



Florida Cooperative Extension Service

## Pruning Landscape Trees and Shrubs<sup>1</sup>

Edward F. Gilman and Robert J. Black<sup>2</sup>

Pruning is the selective removal of plant parts, typically shoots and branches, to improve health, control growth or enhance fruiting, flowering or appearance. Pruning should be a routine part of home-ground maintenance and not delayed until the landscape is overgrown. Overgrown plants can be tall and leggy with little foliage close to the ground, and cannot be pruned to desired size in a single pruning without severely damaging the plants. These plants should be pruned back gradually over a period of several years.

The objective of this document is to present pruning techniques for Florida trees and shrubs. The need for pruning, timing, types of pruning, tree pruning, shrub pruning and tools are discussed separately. Specific examples will support the pruning concepts.

### WHY PRUNE

Proper plant selection can eliminate much of the pruning requirements in today's landscapes. Unfortunately, plants are frequently placed in the landscape according to their current size and shape, not the size which the plant is likely to attain in five or more years. The homeowner or landscape manager soon finds it necessary to clip or prune plants frequently to keep them within bounds. For instance, frequent pruning is assured when photinia

shrubs are selected as foundation plants, since this plant can quickly grow to 25-30' tall. Utilizing a low-growing juniper, Wheeler's Dwarf pittosporum, indian hawthorn or other compact shrub in such a location would greatly reduce or eliminate required pruning. It is less time consuming and less costly to select and install the proper sized plant than to choose one which will require frequent, timely pruning. Ask your nurseryman or consult a reliable source for growth rate and size of desirable plant species. If a plant needs to be pruned several times each year to control size, it may be the wrong species for that location. Many prunings can be eliminated by proper plant selection and this can save space in landfills by reducing the volume of yard waste.

Plants may be pruned for a number of reasons. Determine why you are pruning a plant before beginning.

### Maintain or Improve Vigor

Removal of dead, dying or damaged wood and diseased and insect infested plant parts is an effective way to stop the spread of decay, disease and insects to other portions of the plant or to neighboring plants. For example, if several branch tips are infested with aphids or scale, prune and discard the affected shoots. This can be an effective alternative to spraying insecticides if the infestation is small and

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2. Edward F. Gilman, assistant professor; Robert J. Black, associate professor, Environmental Horticulture Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611. For more information, contact your county Cooperative Extension Service office.

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localized. Weekly checking is often necessary to detect a disease or an infestation in the early stages.

### Control Plant Size and Form

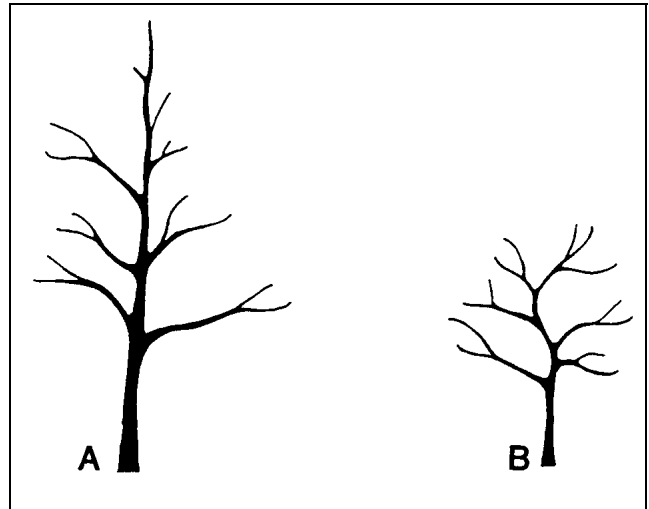
A common objective of pruning is to maintain or develop a desired size or form. However, this can be largely eliminated by installing the proper species or cultivar and by not over fertilizing. Many compact and dwarf shrubs are now available at retail garden centers. Selective pruning can shape plants or produce either a thin or thick canopy. A thinner canopy will allow more light penetration and help keep interior leaves on the plant. Root pruning can be used to slow plant growth, producing a more compact plant. Prune one half the root system, wait 4-6 weeks, then prune the other half. Root pruning should be scheduled so roots will be watered thoroughly to keep the soil moist for 4-6 weeks following root pruning.

### Training Young Plants

There are several reasons to train plants. Pruning young trees can dramatically influence their long-term health, function and survival. Early pruning on young shrubs encourages branching and fullness, which are frequently desirable characteristics of landscape plants.

Branch spacing and arrangement and the ultimate structural strength and safety of a tree can be controlled by selectively removing branches on a young sapling (Figure 1). Always work with the natural form of a plant. Encourage only one central trunk to develop by removing competing, upright trunks or branches. This should begin within the first 2-3 years after the tree is propagated. Tree training continues for 10 or more years on large-maturing species. Frequent light prunings several times each year encourage faster growth and prevent undesirable sprouting compared to one heavy pruning each year. In all but the highest maintenance landscapes, do not attempt to dramatically alter the natural form; instead, choose a species which has more of a natural tendency to grow into the desired form. For example, a river birch, red maple or tabebuia would be better suited as a shade tree in a narrow vertical space than would live oak.

Plants can be pruned into different shapes such as balls, squares, rectangles or animal figures to create special effects. This practice (topiary) has become popular in recent years, but plants pruned in this



**Figure 1.** (A) Desirable form and branching pattern on a young large-sized shade tree such as live oak, sycamore or southern magnolia. Major limbs are spaced 12-24" apart along the trunk, not clustered at the same point on the trunk. (B) Desirable form on a young, small-sized patio tree such as dogwood, redbud or frangipani. Major limbs can be spaced closer together on the trunk.

manner become focal points and should be used sparingly in most landscapes. Topiaries can be grown by planting a small-leaved plant such as boxwood, surinam cherry, natal plum or pyracantha and training the plant into a specific form. A new technique utilizes a wire mesh frame which is packed tightly with sphagnum moss. Appropriate plant species including begonias, ivy and creeping fig can be planted in the sphagnum, forming a fully grown topiary in several months to 2 years.

The practice of growing plants against a wall (espalier) requires frequent pinching and pruning. Plants trained in this manner are specimen plants and not all plants are adaptable to this pruning technique. Pyracantha, sea grape, *Fatsyhedra*, magnolia, yaupon holly and loquat make excellent espalier plants.

Plants which many consider as large shrubs such as photinia, wax myrtle and pittosporum can be trained into small trees by gradually removing over a period of 1-3 years, all the foliage and small branches from the lower portion of one or more stems. This should not start before the plants are 8' tall so that the main trunks can develop properly. Small branches left along the lower trunk will build trunk caliper and create a sturdier tree. The longer they remain on the trunk, the thicker and stronger the trunk becomes.

