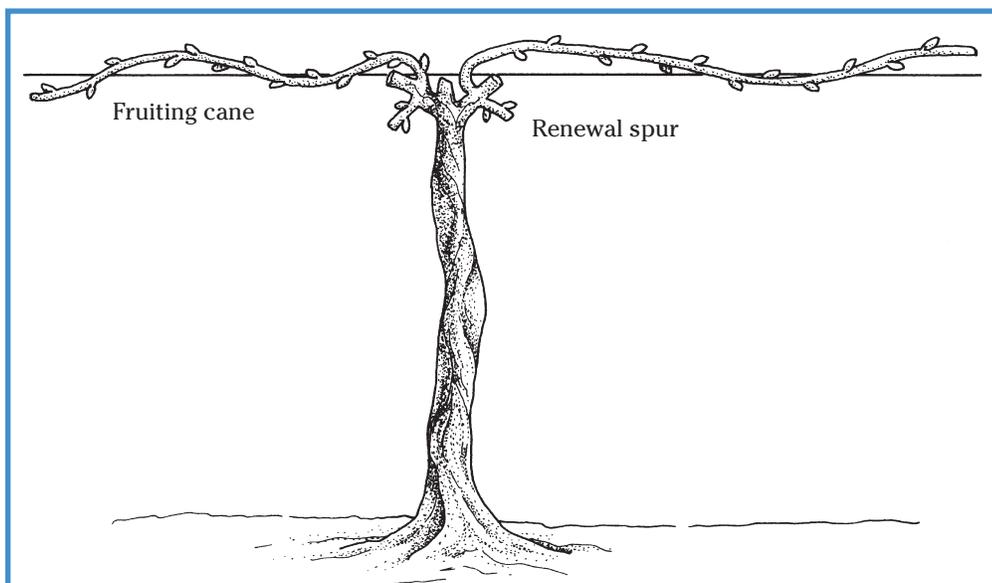


Figure 4F.—Cane pruning, third winter after pruning.

Prune mature plants yearly to remove all growth except new fruiting canes and renewal spurs. Choose a fruiting cane from each of the renewal spurs. If the canes from a renewal spur are undesirable for some reason, choose a cane from a basal bud of last year's fruiting cane (Figure 4G). Cut back each fruiting cane to 10 to 25 buds (or 20 to 50 buds per plant, Figure 4H).

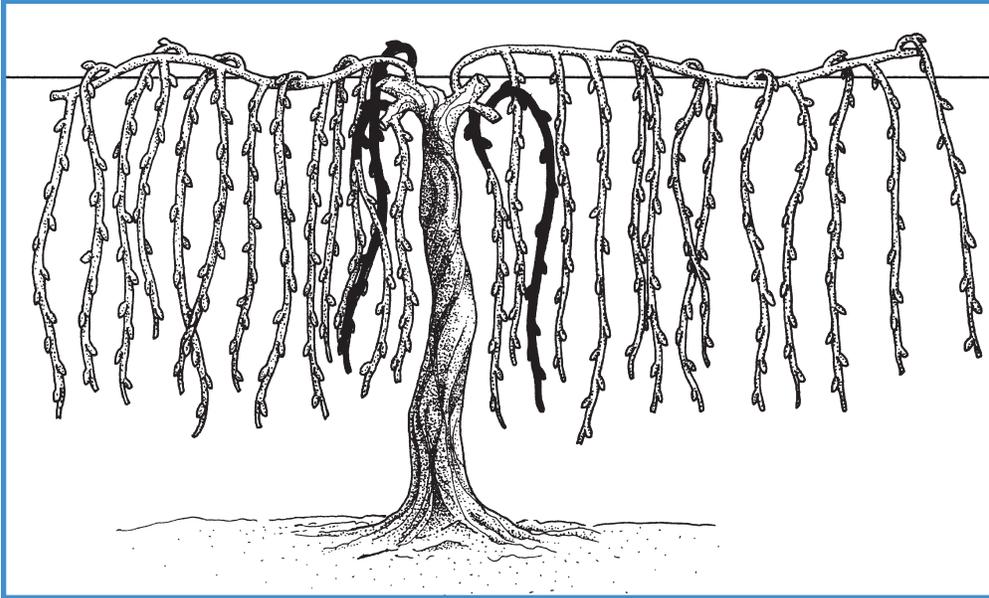


Figure 4G.—Cane pruning, fourth winter before pruning (shaded canes will be retained for next season's fruiting wood).

