

## Pruning Methods ::

Under normal conditions, terminal buds grow faster than lateral ones by producing a chemical that retards the growth of lateral buds. Terminal-bud dominance varies according to the age and species of the plant. It is strong in most trees, especially young ones. It is relatively weak in shrubs, particularly those that are bushy.



Illustration 1, If you cut away the terminal bud from a stem, the lateral buds below it will grow faster, and the stem will become more bushy.

## Pruning Cuts

Pruning is the removal of older twigs and branches that have begun to harden and become woody. Unlike shearing, which is done during the growing season, pruning is usually done while the plant is dormant, that is, not actively growing.

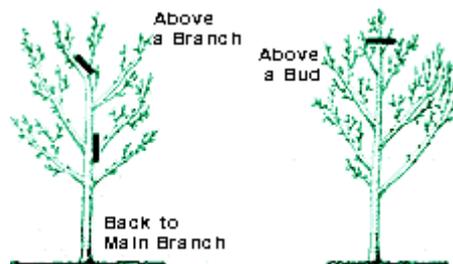


Illustration 2, When making pruning cuts you are removing undesirable growth with an eye to encouraging beneficial future growth.

The cardinal rule is to prune back to a branch or a bud, or you will leave a stub that will die back and cause decay and disease. Make pruning cuts no more than 1/4-inch above a bud or side branch.



Illustration 3, Angle all pruning cuts at about 45 degrees, tilted in the direction the bud is pointing. A slanting cut leaves less stub and dries faster after a rain.



Illustration 4, Deciding which bud to cut back to is the key to successful pruning. Trees and shrubs have buds all along their branches, some pointing toward the center of the plant, others pointing out. Cut just above an outside bud. The resulting twig or limb will tend to grow outward and upward, for a healthy, attractive, spreading growth habit. If you cut to an inward, pointing bud, the limb may cross other branches and contribute to dense, tangled growth and a lack of air circulation and sunlight at the center of the plant

### **Shearing**

When you shear a hedge, you are removing all of its new terminal buds, thereby encouraging vigorous lateral growth for a dense, bushy hedge. At the same time you're keeping the hedge from growing too high. Shearing is usually restricted to removing soft, first-year growth that is easy to cut.

It is best to shear shortly after new growth begins in spring so that the lateral buds will have all season to grow and make the hedge bushy. If you make the common mistake of waiting until the end of the growing season, your hedge will not get bushy. You'll also end up with unsightly brown tips, because no new growth will cover them.

## **When To Prune ::**

The best time to prune depends on many variables. In deciding when to prune you must consider: the condition of the plant, the length of its growing season, when it blooms, and whether its flower buds form on new growth or only on older wood.

### **Late winter**

This is the best time to prune many plants, including fruit trees, certain roses, broad-leafed evergreens, vines, and some flowering plants. What is late winter in your area? It is when the days have begun to lengthen and warm noticeably. In many regions late winter means mid-February, in others mid-March. Much later than that is usually too late; plants are no longer dormant.

Drastic pruning of a neglected plant in late winter can cause overly vigorous growth of leaves and wood at the expense of flowers and fruit. Either postpone such pruning until spring or spread it out over several seasons.

### **Spring**

Remove any wood damaged by winter wind, ice, or snow. Remember, prune back to a healthy bud or limb. Repair damage from animals.

### **Early summer**

Time to shear evergreens and hedges. This is when they are putting on their greatest growth. This is also the time to prune all early-blooming shrubs after the last flowers fade.

### **Late summer**

This is a good time to prune certain shade trees, such as maples and birches, that lose too much sap if pruned in spring.

Some orchardists prefer to prune fruit trees now, since summer pruning encourages trees to set more flower and fruit buds and fewer leaf and branch buds. In the Deep South, however, late-summer pruning of fruit trees is unacceptable since it encourages a spurt of growth late in the season that would be at risk of cold injury.

### **Autumn**

In all but the most northern regions this is a good time to prune roses, clematis, hydrangea, buddleia, crape myrtle, potentilla, hibiscus, grape vines, and the small-berry fruits. However, in Florida and other Sunbelt regions, the best pruning times for these ornamental shrubs vary. Consult local authorities.

