



Pruning Landscape Trees and Shrubs

Pruning is the selective removal of plant parts, typically shoots and branches, to improve plant health, control growth, or enhance fruiting, flowering, or appearance. Proper pruning requires time and understanding of the plant's growth habit, its biology, and its function in the landscape design.

In Hawaii, many landscape plants require pruning several times during the year. To keep landscapes attractive and healthy, pruning should be a regular part of the maintenance routine. Delaying pruning until plants are overgrown results in tall, leggy plants with little foliage close to the ground, and several years work will be required to restore the desired size and shape.

Plants are frequently placed in the landscape according to their current size and shape, without regard to the size that they are likely to attain in five or more years. It soon becomes necessary to prune plants frequently to keep them within bounds. If a plant needs to be pruned several times each year to control its size, it is most likely the wrong species for that location. Many of the pruning requirements of a landscape can be minimized or eliminated by initially selecting the proper plant for the location—*the right plant in the right place*.

Why prune?

Pruning is done for a number of reasons. Before beginning, determine your reasons for pruning.

Training. Proper pruning of young trees is essential for their long-term survival, health, and desired function in the landscape. Attractive plant shape when mature requires early and careful pruning. Selectively pruning branches on a young tree to establish good branch spacing and arrangement ensures the ultimate structural strength and safety

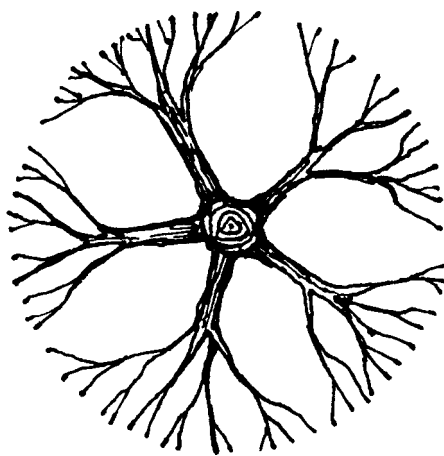
of the tree. Pruning young shrubs can encourage fullness and healthy branching.

Safety. The structural strength of a tree is determined by the manner in which stems are attached to each other and the trunk. Decayed, broken, or poorly attached limbs are a safety hazard, both for the landscape and surrounding areas, and should be removed. Narrow, V-shaped crotches with embedded bark (bark squeezed between the stems) are weakly attached and can split from the tree. They should be removed immediately. Retain branches with wider, stronger, U-shaped crotches. Limbs rubbing against a structure or restricting vision should be pruned. Branches interfering with power and utility lines must be removed to ensure safety as well as to prevent interruption of service, but *never* attempt to remove limbs from utility lines yourself. This is a job for a qualified expert—call the utility company.

Control size and form. Although it is usually preferable to work with the natural form of a plant, pruning is often used to maintain or develop a desired size or form. Planting the right species or cultivar and not over-fertilizing keeps pruning to a minimum. Correct pruning and training extends the useful life of a plant in the landscape.

Many of Hawaii's gardens have been established for a long time and include large plants. When structures are added or expanded or the landscape's uses change, the plant size requirements can be affected, and they may need to be pruned.

Plants are sometimes pruned into unnatural shapes, as with topiary, formal gardens, and hedges. Growing plants flat against a wall (espalier) requires frequent pruning and pinching back but can create an interesting and useful effect in the right place.



As plants mature, pruning maintains a desired and useful size and form. Plumerias, pua-kenikeni, and other trees producing flowers or seed pods used in lei-making should be maintained at an accessible height for picking.

Influencing flowering and fruiting. Selectively removing the flowers or developing fruits of some species encourages the remaining fruits to be larger. Lightly pruning some fruit trees can help maintain regular, annual flowering and fruiting (*caution:* this practice requires clear knowledge of the growth and reproductive habits of the particular species or cultivar). Plants that flower on the current season's growth, such as crape myrtle, will be stimulated by severe pruning to produce more vegetative (leafy) growth and fewer—but larger—flowers. Bougainvilleas require pruning after flowers have faded to induce another flowering cycle.