### Influence Flowering and Fruit Production

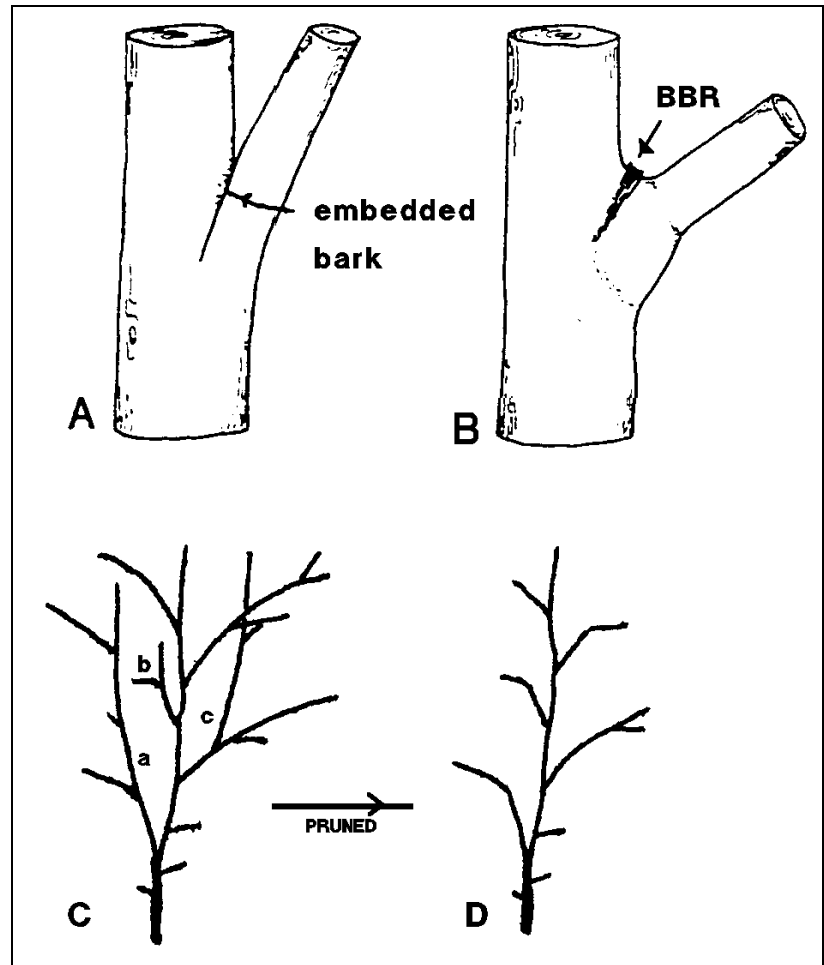
Larger fruit can be produced by selectively removing flowers or developing fruits. Those remaining will be larger. Light pruning helps to maintain annual flowering and fruiting on fruit trees. Severe pruning on plants which flower on current season's growth such as crape myrtle will generally stimulate vegetative growth and produce fewer, but larger flower clusters. Pinching new vegetative growth during the growing season will stimulate growth of lateral shoots which on species which flower terminally (e.g. azalea, cassia, crape myrtle) will increase the number of blossoms produced. Remove developing seed heads on crape myrtle to promote a second and perhaps a third flower display.

### Safety Pruning

The manner in which stems are attached to each other and to the trunk influences the structural strength of the tree. Remove branches with embedded bark having narrow V-shaped crotches in favor of wider-angled U-shaped crotches (Figure 2). Large decayed, broken or poorly attached tree limbs should be recognized and promptly removed by a professional before they fall. Remove dead branches and branch stubs since they can lead to serious trunk decay (Figure 3). Periodic tree inspection by a professionally trained tree specialist (arborist) can help prevent these situations from developing into unsafe conditions.

### Rejuvenate Old Plants

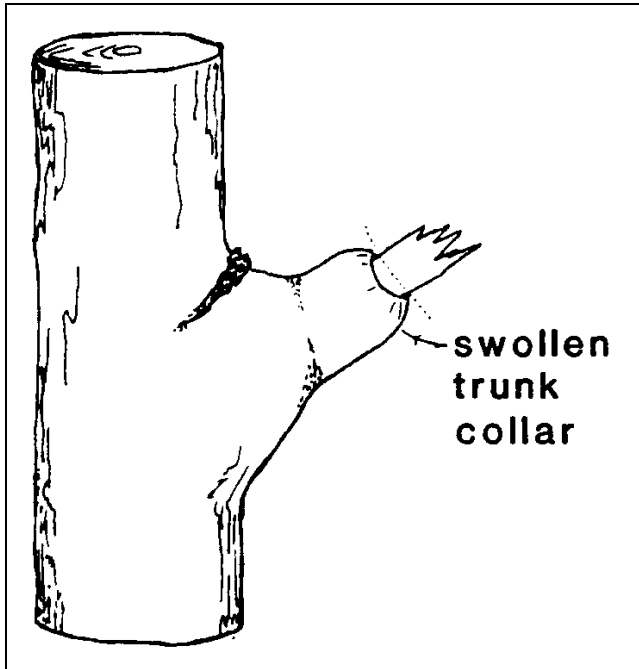
Sometimes a shrub which is not growing well despite receiving adequate light, water and nutrients can be invigorated or "shocked" into growing by severe pruning. Typically, the plant either dies or begins growing vigorously in response to this drastic treatment.



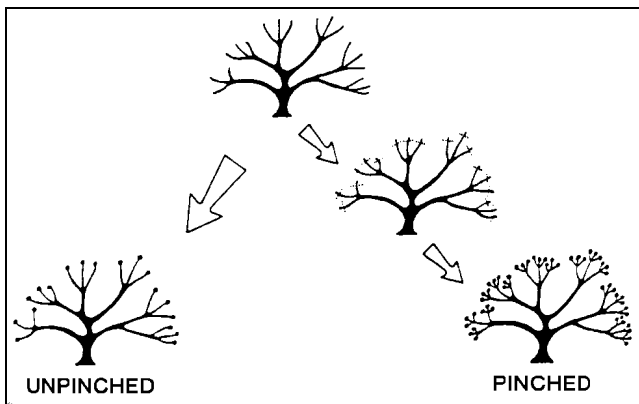
**Figure 2.** (A) Remove limbs with embedded bark. They are poorly attached to the tree and can split from the tree as they grow older. Embedded bark is bark that is squeezed between stems. The union of the two stems appears as a "V". (B) Retain limbs with raised bark at the union of the stems. The crotch between these stems appears as a "U" and represents a strong union between stems. (C & D) The crotches between the trunk and branches a, b and c will develop included bark. They should be removed when the tree is young in favor of the remaining wider angled branches.

### Pruning at Transplanting

Shoot pruning for the purpose of compensating for root loss at transplanting is not recommended. Prune only to remove dead, diseased, crossed, rubbing or broken branches. About one year after transplanting, begin pruning to develop appropriate form and structure.



**Figure 3.** Proper removal of a dead branch. Do not cut into the swollen collar growing around the dead branch. This will injure the trunk, since the collar is composed of trunk tissue. Cut along dashed line.



**Figure 4.** Pinching new spring or early summer growth on plants which flower on subsequent shoot growth will encourage more flower bud formation for next year's flower display. Azalea respond well to pinching.

**WHEN TO PRUNE**

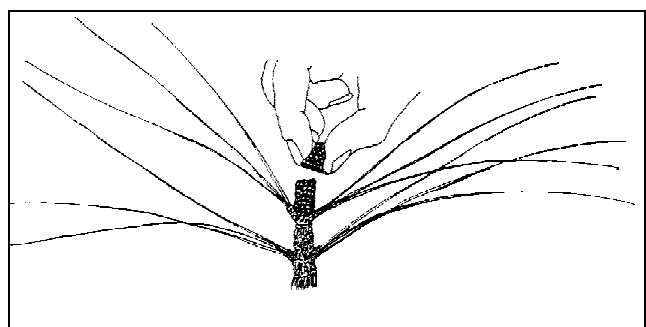
Trees and shrubs can be lightly pruned anytime. To minimize reduction of next year's flowers, prune spring-flowering plants such as azaleas, spireas and dogwoods in late spring before the flower buds set for the next season (Table 1). These plants set their flower buds on the previous season's growth and the

**Table 1.** Winter and spring flowering plants which can be pruned after flowering but before flower buds form for next year's show.\*

| Shrubs   |                          |
|--|--------------------------|
| azaleas  | spireas                  |
| some hydrangea   | Indian hawthorn          |
| banana shrub   | wisteria                 |
| camellia   | star and saucer magnolia |
| Trees  |                          |
| dogwoods   | redbud                   |
| fringe tree  | magnolias                |
| African tulip-tree   |                          |
| * The only effect from pruning at other times is a reduction in the number of flower buds. |                          |