## Shade Trees ::

A tree's first few years are critical. Pruning then has a profound effect on the ultimate size, shape, and health of the mature tree.

### Pruning when Planting

When planting a young tree, prune to achieve balance between the roots and the stem. Shade trees are usually sold balled and burlapped, that is, with most of their roots intact and surrounded by soil. Such trees need little pruning when planted. Simply remove any twiggy growth that won't be part of the tree's framework of branches. Container-grown trees need almost no pruning, since none of their roots have been removed. Prune only to remove dead or broken branches. Plants that have been too long in the container can form circling roots. Prune them; if left, they could become girdling roots.

Bare-root trees (in which many of the roots have been removed or damaged), may require some pruning when planted, but the old practice of removing up to one third of the stem and half of each branch has been seriously questioned. Instead, prune any broken branches or roots before planting. You may want to cut back the main stem of an especially spindly bare-root plant to encourage branching.

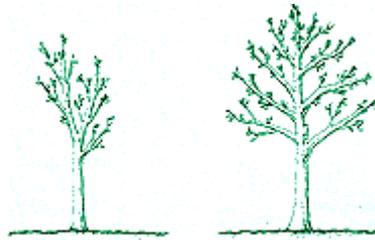


Illustration 1, Prune young shade trees to establish branch patterns that preserve the natural habit of the tree. Certain trees – pin-oaks, birches, poplars, and the like – form a single central trunk with clearly subsidiary side branches. Any tendency of such trees to produce more than one leader calls for removal of the weaker ones.

### Mature Trees

Mature trees that have been pruned since planting require little besides maintenance care: removal of dead or damaged wood or the occasional general thinning to allow more air into the crown.

Always cut large limbs back to a live branch or the main trunk. Most branches have an obvious, sometimes wrinkled, swelling at their base. This is the bark-collar, an area where cell growth is especially abundant and wound closure is rapid. Make your final cut just outside this collar.

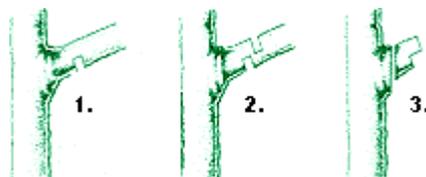


Illustration 2, Use the tree-cut method when sawing off a large branch. First make an undercut at least 6 inches from the bark collar. Then, about an inch beyond that, remove the limb with a top cut. Finally, remove the remaining stub with one smooth cut from top to bottom just outside the bark collar. With a very big limb, first reduce its length by removing it in sections.

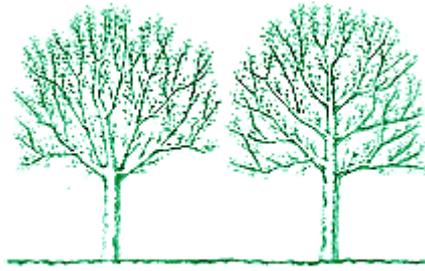


Illustration 3, If possible, remove branches that form a deep V-shaped crotch. Such crotches are vulnerable to wind damage and can cause rot. Wide crotch angles are stronger.

**Ornamental Trees ::**

Illustration 1, In the first year, while the plant is dormant, remove weak or unruly shoots, crossing branches, and suckers.



Illustration 2, In the spring of the second or third year, remove poorly spaced branches. Thereafter, leave the plant alone, pruning only for dead, diseased, or damaged wood or to correct a poor shape.



Illustration 2, In the spring of the second or third year, remove poorly spaced branches. Thereafter, leave the plant alone, pruning only for dead, diseased, or damaged wood or to correct a poor shape.

Like shade trees, ornamental deciduous trees grow on a framework of older branches and need only infrequent maintenance pruning. Follow the same rules for pruning at planting time.

The best time to prune most flowering trees is just after the blossoms fade unless you want to leave attractive berries, on which case prune in late winter.

