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Pruning Landscape Trees, Shrubs and Groundcovers

Pruning Landscape Trees, Shrubs and Groundcovers

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Ornamental Horticulture and Landscape Design

Pruning is one of the most important cultural practices in the landscape. Rarely will you find a tree, shrub or vine that does not need some pruning each year, while some may only need light pruning each season. Proper pruning will help produce a more attractive, vigorous and well-formed plant. Correct pruning may add years to the usefulness of the plant. The plant's inherent characteristics, such as natural canopy form, rate of growth, height, spread and time of flowering, should be considered prior to pruning.

Many plants benefit from early pruning when they are young. Pruning low branches on shrubs will increase the branching structure near the ground, resulting in a more compact plant. Pruning young trees correctly will ensure a straight center leader and scaffold branching. Trees need to be pruned correctly as they grow to eliminate massive corrective pruning when they are mature.

Why Prune?

Pruning is a practice that can help maintain healthy, vigorous plants of desirable shape and size. Many people are apprehensive about pruning, but understanding how, when and why to prune can help master a common landscape chore. Pruning cuts should be made for a reason:

1. To maintain plant health by removing dead, damaged or diseased plant tissue. This helps to maintain the health and vigor of the plant. Remove all damaged areas until pruning cuts are into healthy tissue.

2. To remove branches that are misshapen, crowded, rubbing together or drooping onto other branches for support. Remove branches with narrow crotch angles or branches that cross over another. This pruning practice is considered preventative, eliminating problems before plant damage occurs.

3. To stimulate or increase flowering or fruiting. Many flowering plants produce more flower buds the following season if old flowers are removed when they lose their attractiveness. A common phrase for this type of pruning is dead-heading.

4. To improve the appearance of the plant by training to a particular shape or size. Pruning can increase the density of the plant, which helps shape or train plants in unnatural forms, such as hedges or espaliers.

5. To rejuvenate old, overgrown shrubs to restore their shape and vigor. When shrubs become overgrown, severe pruning is necessary. This prevents plants, especially shrubs, from crowding or shading other plants.

Pruning stimulates new growth and development of the plant. Some plants become cumbersome in size, and require major pruning every two to three years to reduce the plant to a pre-determined size. Often the wrong plant was chosen for the site and should be replaced with one that is better suited to the site. For example, potentially large hollies, privet or photinia are planted in front of picture windows. It does not take long for them to grow to the point the view from the window is obscured. When an established plant is cut back or pruned severely, the plant quickly grows back to its original size, due to the large root system.

Pruning Tools

Use the right tools to prune. Only a few tools are needed and it is beneficial to use good ones. Tools should be sharp and high quality. Smooth cuts heal faster and provide a less favorable site for disease. Don't wiggle pruning tools to cut into a branch that is too large for the tools. Too often incorrect tools are used to prune, which leaves jagged cuts and ruined pruning tools. Take care not to damage the bark around the pruning cut.

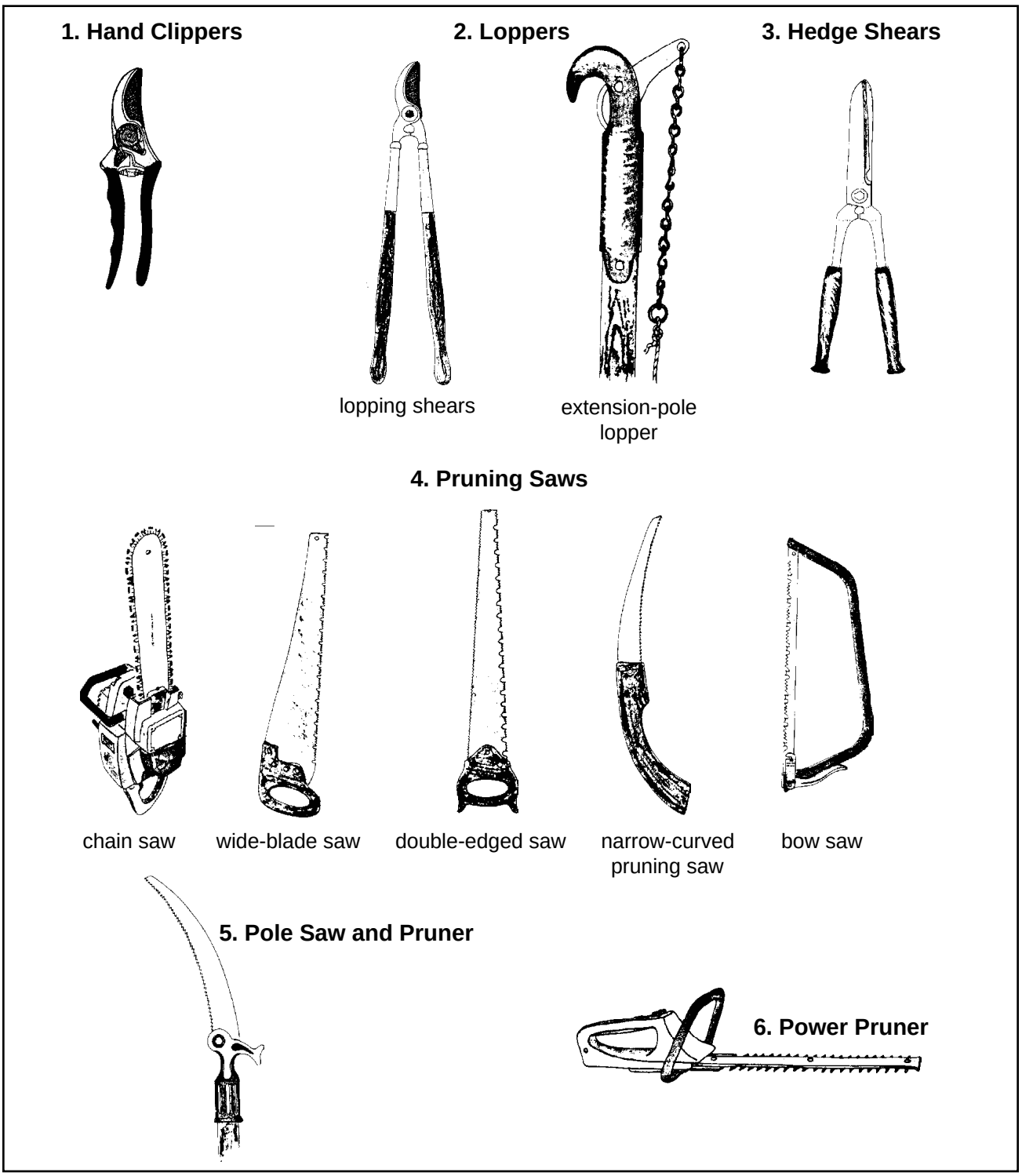


Figure 1. Pruning tools

1. Hand clippers and shears are recommended for removing small branches less than 1/2 inch in diameter. They come in sizes from 6 to 9 inches in two general types — anvil shears and two-bladed scissor shears (by-pass blades). Anvil shears are used on dry, hard and old growth with cuts less than 1/4 inch in diameter or on plants that do not have hollow stems. Scissor shears give a precise, clean flush cut that is generally considered best, especially for pruning new green growth, roses and shrubs having hollow and thick stems.

2. Loppers are recommended for pruning limbs from 1/2 to 1 1/2 inches in diameter. Loppers are usually 20-36 inches long and have a distinct curve or contour in the shear and cutting blade.

3. Hedge shears are used for developing a formal, sheared appearance. Do not use shears on any shrub where a natural shape is desired. Hedge shears are the most inappropriately used pruning tool. Too many people think they are the only pruning tool, and that every shrub should be sheared. Hedge shears result in indiscriminate heading cuts.