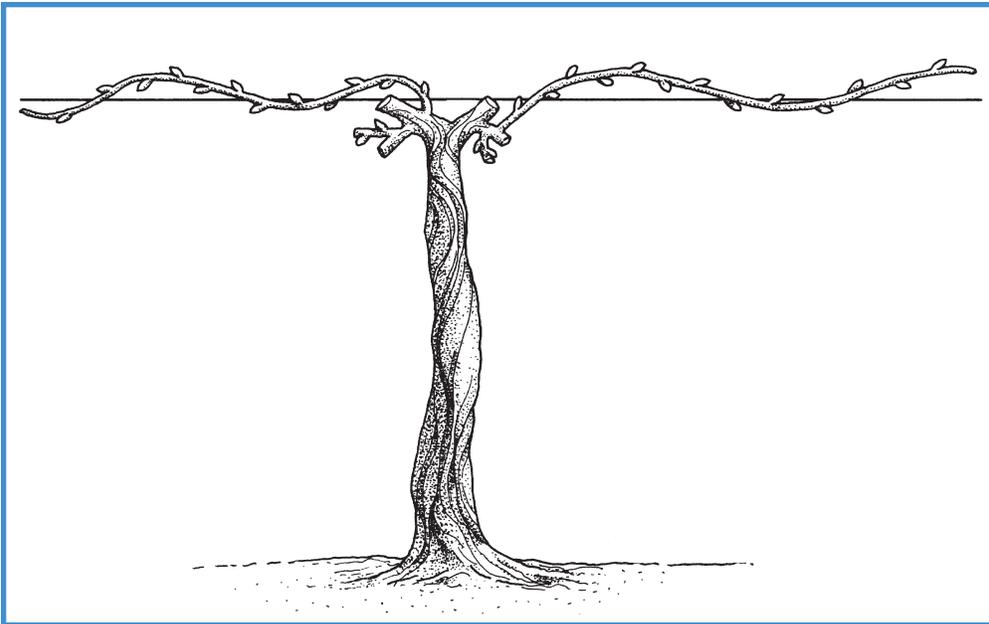


Figure 4H.—Cane pruning, fourth winter after pruning.

If necessary, you can replace arms by training shoots that arise from buds near the trunk.

Spur pruning

This simple method requires little or no decision on what to select for fruiting wood. Differences between spur and cane pruning begin during the third winter; up to this point, prune the young vine as illustrated in Figures 4A through 4D.

In the third winter, cut back the selected canes (indicated by shading in Figure 5A) along the cordon to two or three bud spurs. Spurs should be 4 to 6 inches apart. If more than one shoot grew from a node on the cordon, select the strongest one and cut off the others (Figure 5B). Leave no more than 40 to 50 buds per plant. If plants are low in vigor, leave fewer buds. Fruit will be produced from buds on spurs.

