

Pruning

Trees & Shrubs

A Guide for Grounds Managers



North Carolina Cooperative Extension Service

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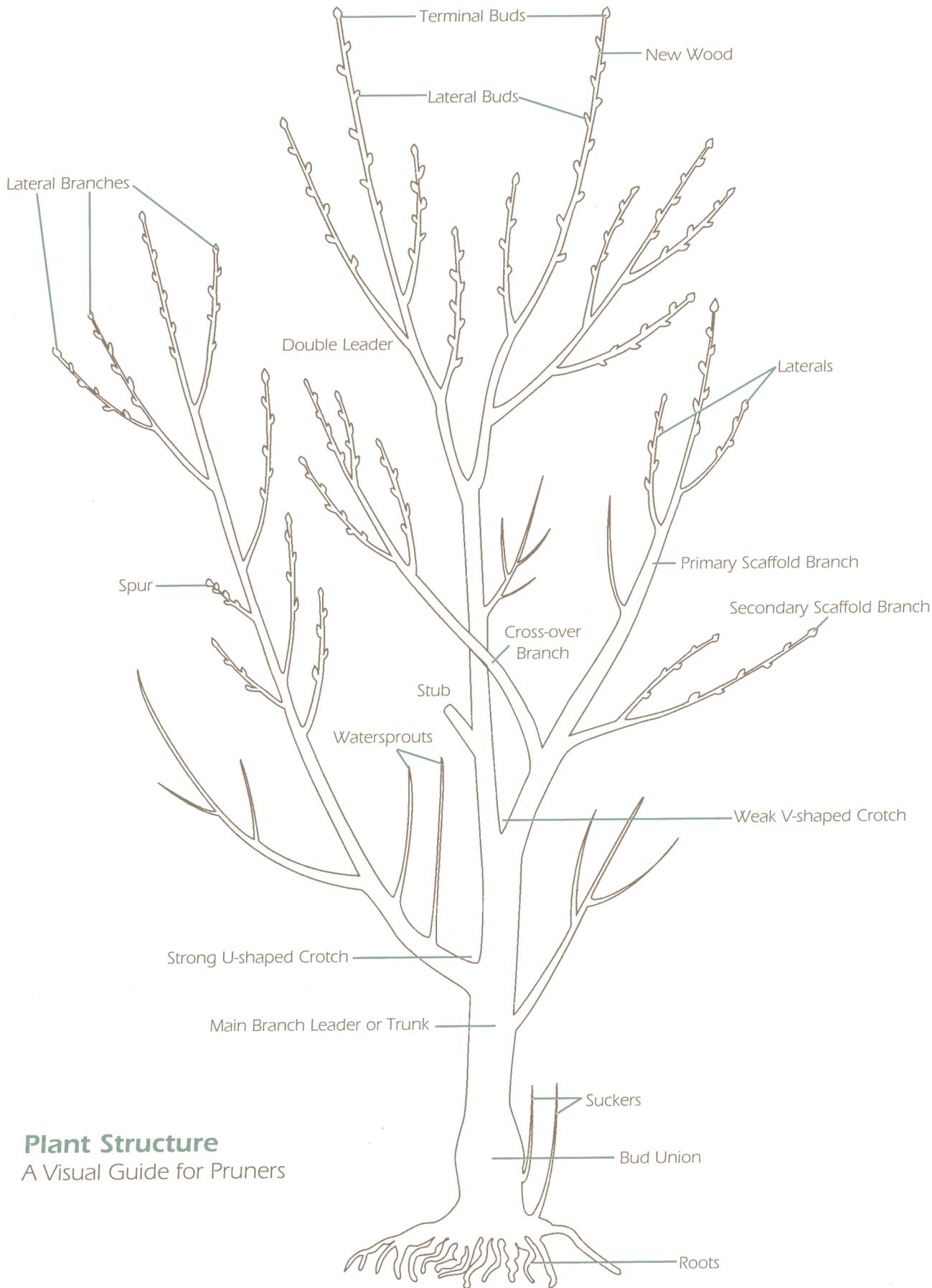
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Pruning Trees and Shrubs is a revision of *Pruning Shrubs*, AG-71,
originally printed in 1983.