Renovating and rejuvenating old plants. Mature plants (particularly shrubs) that have grown too large, become “leggy,” or developed a large amount of non-flowering wood may be rejuvenated over a period of years by severe, selective pruning. The exact technique depends on the particular species and the form of the plant. The process requires time and patience but can add years of life to old plants.

Sometimes shrubs that are not growing well despite adequate water, light, and nutrients can be “shocked” into growing by drastic pruning. This will either stimulate vigorous new growth or the plant may die, so it is a last-resort technique.

Improving general appearance. Pruning to remove unattractive, spent flower heads, as with some double-flowered bougainvillea, enhances the appearance of the plant and encourages further flowering. Trimming dead or dying branches and stems and removing diseased plant parts gives a neater, healthier appearance to the landscape.

When to prune

Trees and shrubs may be *lightly* pruned year-round in Hawaii. Remove dead, broken, or diseased branches whenever they appear. Plants grown for foliage, such as podocarpus, privet, juniper, and yaupon holly, may be pruned at any time, because flowering is not important for these plants. With plants grown for their flowers or fruits, timing of pruning affects future flower development, and pruning should be timed to maximize blossoming.

The right time to prune depends on the plant, its condition, and the results desired. For rapid shoot de-

velopment and the greatest overall growth, plants should be pruned just before the buds begin to swell. To retard growth with the maximum dwarfing effect, plants should be pruned after each flush of growth, when the new leaves are fully expanded. If a species flushes several times a year, pruning in late summer may encourage an additional flush of shoot growth.

Plants flower from either current growth (the ends of twigs and branches), or older wood (further back on branches).

Plants that flower on current growth (new shoots and stems) usually blossom and form and fruits several times a year, sometimes almost continually, in Hawaii. Such species include allamanda, oleander, hibiscus, and bougainvillea. Prune them periodically throughout the year after a blooming flush to encourage new shoot development. Take care to prune lightly. Continuously heading-back this type of plant (for example, a hibiscus hedge), results in dense foliage and few flowers.

Plants that flower on older wood generally flower and fruit at a distinct time once each year. To maximize flowering on plants that flower on older wood, prune immediately at the end of their blooming cycle. Pruning or pinching shoots at this time encourages more lateral branches and many more flowers. Pruning later in the season removes flower buds and reduces the next flowering and fruiting. Plants of this type include some azaleas and hydrangeas, camellias, magnolias, Indian hawthorn, crape myrtle, royal poinciana, jacaranda, cassia, and bottlebrush.

Deciduous plants (such as monkeypod), which drop their leaves before flushing, are best pruned late in the dormant (bare) cycle. Plants that do not lose their leaves are best pruned several weeks following a growth flush. At this time, wounds caused by pruning rapidly develop callus and close, which discourages insects, disease, and decay from entering the plant. Undesirable sprouting may result from pruning at other times. When trees produce excessive sprouts, they are easily damaged when pruned during active shoot elongation. The worst time to prune is when leaves are forming. *Do not prune plants when they are under stress.*

Some plants grown in Hawaii have specific pruning needs. Pikake blooms on new growth but flowers most heavily from March to September. Prune pikake between November and January. For heavier flower set, they may also be cut back once or twice during the flow-

ering period. New flowers will be produced about four weeks after this pruning. Mango should be pruned after fruiting, before a growth flush begins. Fruit trees should not be pruned once flowering begins. Pruning of fruit trees should be timed to suit the flowering season of the specific cultivar.

For best pruning results, learn about the species and cultivar of the tree or shrub and decide what you would like from the plant in the landscape. To realize your goals, consult some of the many resources available, such as garden centers, libraries, garden books, Internet web sites, and Cooperative Extension Service offices, for specific information on recommended pruning times.

Pruning equipment

Selecting the right tool and using it correctly will minimize hazard and injury to the plant *and* the pruner and help complete the task efficiently. Many types and brands of pruning equipment are available in the marketplace, in many price ranges. Durable, dependable equipment can be expensive, and home-owners may not require the highest-priced tools. Do, however, select the right tool for the job—one that is sturdy and comfortable to use. Keep all tools 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.