4. Pruning saws are used to remove limbs greater than 1 1/2 inches in diameter. A clean, sharp saw designed for pruning and not carpentry work can make the difference in a smooth cut or a ragged cut that is more conducive to disease. There are several types and shapes, but the one most useful to the average homeowner is one with a curved blade. The teeth are angled toward the handle and cut in a pulling motion. Some saw blades are designed to cut on the push-and-pull strokes. Saws with narrow, short blades (about 12 to 15 inches long) are the most effective for pruning overgrown shrubs (severe renewal pruning) and limbs from trees.

5. Pole saws and pruners are similar to pruning saws and loppers, but have a handle that may be 10-12 feet long. The pole pruner is a form of lopper with a long handle for cutting difficult-to-reach branches. Pole saws and pole pruners may be purchased as separate tools or as a combination tool. Use extreme caution when pruning near electric lines to prevent electrocution. Purchasing fiberglass pole pruners reduces the hazard.

6. Power pruners, a recent category for pruning tools, are lightweight and powerful. They are marketed as conventional saws with smaller fuel tanks and generally have handles located on top of the engine instead of the rear. Power pruners are also available as electric saws (need an extension cord) or as battery-operated saws. Power pole pruners with a light, two-cycle engine are connected to a small chainsaw blade. The pruner can be attached to a pole with a fixed- or variable-length pole. These pole pruners resemble string trimmers. They work quickly despite their small size and are powerful. Always adhere to all safety precautions when operating these machines.

Proper Pruning Techniques

The first step in pruning is to remove all broken, dead and diseased limbs. Next, remove any crossover branches or branches rubbing another. A branch that is removed should be cut back to the origin or to a side branch that is at least one-half its size. The correct location for the cut is just outside the swollen area known as the branch collar. Never leave a stub. Undesirable growth, insect attacks or decay occurs on stubs.

There are many pruning styles, but there are two basic pruning cuts: heading and thinning. Heading cuts often shorten a branch or stem; thinning cuts remove a branch at its base or where a side branch arises. Whether a shrub is sheared into a hedge or pruned with a natural growth habit, these two cuts are used.

The International Society of Arboriculture's Arborist Certification Study Guide states "Topping or heading back is not a recommended pruning method for trees." The term 'heading' is generally associated with shrubs and small trees. Crown reduction and drop-crotch pruning are the terms used by certified arborists.

Heading

Heading cuts are made just above the nodes. The buds directly below a heading cut generally produce new shoots. To encourage shoots to grow outward and produce a spreading shrub, cut above a bud facing outward. Buds that face inward may yield branches that are crowded and impair the anticipated growth form. Leave enough of a stub below the cut to keep the bud from drying out.

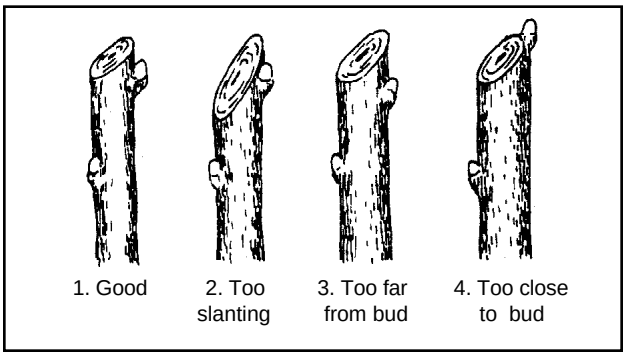


Figure 2. Proper angle for pruning cut

Cut plants that have opposite bud arrangement, 1/4 inch above the buds at a right angle to the stem. Usually, both buds will grow, producing two equal new shoots growing in opposite directions. This is often undesirable. Rub or cut off the unwanted bud, probably the one facing inward. Maple, dogwoods and ash are common landscape trees that have opposite bud arrangement. It is difficult to maintain a center leader in these trees without diligent pruning.

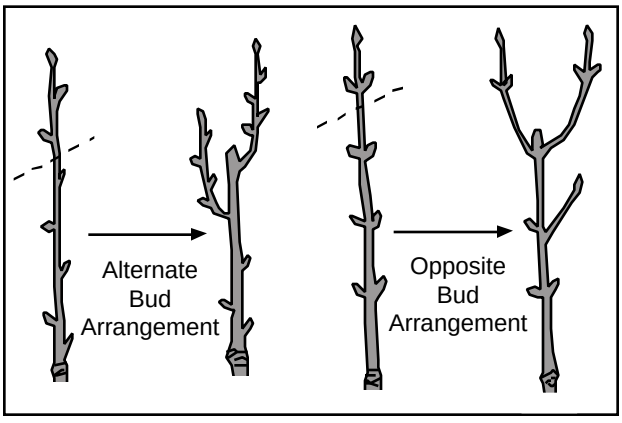


Figure 3. Alternate and opposite bud arrangement

Pruning can cause plants to react in different ways, due to the wounding of the plant. Knowing how a plant will respond is necessary to achieve the desired landscape effect. For instance, a deciduous shrub produces new growth at the terminal buds. Terminal buds produce a growth regulator called auxin that controls the development and growth of lateral or side buds (buds lower on the branch). This is called apical dominance. When the terminal bud is removed, the lateral buds are stimulated to grow, due to the lack of auxin. These buds are found at nodes, and each node will have one or two (rarely three) buds.

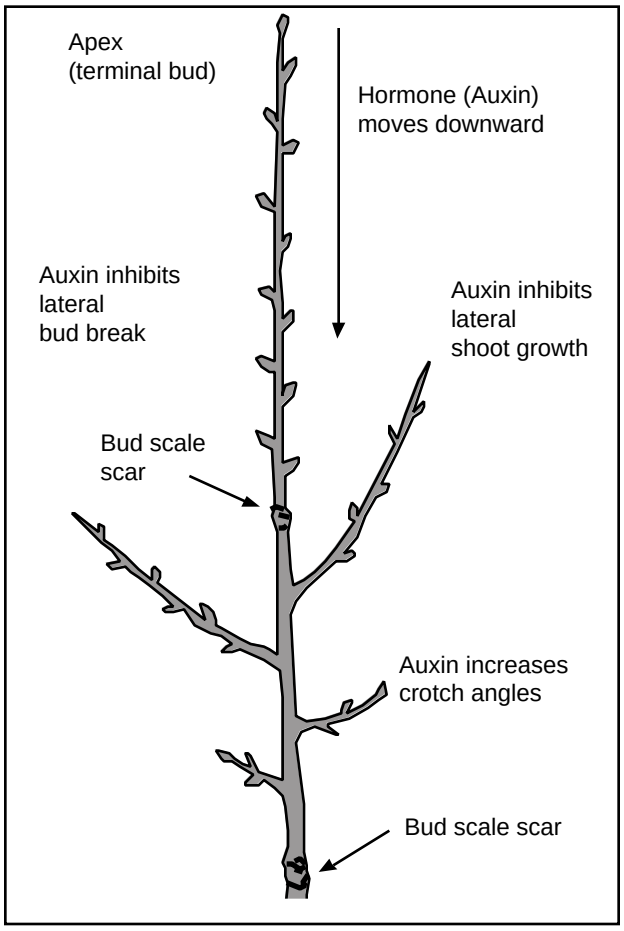


Figure 4. Apical dominance

Apical dominance is strongest in shoots that are vertical or upright. For instance, limbs growing upright have the most shoot growth at the terminal bud. Limbs or shoots that are wide-angled or horizontal have less vigor at the terminal. More growth occurs from lateral buds along the limb. On some plants, apical domi-

nance is totally lost on horizontal branches. Lateral buds on the upper side of the branch can develop vigorous upright shoots called water sprouts. Water sprouts can exhibit excessive apical dominance, which limits the natural growth of the plant.