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Plant Structure
 A Visual Guide for Pruners

One of the most important aspects of tree and shrub management is pruning. Knowing why, when, and how to prune correctly will make the difference between a healthy, aesthetically pleasing plant and one that is unhealthy, misshapen or both. The following information contains the basic pruning practices for grounds managers.

What is pruning?

Pruning is the removal of plant parts to improve form and growth. Branches are removed with minimum damage to cambium or growing tissue so that the wound will close in the shortest period of time and with the least possibility of wound infection.

The reasons for pruning can be grouped under the four following categories:

- 1) training the plant,
- 2) maintaining plant health,
- 3) improving the quality of flowers, fruit, foliage, and stems, and
- 4) controlling growth.

Training

The first pruning of young trees and shrubs always consists of removing broken, crossing, and weak-structured branches. The recommendation to remove one-third of the top to compensate for root loss of balled and burlapped material at transplanting has been revised. Prune these plants for structural integrity and cosmetic reasons only. Plenty of water during establishment will take care of the root loss problem.

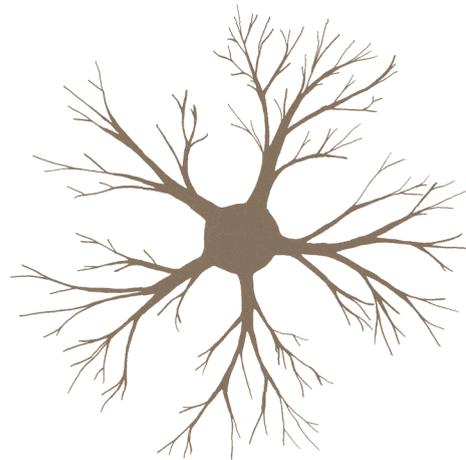
Trees with a central leader (excurrent form), such as cedar, sweet gum, or pin oak, may need little or no pruning except to eliminate branches competing with the central leader; these should be shortened. Some pruning may be necessary to maintain desired shape and shorten extra-vigorous shoots on trees that spread (decurent form). Depending on the species and the desired impact, the height of the lowest branch can be a few inches above the ground (for screening or windbreaks) or 10 to 12 feet or more above the ground (as needed near a street or patio). Lower limbs are usually removed, beginning in the nursery and continuing for several years after transplanting, until the desired height is reached.

For greatest strength, branches selected for permanent scaffolds should have a wide angle of attachment with the trunk. Branch angles of less

than 30 degrees from the main trunk result in a weak attachment, while those between 60 and 70 degrees have a very strong attachment.

Vertical branch spacing and radial branch distribution are important. If this has not been done in the nursery, it should begin once it is planted into the landscape.

Major scaffold branches of shade trees should be vertically spaced at least 8 inches and preferably 20 inches apart. Closely spaced scaffolds will have fewer lateral branches. The result will be long, thin branches with poor structural strength. Eventually they will cross and rub as they get longer.



Scaffold branches of trees should have proper radial spacing around the trunk.

Maintaining Plant Health

In pruning to maintain plant health, consider the elimination of dead, dying, or diseased wood. Any dying branch or stub can be the entry point for insects or disease that could spread to other parts of the tree. When removing diseased wood, such as a fungal canker or fire blight, it is important that the cut be made into healthy wood, beyond the point of infection, with a sterile blade.

The development of a sound framework through proper thinning will help prevent disease and loss of vigor while maintaining good form. Even evergreen shrubs usually will benefit from an occasional

thinning of foliage. This thinning will allow light and air to penetrate throughout the shrub, resulting in even growth of the foliage.