Hand pruners are the most frequently used pruning tool. They cut limbs or suckers up to ½ inch diameter. Cutting larger stems damages the shrub and the tool. Draw-cut or by-pass type hand pruners use a sharpened blade that cuts like scissors. This type is preferred because it cuts through stems more easily without crushing the tissue. Anvil or snap-cut types feature a sharpened blade that cuts against a broad, grooved head. Anvil types work best for small or soft stems.

Loppers (lopping shears) prune limbs that cannot

be cut with hand pruners. They are designed to remove limbs up to 1 inch or so in diameter. The hook-and-blade, scissors-action (parrot beak) loppers are preferable to anvil types. The length of the handle determines the leverage and ease of the cut. Handles range from 24 to 35 inches long and are made of wood, steel, or fiberglass, with or without vinyl hand-grips. Rubber bumpers beneath the base of the blades cushion the impact caused by closing the handles and increase safety and comfort of use.

Pruning saws are essential for removing branches 2 inches or larger in diameter. They are available in many sizes and types, each with a particular use. Pruning saws differ from carpenter's saws in two respects: pruning saws have curved blades for working around limbs, and they cut on the draw (pull) stroke. Pruning saws are coarse (5–6 teeth per inch) and the teeth are arranged in a V pattern, alternately bent to either side down the length of the blade. Finer teeth (8–10 per inch) are useful for removing small branches.

Pole pruners have a pruning head mounted on a handle 6 ft or more in length to remove limbs higher in the tree. The head is a heavy scissors-action blade operated by pulling on a rope. Curved pruning saws for removing larger limbs can be fitted to the pole. Extension handles increase the length of reach. Many models have telescoping poles for versatility and easy storage. Do

not use these near electrical wires.

Hedge shears are for pruning hedges, *and only hedges*. Never use hedge shears to prune landscape shrubs. They feature flat, scissors-action blades, sometimes serrated, that are 8 inches or more in length. For heavy use, hedge shears with shock absorbers of neoprene, rubber, or metal springs between the handles are preferred. Electric- or gasoline-powered hedge shears have a moving blade. Some hedge shearing units can be adapted to chain saws. Gasoline-powered units avoid



the need for extension cords and the inevitable cut power cord. Rechargeable, battery-operated models are also available. Power units take much of the drudgery from pruning extensive or tall hedges.

Machetes and cane knives are *not* pruning tools and they should never be used on landscape plants. Cutting with a machete or cane knife is better referred to as “slashing” or “whacking” rather than pruning. These tools do not produce a clean cut, and they leave ragged and torn ends. Cuts that are not clean allow diseases and insects to invade and damage plant tissues. These tools do not allow a straight cut on hedges, and they cannot cut tree branches in the proper place.

Pruning techniques

Pruning shrubs

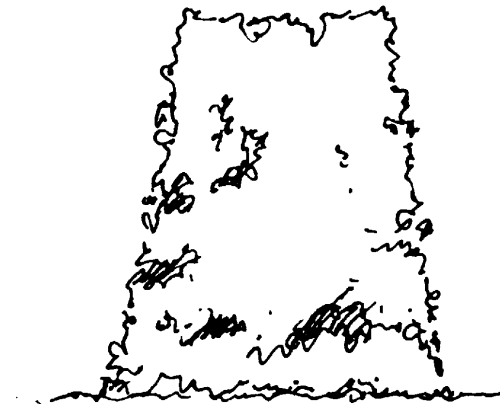
Shrubs are pruned by either heading-back or thinning. Hedging is a technique for more controlled shaping.

Heading back is the cutting of terminal ends of twigs or young branches back to an axillary bud or node. It is usually done to reduce plant size. This technique usually increases the number of shoots and leaves, producing a denser plant. On trees, heading back results in undesirable multiple leaders with embedded bark, but on shrubs, these cuts when properly placed can create and maintain nicely formed plants.

New growth usually is vigorous and upright and develops from two or more buds located just behind the pruning cut. Heading-back all shoots to the same height produces a top-heavy plant and is seldom desirable in the landscape. Heading-back shoots to several different levels produces a more natural, fuller-looking shrub.