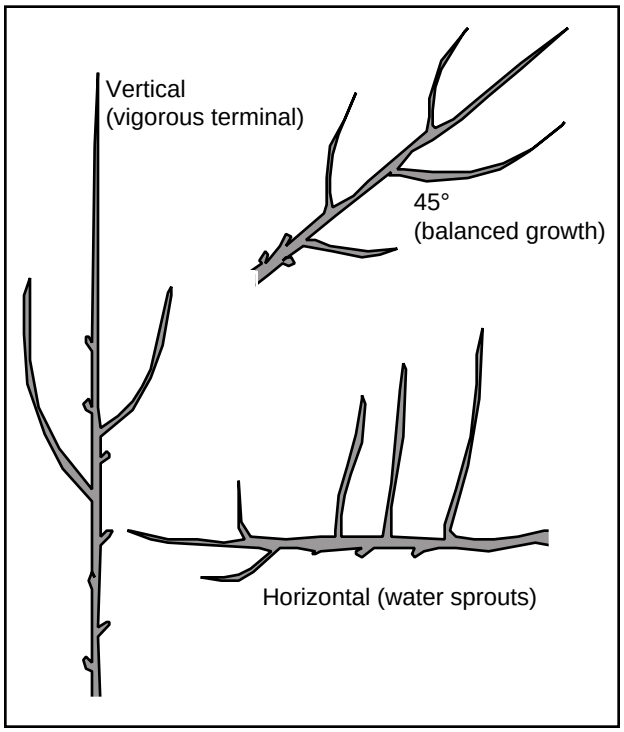


Figure 5. Limb orientation affects apical dominance

Thinning

Shrubs may be thinned by cutting about one-third of the older branches or canes back to ground level every few years. As a result, the new growth will increase the density of the plant and the potential for flowering. If some long or leggy shoots remain, consider removing about half of the length to shape the plant. Cutting the tips of the new growth during the growing season is also beneficial to the development of a healthy plant. Repeat this process next year if the plant needs further thinning. This pruning technique may be used for shrubs with a similar branching habit, such as forsythia, spirea, weigela, mahonia, mockorange, nandina and eleagnus.

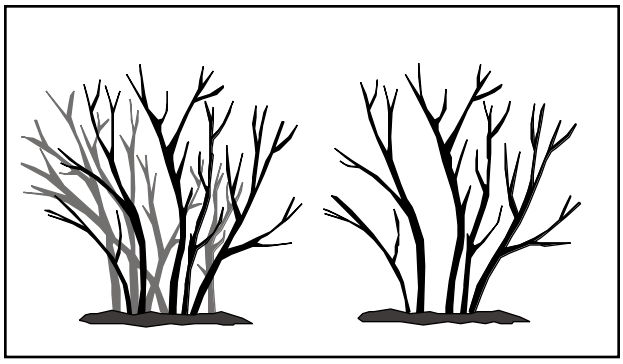


Figure 6. Thinning

Severe Renewal Pruning

If shrubs have become overgrown or leggy, severe renewal pruning may be the only technique to restore a full vigorous growth habit. In late winter, cut all branches to within several inches of the ground. Buds will break dormancy as the weather warms up. Because the plant already has an established root system, the growth is generally stronger and faster than that of newly planted shrubs. Tip pruning of the new shoots is necessary to enhance lateral bud growth. Many hollies respond favorably to severe renewal pruning, but avoid using this technique on junipers and boxwood.

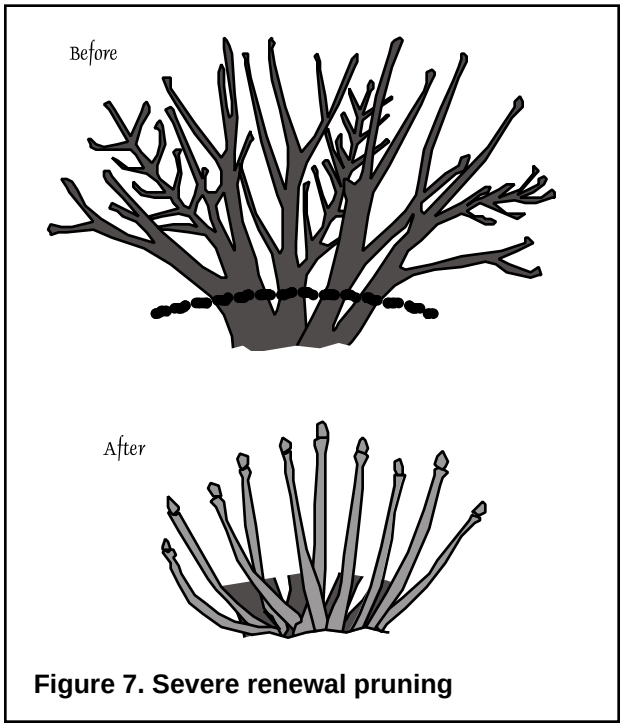


Figure 7. Severe renewal pruning

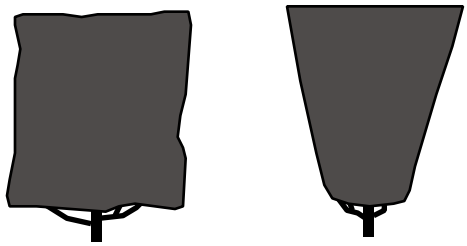
Shearing and Hedges

A formal hedge provides privacy to the garden and serves as an aesthetic backdrop for colorful plants. However, hedges do require regular maintenance to maintain the optimal size and shape. Improper pruning can be problematic and hides a plant's natural beauty. Too often plants are pruned into balls or blocks. The plants lose their natural beauty and repeated maintenance is required to maintain the geometric shapes. There are formal gardens where this type of pruning is appropriate, but most people do not have time to maintain formal landscapes. If a sheared, geometric look is desired, however, there are particular plants that are more adaptable to this regime.

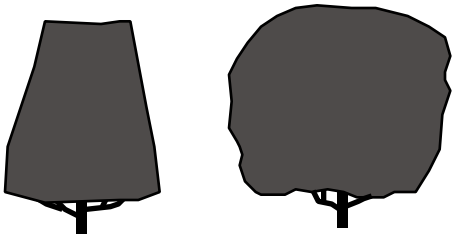
Needle-leaf evergreens, such as yew, arborvitae, hemlock and spruce, are often sheared to develop hedges or present a sculptured plant for the landscape. Shearing is a major commitment to a rigid, timed pruning schedule. Start shearing when plants are young. As the plant grows, shearing will need to be done one or two times a year. Generally, plant growth begins in mid to late spring and stops by midsummer. Shearing should begin soon after new growth begins. A single early shearing will result in a more naturalistic look, as later growth softens the surface and hides the cuts. A more formal look can be maintained with regular shearing throughout the growing season.

Proper shearing is important. Plants with sheared tops and sides often suffer. The sides should be sheared so they are wider at the bottom than the top. If the top is wider, lower branches are shaded and will not receive enough sunlight to efficiently produce food for the plant. The non-productive leaves will drop from the lower portion of the plant, creating an unsightly, "leggy" plant.

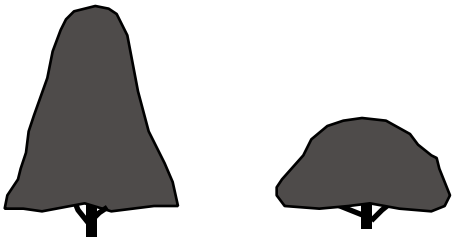
Flat or wide tops should be avoided. Snow and ice can accumulate and break branches. Shape the tops for a narrow or rounded form so ice and snow can shed naturally. A neglected hedge, or one that has been pruned incorrectly, may need to be severely pruned.



Needle-leaved evergreens that are flat on top and straight-sided or wider at the top them the base shade lower branches and allow snow to accumulate on top of the hedge and damage the plant.



Tops that are flat or somewhat wide are acceptable for areas with little snowfall, but not ideal.



Rounded tops and wide bases shed snow naturally and allow light to reach the leaves.

Deeply cutting back overgrown evergreen branches without sheering will give the plant a more natural appearance.

Figure 8. Hedge styles

Pruning to Control Insect and Disease

Pruning ornamental plants to control insects and diseases is nothing new. In the early 1800s, removing infested branches was a common pest-control recommendation. Success in eradicating the pest was variable, because the life cycles of the pests were not known.