Improving the Quality of Flowers, Fruit, Foliage, or Stems

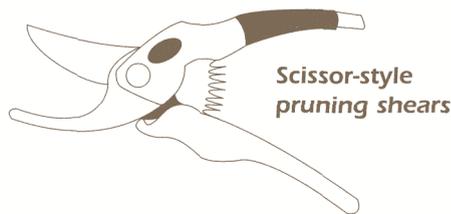
The more flowers and fruit a plant produces, the smaller they become, as can be seen on an unpruned rose bush or fruit tree. Pruning reduces the amount of wood and diverts energy into the production of larger, though possibly fewer, flowers or fruit or both. Most flowering shrubs will bloom either on 1-year-old growth or on new growth. Properly timed pruning will increase the production of wood that will bear flowers or fruit.

Restricting Growth

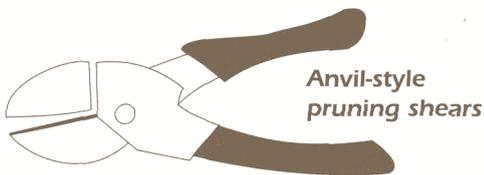
Over time, trees and especially shrubs will often grow to sizes that exceed the space allowed for them. Where space is limited, regular pruning becomes necessary to keep plants in bounds. Regular pruning is necessary to maintain a uniform size and shape of street trees and formal hedges. It is best to plant wisely, so that the tree will "fit" the space with a minimum of pruning.

PRUNING TOOLS

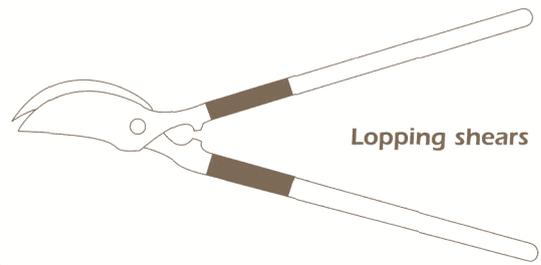
Pruning shears are good for branches up to 1/2 inch in diameter. Using pruning shears to cut larger branches may result in a poor cut, ruined shears, or both. There are two styles of hand shears: anvil cut and scissor action. In the anvil style, a sharpened blade cuts against a broad, flat plate. In the scissor style, a thin, sharp blade slides closely past a thicker (but also sharp) blade. The scissor style usually costs more, but makes cleaner, closer cuts.



Scissor-style pruning shears



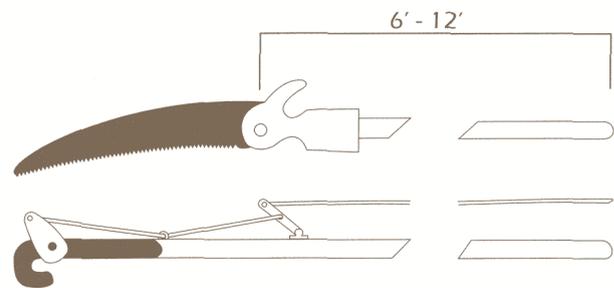
Anvil-style pruning shears



Lopping shears

Lopping shears have long handles and are operated with both hands. Even the most economical pair can cut material 1/2 inch in diameter. The better ones are designed to cut 2-inch limbs.

Pole pruners have a cutter with one hooked blade above and a cutting blade beneath. The cutter is on a pole and is operated by a lanyard pulled downward. The poles can either be in sections that fit together or telescoping and can be made of several materials. Wooden poles are heavy, but aluminum but can conduct electricity if it touches an overhead electric wire. Fiberglass or some type of plastic compound is probably the best.