**Table 2.** Plants producing flowers on current season's growth which can be pruned during the dormant season.\*

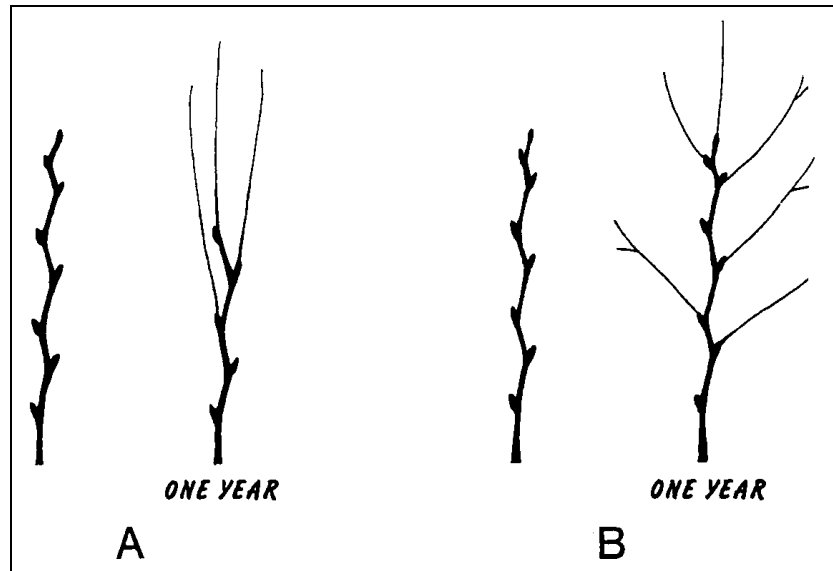
| Shrubs  |                  |
|---|------------------|
| allamanda                                     | plumbago         |
| abelia  | thryllis         |
| hibiscus                                      | golden dew-drop  |
| oleander                                      | bouganvillea     |
| rose  | vitex            |
| Trees   |                  |
| frangipani                                    | acacia           |
| bottle brush                                  | golden rain tree |
| cassia  | princess-flower  |
| royal poinciana                               | crape myrtle     |
| jacaranda                                     |                  |
| * Structural pruning can be done at any time. |                  |



**Figure 5.** Prune pines by pinching one-half of the candle, or new shoot before the needles elongate.

buds over winter on this older growth. For example, dogwoods and azaleas form flower buds in July for the following year's flower display. Pruning or pinching between the end of the flower display and late spring would not reduce the number of flower buds set. Pinching the new shoots on azalea anytime from several weeks after they begin elongating

**Figure 6.** (A) Heading back a young unbranched shoot will force two to four buds back from the cut into vigorous upright growth. Undesirable multiple leaders with included bark will develop on trees from this type of pruning; however, properly placed, these cuts can create and maintain a nicely formed shrub. (B) Growth from an unpruned shoot will be more typical of the natural form and more uniformly distributed along the trunk. Note the horizontal branching habit and the desirable central leader.



through May will encourage lateral branching. Each of these laterals is likely to develop a flower bud. Thus the pinched plant produces many more flowers the following year, than an unpinched plant (Figure 4). Pruning between July and the flower display would remove flower buds and reduce the flower display but should not affect the health of the plant.

Plants that produce flowers on current season's growth such as abelia, hibiscus and rose are usually pruned while dormant or just before the spring growth flush (Table 2). Developing shoots can be pinched to encourage lateral branching which will enhance the flower display. Moderate to severe pruning may encourage production of fewer but larger blossoms or blossom clusters.

It is best to prune trees such as oaks, maples, hickory, and other large shade trees during the dormant season or just following a growth flush. Pruning at other times frequently promotes undesirable sprouting. Trees sprout excessively when pruned during active shoot elongation.

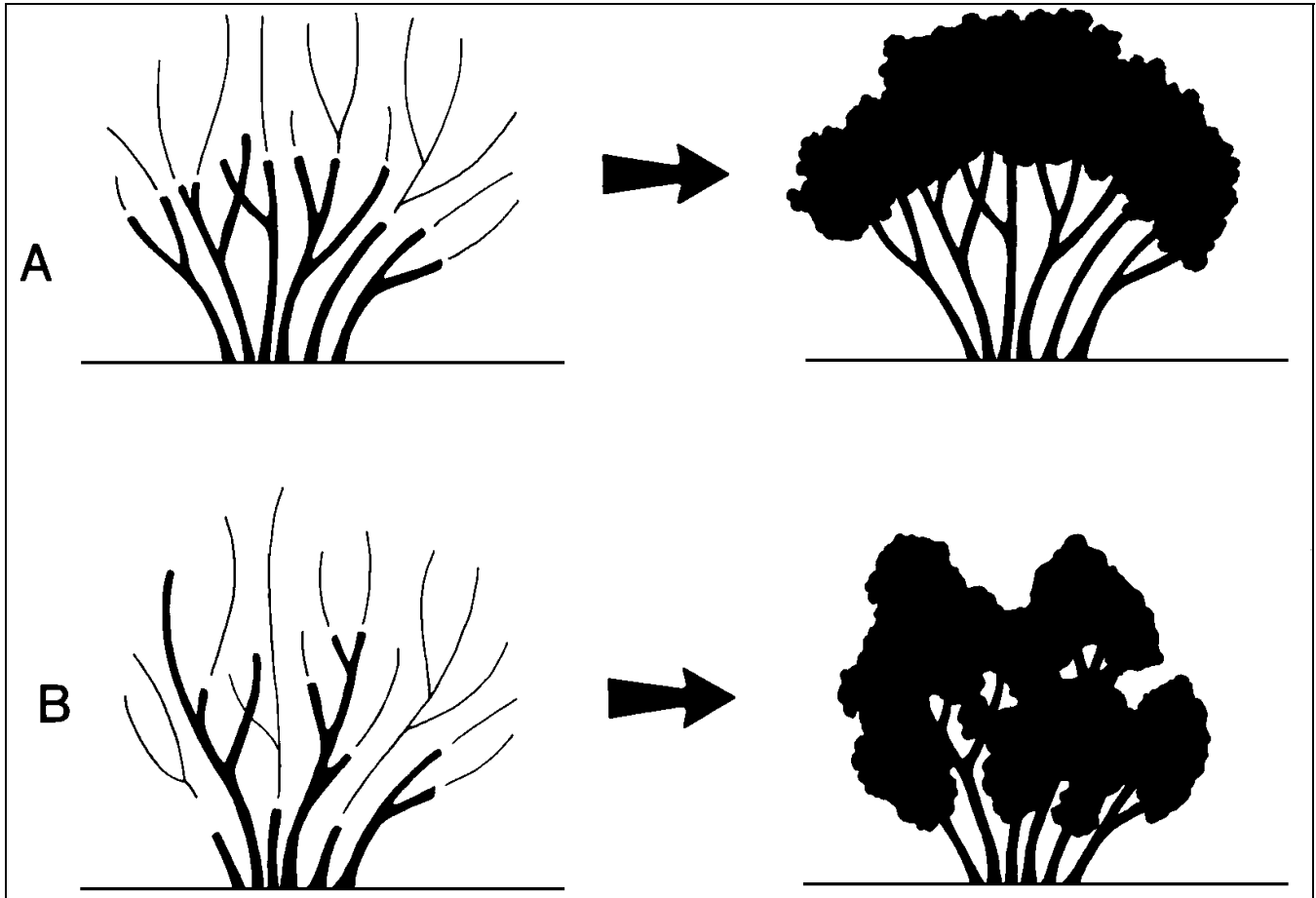
Most evergreens such as podocarpus, holly, boxwood, ligustrum, juniper and wax myrtle can be pruned anytime. Terminal growth of pines can be controlled by removing one-half of the candle in the spring just prior to needle expansion (Figure 5). This encourages new bud formation at the pinch, slows growth on the pinched branch and creates a more compact plant. Never pinch a pine at other times of the year, since new buds will not form.