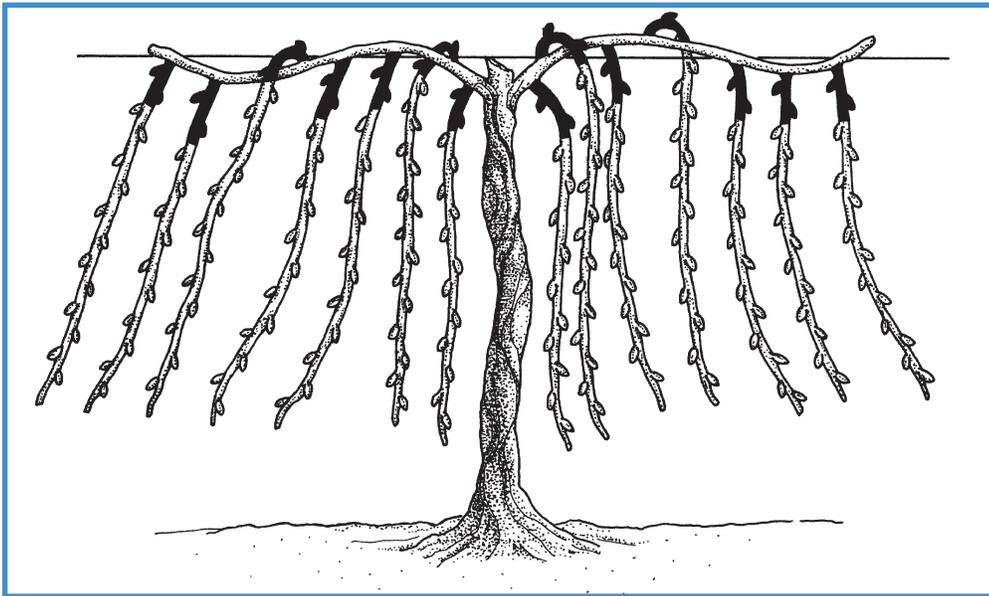


Figure 5A.—Spur pruning, third winter before pruning (shading indicates fruiting spurs that will be retained for next season).

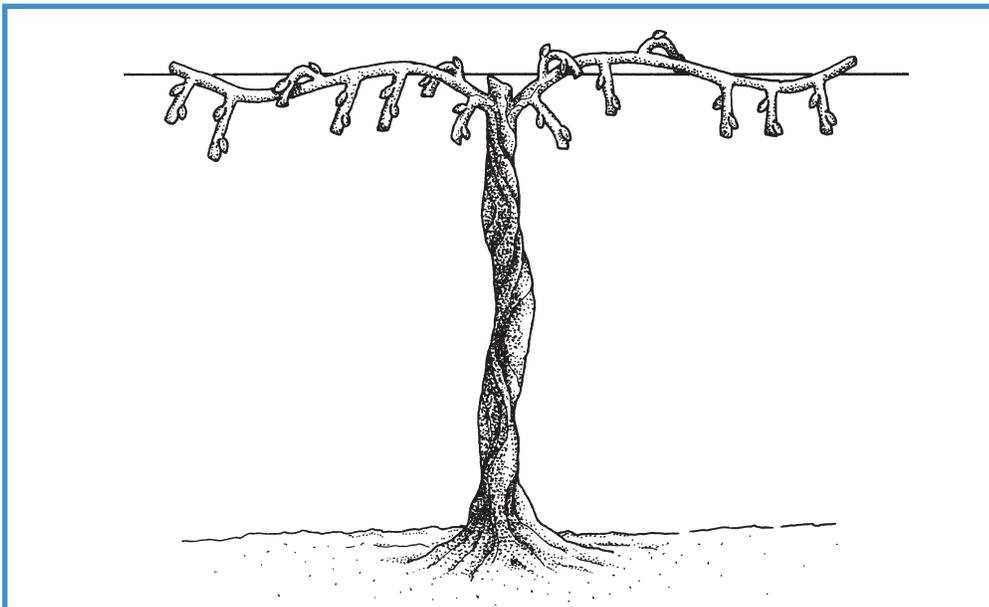


Figure 5B.—Spur pruning, third winter after pruning.

Prune mature plants by selecting spurs, cutting them back to two or three buds, and removing all other canes (Figures 5C and 5D).

In some cultivars, such as the French-American hybrids (for example, 'Interlaken') or American types ('Concord'), the basal buds of canes aren't fruitful; the shoots that grow from these buds do not produce fruit. Thus avoid spur-pruning these cultivars; cane-prune them instead.