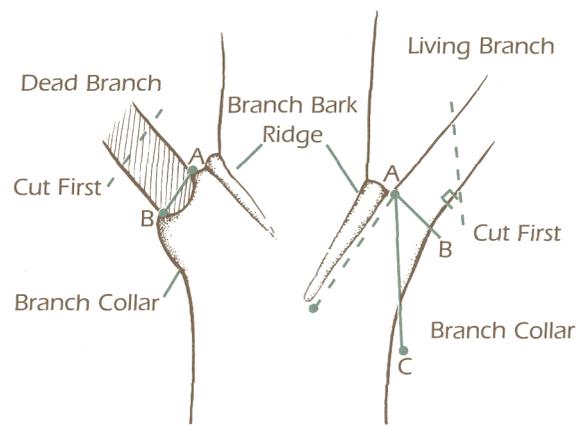
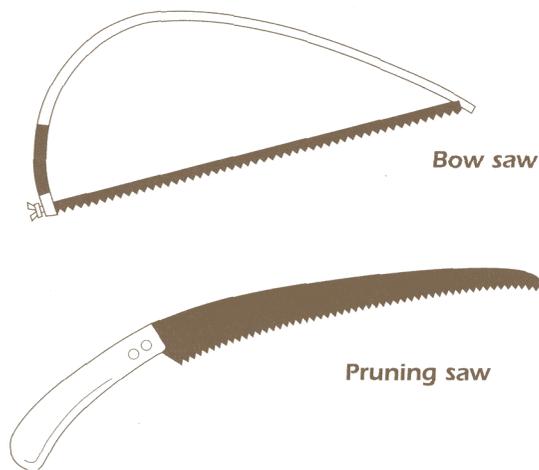
Pole pruner

Use of pole pruners can be dangerous, as material cut overhead can fall on the operator. Be sure to exercise caution and wear the correct head and eye protection when using a pole pruner.

There are many makes and models of pruning saws. Fineness of cutting edge is measured in points (teeth per inch). An 8-point saw is for delicate, close work on small shrubs and trees. Average saws are about 6 points, while 4 1/2-point saws are for fairly heavy limbs.

A fixed-blade saw with a leather scabbard is safe and easy to use. Folding saws require either a screwdriver (for a slotted-head holding screw) or will have a protruding wing nut, which can scar the trunk when a limb is cut. If the saw suddenly folds while in use, your fingers can be injured.

Blades can be either straight or curved. Many prefer a curved blade that cuts on the draw stroke. A double-edged saw has fine teeth on one side, and



coarse teeth on the other; these can be difficult to use in densely branched plants.

Bow saws are good only where no obstruction exists for a foot or more above the area to be cut.

Chain saws come in a variety of sizes, both gas and electric. However chain saws are not appropriate for pruning live plant material except for large limbs. They are better suited to tree removal and cutting firewood.

GENERAL PRUNING TECHNIQUES

Twigs and Small Branches

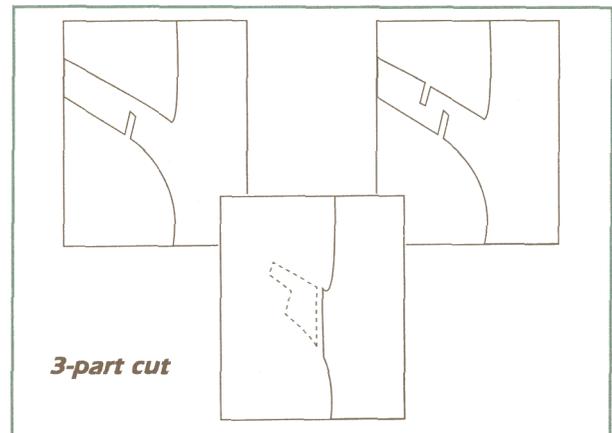
When pruning twigs and small branches, always cut back to a vigorous bud or an intersecting branch. When cutting back to a bud, choose a bud that is pointing in the direction you wish the new growth to take. Be sure not to leave a stub over the bud or cut too close to the bud. When cutting back to an intersecting (lateral) branch, choose a branch that forms an angle of no more than 45 degrees with the branch to be removed.