When pruning to remove an infection or insect infestation, remove all the affected area. This may prevent the further progress of branch dieback or save a plant's life. Sterilizing pruning equipment between cuts prevents spreading disease to other parts of the plant. Dip pruning tools in a disinfectant (undiluted alcohol or 10 percent solution of household bleach) after each cut. Timing must be adjusted to the life cycle of the pest. Do not prune when an adult pest is present. Pruning may attract the pest to the plant and provide oviposition (egg-laying) sites.

Other preventative techniques and cultural practices must be included to decrease the chance of a recurring problem. Rake and remove the clippings from the ornamental location to avoid recycling the pest back to the plant.

There is no advantage in painting pruning cuts. This antiquated practice does not provide any benefit to the health of the plant, nor does it deter insects or diseases. Plants have their own wound defense system and compartmentalize wound areas.

When to Prune?

Pruning can be done almost any time of the year, but there are optimal times for plant response. In fact, timing is everything for some plants. A plant's energy reserves are highest during the dormant period of winter and lowest during spring growth. If plants are pruned during the action weeks of spring, they may draw on diminished reserves to replace at least part of the lost growth and to defend pruning wounds. Late summer and early fall are also poor times to prune, because this may encourage new growth that will not mature sufficiently to withstand winter freezes and may be killed by an early fall frost. Finally, avoid pruning in late fall or early winter. The wounds could stay open until spring, inviting dessication. An old rule is do not prune when the temperature is below 20 F.

The best time to prune is late winter or early spring, before buds start to swell and open. At this time, the possibility of freeze damage is reduced. Plants have plenty of stored energy and are ready to grow. Dormant pruning may reduce the amount of flowering on shrubs that flower in spring, but occasionally it is necessary to maintain the desired growth form. Prune birch, elm, maple and yellowwood in late winter. These trees are known as 'bleeders,' and when pruned in spring, the flow of sap is unsightly and can stain the tree bark.

The next best time to prune is in early summer after all the foliage has matured. Wait for a day when the foliage is dry, especially if diseases such as mildew or fire blight are evident. Use this pruning time to control height or to develop a denser shrub.

Trees and shrubs should be examined for pruning on an annual basis. Too many homeowners neglect their shrubs and fail to prune for several years. Shrubs become overgrown (a loss of vigor may occur) requiring heavy pruning or severe renewal pruning to reduce the size of the plant. Never hesitate to cut out tall, fast-growing or unsightly limbs while they are growing. If the terminal bud is pinched or lightly pruned on new growth, lateral growth will occur and result in a fuller plant.

Flowering Trees and Shrubs

Knowing when to prune is just as important as knowing how to prune. To ensure proper plant response after pruning, be aware of the flowering and fruiting habits of the plants. As a general rule, plants that flower before July 1 should be pruned immediately after flowering. When flowers fade and are no longer showy, it is time to remove the spent flowers (if fruit is not desirable) and shape

the new growth that will mature and develop flower bud set for the following spring. These plants develop flower buds on the previous season's wood. Pruning in July will promote shoot growth and allow time for the flower buds to develop for next year's flowering. If pruning is delayed, any pruning will remove potential flowers for the next season. Examples of these plants include azaleas, forsythias, plums, cherries, weigela, mock orange and oak leaf hydrangea.

Plants that bloom after July 1 should be pruned in late winter or early spring before growth starts. These plants develop flower buds in early spring on the current season's growth. Summer-flowering plants include crape myrtle, rose-of-sharon, vitex, butterfly bush and some hydrangeas.

Fruiting Shrubs

Plants that are prized for their fruiting should not be pruned until after the fruit has lost its beauty, regardless of when they flower. Lightly thin the branches during the dormant season on an as-needed basis. Pyracantha, holly, barberry, cotoneaster and nandina are in this category.

Broadleaf and Narrow-leaf Evergreens

Conifers, broadleaf and narrow-leaf evergreens may be pruned any time the wood is not frozen. A good time to prune evergreens is in early December so prunings can be used to make holiday decorations.

These plants are primarily pruned to increase the density of the foliage or to reduce the size of the plant. Conifers have lateral branches that arise from the trunk in whorls or as random shoots. Preformed latent buds in the terminal determine the number of branches. Few conifers have latent buds below the foliage area on old wood. When these plants are pruned back to the older wood, there are no new buds to break and generate new foliage. Pine, spruce, fir, dawn redwood, Cryptomeria and cypress have few, if any, buds on old wood. Juniper and yew have numerous buds in the foliage but few on older wood. Therefore, do not prune back to old wood when pruning these plants.

To thicken the new growth of pine or spruce, remove one-half the length of the candle (the new growth) in the spring when it is about 2 inches long. Do not use shears. Pinch out the tender candle with your fingers or sharp pruning shears. Shears damage needles surrounding the candle and the cut edges turn brown.

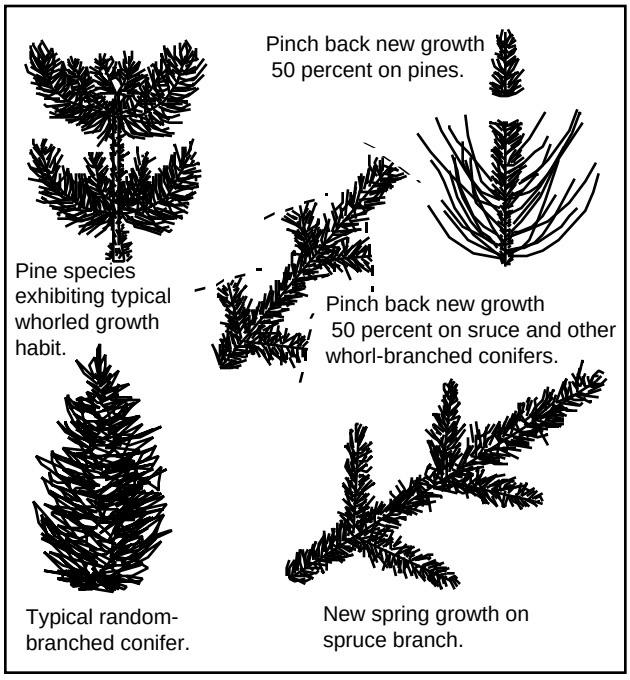


Figure 9. Pruning conifers

Vines and Groundcovers

Some groundcovers such as vinca, ivy and wintercreeper can be pruned with a lawn mower set to mow at the highest setting. This pruning can be done once or twice during the growing season to control growth. Liriope can be mowed in the early spring to remove any old foliage. The blade should be sharp and the cut made prior to new leaves emerging.

Young Trees

Young trees may need to be pruned to maintain a central leader. All cuts should be made at the nodes or back to the next limb. Do not remove more than one-third of the living branches. To develop a strong, straight trunk,

start early in the life of a tree to remove branches at positions 1, 2 and 3 (See Figure 10). The trunk should be limbed up only one-third to one-half of the height. For instance, if a small tree is 6 feet tall, remove the limbs about 2-3 feet above the soil line. For a more compact tree, remove the C's. For a more upright tree, remove the A's. For a more open tree, remove the B's.