Thinning in shrubs is the selective removal of complete branches back to lateral branches or the ground. Thinning gives plants a natural, open appearance and encourages new growth inside the shrub, depending on how heavily the plant is pruned. Heavy thinning results in the development of interior sprouts, while light thinning does not. When thinning shrubs, visualize what the plant will look like without the branch or cane before making each cut. To reduce a shrub’s size without leaving a “scalped” look, reach into the canopy and selectively prune branches back to a major limb. This not only hides the cuts behind the remaining foliage, but it also gives the shrub a more open and natural appearance. Remove some of the new (sucker) growth, espe-

A properly pruned hedge is wider at the base than at the top.



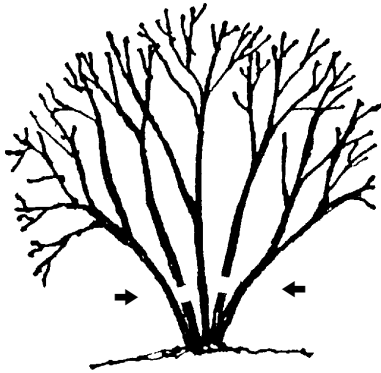
cially from extremely vigorous species and those that tend to develop numerous suckers. Prune carefully to avoid injury to growth, and leave clean cuts without torn edges. When pruning to remove diseased plant parts, disinfect clippers after each cut by dipping the blades in isopropyl (rubbing) alcohol. Thinning shrubs controls size while maintaining a “natural” appearance, in contrast to hedging or heading-back to the same spot on all branches, which gives a controlled, manicured appearance.

Renovation pruning over several years can be used to restore growth to some overgrown shrubs. Remove $\frac{1}{3}$ – $\frac{1}{2}$ of the oldest canes or shoots at the first pruning. In the next year or season, thin the new growth and remove another $\frac{1}{3}$ – $\frac{1}{2}$ of the oldest growth. During the third season, begin a normal thinning pruning program and, if old growth remains, remove the rest of it.

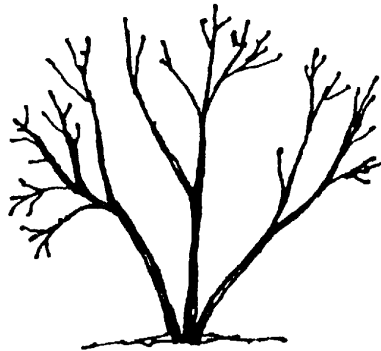
Do not use hedge shears for heading-back or thinning shrubs—cut each branch separately with a hand pruner.

Hedges serve various functional and decorative purposes in landscapes. To establish a hedge from new plants, tip pruning is required for several seasons. Until the plants reach the desired height, head back new shoots $\frac{1}{2}$ – $\frac{2}{3}$ of their length each time they grow 6–12 inches. This develops a dense, low-branching structure and encourages the plants to spread. Always prune a hedge so that it is wider at the base than at the top. Once the plants reach the desired height, trim and shape the hedge with hedge shears. Prune hedges just before new growth begins so that the hedge is bare for the shortest possible time.

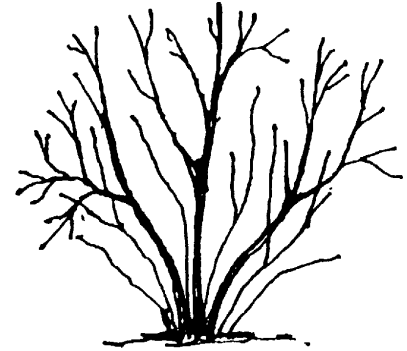
Renovation thinning over several seasons can restore overgrown shrubs.



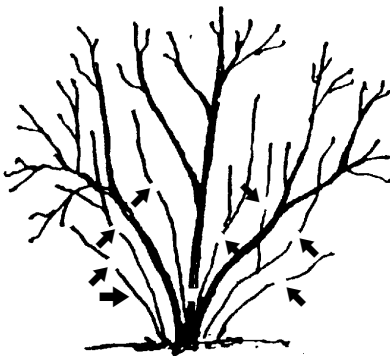
Thin center by removing some main stems.