Thick Heavy Branches

Large branches should be removed flush with the collar at the base of the branch, not flush with the trunk. The collar is an area of tissue that contains a chemically protective zone. In the natural decay of a dead branch, the decay advancing downward meets the internal protected zone (an area where very strong wood meets an area of very weak wood). The branch then falls away at this point, leaving a small zone of decayed wood within the collar. The

decay is stopped in the collar. This is the natural shedding process when all goes according to nature's plan. When the collar is removed, the protective zone is removed, causing a more serious trunk wound. Wood-decay fungi can then easily infect the trunk. Even if the pruned branch is living, removal of the collar at the base still causes injury to the tree.

For over half a century, the recommendations for pruning have been to flush-cut and paint. These outdated recommendations have no basis in scientific fact. The flush-cut increases the tree injury, which the paint hides. The paint is primarily cosmetic, a psychological treatment for the person doing the pruning, to show that he or she has done something to "help" the tree. In fact, paints or wound dressings may trap moisture and increase disease problems.



When cutting branches over 1 1/2 inches in diameter, use a 3-part cut. This is accomplished by first sawing the bottom of the branch, 6 to 12 inches out from the trunk and about one-third of the way through the branch. Next, make a second cut from the top, about 3 inches further out from

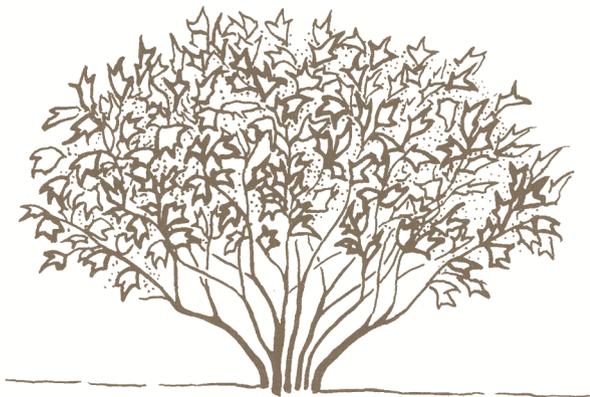
cut from the top, about 3 inches further out from the undercut, until the branch falls away. The resulting stub can then be cut back to the collar of the branch.

PRUNING SHRUBS

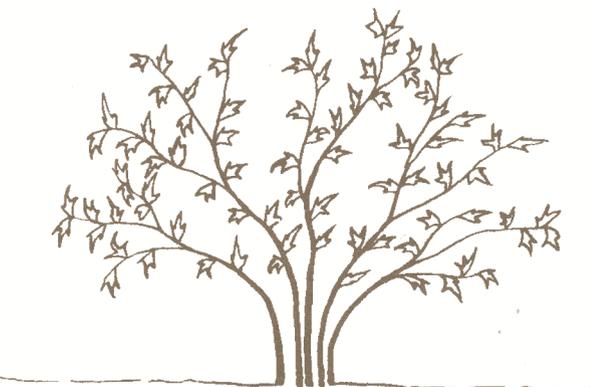
Modern landscaping calls for the natural look or enhancement of most plants. Plants should be chosen because of their particular characteristics—shape, size, color, form, or texture. A plant should be pruned to enhance this natural beauty and accentuate its particular features. Proper pruning can only be accomplished by using the right tools in the right way, and working with the natural growth habits of the landscape plants. Always keep tools well oiled and sharpened.

Most shrub pruning will involve two basic techniques.

- **Thinning** means the removal of an entire branch back to the main trunk or stem.
- **Heading back** is simply shortening the length of the branch.



Repeated heading back with no thinning.



Continued thinning with no heading back.

Problems result when either of these techniques is used continuously without the other. Proper pruning should involve a combination of the techniques to keep a plant at a chosen size, shape, and density.

When a shrub gets completely out-of-bounds, it is often necessary to prune drastically or head-back. Some varieties of shrubs tolerate severe pruning while others do not. Tolerant shrubs will put on new growth and may have several growing periods confined to one area. Sometimes an overgrown evergreen shrub can be pruned from the bottom to expose the main trunk. This creates a small tree.