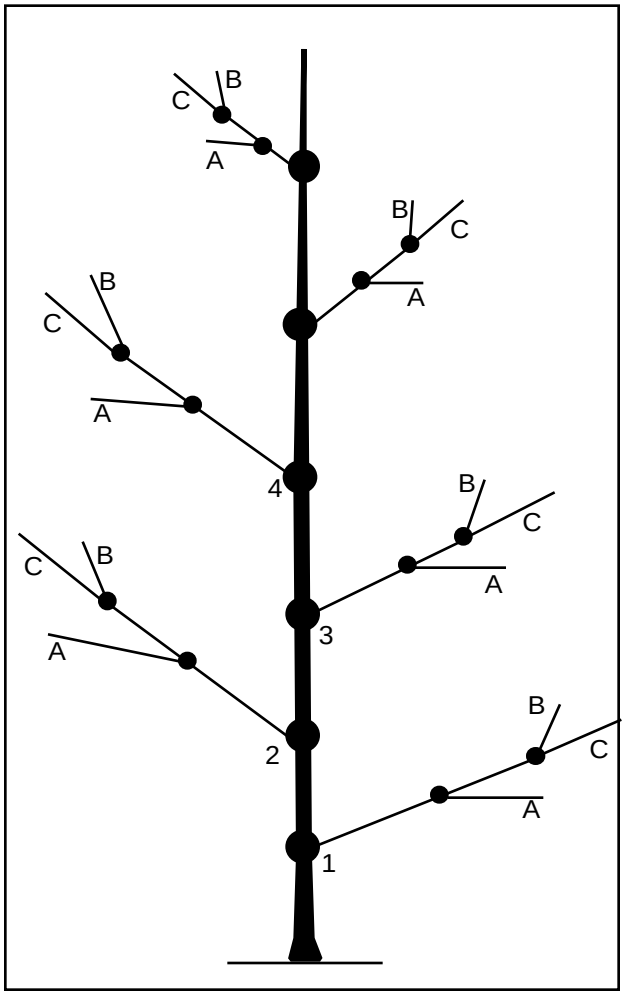


Figure 10. Training small trees

Do not remove or head the leader except to correctly position the lowest main branch, to space or scaffold branches or to remove a tight group of terminal twigs so a more vigorous dominant shoot will develop.

For greatest strength, branches selected for permanent scaffolds must have wide angle of attachment with the trunk. Branch angles of less than 30 degrees from the main trunk result in a high percentage of breakage, while those between 60 and 70 degrees have a small breakage rate. Narrow crotch angles are weak as a result of bark inclusion, which is dead tissue in the space between two branches or limbs. Bradford pears that have been in the landscape more than 10-12 years are susceptible to limb breakage. Often, as limbs break due to bark inclusion, they tear bark down the trunk or damage supporting branches.

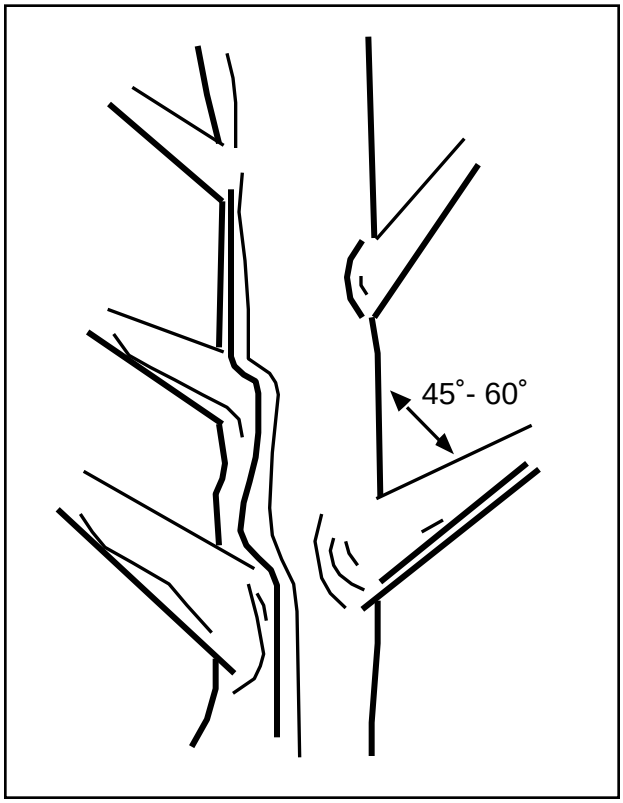


Figure 11. Branch angles

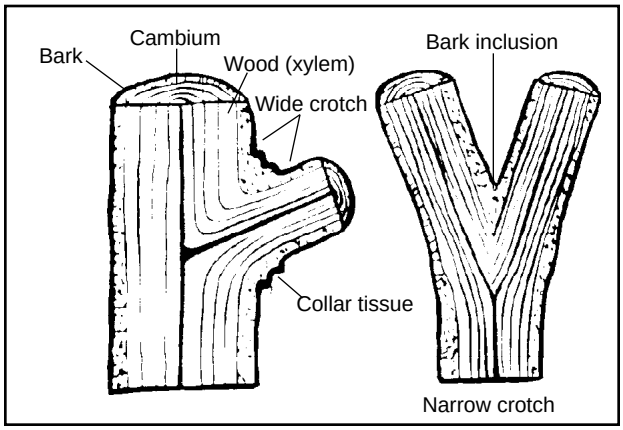


Figure 12. Bark inclusion

On young trees, branches can be spaced about 6 to 12 inches apart. By the fifth year, potential major scaffold branches of shade trees should be spaced at least 8 inches and preferably 20-24 inches vertically. Closely spaced scaffolds will have fewer lateral branches. The result will be long, thin branches with poor structural strength. Temporary branches can be left on the lower trunk for the first few years to help increase lower-trunk size and protect the trunk from sun.

There should be five to seven scaffolds for radial branch distribution to fill the circle of space around a trunk. Radial spacing prevents one limb from overshadowing another. Remove or prune shoots that are too low, too close or too vigorous in relation to the leader, and to the branches selected as the scaffold branches.

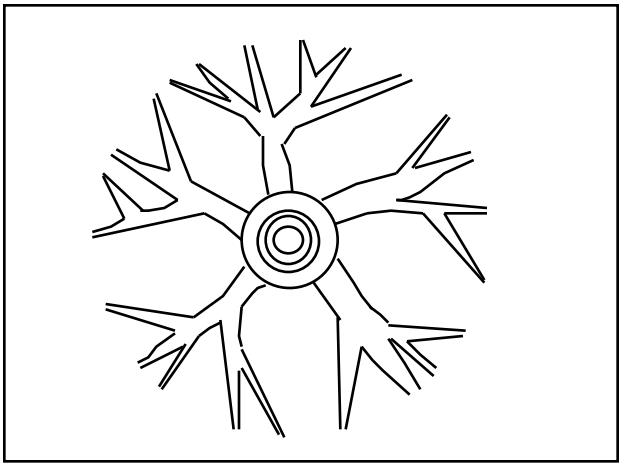


Figure 13. Diagram of radial spacing

It is not necessary or desirable to cut back the canopy of a tree when transplanting. A substantial portion of a tree's root system is left in the production field when harvested as ball and burlap or bare-root. It may appear logical to prune the tree to balance things out. Research has proven that trees cut back at planting do no better and sometimes do worse than trees that are not cut back. Cutting back a dormant tree can actually delay bud break in spring and slow the tree's initial growth.

Mature trees

The pruning of large shade trees by the homeowner should be limited to the branches that can be reached from the ground. If large limbs need to be removed, enlist the professional services of a certified arborist with the proper skills, equipment and insurance. Observe caution when pruning around power or utility lines. Employ a trained arborist for pruning near hazardous areas.