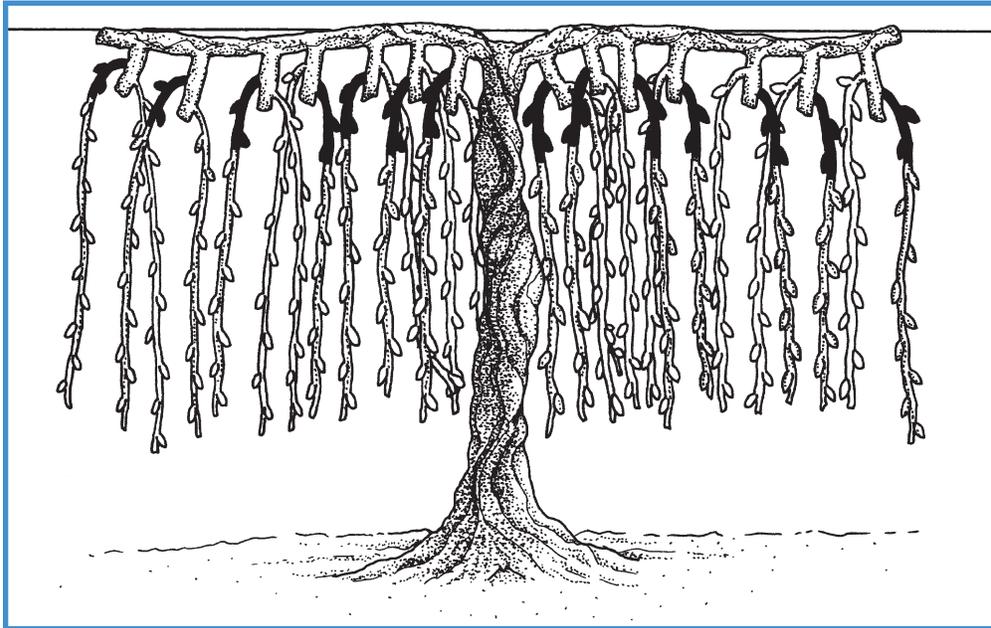


Figure 5C.—Spur pruning, fourth winter before pruning (shading indicates fruiting spurs that will be retained for next season).

If you're uncertain as to whether the basal buds of a cultivar are fruitful, it's best to cane-prune. However, it's easy to convert from one system of pruning to the other. Thus, if you're interested in spur-pruning, try both methods and compare results for a particular cultivar.

Prune wine grape cultivars harder than table grapes to promote the development of high-quality grapes. Leave only 20 to 30 buds per vine; many wine grapes are cane-pruned.

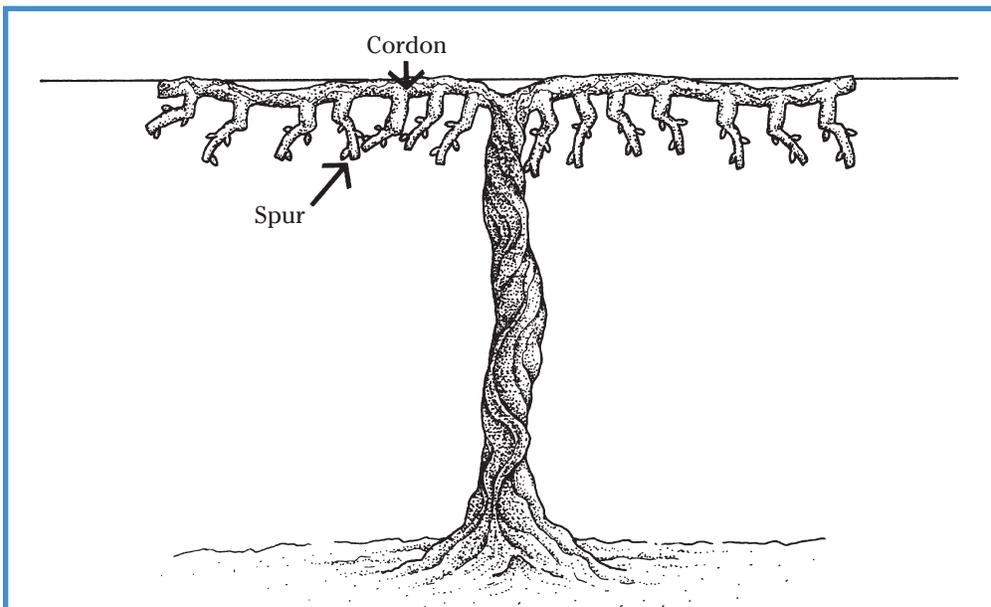


Figure 5D.—Spur pruning, fourth winter after pruning.

Training

You can train grapevines in many ways. Some training systems require slight modifications to the trellis described earlier.