Some popular trees in this group include: *Acer palmatum* (Japanese maple), *Cercis* (redbud), *Cornus florida* (flowering dogwood), *Cornus kousa* (Kousa dogwood), *Corylopsis*, *Cotinus obovatus* (American smoke tree), *Elaeagnus* (Russian olive), *Euonymus atropurpurea* (burning bush), *Hydrangea paniculata*, *Laburnum anagyroides* (golden-chain), *Magnolia*, *Malus* (flowering crabapple), *Prunus* (flowering almond, cherry, plum), *Syringa reticulata* (Japanese tree lilac), and *Viburnum*.

## Ornamental Shrubs ::

Most deciduous flowering shrubs require little more than regular maintenance pruning: removal of dead, diseased, or damaged branches whenever you notice them. Remember, a plant should not be pruned unless there is a good reason for doing so. Some shrubs may need to be cut back to keep them from getting too tall or too broad. Because they renew themselves by growing new stems from the roots or from the base, they do not require pruning to encourage a balanced, open structure of large branches as do trees.

Some shrubs, like hydrangea, lilac, and honeysuckle, benefit from occasional drastic pruning. Cut back almost to the ground, these plants will virtually replace themselves with new growth. Others, however, are better served by less drastic renovation pruning spread over two or three seasons.

Before pruning a flowering shrub, check to see whether it flowers on wood produced the same year or on year-old wood that grew during the previous season. While there is no foolproof way to tell if plants bloom on old or new wood, most plants that bloom before the first of June do so on old wood, and those that flower later, bloom on new wood.

**If flowers form on old wood**, the shrub should be pruned immediately after the flowers fade. If you prune these plants in winter or spring, you'll cut away flower buds. If you don't prune them immediately after they flower, they won't have enough time to develop a new set of buds to flower the following spring. Examples are beautybush, Buddleia, Alternifolia, Deutzia, Cotinus, forsythia, honeysuckle, Kerria, lilac, and some spireas and viburnums.

**If flowers are produced on new wood**, the shrub may be pruned in late winter or early spring before the buds become green. Some examples are Buddleias other than alternifolia, broom, crape myrtle, spreading euonymus, Hibiscus syriacus, Hydrangea paniculata, Potentilla witch hazel, and some spireas like *S. japonica*.

Shrubs that flowers on old wood (some examples are jasmine, forsythia, mock orange, lilac and Pyracantha) should be pruned in the following manner. To remove dead, diseased, or damaged wood, follow these steps:

Cut back shoots that have borne flowers, leaving vigorous young shoots lower down on the main stems.

Remove any puny or overly vigorous shoots and suckers that spoil the shape of the plant.

On shrubs three or more years old, begin to remove some of the oldest shoots at the base as close to the ground as possible, to simulate the growth of new shoots. Remove one out of every three to five older shoots depending on the size of the shrub.

Shrubs that flowers on new wood should be allowed to form a strong framework of branches in their first several years. In the first year, tip back shoots to the first strong bud or pair of buds. Remove puny, overly vigorous shoots.

In the second year and there after prune back new shoots to within one or two buds of last year's growth. In the fourth or fifth year begin to remove older branches at the base.

### Renovation

When restoring old shrubs, follow these guidelines, remembering to prune according to the plant's natural form.

Remove dead, damaged, diseased, weak or badly placed stems. If a shrub has become too large, cut several of the oldest stems to the ground and cut the remaining ones to just below the height you want for the shrub. Within a year or two the branches will grow back and hide the pruning wounds. In future, prune annually to maintain desired height and breadth.

If a low-growing shrub has become too dense, prune half the stems to the ground the first year. Prune the remaining half the second year. If the shrub is very vigorous, cut all the stems to the ground the first year.

If a shrub's growth has become thin and floppy, cut back all the leggy stems by half and remove some of the oldest stems to the ground.

If the shrub has become too twiggy, with many small branches at the ends of the branches, prune the oldest branches to the ground and cut off the outer twiggy growth.

In all of the above instances a healthy and reasonably vigorous plant will come back with lush growth and fill out within three years.

## **Broadleafed Evergreens ::**

Broadleafed evergreens need very little pruning; many are better left alone. What pruning is beneficial is similar for all such plants, including: azaleas and rhododendrons, mountain laurel, holly; as well as camellias, bay laurel, jasmine, leucothoe, oleander, olive and others in the South and Pacific Coast region; and andromeda, barberry, cotoneaster, daphne, euonymus, pyracantha, and privet, which are deciduous in the North and evergreen in mild climes.