To encourage rapid shoot development and greatest overall plant growth, prune just prior to the first spring growth flush. To retard growth for maximum dwarfing effect, prune just after each

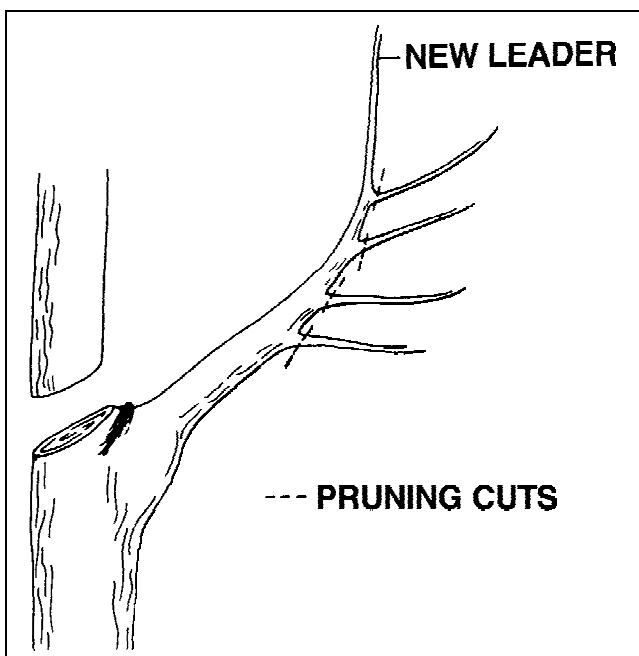
growth flush. Late summer pruning may stimulate an additional flush of shoot growth on species which flush several times each year. These shoots could be damaged by an early frost.

Closure (callusing) of pruning wounds on most trees and shrubs should be most rapid if pruning is conducted just before, or immediately following the spring growth flush. This is desirable because a closed wound is more aesthetically pleasing, and insects, diseases and decay organisms are discouraged from entering the plant. In addition, cold injury can be reduced if pruning is conducted close to spring bud break. Late fall and early winter pruning can stimulate new growth, particularly during a mild period during the winter. These succulent stems are not cold hardy and can be easily damaged, even by a light frost. Low winter temperatures can also cause cambium damage near pruning cuts, even if growth is not stimulated by pruning. This is particularly true of plants which are marginally hardy. If in doubt about cold susceptibility, it is best to delay heavy pruning to just before growth begins in the spring.

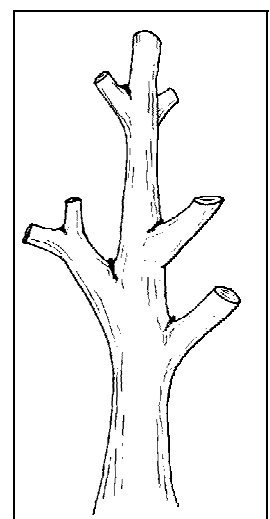
Some trees such as birch, maple, dogwood, elm and walnut bleed sap from pruned wounds if they are pruned during late winter or early spring. This "bleeding" is not usually harmful to the tree, but the dripping sap is often objectionable. Trees which show this tendency should be pruned in late fall or early winter.



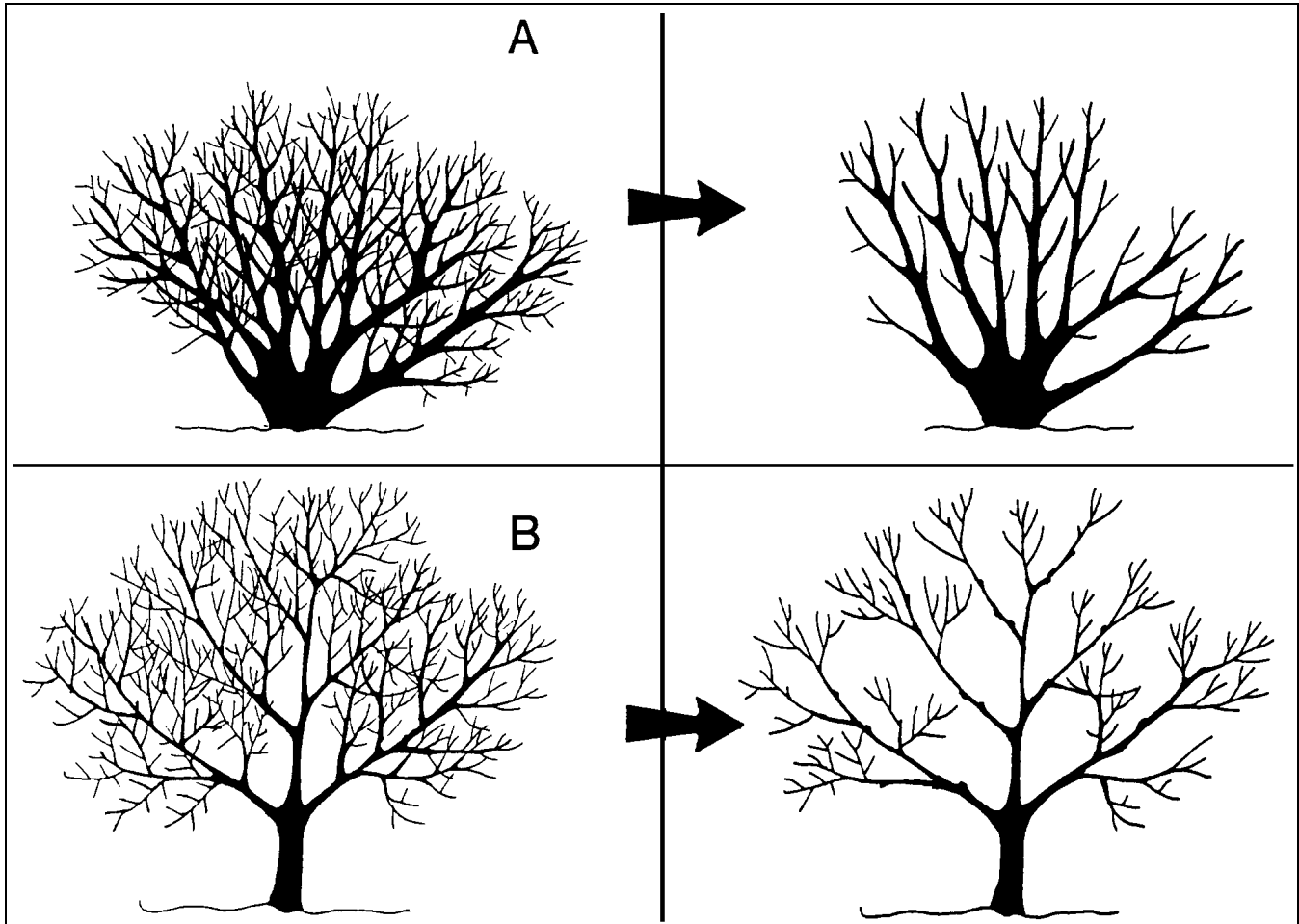
**Figure 7.** Heading back shrubs is cutting back terminal shoots to a bud or node. (A) Heading back all shoots to the same height produces a leggy, top-heavy shrub. (B) Heading back shoots to several different levels produces a more natural, fuller-looking shrub.



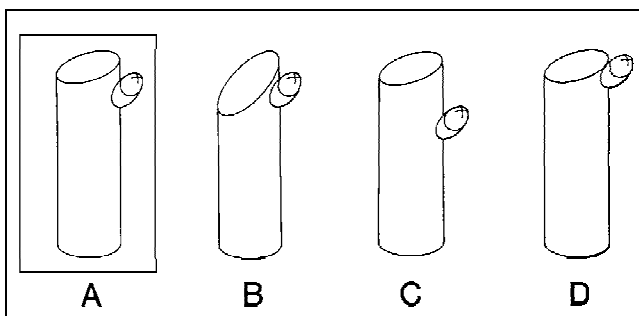
**Figure 8.** Heading back trees is rarely necessary if they were properly placed in the landscape. Heading back large limbs is very damaging and shortens the life span of the tree. Proper heading (or drop-crotching) in trees is pruning back to fork with a living branch which will become the new leader.