Two-cane Kniffen and single curtain. This training system requires pruning to two fruiting canes or cordons; we used it as an example in the above description of cane- and spur-pruning (Figures 4 and 5). This is a simple method of training grapes and is highly recommended for growing grapes in home gardens in Oregon.

For a single-curtain system, train the trunk to the top wire of a single-wire trellis. The shoots then grow and hang downward (Figure 6A). Fruit is well exposed at the top of the canopy, promoting good fruit quality.

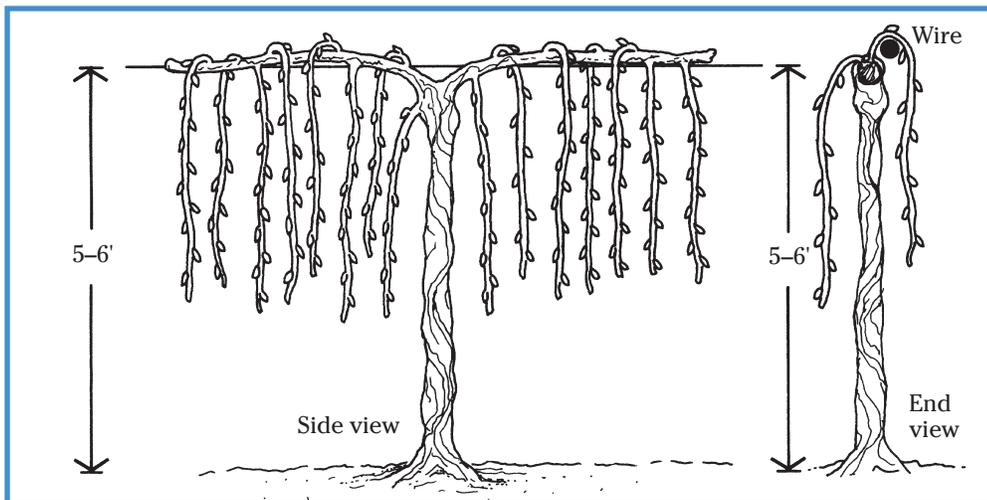


Figure 6A.—Single-wire trellis for single curtain training.

In the two-cane Kniffen, also called a “vertical hedgerow” or “Guyot” system, a multiple-wire trellis is required (Figure 6B). Train young vines to the lower wire. The shoots should be vertically trained; weave shoots between the wires as they grow and use twist ties to keep them in place if necessary (Figure 6B).

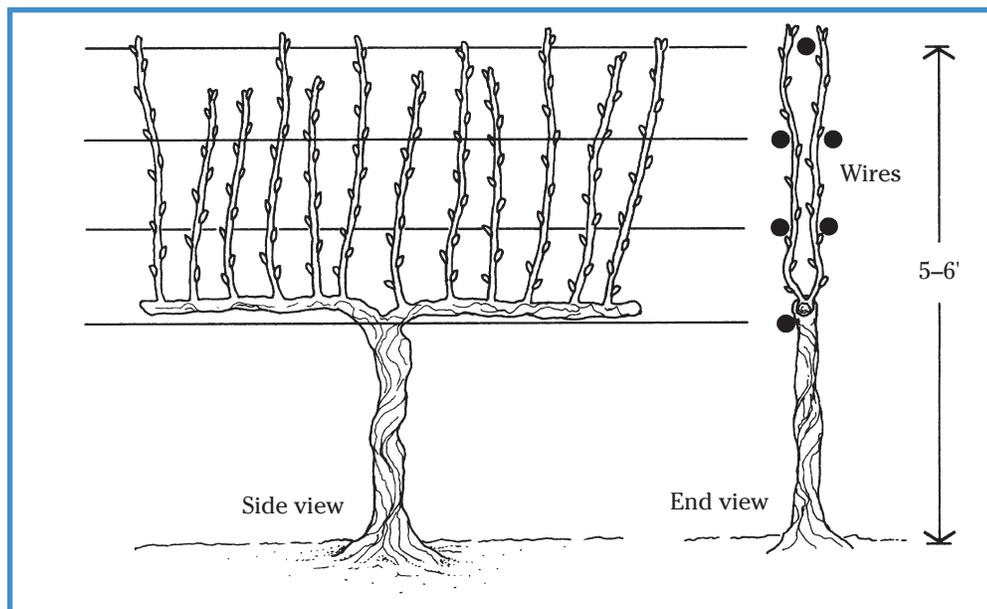


Figure 6B.—Two-cane Kniffen.