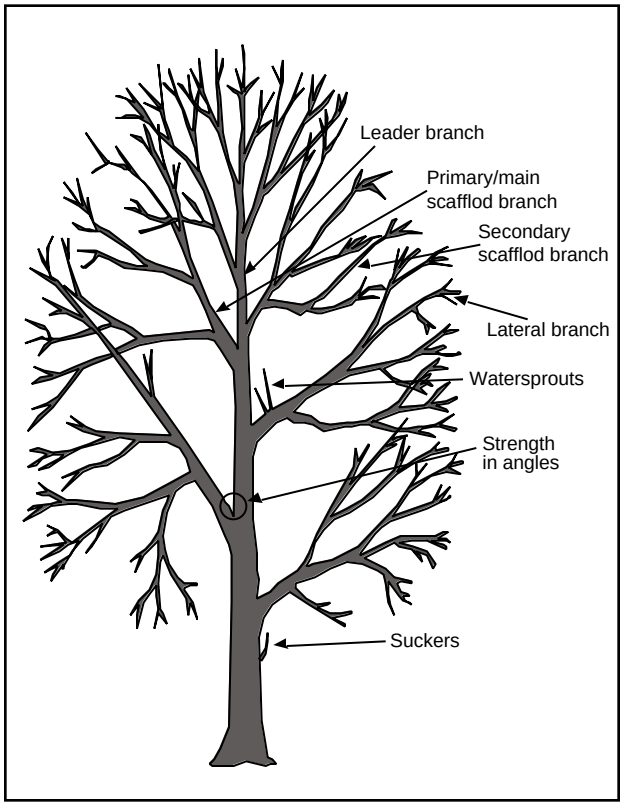


Figure 14. Anatomy of a tree

Improper pruning can cause irreparable damage. Pruning cuts should be made for a reason and with the knowledge of how the tree will respond to the cut. Certified arborists use pruning techniques based on the condition and site of the tree, and the desired goal of the job. Pruning should focus on maintaining tree structure, form, health and appearance. Common methods to prune large trees are crown thinning, crown cleaning, crown or height crown reduction and crown raising. Discuss with the arborist the best and most desired method of pruning before the work is done

Regardless of the method chosen, branches should be cut back to the origin or to a lateral branch that is at least one-third of the diameter of the parent branch. The final cut should be just outside the branch collar. Leaving stubs or flush-cutting may lead to decay and slow closure of the pruning wound.

Each cut should leave a smooth surface with no jagged edges or torn bark. Large or heavy limbs, 1 1/2 inches or greater, should be removed using the three-cut method. The first cut is an undercut on the targeted branch about 10-12 inches (1 to 2 feet on extremely large branches) from the trunk. This cut prevents the branch from tearing bark farther down on the tree. The second cut is a top cut slightly farther out than the undercut (3-4 inches past the undercut), which allows the limb to drop without the weight of the limb causing damage to the tree trunk. The third and final cut removes the stub just outside of the branch collar. This cut should be smooth with no tears or jagged edges.

A common practice called “topping” is a severe problem in Tennessee. Topping is used to reduce the height of trees around homes and utility lines. Topping is not the same pruning method as crown or height reduction. Crown reduction does not leave stubs like

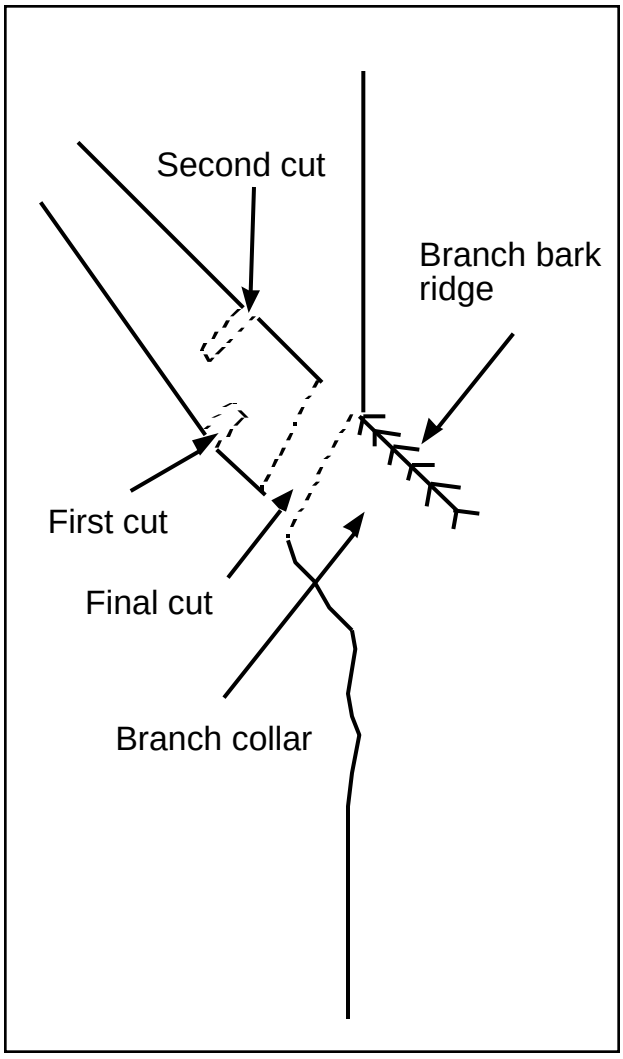


Figure 15. Three-cut method with branch collar

Terms associated with pruning large shade trees:

Crown cleaning:
Selective removal of dead, dying, diseased or weak branches or water sprouts.

Crown thinning:
Selective removal of healthy, live branches to increase light penetration or movement and reduce weight.

Cleaning typically done at the same time.

One-half of the foliage must be left on the lower one-third of the tree so these branches promote growth and limb strength.

Crown raising:
Removal of lower branches for clearance. Some horticulturists refer to this as limbing-up the canopy.

Crown reduction:
Removal of live or dead branches to reduce the height or spread of the tree.

Cutting branches to larger laterals, never removing more than one-third of a tree’s crown.

Cutting branches headed into a building or utility area.