**Figure 9.** Never "hat-rack" a tree by heading back all branches to an indiscriminate location.



**Figure 11.** (A) Thinning is complete removal of branches back to a lateral or the main trunk or, in shrubs, to the ground. (B) Proper thinning of shade trees first removes branches rubbing, crossed over each other, dead, diseased or dying. If further thinning is desired, remove branches back to major limbs to create an open crown. Space remaining branches along the major limbs to give each room to develop. Removing upright branches creates a more spreading tree; remove horizontal branches to create a more upright form. Grass grows better beneath thinned trees.



**Figure 10.** Proper pruning angle. "A" is a correct cut, "B" is too slanted, "C" is too far from the bud, "D" is too close to the bud.

## PRUNING TECHNIQUES

Plants are pruned by either heading back or thinning. Heading back (Figure 6) is the selective cutting of terminal ends of twigs or young branches back to an axillary bud or node. This technique produces a denser tree or shrub because it usually increases the number of shoots and leaves. However, new growth is typically vigorous and upright, developing from two to several buds just behind the pruning cut. The new foliage may be so thick that it shades the lower growth forming a top-heavy plant. This can be avoided in shrubs by heading back shoots to several different heights (Figure 7).

Heading back (stubbing) trees is rarely warranted in landscape sites. If it is necessary, e.g. to prune beneath power lines or to clear a tree from interfering

with a structure, always head back to a fork where there is a live branch (called drop-crotching — Figure 8). Sometime later, within several months, prune out all sprouts growing in response to the pruning cut. Never "hat-rack" a landscape tree, i.e., cut all branches back to about the same length without regard for their location (Figure 9). This type of pruning has no place in horticulture and is not recommended. When heading back trees or shrubs, make the cut on a slight slant  $\frac{1}{4}$  inch above a healthy bud (Figure 10). The bud should be facing the direction preferred for new growth.

Thinning (Figure 11) is the complete removal of branches back to lateral branches, the main trunk, or in shrubs, to the ground. Thinning gives a plant an open appearance and can encourage new growth inside the crown depending on how the plant is thinned. If thinning is heavy, interior sprouts will develop. If the plant is lightly thinned, interior shoots are not likely to develop. This technique is used primarily on shrubs to control size while maintaining a natural appearance. It contrasts to hedging or heading to the same spot on all branches which gives a shrub a manicured, controlled appearance. Trees can be thinned to increase light penetration, encouraging turf growth beneath the tree. Trees with properly thinned crowns also resist wind damage better than unpruned trees. This is a specialized technique best performed by a professional arborist.

## PRUNING SHRUBS

The first step in pruning a shrub is to remove all dead, diseased, or injured branches. Pruning shears and saws can be dipped in a weak alcohol solution (1 part to 9 parts water) to prevent spread of disease between plants. Remove branches that cross or touch each other and those which look out of place. If the shrub is still too dense or large, remove some of the oldest branches. Head back excessively long branches to a bud or lateral branch that is 6 to 12 inches below the desirable plant height. If the shrub is 2 to 3' too tall, heading (Figure 6) and thinning (Figure 11) may be desirable. Do not use hedge shears, but cut each branch separately to different lengths with hand pruners. This will maintain a neat informal shrub with a natural shape. Plants sheared into various geometric shapes produce a formality not suitable for many modern, natural landscapes. See the following section on hedge pruning for a discussion of formal pruning.

A properly pruned shrub is a work of art and beauty and does not look as if it has been pruned. Pruning cuts should not be visible, but located inside the plant, covered up by remaining foliage.

## REJUVENATION OF SHRUBS

Rejuvenation is a drastic method of pruning old shrubs that have become much too large or have a large amount of non-flowering wood. On single-stem shrubs such as ligustrum and gardenia, rejuvenation is carried out over a period of 2-3 years by severe thinning out to the basic limb framework (Figure 12). One-third to one-half of the old growth is removed each year.

Multiple stem shrubs are rejuvenated by cutting back all stems at ground level over a period of 3 years (Figure 13). Remove  $\frac{1}{3}$  of the old, mature stems the first year. The second year remove  $\frac{1}{2}$  of the remaining old stems and head back long shoots growing from the previous year's pruning cuts. The third season remove the remaining old wood and head back the long new shoots.

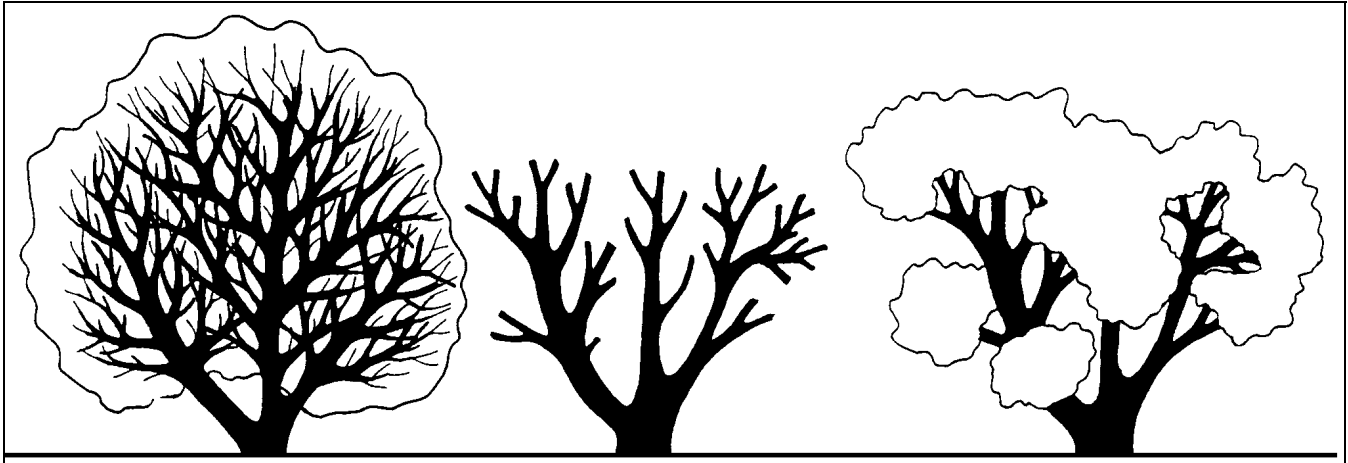
The best time for rejuvenation is in late winter or early spring, just before growth begins. Large, old shrubs should not be rejuvenated during late summer, as new growth will be stimulated and possibly killed by cold weather in the winter.

Pruning cane-type shrubs such as nandina and mahonia is best done on a 2 or 3-year cycle. The tallest canes are pruned to a stub 3"-6" above the soil line during the first spring, just as growth begins. By the second spring, last year's medium sized canes have grown to become tall canes and should be cut back to a 3" stub. Canes from the first year's pruning have already begun to grow and are one to three feet tall by now. In the third spring, the canes which were the shortest in the first spring are now fairly tall and can be cut back. In this way, there is always foliage near the ground and the shrubs can be kept from becoming leggy. Cut nandina canes generally will not flower during the growing season following pruning.