Four-cane Kniffen. This is similar to the two-cane Kniffen, but four fruiting canes are trained (Figure 7). Avoid spur-pruning this system. A disadvantage of the four-cane Kniffen is that fruit may be of lower quality because shoots from top fruiting canes shade the fruit on the lower canes.

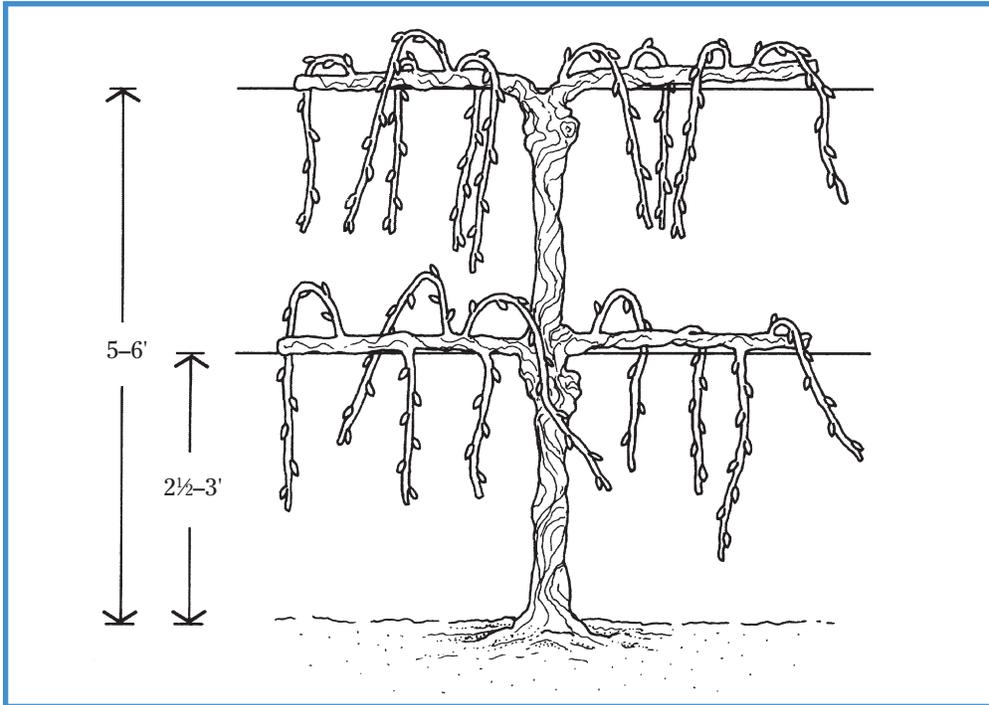


Figure 7.—Four-cane Kniffen.

Head training. Vine trunks are tied to a stake when young and become self-supporting as they grow (Figure 8). This method is inexpensive and requires less space, but yields are lower.