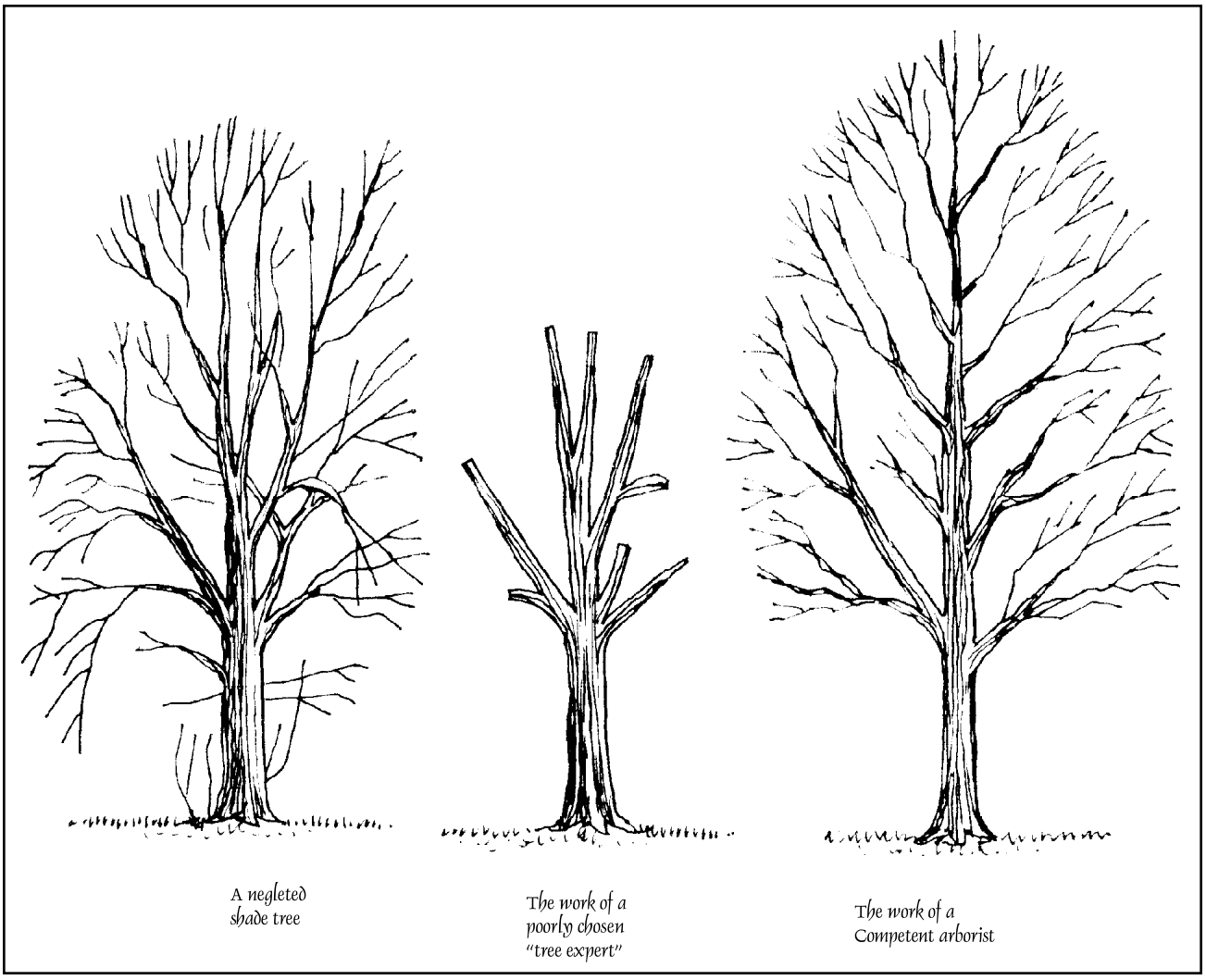


Figure 16. Topped trees

topping. There is never a good reason to top a tree. Topping removes the tree's main leader and branches, resulting in stubs. After topping, the new growth is disfigured, with watersprouts and weak limbs that form a dense canopy where very little air can penetrate. Insects and disease organisms thrive in this environment. The initial large wounds never heal properly and the subsequent growth is very weak. New limbs that are generated will break out easier than the branches that were removed. Topping drastically shortens the life of a tree. Topped trees are an eyesore in the landscape and continue to be an eyesore as trees slowly decline.

Selecting an arborist

The International Society of Arboriculture (ISA) certifies arborists. The arborist must have a minimum of three years experience and must pass a written exam regarding pruning, problem diagnosis, tree biology, safety and other topics.

Look for membership in professional organizations such as ISA and the National Arborist Association. Membership does not guarantee quality, but does indicate a commitment to the profession. Check references, and make sure the arborist's liability insurance is current.

Pruning Instructions

Table 1. Spring-blooming shrubs

Spring-flowering plants can be pruned immediately after flowering to avoid reducing floral display and to promote new growth. On plants where the fruit is as important as the flowers, prolong long pruning until after fruiting.

Plant name	Pruning notes
Azalea (*Rhododendron spp.*)	Pinch out tips to produce a more compact plant. Don't prune if the plant looks good.
Barberry (*Berberis spp.*)	Flowering may be nondescript on some species, but prune to produce ornamental fruit. Flowers on old wood.
Beautybush (*Kolkwitzia amabilis*)	Remove about one-third of the older stems at ground level every couple of years. Head back new growth to produce more lateral shoots if needed.
Burning Bush (*Euonymus alatus*)	Prune to control shape and size. Thin out and head back crowded branches on plants.
Chokeberry (*Aronia spp.*)	Flowering may be a secondary interest compared to the orna mental fruit. Flowers on old wood.
Deutzia (*Deutzia spp.*)	Remove about one-third of the older stems at ground level every couple of years. Head back new growth to produce more lateral shoots.
Dogwood, bush forms (*Cornus spp.*)	Prune to display stem color and ornamental fruit.
Flowering quince (*Chaenomeles spp.*)	Remove older branches. Head back new growth to produce more lateral shoots.
Forsythia (*Forsythia spp.*)	Remove about one-third of the older stems at ground level every couple of years. Head back new growth to produce more lateral shoots if needed.
Fothergilla (*Fothergilla spp.*)	Pinch out tips to produce a more compact plant.
Hydrangea, Bigleaf, Oakleaf (*Hydrangea macrophylla, H. quercifolia*)	Remove older branches. Head back new growth to produce more lateral shoots as needed.
Kerria (*Kerria spp.*)	Remove old wood to the ground. Head back longer stems to promote lateral shoots.
Lilac (*Syringa spp.*)	Prune out all suckers and old flower clusters before seeds are developed. Remove old wood every couple of years to promote new growth. Thin out branches to shape to a desirable form.
Mock orange (*Philadelphus spp.*)	Remove about one-third of the older stems at ground level every couple of years. Head back new growth to produce more lateral shoots.

Table 1. Spring-blooming shrubs (cont.)

Plant name	Pruning notes
Pearlbush (*Exochorda racemosa*)	Prune to control shape and size. Thin out and head back crowded branches on plants.
Pieris (*Pieris japonica*)	Remove crowded stems from inside the plant. Head back new growth to produce more lateral shoots.
Photinia (*Photinia spp.*)	Pinch out tips to produce a more compact plant.
Rhododendron (*Rhododendron spp.*)	Make major cuts in late winter. Light pruning can be done after flowering.
Smoketree (*Cotinus spp.*)	Prune to maintain desired form.
Snowbell (*Styrax japonicus*)	Remove crowded stems from inside the plant. Head back new growth to produce more lateral shoots.
Spicebush (*Lindera spp.*)	Remove crowded stems from inside the plant. Head back new growth to produce more lateral shoots.
Spirea (*Spiraea spp.*)	Remove about one-third of the older stems at ground level every couple of years. Head back new growth to produce more lateral shoots.
Sweetshrub (*Calycanthus spp.*)	Remove individual stems from inside the plant rather than shearing. Head back new growth to produce more lateral shoots.
Viburnum (*Viburnum spp.*)	Prune after flowering or fruit set to thin out oldest, nonfruiting wood and to improve shape.
Weigelia (*Weigelia spp.*)	Remove individual stems from inside the plant. Head back new growth to produce more lateral shoots.
Witchhazel (*Hamamelis spp.)*	Prune out older wood to control size and promote new growth.

Table 2. Spring-blooming trees

Spring-flowering trees can be pruned immediately after flowering to avoid reducing floral displayand to promote new growth. Dormant pruning is recommended to control size and shape.

Plant name	Pruning notes
Bradford ornamental pear (*Pyrus calleryana*)	Make major cuts in late winter, even though some blossoms may be sacrificed. Lightly prune after flowering if necessary.
Crabapple (*Malus spp.*)	Prune when fully dormant to remove suckers and to produce a desirable shape. Young suckers can be removed during the growing season.
Dogwood (*Cornus spp.*)	Make major cuts in late winter even though some blossoms may be sacrificed. Lightly prune after flowering if necessary.
Flowering almond, cherry, (*Prunus spp.*)	Prune lightly after bloom to remove suckers or develop desired plum shape.
Fringe tree (*Chionanthus spp.*)	Prune to maintain desired form. Birds enjoy the late summer fruit, so avoid pruning after flowering.

Table 2. Spring-blooming trees (cont.)

Plant name	Pruning notes
Hawthorn (*Crataegus spp.*)	Start pruning plant at a young age to develop the main branching pattern. Thin out crowded branches and head back other branches to develop a desired form.
Magnolia, Saucer (*Magnolia spp.*)	Prune to maintain desired form.
Maples (*Acer spp.*)	Prune in late winter if major cuts are necessary. Light pruning in midsummer can be done. Avoid early spring pruning because unsightly sap will flow from the pruning cuts.
Redbud (*Cercis spp.*)	Prune to maintain desired form. May need to remove individual stems from inside the canopy.
Serviceberry (*Amelanchier spp.*)	Prune to maintain desired form. May need to remove individual stems from inside the canopy.
Silverbell (*Halesia spp.*)	Remove sucker growth from base of plant. Thin out crowded branches and head back other longer branches.

Table 3. Summer-blooming shrubs

Summer-flowering plants bloom on new growth or current season wood. The optimal time to prune is late winter or early spring, before new growth starts.