Rejuvenation is only a temporary solution to overgrown shrubs. Very often the plant will need severe pruning again and again. Consider removing such a shrub and planting a species which grows more slowly and remains smaller.

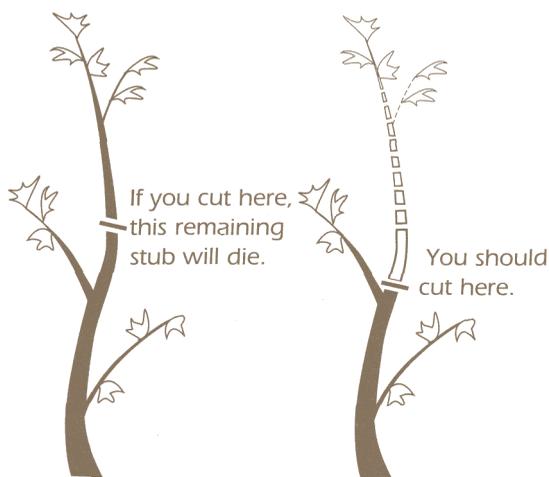
Formal landscapes require a formal type pruning, such as a hedge. Shearing is simply pruning the plants on the surface, usually with hand shears or electric shears. Plant species normally sheared have buds very close together so that new growth will begin wherever a cut is made.

When and How to Prune:

Abelia—It is beneficial to cut out tips and shoots of new abelia growth during the growing season each summer. To keep this semi-evergreen within bounds, heavy pruning near the ground level every 3 or 4 years may be necessary. Dwarf abelia and spreading abelia seldom need more pruning than removal of dead wood and stray shoots that detract from the low compact form.

Aucuba—Prune this showy, shade-loving shrub only to remove diseased or dead branches, or to keep plant in desired form for the landscape scheme. The broad evergreen leaves, both the solid green and Gold Dust aucuba with yellow splotches, make excellent foliage for indoor use. Such cuttings will root in water after a few weeks. Under ideal growing conditions, female aucuba will produce red cranberry-like berries. Prune after berries have fully ripened (when they darken in color).

Boxwood—Prune boxwood to cut out unsightly limbs before growth begins in the spring. Prune with hand shears, tipping each branch. Do not prune boxwood only across the top unless you have a very specialized contemporary planting.



Don't leave a stub.

junction with larger branches. On large plants, when large branches are removed, make a clean, close cut without bruising or tearing back.

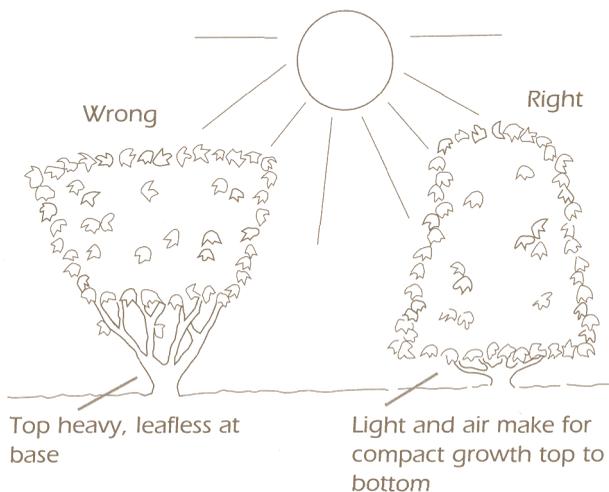
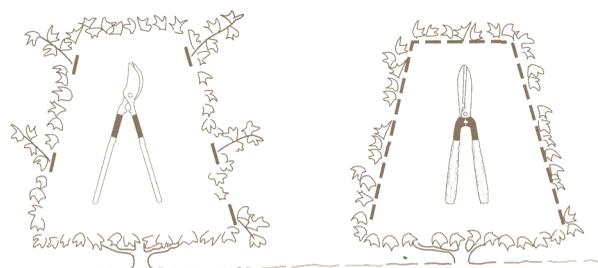
Cleyera—This handsome plant needs pruning to remove "shoot growth," which appears in the upper part or on the outer fringes of the plant. Cut these stems well back into the plant where they will put out new buds to cover cutting wounds. This gives the shrub a fuller, bushier form. Pruned away limbs of cleyera make excellent foliage for indoor use, and the handsome thick glossy leaves last for several weeks in water.