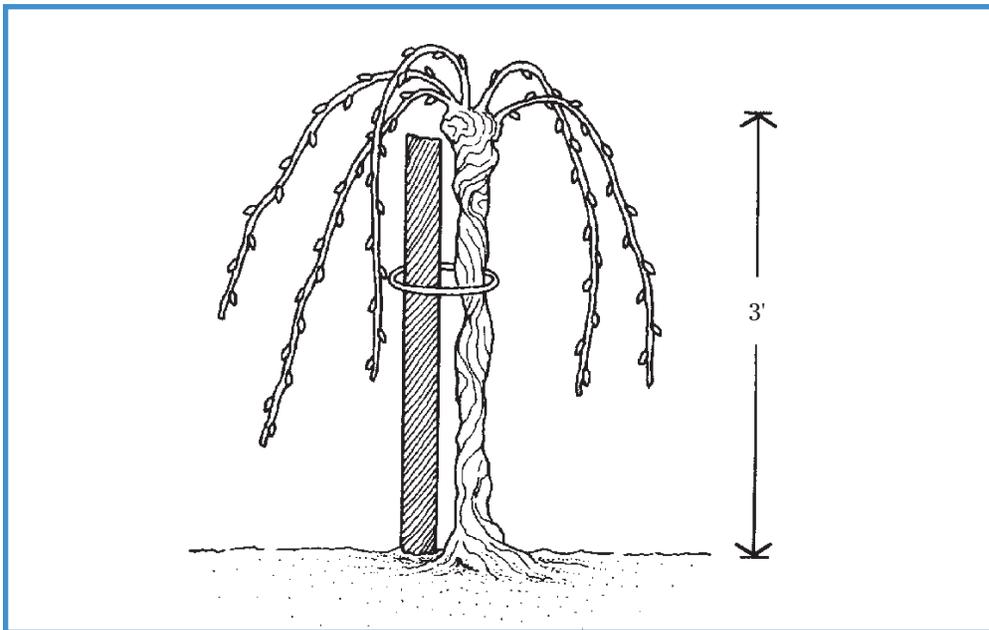


Figure 8.—A head-trained vine.

Arbors. You can train grapes on walls, fences, or arbors. The plants make attractive ornamentals and can provide shade. If you're training to an arbor, prune the vine less severely; let long canes cover the arbor. Leave more buds per plant, which means fruit quality usually is lower. Training three different-colored table grapes to an arbor is very attractive.

Summer pruning

Usually 3 to 4 feet of growth per shoot is enough to ripen the crop. If plants become too vigorous, you can top or trim shoots. Laterals will be produced, but you can trim or hedge them.

Fruit thinning

If you don't prune vines hard enough, a large number of small, scraggly bunches will be produced. This decreases vigor and can severely stunt young plants. If too many bunches are produced, thin to one or two bunches per shoot by removing clusters when the berries are no more than $\frac{1}{8}$ inch in diameter. Thinning bunches will improve berry size.

You also can thin the fruit clusters from vines that are adequately pruned and don't have an excessive fruit load; doing so will improve berry size and promote earlier fruit maturation. However, yields will be lower.

Girdling

This is an old practice that, when done correctly, may improve size and appearance of table grapes. Girdle each cane at the third internode; this allows the two basal shoots to support the root system and weakens the plant less.

Remove a narrow ring of bark about $\frac{1}{8}$ to $\frac{1}{4}$ inch wide about 2 weeks before bloom. The girdle will heal by the end of the growing season. If you're uncertain about the effects of girdling, practice this technique on one cane of a vine.

Harvest

The most important aspect of harvest is picking at the proper maturity. Fruit color isn't a good indication of maturity. In table grapes, maturity usually is determined by taste or by seed color, which changes from green to brown. All grapes become sweeter (and usually less acidic) as they approach maturity. The percentage of sugar and the ratio of sugar to acid are major factors in determining juice and winegrape quality.

In deciding when to harvest, you must consider the weather and its potential effects on fruit. Rain on mature fruit may cause shattering, cracking, and an increase in fruit rot—and fruit becomes more attractive to birds as it matures.

The average temperature must be greater than 50°F for grapes to continue to mature on the vine. Fruit does not ripen further once picked.

Pests

There are no major insect pests of grapes in Oregon. However, wasps and yellowjackets may be a problem once fruit becomes ripe—they can make picking a hazardous operation!

Phylloxera is a major insect pest in California and Oregon vineyards. There are strict quarantine regulations on grapevine importation from other states, to try to prevent phylloxera from becoming more of a pest in Oregon. It's an aphid-like insect that feeds on roots; it can kill a susceptible grapevine. American cultivars such as 'Concord' are resistant to this pest. However, European winegrape cultivars are susceptible, so they're often grown on resistant rootstocks.

Birds can be a major pest. Scare devices such as aluminum plates offer little control. The only sure method of protection is placing netting over the vines.

The two most common diseases are bunch rot and powdery mildew. Keeping the canopy well pruned and trained to promote good air circulation may decrease the amount of fruit rot. Check with your county office of the OSU Extension Service for management recommendations.

For further reading

Strik, Bernadine C., *Grape Cultivars for Your Home Garden*, EC 1309 (Oregon State University, Corvallis, reprinted April 1993).

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Published April 1989. Reprinted June 2006.