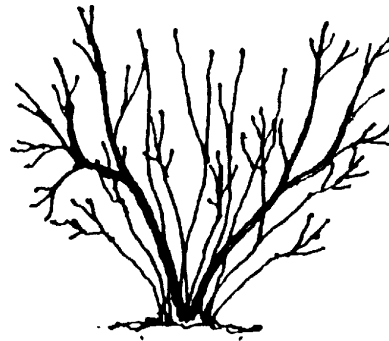
After the first thinning, the canopy will be more open.



New growth then occurs as light penetrates the canopy.



Prune new growth and remove additional main stems to encourage fuller branching within the shrub.



The result: a fuller shrub with healthy new growth and an open canopy.

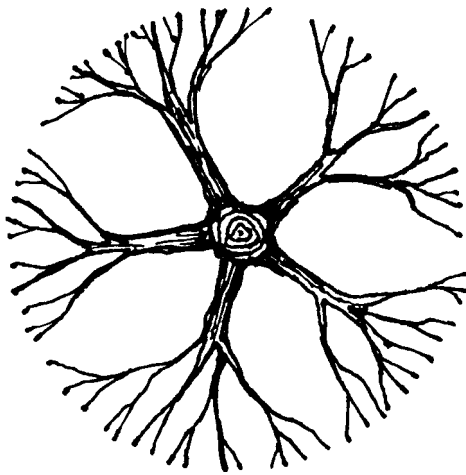
Pruning trees

Trees should be trained and pruned routinely during the first 10 or so years after planting, to avoid severe pruning when they are older. Properly pruned young trees will not likely need to be pruned again for 1–2 years. Middle-aged trees can go for longer periods without pruning.

Young trees. Train the tree according to its natural form. Plants with a central-leader growth habit (a single, dominant stem) are trained differently than those that form multiple leaders. Know the characteristic form of the tree before removing any live branches. In most landscapes, little or no attempt should be made to signifi-

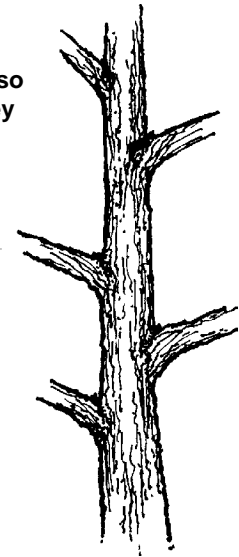
cantly change the growth habit that is natural to the tree. Remember that a tree is a three-dimensional object, and train limbs to develop in all directions. Establish alternate branching early in the tree's life. Major scaffold branches should develop at least 6–12 inches apart to allow for future growth.

Begin by removing all broken, diseased, or dead branches and twigs. Look for branches that now or eventually will cross or rub; select one of the two to leave, and prune off the other, or remove both. Remove interior branches, which receive little light and will grow slowly, eventually dying. Prune away "water sprouts" and "suckers," the vigorous, fast growing, but weakly



A tree is a three-dimensional object. Establish radial spacing of its branches by early shaping, and then maintain it by periodic pruning.

Establish alternate branching, with branches spaced far enough apart so they will not cause problems as they increase in size.



attached shoots arising from the plant's base or the middle sections of older branches.

Study the form of the tree. Pruning during its development should be done with the calculated intention of preparing a structure that will eventually produce the best canopy—the form most appropriate for the species. Choose the best-spaced and best-positioned branches and remove or shorten all others. Select the broadest-angled branches. Branches with wide crotch angles have greater structural strength and resistance to wind. Branches from the main stem with narrow crotch angles (less than 40°) should be removed. Some trees are prone to narrow or weak crotch angles, and their branches should be pruned to grow more laterally rather than upright.

Most young trees that are not clearly multiple-leader types should be pruned to a single leader, choosing the straightest and best leader to retain. As the tree develops, remove lateral branches that grow upright—they will compete with the leader and result in a weak tree. The lower branches should be removed in stages over time as the tree develops, rather than all at one time. Removing all the lower branches at once or too soon results in a weak trunk. The crown height of a tree should be in a pleasing proportion to the trunk. A ratio of crown to clear trunk height of 3:1 is sometimes used as a standard (that is, $\frac{1}{4}$ of the height of the tree is clear trunk). In some situations, such as street or parking-lot plantings, clearance beneath the crown will need to be increased.