Large-growing hollies (American, Japanese, and Chinese)—Most hollies are evergreen, but a few shed their leaves in the fall. Large hollies properly placed in the landscape need little pruning, except to keep them neat. They can be pruned at any time, but late winter pruning is best to ensure a good berry crop the next season. Many gardeners prune hollies at Christmas time and use the greenery in holiday decorations. *Cornuta* species, including Burford, grow faster than some of the native American species and require heavier pruning to keep them in shape. Prune to remove individual branches, shaping the plant as you prune. This will avoid giving the plant a severely clipped appearance. Holly hedges require pruning to encourage full, compact growth. Clip away any shoots which stray from the desired form. Espalier hollies should be pruned while in bloom in order to prevent cutting away berry-forming flowers.

Smaller-Growing Hollies—The dwarf and semi-

dwarf hollies are popular shrubs throughout the south. Prune them to remove long shoots that stick up after plants have put on new growth. Round-leaved Japanese holly needs heavier pruning to help keep its shape. Small-scale Helliery holly has a tendency to spread more if tops are shaped periodically. Most dwarf forms of Chinese and Japanese hollies require periodic pruning to maintain the desired shape and size.

Photinia—Few evergreens give such a vivid splash of red color to the landscape as photinia in the early spring when the plant puts on new growth. After growth matures and turns green, additional summer pruning will produce more red leaves. Cut each branch a different length for a well-proportioned handsome plant. Photinia makes an excellent background hedge as well as accent-specimen plant. It is a very effective espalier specimen or multi-stem tree for a large wall.



To achieve the desired shape, trim using the proper tool.

- Wrong—Top-heavy, leafless at base.
- Right—Light and air make for compact growth from top to bottom.

When pruning a hedge, decide if you want the

When pruning a hedge, decide if you want the formal or the natural look. Be sure to have the shrub pruned wider at the base than the top. This allows sunlight to hit more surface. Lower branches will have more foliage and appear to be more dense.

Narrowleaf Evergreens—Cedars, junipers, and arborvitae should be planted in unrestricted areas where little pruning is necessary. Heavy pruning can kill them.

Such needle-leaf shrubs can be tip pruned in the spring, beginning when plants are young. Cut tips back far enough so that cutting wounds are hidden by other overlapping leaves and branches since these plants will not make new growth to hide the stubs.

Forsythia, spirea, weigelia, flowering almond and quince, sweet shrub, pearl bush, and the oriental magnolias are typical of the many deciduous shrubs that bloom in the spring. These are pruned so that new growth conforms to the plant's general appearance. They should be pruned immediately after flowering—just as the blooms lose their color.

Plant form is greatly improved if these shrubs are pruned to remove about one-third to one-half the top growth. To encourage new shoots that will prevent shrubs having an open scraggly base, cut about one-third of the older mature stems at ground level.

Prune spring-flowering shrubs with a hand-clipper unless they are grown as a formal hedge. In hedge form, prune with hedge clippers. Specimen shrubs may look scalped if sheared with hedge clippers.

Azaleas—Contrary to popular opinion, most azaleas do need pruning. Pruning is especially desirable to produce more handsome and compact growth for tall-growing varieties. Any heavy pruning should be done immediately after the flowering period. Tall, rangy limbs that appear in the top of the plant should be removed back inside the body of the plant. To induce branching, pinch out tips of new growth between flowering and the first of July. Later pinching would reduce next year's flower production. Always remove any dead or injured branches when shaping or heading-back azaleas.