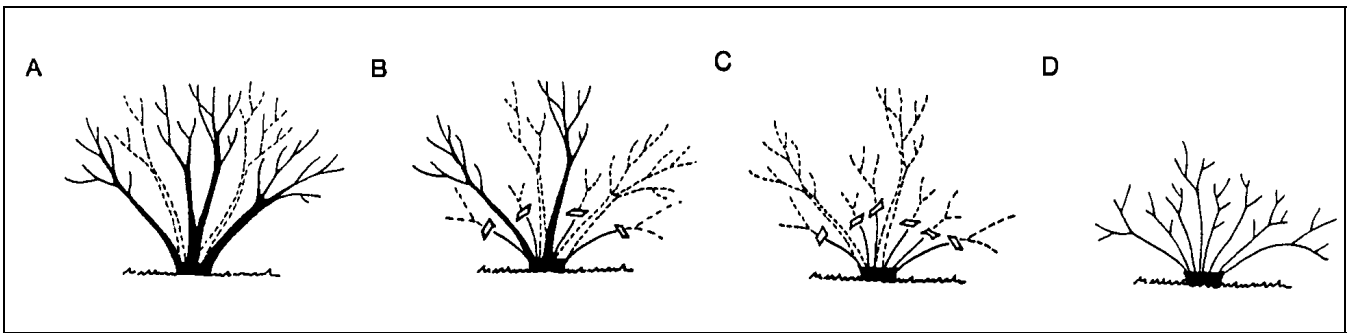
## PRUNING TREES

The characteristic form of a tree should be known before any live branches are removed since in many landscapes, little or no attempt should be made to significantly change the characteristic growth habit common to the species. First, prune out dead, diseased or broken twigs and branches. After

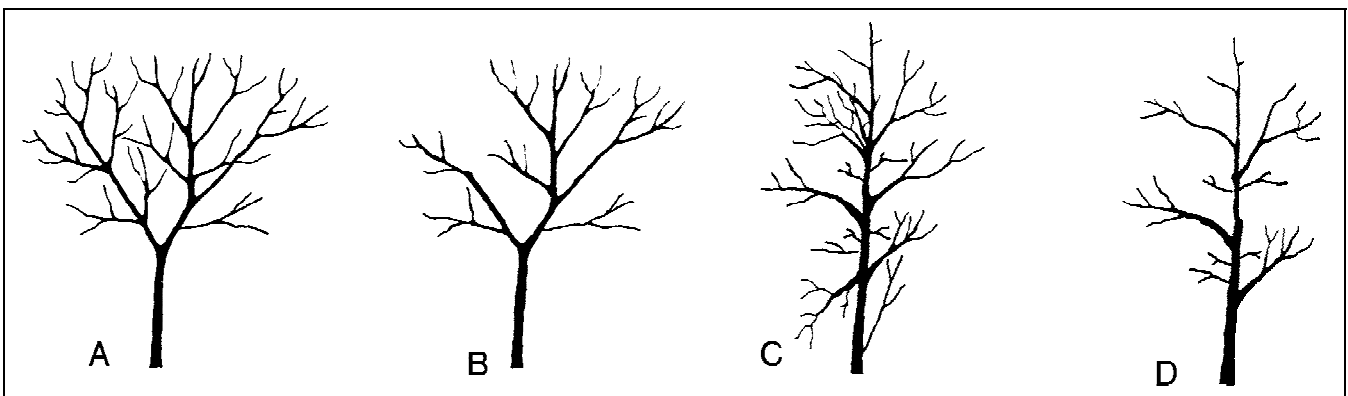




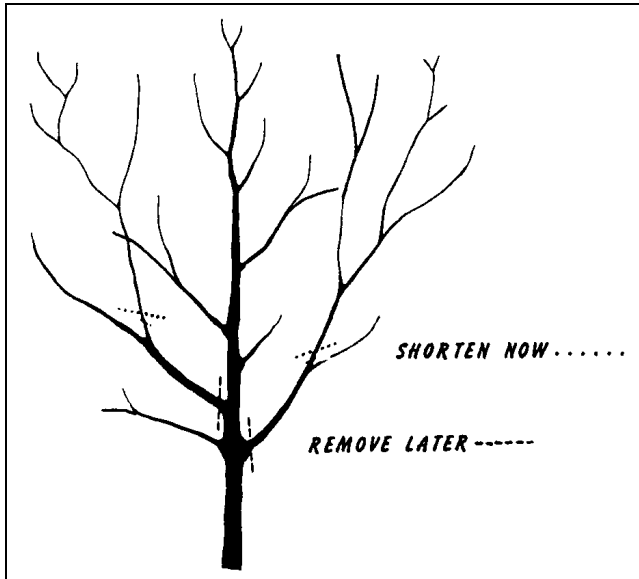
**Figure 12.** Rejuvenation on single stem and grafted shrubs is carried out by severe thinning out to the basic framework.



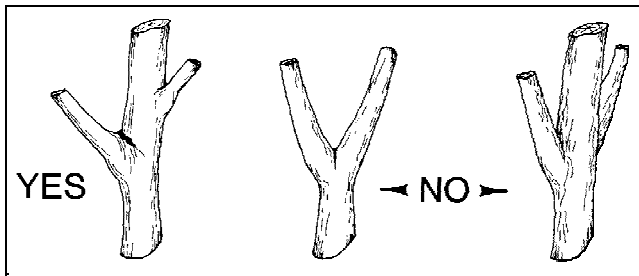
**Figure 13.** Rejuvenation of multiple stem shrubs: (A) First year, remove 1/3 of old, mature stems near ground level. (B) Second year, remove 1/2 of the remaining old stems and head back long regenerated shoots from last year's growth. (C) Third year, remove the remaining old stems and head back the long new shoots. (D) Growth at the end of the third season (rejuvenated shrub).



**Figure 14.** (A & B) A tree maturing at less than 30' tall before and after pruning. No two permanent major limbs should originate from the same point. Tree "A" has a bad fork which should be eliminated. Pruning the upright portion of the left fork now will slow the growth on that branch and encourage growth in a central leader. (C & D) A large-maturing tree before and after pruning. Scaffold branches are spaced 18-24" or more along the trunk. Always encourage central leader development.



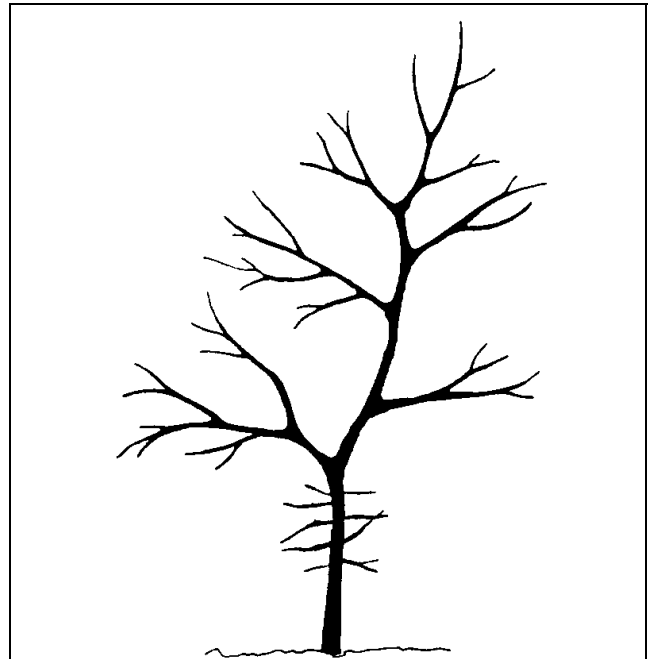
**Figure 15.** In forming the tree over a 2-year period, remove lateral branches which grow upright. They will compete with the leader and form a weak, multiple leadered tree.



**Figure 16.** Angle of branch attachment. Select branches with a wide angle to the trunk and remove those growing in a nearly vertical position. Forked trunks are dangerous. One of the forks should be removed as soon as it is recognized.

studying the tree form, select the best spaced and positioned permanent branches and remove or shorten others. Permanent branches should be spaced between 6-24 inches apart on the trunk, depending on the ultimate mature size of the tree. For dogwoods, 6" spacing is adequate; whereas, for oaks, 18-24" spacing is best (Figure 14). Next, remove fast growing suckers at the base of and along tree trunks or on large, interior limbs.