Mature trees. Preferably, mature trees should be pruned only to remove branches that are dead, diseased, crossed, or rubbing. Branches that interfere with structures or are touching or near utility lines should be removed. Let professionals handle removal of branches near power lines—call the utility company.

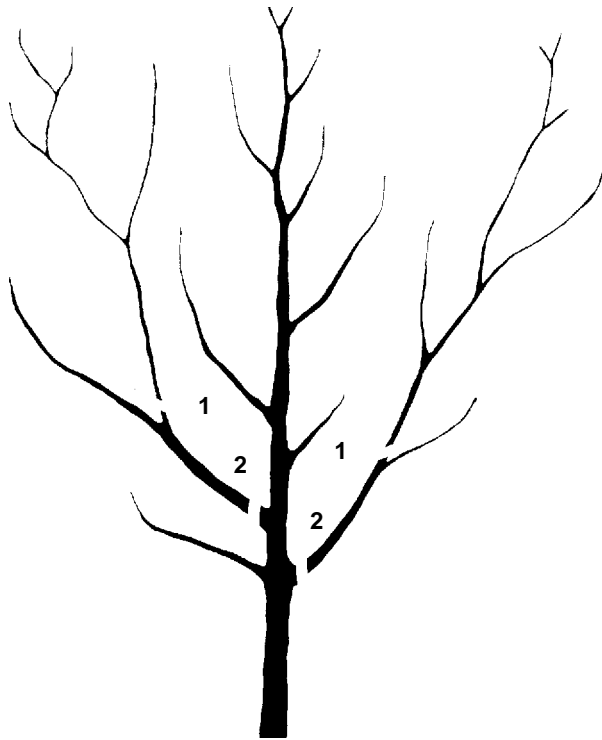
Heading-back mature trees should be avoided, because the new growth will be vigorous but weak, resulting in the need for increasingly more pruning. However, when trees are beneath power lines or interfering with a structure, heading-back is often unavoidable.

Thinning mature trees increases light penetration and encourages growth of turf or understory plants. Properly thinned trees also have increased resistance to wind damage. This specialized technique is best performed by a professional arborist.

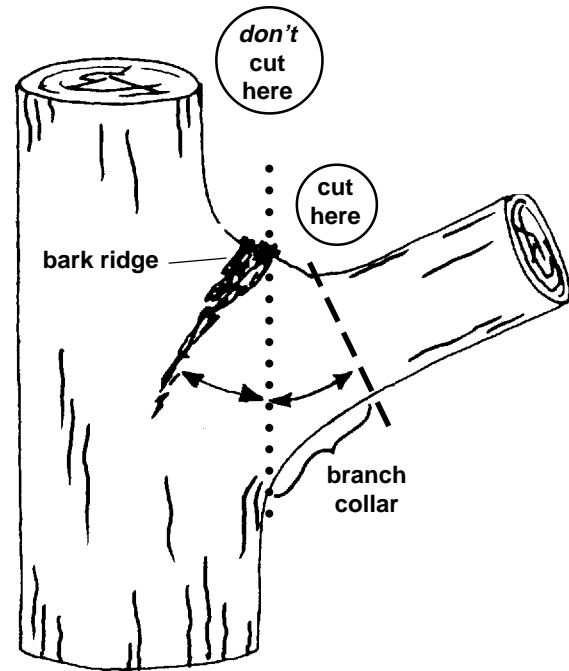
Making the cut

Removing branches. In the past it was recommended that tree branches be removed as close as possible to the stem or lateral branch (a “flush” cut). However, this practice has been found to delay the closure of pruning wounds because it damages the branch collar. The preferred method is to remove branches without injuring the branch collar.

Branches of woody plants are joined to the stem most strongly on the underside. The stem forms a “collar” in the crotch over the branch. This collar is prominent in



Pruning in stages to establish a single leader. Remove upright branches first; later, the rest of the branch can be removed if desired.