Maintenance pruning is simple. Prune dead, diseased, or damaged wood anytime. Remove faded flowers immediately after they are spent for the best flowering the following year. At the same time prune back branches that are too long.

To maintain a compact shrub, periodically snip off the terminal buds of new growth during early summer to induce the growth of lateral and latent buds. Be careful to cut off only the smaller terminal buds and not the fatter blossom buds that are next year's flowers.

In time, broadleafed evergreens become leggy and need rejuvenating. In the South, cut the plant back to within about a foot of the ground. In colder areas, spread this drastic pruning over several years, removing a third of the stems annually. Renew plants in late winter or early spring.

Larger broadleafed evergreens like camellias, magnolias, and gardenias require little beyond removal of dead or damaged limbs and suckers. Large wounds are very slow to heal; avoid making them if possible.



Illustration 1, To stimulate branching, remove the head just above the light-colored new growth of the current season.

## Hedges ::

Creating a hedge requires the regular shearing of vigorous plants to produce dense, contained growth. You cannot shear a formal hedge too often to keep it looking its best. Informal hedges may need shearing only once or twice a year.

Begin shearing a new hedge in its second or third year. Shear it regularly thereafter. Do not allow a hedge to reach its desired height and then begin shearing it for a compact, dense habit. Develop a small, dense hedge first then let it slowly reach the desired height.

Always prune a hedge so that it is tapered toward the top. This allows sunlight to reach all the foliage, even at the base. If you sheared the sides of a hedge perpendicular to the ground, or worse, slanting out toward the top, lower foliage will succumb to the resulting shade, and the hedge will become a top-heavy eyesore.

Provided they are vigorous and healthy, most overgrown hedges (and especially deciduous ones) respond very well to drastic pruning. Cut them back to a foot or more from the ground, and within a new years they will be good as new. Some evergreen hedges can be similarly renewed, but be sure branches have some leaves remaining. Evergreen hedges are yew, boxwood, and holly.



Illustration 1, When shearing to shape a hedge, start at the bottom and work up. Keep your shears pointed slightly inward to achieve the desired taper. In the north, do not make a flat-topped hedge; it will carry more snow and ice and will break under the weight.

The best time to shear a hedge is when it is making its fastest growth. For needle evergreens that means early summer. Since they put on all their growth over a short period, they won't require periodic shearing after mid-summer. Deciduous plants like privet and barberry require periodic shearing throughout the summer. Shear broadleafed evergreen hedges throughout the year. Shear flowering hedges only after the blossoms have faded.

## Ornamental Vines ::

Whether they climb, creep, cling, twine, or flop and scramble, vines have one thing in common: given favorable conditions they grow like crazy. Pruning vines is largely a matter of keeping them in bounds. That's the best done by controlling growth from the day you plant a vine.

When planting, select several of the strongest shoots and prune them back to half their length to encourage more new shoots to grow from the base.

As a vine grows, keep it in check. If you want it to be compact, continually prune terminal growth during the growing season. If you want it to ramble, cut to the base all but three or four of the strongest shoots. Be sure to prune to let light reach the base of the vine or it will become bushy on top and bare below.

Most flowering vines bloom on wood formed the previous year, so try to avoid drastic pruning in early spring or you'll remove the flower buds. On the other hand, all drastic pruning of vines should be done when the plants are dormant.

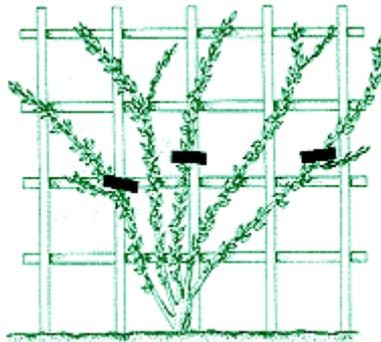


Illustration 1, When planting a vine, prune about half the strongest shoots to half their original length. This will encourage growth at the bottom of the vine as well as above.