Young trees should be pruned to a single leader (stem) after locating the straightest and best leader to retain (Figure 1 and Figure 15). Most trees can be grown in this form when they are young, but the



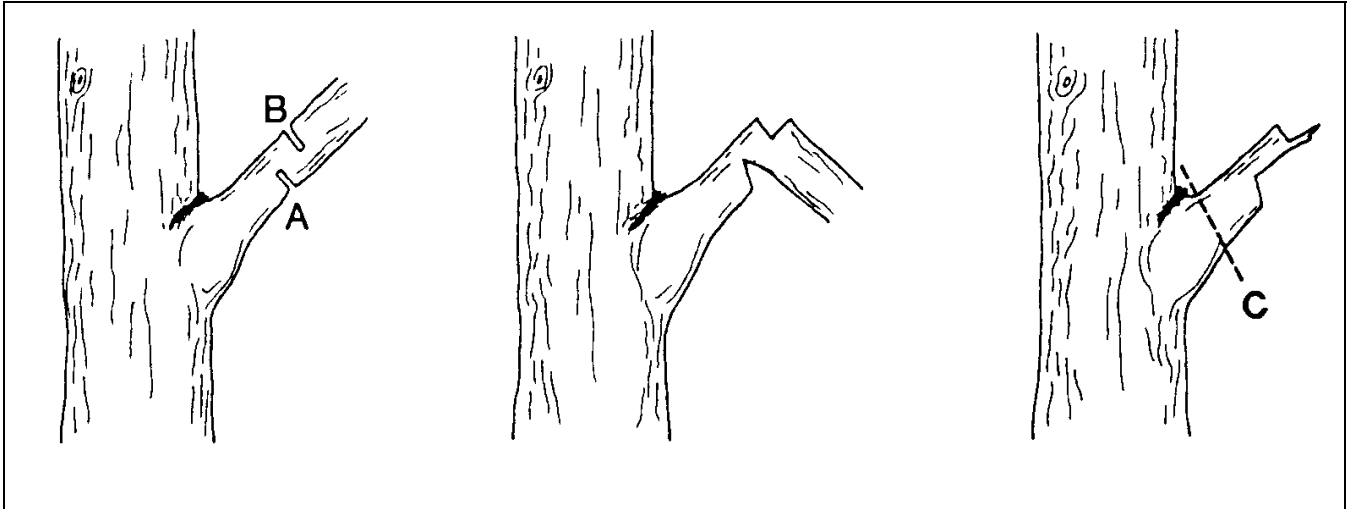
**Figure 17.** Prune branches along the lower trunk to 8-12" long twice each year. These temporary branches help produce a sturdier tree by increasing trunk diameter and protect the trunk from accidental damage.

growth habit of some species will change to a multi-leader spreading form as they mature. There should be no narrow forks or branches leaving the trunk at an acute angle. Crotches of from 45 to 90 degrees from the vertical are less likely to split than narrow V-shaped crotches of less than 40 degrees. Branches with a narrow angle of attachment should be removed as soon as possible (Figure 16).

When training a young tree, prune lower branches back to about 8" from the trunk (Figure 17); do not remove them entirely. Any lower branches which are  $\frac{1}{3}$  the diameter of the trunk or larger should be removed at once all the way back to the trunk. By keeping the lower branches on the trunk, the tree will grow faster, develop a thicker trunk and the trunk will be better protected from sun burn and vandalism. Removing the lower branches too soon will result in a poorer quality plant. When the tree approaches 2-3" in diameter, remove temporary lower branches beginning with the largest diameter branches.

### Removing Large Tree Branches

Large branches that are too heavy to be held with your hand (those  $1\frac{1}{2}$ " or larger in diameter) require three separate cuts to prevent trunk bark stripping. The first cut is made on the lower side of the branch

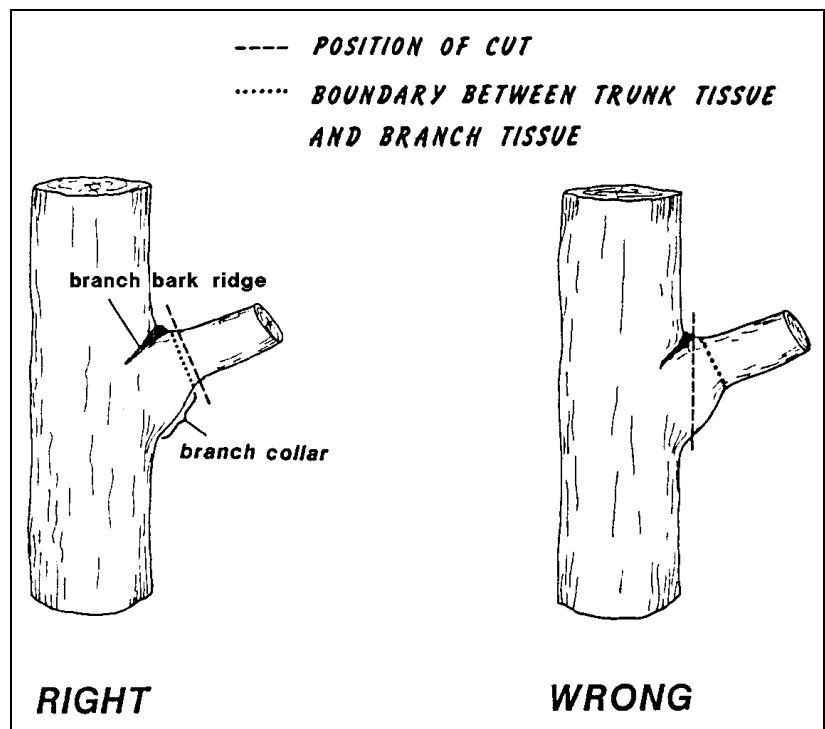


**Figure 18.** Removing a tree branch over 1½" diameter. First cut at "A" until saw binds, then cut at "B" 2-4" beyond "A" until the branch falls, then cut at "C", outside of the branch collar (see Figure 19).

**Figure 19.** Correct and incorrect final pruning cut. All branches, large and small, should be cut in this manner. Do not cut into the branch collar. It is trunk wood and the trunk can decay if this tissue is damaged. Begin the cut on the outside of the branch bark ridge (BBR). This ridge is usually rough and always darker than the surrounding bark and is fairly obvious on most species. Angle the cut so it ends just above the swelling (branch collar) beneath the branch. If this swelling is not obvious, then place the cut at a right angle to the branch bark ridge (BBR).

about 15 inches away from the trunk and as far up through the branch as possible before the branch weight binds the saw (Figure 18). The second cut is made downward from the top of the branch about 18 inches from the main trunk to cause the limb to split cleanly between the two cuts without tearing the bark.

The remaining stub is easily supported with one hand while it is cut from the tree. This cut should begin on the outside of the branch bark ridge and end just outside of the trunk collar swelling on the lower side of the branch (Figure 19). This is usually accomplished by cutting at a right angle to the branch bark ridge. In this way, only branch tissue is cut, and there is no damage to the trunk. The standard practice has been to make the final cut flush with the trunk. Research has conclusively shown that this causes extensive trunk decay because wood is cut



which is actually part of the trunk. Flush cuts should never be made since they injure the trunk.

### Wound Dressing

Painting wounds with tree wound dressing has become a controversial practice. The standard recommendation was to paint wounds with a quality tree wound dressing to protect the cut surface from wood rotting organisms and checking (cracking) upon drying. Research has shown, however, that wound

dressings do not prevent decay. Upon exposure to the sun, the protective coating often cracks, allowing moisture to enter the cracks and accumulate in pockets between the wood and the wound covering. This situation may be more inviting to wood rotting organisms than one with no wound cover, but in situations where aesthetics are important, the practice may be justified.