Never cut a branch flush to the trunk. Begin the cut outside the bark ridge and angle it away from the trunk to avoid cutting the branch collar.

some species but difficult to discern in others. To determine where a cut should be made, follow these steps:

- locate the ridge of bark formed above the branch in the crotch of the stem and branch
- locate the stem collar surrounding the branch, usually a slight swelling near the main stem or trunk
- remove the branch by cutting *outside* both the bark ridge and the branch collar

When an obvious swelling is not present to indicate the collar, cut outside the branch bark ridge and at an angle opposite that formed by the ridge. Limbs over 2 inches in diameter or long, heavy branches should be removed by the three-step method described below.

Never leave stubs: they will die and allow decay to enter the rest of the tree or shrub. Old stubs resulting from previous natural damage or poor pruning methods should be removed carefully. In many cases, callus (thickening of the surrounding tissue to close over a wound) may have begun to form near the stub base. This can be seen as an enlarged area enclosing the lower portion or remainder of the stub. Remove the stub just out-



side the swollen callus region. If an enlarged callus area is not visible or the stub is recent, remove it at the branch collar.

Remove large branches (over 2 inches diameter) by following the three-step method to avoid tearing the bark beneath the limb:

1. Make the first cut on the underside of the branch 1–2 ft from the crotch. Cut the branch $\frac{1}{4}$ – $\frac{1}{3}$ of the way through, or until the saw begins to bind.
2. Make the second cut on the top of the limb 2–3 inches further out on the limb than the first cut. Saw until the limb breaks off; the break will occur at the first, lower cut.
3. Make the final cut at the crotch, just outside the branch collar. *Do not leave the stub*, which will be slow to callus or will decay.

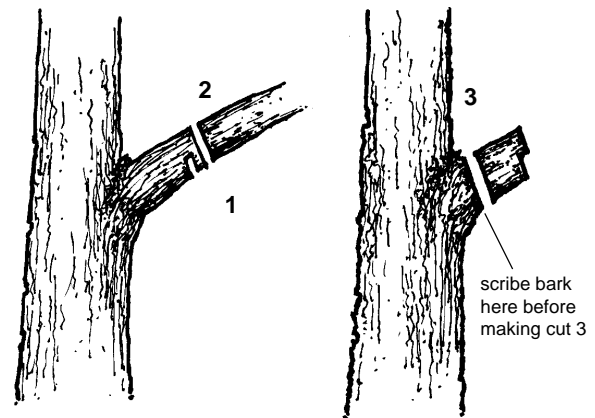
Scribing or breaking the bark on the lower side of the branch with the saw before making the final cut through reduces the possibility of bark tearing should the limb slip.

Thinning (heading back). Make cuts about $\frac{1}{4}$ inch above an out-facing bud or lateral branch. Cutting too close to the remaining bud will damage it, while cutting too far away may allow additional buds to break. Buds can be selected to direct the new growth. When pruning plants with buds opposite each other on the branch, rub off the interior bud or angle the cut to damage or remove it.

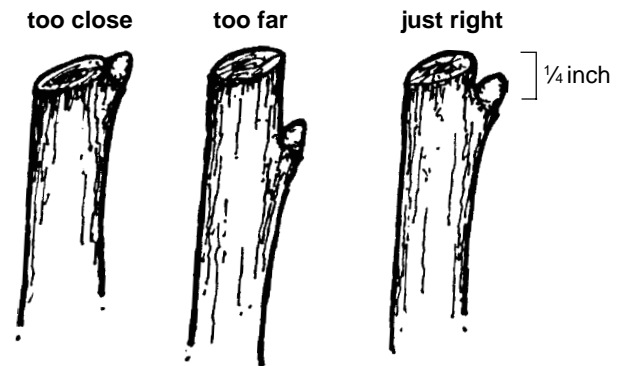
Ginny Meade and David L. Hensley
CTAHR Department of Horticulture

Illustrations based on drawings by Cameron Rees (p. 1, 4, 5, 6, and 8).

Three steps to pruning a large branch.



Prune branches carefully in relation to the buds that will form new growth.



Choose the direction of new growth by selecting the bud to leave in place.