Plant name	Pruning notes
Abelia (*Abelia x grandiflora*)	Remove about one third individual stems at ground level every couple of years rather than shearing. Head back new growth to produce more lateral shoots.
Beautyberry (*Callicarpa spp.*)	Remove individual stems from inside the plant to promote new growth. Head back new growth to produce more lateral shoots. Flowers on new wood.
Bottlebrush buckeye (*Aesculus parviflora*)	Prune to maintain desired size. Flowers on old wood.
Butterfly bush (*Buddleia spp.*)	Remove individual stems from inside the plant. Head back new growth to produce more lateral shoots. In some years it may be necessary to cut back shoots back to the ground.
Chastetree (*Vitex spp.*)	Remove individual stems from inside the plant. Head back new growth to produce more lateral shoots. Flowers on new wood.
Crapemyrtle (*Lagerstroemia, spp.*)	Prune by thinning to produce desired form. To produce small trees remove all but three or four main stems and cut off side branches to the desired height.
Hydrangea, hills-of-snow, pee-gee (*Hydrangea arborescens, paniculata*)	Prune to maintain desired form for summer flowering. Head back new growth to produce more lateral shoots.

Table 3. Summer-blooming shrubs (cont.)

Plant name	Pruning notes
Rose-of-sharon (*Hibiscus syriacus*)	Prune to maintain desired form for summer flowering.
Japanese Spirea (*Spiraea japonica, S. x bumalda*)	Prune to maintain desired form for summer flowering.
Summer-sweet (*Clethra alnifolia*)	Prune to maintain desired form for summer flowering. Flowers on old wood.
Sweetspire (*Itea spp.*)	Prune to maintain desired form for summer flowering. Flowers on old wood.

Table 4. Evergreen plants

The optimal time to prune evergreen plants is late winter or early spring, before new growth starts. Frequent pruning in spring and summer may be necessary to develop desired size and shape.

Plant name	Pruning notes
Arborvitae (*Thuja spp.*)	Prune when it needs shaping. Avoid making major cuts.
Boxwood (*Buxus spp.*)	Reach in and take out limbs to produce a natural shape. In formal gardens, shear once or twice during the summer months.
Cherry laurel (*Prunus lauracerasus*)	Begin pruning when plants are small to develop desired form. To maintain a compact plant, frequent pruning is necessary.
Chinese holly (*Ilex cornuta*)	Begin pruning when plants are small to develop desired form. Head back growing shoots in spring and summer to develop a compact,dense plant. Heavy pruning will reduce berry production. Severe renewal may be necessary if plants get too large.
Cotoneaster (*Cotoneaster spp.*)	Make thinning cuts to remove old wood and to shape to produce a more compact plant.
Eleagnus (*Eleagnus spp.*)	Begin pruning when plants are small to develop desired form. To maintain a compact plant, frequent pruning is necessary.
Euonymus (*Euonymus spp.*)	Prune by thinning to desired shape.
Falsecypress (*Chamaecyparis spp.*)	Prune in dormant season. Avoid making major pruning cuts.
Fir (*Abies spp.*)	To shorten a leader, cut it back by about one-half in the early spring before growth begins. Make sure there are a few buds near the end of the remaining stem.
Hemlock (*Tsuga spp.*)	Responds to moderate pruning or shearing. Avoid major pruning cuts.

Table 4. Evergreen plants (cont.)

Plant name	Pruning notes
Hollies (*Ilex spp.*)	Begin pruning when plants are small to develop desired form. Head back growing shoots in spring and summer to develop a compact,dense plant. For informal plantings, thin out older stems and head back leggy growth. Formal hedges may be sheared to develop a dense compact plant. Severe renewal may be necessary if plants get too large.
Junipers (*Juniperus spp.*)	Maintain shape or eliminate undergrowth of groundcover types by thinning during the growing season. Do not cut into old wood because new growth will not occur.
Ligustrum (*Ligustrum spp.*)	Begin pruning when plants are small to develop desired form. To maintain a compact plant, frequent pruning is necessary.
Mahonia (*Mahonia spp.*)	Begin pruning when plants are small to develop desired form. To maintain a compact plant, frequent pruning is necessary.
Nandina (*Nandina domestica*)	Remove one-third of the older canes every couple of years. Selectively cut one-third of the other branches about half their length to encourage a full, dense canopy. Dwarf selections may not need pruning.
Pine (*Pinus spp.*)	Prune back the ‘candles’ (new growth) about 50 percent as they expand in the spring. These new candles should be pinched by hand, since pruning shears will damage the surrounding needles.
Pyracantha (*Pyracantha spp.)*	Prune after fruit set to remove non-fruiting wood. Remove long,vigorous shoots to maintain desired size.
Spruce (*Picea spp.*)	To shorten a leader cut it back by about one-half in the early spring before growth begins. Make sure there are a few buds near the end of the remaining stem.
Yews (*Taxus spp.*)	Begin pruning when plants are small to develop desired form. To maintain a compact plant, frequent pruning is necessary.

Table 5. Groundcovers and vines

The optimal time to prune groundcovers and vines is late winter or early spring, before new growth starts. Frequent pruning in spring and summer may be necessary to develop desired size with vines.

Plant name	Pruning notes
Bittersweet (*Celastrus spp.*)	Prune vigorous stems each season, leaving three or four buds on each stem. Head back the tips to develop branching.
Clematis (*Clematis spp.*)	Some of these plants bloom on old wood, and some on new wood, depending on the species. It is best to wait until after bloom to prune this plant. Thin out old wood. Some vigorous varieties can be pruned with 12 inches of ground level.
Honeysuckle (*Lonciera spp.*)	Prune old stems and branches as necessary to control size. Periodic thinning of sucker shoots will reduce the density of the top.
Liriope (*Liriope spp.*)	Remove old foliage four to six weeks before spring growing season. Set lawnmower to the highest cut to prune old foliage.
Trumpetcreeper (*Campsis spp.*)	Flowers on new growth, so prune during the dormant season. This plant will tolerate severe pruning. Head back new growth to promote lateral shoots.
Wintercreeper (*Euonymus spp.*)	Thin out branches to control spreading.
Wisteria (*Wisteria spp.*)	Prune after flowering. This is a very vigorous vine and will require pruning often.

a U.T. Extension Reminder…

Conversion Factors for English and Metric Units

To convert column 1 into column 2, multiply by	Column 1	Column 2	To convert column 2 into column 1, multiply by
	Length		
0.621	kilometer, km	mile, mi	1.609
1.094	meter, m	yard, yd	0.914
0.394	centimeter, cm	inch, in	2.54
	Area		
0.386	kilometer^2, km^2	mile^2, mi^2	2.590
247.1	kilometer^2, km^2	acre, acre	0.00405
2.471	hectare, ha	acre, acre	0.405
	Volume		
0.00973	cubic meter, m^3	acre-inch	102.8
3.532	hectoliter, hl	cubic foot, ft^3	0.2832
2.838	hectoliter, hl	bushel, bu	0.352
0.0284	liter, l	bushel, bu	35.24
1.057	liter, l	quart (liquid), qt	0.946
	Mass		
1.102	ton (metric)	ton (English)	0.9072
2.205	quintal, q	hundredweight,cwt (short)	0.454
2.205	kilogram, kg	pound, lb	0.454
0.035	gram, g	ounce (avdp),oz	28.35
	Pressure		
14.50	bar	lb/inch^2, psi	0.06895
0.9869	bar	atmosphere, atm	1.013
0.9678	kg (weight)/cm^2	atmosphere, atm	1.013
14.22	kg (weight)/cm^2	lb/inch^2, psi	0.07031
14.70	atmosphere, atm	lb/inch^2, psi	0.06805
	Yield or Rate		
0.446	ton (metric)/hectare	ton (English)/acre	2.240
0.891	kg/ha	lb/acre	1.12
0.891	quintal/hectare	hundredweight/acre	1.12
1.15	hectoliter/hectare, hl/ha	bu/acre	0.87
	Temperature		
(1.8 x C) + 32	Celsius, C	Fahrenheit, F	0.56 (F-32)
	-17.8˚	0˚	
	9˚C	32˚F	
	20˚C	68˚F	
	100˚C	212˚F	

Metric Prefix Definitions

mega 1,000,000	deca	10	centi 0.01
kilo 1,000	basic metric unit	1	milli 0.001
hecto 100	deci	0.1	micro 0.000001

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture,
and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.
Agricultural Extension Service
Billy G. Hicks, Dean