### PRUNING PALMS

Care must be taken when pruning palms not to cut or otherwise injure the terminal bud or the whole tree will die.

Old leaves that persist on palms such as the Washington palm should be removed, as they often harbor insects and rodents and may become a fire hazard. Remove palm leaves by cutting them from the underside to avoid tearing the fibers of the palm's stem.

Palms such as the Royal palm shed their heavy leaves. If they are growing where falling leaves may be hazardous, remove leaves before they drop.

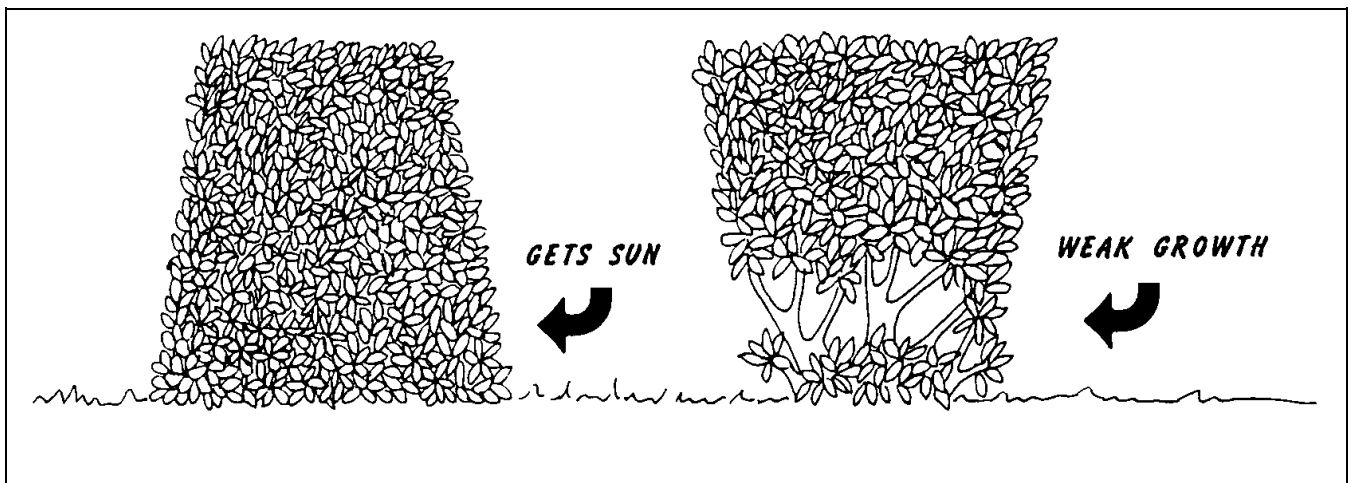
Large fruits of coconut palms can be dangerous to pedestrians and automobiles passing beneath the palm. Prevent formation of fruits by removing the flower stalks. Flower stalks on christmas palm and others can be left on the palm to take advantage of the ornamental characteristics of the fruit.

### HEDGE PRUNING

The method of pruning hedges depends on the type of hedge desired. Informal hedges generally consist of a row of closely planted shrubs which are allowed to develop into their natural shape. Annual pruning consists of thinning and heading back just enough to maintain desired height and width.

Formal or clipped hedges require a specialized the growing season. The desired appearance of a formal hedge is a soft outline of foliage from the top of the hedge to the ground. Two important factors to remember when pruning formal hedges are (1) hedges should be clipped while the new growth is green and succulent and (2) plants should be trimmed so the base of the hedge is wider than the top (Figure 20). Hedges pruned with a narrow base will lose lower leaves and branches because of insufficient light. This condition will worsen with age resulting in sparse growth at ground level and an unattractive hedge which does not give desired privacy.

Flowering hedges grown formally should be sheared after they have bloomed since more frequent shearing reduces number of blooms. If the blooms are of secondary importance, pruning may be conducted at any time.



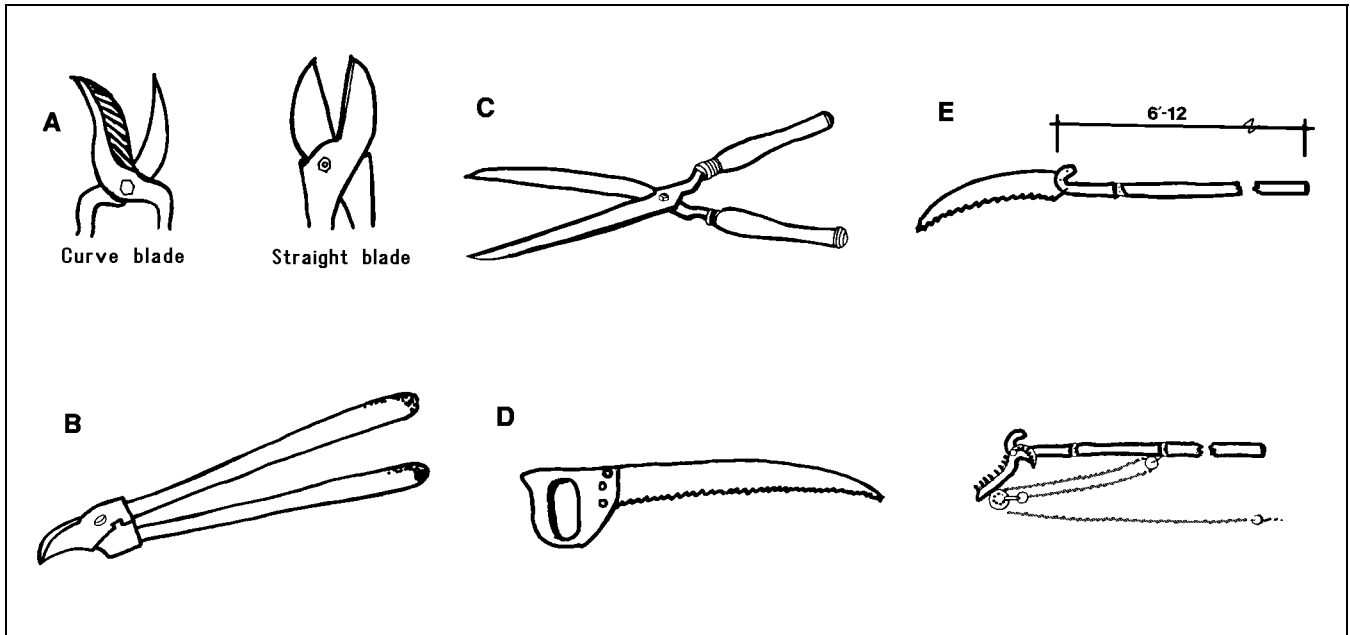
**Figure 20.** Plants pruned as a solid hedge should be wider at the bottom than the top.

**PRUNING TOOLS**

Basic tools used in pruning are hand pruner, loppers, hedge shears and saws (Figure 21). Hand pruners are used for small branch and twig cleanup, loppers for branches up to 1/2 inch in diameter, pruning saws for larger branches and hedge shears to trim closely clipped formal hedges only. Both shears

and saws are available on poles which are handy to prune difficult to reach branches.

Tools should be kept sharp for easier cutting without injuring surrounding tissue. Injured tissues are susceptible to disease and decay, which can lead to long-term health problems for the plant.



**Figure 21.** Pruning tools. **(A)** Hand pruners are used to cut branches less than 1/4" in diameter. **(B)** Loppers are used to cut branches up to 1/2" in diameter. **(C)** Hedge shears are used to shear formal hedges. **(D)** Saws are used to remove larger branches. **(E)** Pole saw and pruner are used to prune difficult to reach branches.