## Roses ::

Pruning the roses is not a mysterious art form. Roses are deciduous shrubs that flower on new stems, called canes, that grow from the base each year. As canes age, they lose vigor and produce fewer and fewer flowers. An old, neglected rose bush is an unsightly tangle of dead wood and old canes. To continue blooming profusely, rose bushes must be pruned once a year to stimulate the growth of new canes.

Pruning also lets light through to the "bud union" at the base of the plant. Most roses are bud-grafted, and the big, wood knob at the base is the graft. A rose produces more and healthier canes if its bud union gets plenty of sunlight in the late spring and early summer. Remember, though, that the bud union can be severely damaged by snow and frost. In colder regions, cover it with soil and mulch from first frost to last.

Most roses bloom in summer and should be pruned in March, just after buds begin to appear. In the Sunbelt regions, the best time to prune is in late January-February. In the Deep South, it is February. If you prune too early (December), you'll stimulate premature growth that is vulnerable to frost damage. If you prune too late (April-May), you will waste energy the plant has put into early-spring budding and leafing. The ideal time is after the last killing frost, when buds halfway up the most vigorous shoot are beginning to swell, and buds near the tip have grown to about ¼-inch.

Roses that bloom on the previous year's wood should be pruned after they are finished blooming. A few roses bloom on both new and old wood. Prune each type of flowering wood as if it were a separate plant.

Seal all large pruning cuts with tree paint or rose paste to prevent disease and speed healing.

If you have a diseased rose plant, make sure to dip clippers in alcohol after pruning to prevent spread of the disease.

### Pruning when Planting

If you buy a rose bush with a root ball wrapped in burlap or one grown in a container, the only pruning you need to do when planting is to cut back any dead, diseased, or damaged growth.

If you buy bare root roses, prune away any broken or mangled root tips. Then remove all twiggy growth from the top of the plant.

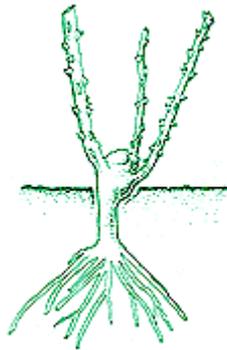
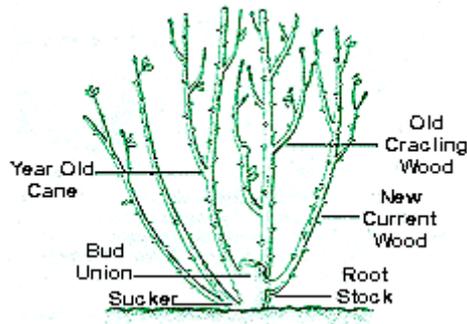


Illustration 1, Make sure to cut the canes back to within 6 to 12 inches of the base of the root union.

### Maintenance Pruning

First, be sure to have on hand sharp pruning shears and a pair of stout garden gloves; most roses have very sharp thorns and are much easier to prune if you're not constantly worried about being pricked.

**PRINCIPLES OF PRUNING ::**



Begin by removing dead, diseased, and damaged canes. Dead wood is brown and dry inside, even when it's green outside.

Next prune away any crossing canes and lateral branches that may rub together. Disease and pests enter where bark is abraded. Remove crossing growth from the center of the plant to allow light into the bud union. A vase shape is the ideal skeleton for most rose bushes.

With young plants, that's all the pruning needed. On plants three or more years old, keep pruning. Cut away about one third of the oldest growth. Start by removing wood three or more years old. Then cut two-and-one-year old wood back to the height you want to maintain.

To distinguish between new wood and old, look at the color of the canes. One-year-old wood is green with green thorns and vigorous green leaves. Two-year-old wood is brownish-green, and the thorns begin to look dull. Other wood is brown or gray or black.

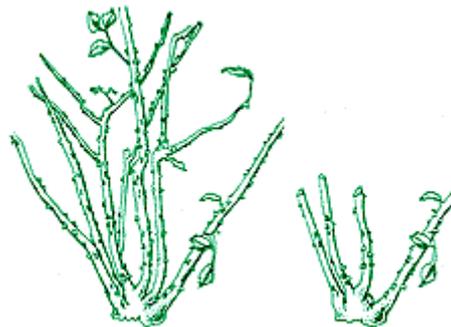


Illustration 2, When pruning an old cane, cut it back to where young, green wood is showing. If a cane is brown or black from tip to toe, remove it at the bud union. Leave no stubs. Cut back to an outward-facing bud, and make the cut ¼-inch above the bud and facing away from it.