Camellias—Camelliajaponica varieties require little pruning. If a plant is poorly shaped, remove undesirable limbs at a point within the plant. An overgrown plant which has become too large for its landscape position should be pruned by cutting branches of flowers rather than individual blooms. There is a risk in moving such large plants.

Camellia sasanqua varieties sometimes require heavy pruning. To preserve the natural effect, prune out individual limbs, cutting back into the heart of the plant. Prune sasanquas immediately after flowering so that next year's flower crop will not be affected. Espaliers of both camellia species are pruned just as they go out of flower to maintain the pattern of espalier on wall or fence.

Crepe Myrtle—This popular plant may be grown as a base-branching large shrub, or as a single or multi-trunked tree. The way to prune depends upon the landscape use of the plant. A tree form should have three to five main stems, equidistant apart. The branches should begin about 4 to 5 feet above the ground. The overall plant will have a vase shape. Tip pruning will encourage new terminal growth and more flowers. All blooms should be removed as they fade as this will promote another succession of flowers. This can be done all summer long. Basal sprouts and water sprouts are best removed in mid-summer to discourage this type of growth. Heavy pruning in the winter will only encourage more flushes of growth at the pruning cut.

Hydrangea—This showy shrub of the summer landscape starts setting buds for next year's blooms on this year's growth. Don't cut off flower buds when you prune. It is safest to cut off blooms as they fade, cutting stems enough to give plants the desired landscape shape and size. New growth will appear, forming flower buds for next year's show.

Gardenia—In general, gardenias require little pruning. However, if the plant is much too large for its landscape position, prune back just before growth starts in the spring. When large plants are pruned heavily, frequent watering will stimulate new growth and flower production. Nature often prunes gardenias by freezing them back to the ground in winter. If this happens to your plants,

cut them back to ground level—they will often sprout out and grow into sturdy plants the next summer.

Nandina and Mahonia—Prune these evergreens in late winter when the red berries of nandina and dark blue berries of mahonia fall or are eaten by birds. If plants have been neglected for several years and allowed to grow leggy, prune away tallest and oldest stems—usually the ones with the oldest bark. This encourages new growth to appear and the plant will fill in at the base. Heading back tall stems will not correct legginess. The stems must be removed at ground level. Once a seasonal program of pruning is established, plants will have a compact growth from the ground up.

Pyracantha—This shrub has many landscape uses and must be pruned and trained to conform to its designated landscape function. Pyracantha produces berries on second-year growth, and the showy clusters of red, yellow, or orange berries are second to none. Removing growth in the fall and winter will reveal the colorful berries, but reduces next year's crop. Annual light pruning is recommended as the plant matures. If the plant becomes completely too large, a severe heading back is necessary. This can be accomplished in

the winter with lots of subsequent growth, or in the summer when the regrowth will be limited. An espalier pruning design requires several tip prunings each season so that the plant conforms to the intended design.

Groundcovers, Ornamental Grasses, Perennials, and Vines

Many groundcovers benefit from an annual pruning. This is especially true for liriope and mondo grass. Mow off the old tops before new growth resumes in the spring. Mass plantings of periwinkle, ivy, and pachysandra can also be cleaned up in late winter before the new growth begins. Use a string-trimmer type device, lawn mower, or shears to remove faded foliage and dead leaves. Do not damage the crowns or roots of the groundcover. This is also a good time for raking and removing fallen leaves from the beds.

Pruning ornamental grasses, such as pampas grass, miscanthus, northern sea oats, and pennisetum, should also be trimmed before new growth appears in the spring.

Aggressive vines such as wisteria, clematis, honeysuckle, and clematis should also be pruned periodically to keep them in bounds. Be sure to prune at the appropriate time so that flower buds are not removed with the general vine growth.

10,000 copies of this public document were printed at a cost of \$3,200.00, or \$.32 per copy.

Published by
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