For a balanced shrub, leave canes on the east and north sides of the plant 2 to 4 inches longer than those on the south and west sides. The latter will get more light and grow longer, catching up with the other canes by midsummer.

Remove suckers. Don't just cut them off above ground. Trace them back to their roots and pull them out.

Check the number of buds at the nodes of the remaining canes. There should be only one bud at each node. If there are several, rub away all but one with your finger.

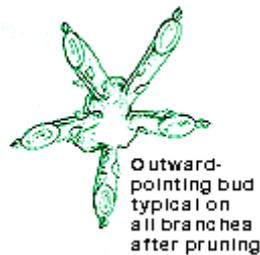
**PRINCIPLES OF PRUNING ::**

Illustration 3, You should now have a vase-shaped skeleton consisting of two to six young canes arising from the bud union. Four canes are ideal. Each cane should have an outward-pointing bud about ¼-inch below its tip. The canes should be no more than 30 inches high on a mature shrub, unless you want a taller plant.

If you want your shrubs to produce a few large blossoms, prune more severely, removing more canes and cutting the remaining ones lower. If you want more, smaller blossoms, prune lightly.

**Removing Flowers**

During the flowering season, pruning is limited to removal of spent flower clusters. This prevents the shrub from producing hips (fruit and seeds) and encourages better blooming next season. Remove flowers by cutting back the stem bearing them to the first strong, outward, facing bud. These buds are located just above a leaf with five leaflets. Leaves with one, two, or three leaflets tend to have weak buds.

Don't just nip off the flower. If you do, the weak growth just below the spent flower will produce weak, straggly growth.



Illustration 4, Cut above the second 5-leaflet leaf from the top.

There are many different roses available, and there are minor difference in how each should be pruned for the best effect and the healthiest plant.

**Hybrid teas and hybrid perpetuals.** These, the most popular of all roses, should be pruned annually to keep them blooming well. The more vigorous varieties like 'Peace' should, however, be pruned lightly or they will produce lots of leaves and few flowers.

**Floribundas.** Generally, moderate pruning is in order, but the best method is to prune some growth lightly, other growth severely. This produces both an earlier and a longer display of blossoms.

**Miniatures.** It's best not to prune miniature roses back too much when you plant them. If they send up strong shoots that make their shape unbalanced, remove these shoots at their point of origin.

**Polyanthas.** These roses tend to be twiggy and produce much dead wood. Be sure to keep their centers open.

**Climbing hybrid teas and floribundas.** Little pruning is required. Simply remove dead or worn-out canes and stems that have flowered.

**Ramblers.** They blossom best from short laterals sprouting from long, unbranched canes produced the previous year. You can distinguish a true rambler from other climbing roses by the many new shoots that

sprout from the base while the plant is in full bloom. Never cut these away. They are the canes that will bloom next year. Prune ramblers in August, cutting the old canes that have flowered to the base.

**Pillar roses.** Unlike most climbing roses, pillars grow and flower upright. (Most climbers only flower well when trained horizontally.) In autumn, remove worn-out canes whose bark has grown rough and dark and whose laterals are producing weak, twiggly growth. Also cut back one or two of the new canes by about two thirds of their length. In summer remove spent flowers.

**Species and shrub roses.** They require little pruning, but "little" does not mean none. During the winter tip back all vigorous canes and laterals to encourage abundant flowering. If the bush becomes overcrowded, remove one or two of the oldest canes. Regularly remove spent flowers.

**Rose hedges.** Floribundas are usually used in rose hedges, which can be pruned as you would any hedge. Do not cut back more than one third of the hedge.

**Standards.** These, usually formed from hybrid tea or grandiflora roses, can be pruned back by about half to keep the head compact. Remove any shoots growing from the trunk below the head.

## Pruning Fruit Trees ::

The reasons for pruning fruit trees are the same as those for pruning any tree or shrub. Pruning of two-year-old whips is important to the shape, health, and productivity of the mature tree. Regular maintenance pruning to remove dead or diseased wood or wood that is growing in awkward directions is also important. But unlike pruning ornamental trees and shrubs, properly pruning fruit trees makes difference between large, annual crops of excellent fruit and spotty, intermittent crops of variable quality. And because fruit trees are encouraged to bear lots of large fruits, pruning to develop a strong branch system capable of withstanding the annual load of ripe fruit is also critical. For tips on basic pruning techniques and the best times to prune, see "Pruning Methods" and "When to Prune".

Most fruit trees are sold as two-year-old bare-root whips, and must be pruned when planted. Cut the main stem back by about one third to a fat bud, and prune side branches until you have removed about a third of the total wood. Such severe pruning of small, newly purchased trees is always difficult for beginners, but years of experience have shown that it is beneficial and will get your tree off to a faster, healthier start.

Prune fruit trees to allow ample sunlight to reach into the middle of the tree, otherwise fruits will not ripen properly and will lack good color. That can mean removing many more lateral branches and stems than might make the most pleasing-looking, bushy plant. Such pruning also allows for good air circulation through the crown, and that prevents disease.

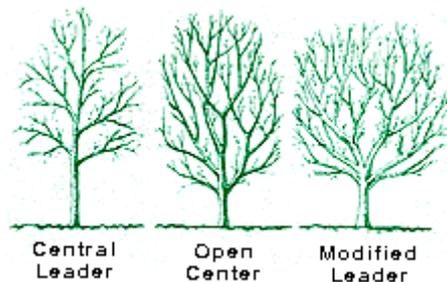


Illustration 1, There are three generally accepted systems for pruning fruit trees, each designed to produce a different configuration of main branches and secondary and lateral branches.

### Central leader

Apples and pears, which bear large crops of heavy fruit, should be pruned to form a central leader. This system encourages the growth of strong side branches from one main trunk. Remove branches growing from the trunk to maintain open space between limbs, and also thin the secondary branches that grow from these limbs. Prune to allow sunlight and air to reach the center of the tree.

### Modified leader

This method begins the same as the central leader system, with one strong central trunk. Eventually though, you must prune the central leader to form several leaders. The modified leader system is generally easier to maintain because most fruit trees tend to grow in this way naturally.

### Open center

Also called the vase system, this method lets plenty of light and air into the center of the tree, but it also makes for weaker branches and is not recommended for apples and pears. It is well suited to quinces, crabapples, plums, cherries, peaches, nectarines, and apricots. Be sure to prune so as to avoid making lots of limbs arise from nearly the same point of the trunk, or weak crotches will result.

A fruit tree allowed to bear all the fruit it sets in the spring will produce scads of poor-quality fruit, or it will produce well only every other year. For consistently good crops you must thin clusters of young fruit to a single fruit. Do this when the fruit is still small (marble to golf-ball size). Each fruit should be 6 inches or more from its neighbor. Such thorough fruit thinning is time-consuming, but you will appreciate the effort come fall.

Pears, plums, and cherries produce most of their fruit on stubby growths between the branches called spurs.

**PRINCIPLES OF PRUNING ::**

Peaches grow on one-year limb growth, and apples grow on both spurs and limbs. Spur-type trees produce less limb growth and so require less pruning, but even spurs must be thinned periodically. A spur will produce good fruit for two or three years. Then it should be removed to encourage new, more vigorous spurs.

Try to maintain a strong central leader on young apples, switching to a modified-leader form as the trees age. Prune them lightly every year. Remove dead or damaged wood, thin branches for open growth, remove suckers and water sprouts. Moderate annual pruning is far better for the tree than irregular severe pruning. As with all fruit trees, thinning of young fruits ensures a much finer crop.

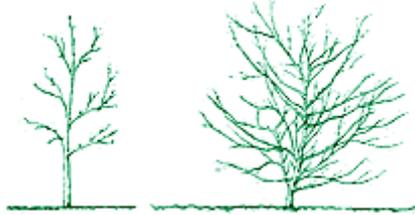


Illustration 2, maintain a strong leader, switching to a modified-leader form as the tree ages. Cherries need less pruning than other fruit trees. They tend toward an open-center growth habit, but it is still a good idea to encourage a central-leader habit when the tree is young, changing over to a modified-leader or open-center system.

Peaches, nectarines, and apricots are all very vigorous and therefore need regular, careful pruning to produce well. They are also relatively short-lived (about 10 years), another reason pruning is so important, since it stimulates new, vigorous growth. Train all three to an open-central growth habit. They tend to grow tall, and the best fruit forms at the top of the tree, so prune to keep the top in bounds. Prune in late winter while the trees are dormant yet when you can remove any cold-damaged wood.

Train a pear tree in much the same manner as an apple, with a central leader that can be allowed to form a modified leader as the tree matures. As with apples, a light annual pruning to remove dead or damaged wood and suckers and encourage spreading form is preferable to occasional heavy pruning. Thin spurs annually to keep the tree from setting too much fruit. Likewise thin young trees.

Prune plums to an open center. Japanese plums, like peaches, require lots of pruning. Keep after them every year in late winter. European and American plums need much less pruning; an occasional thinning is all that's needed. Many plums bear heavily only every other year. To encourage good annual crops thin young fruit so that the plums are at least 5 inches apart.

Bare-root citrus fruits trees (grapefruits, lemons, limes, and oranges) should be pruned at planting time; containerized ones probably need none. Where occasional frosts occur be sure to wait to prune until any danger of a freeze is past in the spring. And postpone fall or early-winter pruning until spring, since it can make fruit trees more cold sensitive. Citrus trees tend to grow unevenly, sending out the odd long limb. These should be pruned back to a good bud. Citrus trees lose vigor and productivity as they age, but because frigid winters are not a problem, they can withstand severe rejuvenation pruning. After such pruning be prepared to wait two or three years for good fruit production to resume.

## Small Berry Fruits ::

Small-berry fruits require regular pruning. Without annual pruning grape vines bear many small, poor fruits, and bramble fruits become unapproachable (much less harvestable) masses of prickly brambles.

**Grapes** produce fruit on new lateral growth from year-old stems. Prune grapes to limit the number of new laterals and the number of fruit clusters per lateral. As with fruit trees, it's best to thin young fruits to direct more of the plants' strength into producing fewer, better fruits.

Prune grapes in late winter or early spring before buds swell. When planting grape vines, leave only one or two buds above the soil. During the first winter, select the longest, strongest stem to become the main stem and remove all other stems. During the second spring allow one terminal and two lateral buds to form shoots.

For European table and wine grapes four permanent lateral stems are maintained on either side of the main stem. During the second winter prune back to this framework. In the third year remove all growth except for a series of strong stems spaced 6 to 10 inches apart along the four lateral stems. Prune these spurs back to within two buds of the lateral stems. In subsequent years prune all growth back to the spurs.

For American grape varieties use the cane pruning system, in which the four main stems are replaced each season. During the second winter remove all growth except for four lateral shoots. Prune these back to two buds. In the third winter cut back the upper cane of each pair to two buds. (This will become next year's replacement canes.) Cut the lower cane back to 12 buds. This year's fruit will be borne on these canes.

In subsequent years, remove the cane that bore fruit the previous year. Cut the upper cane of the replacement pair back to two buds; the lower cane back to 12 buds.

Whichever pruning method you choose, you will have better harvests if you limit each cane to one or two clusters of grapes. After four years of bearing you can leave half of the grape clusters.

**Bramble fruits** (blackberries, boysenberries, black raspberries, and red raspberries) require the same simple annual pruning. All bear fruit on year-old canes. The canes grow from the ground and bear fruit in their second summer. After bearing they become barren or die, and should be removed immediately after harvest. Clean up the plants in late winter or early spring before they begin to put on new growth.

New canes sprouting from the ground should be thinned. Remove all but four or five of the strongest new canes. With blackberries or boysenberries, whose vinelike canes trail, let these new canes grow on the ground until the two-year-old canes are cut after harvest. Then tie the new canes to a wire trellis or stake for support. When the new canes are about 30 inches long tip them back to stimulate fruit-bearing lateral growth.