



# Tree Pruning Techniques

Guide H-156

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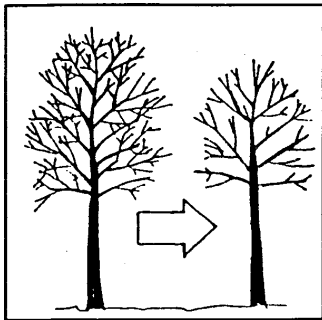
Cooperative Extension Service • College of Agriculture and Home Economics



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## WHY SHOULD I PRUNE?

Proper pruning creates more beautiful, healthy trees and can increase the life span and productivity of fruit and shade trees (fig. 1). Unpruned or poorly pruned trees can often be safety hazards that endanger people and property.



**Figure 1. Proper pruning**

Pruning is both art and science. Topiary, the art of pruning plants to achieve unusual shapes, and bonsai are good examples of “plant art” requiring special pruning techniques. However, even these unusual plant forms use the same basic scientific principles of pruning. This publication will provide you with the knowledge to begin pruning properly. With this knowledge, you can develop a more artistic pruning style based upon your personal preferences and experience.

Orchard pruning differs from landscape tree pruning. The purpose of pruning in an orchard is to maximize economic return and stimulate early fruit production. Landscape tree pruning is usually intended to maintain a tree’s natural form, health and longevity and to minimize hazards that develop from improper pruning and unrestricted branch growth. Pruning to reduce a tree’s size is sometimes necessary but often indicates that the wrong tree was selected for the specific landscape site. If size-reduction pruning is needed in landscape trees, fol-

low the proper pruning information provided in this publication to minimize reduction in tree health and prevent development of hazardous branches and poor branch attachment that can result in property damage or personal injury.

## WHAT DO I LOOK FOR?

Consider pruning a branch if it meets any of the following criteria (fig. 2):

- dead, dying or severely diseased branches
- sprouts forming at the base of the trunk
- branches growing toward or across the tree’s center
- crossed limbs that rub together or may rub in the future
- V-shaped crotches (when possible to prune)
- multiple leaders (upright branches that compete as secondary trunks or may develop into additional trunks)
- nuisance growth (interfering with power lines, sidewalks, buildings, traffic or traffic visibility, etc.)

## WHEN DO I PRUNE?

You may prune deciduous trees in the dormant season once leaves have fallen in October or November, but January to March is preferred. Finish pruning in the spring, before color is evident in swelling leaf and flower buds. During the dormant season, much of a tree’s carbohydrates and nutrients are stored in the roots and wood, so few of the food resources needed for growth and overall health will be lost when a limb is removed. (Once leaves have formed, food reserves are then found in the leaves and are more subject to loss by pruning.) Dormant season pruning also reduces the flow of sap from wounds and lessens the chance of damage by insects and disease.

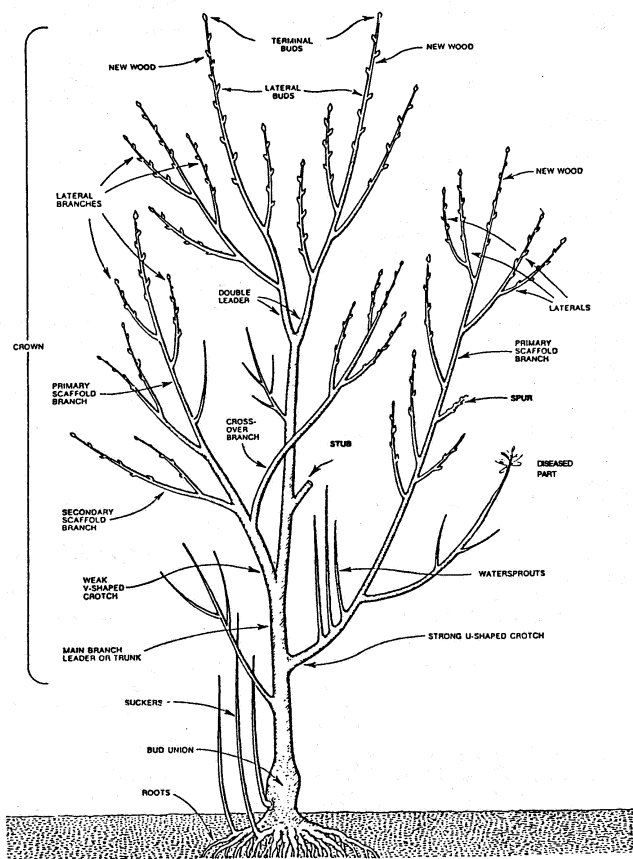


Figure 2. Tree anatomy for pruning

Evergreen trees should be pruned late in the dormant season, shortly before new growth begins. Light pruning may be employed to collect greens for the holidays, but do not heavily prune at this time.

Summer pruning is often recommended for spring-flowering trees, which carry preformed flower buds through the winter. This reduces the loss of flowers cut while still in the bud. Summer pruning is appropriate for other trees, but limit summer pruning to removal of deadwood and new branches that have not exceeded the thickness of your thumb.

Pruning young trees is preferable to corrective pruning of large trees. Pruning a young tree removes smaller branches removing less food reserves from the tree and creates smaller wounds that close more quickly.

#### DO I NEED A PROFESSIONAL?

You may need the assistance of a tree care professional. Homeowners can safely handle most pruning of a young tree, but pruning high, heavy limbs of mature trees us-

ing sharp cutting tools can be very dangerous. If power lines, heights or valuable property are involved below or near the tree, call a professional. If there is a possibility that the tree or its branches, people or equipment may come into contact with power lines, **always** have the power company do the pruning. Just be sure they follow proper pruning techniques.

If you hire professional arborists, confirm that they are licensed, bonded and insured. Some arborists may also be certified by a professional association, the International Society of Arborists (ISA). ISA certified arborists have passed exams to demonstrate their knowledge of proper tree care practices and usually attend update training annually. They can save you from property damage and personal injury and also assure that your trees will not be damaged by improper pruning. Don't be afraid to ask the arborist questions or request references from their previous local pruning jobs. Arborists certified by the ISA are found in New Mexico communities. Contact information may be located in your telephone book.

#### WHAT TOOLS DO I NEED?

To prune branches of different sizes you may need (fig. 3):

- **Hand shears** (a): effective for small twigs and branches
- **Lopper shears** (b): provide more leverage for branches 1 1/2 inches or less in diameter
- **A pruning saw** (c): cuts large, woody limbs 6 inches or less in diameter
- **A chainsaw** (d): makes quick work of limbs greater than 3 inches in diameter but shouldn't be used on small limbs because of its shredding effect
- **Pole-pruners** (e): include a saw and a lopping shear on an extendable shaft for cutting branches several feet off the ground
- **Safety goggles and hard hat**: (especially when pruning branches overhead)

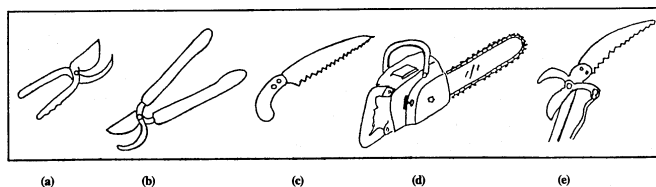


Figure 3. Pruning tools

## WHERE DO I CUT?

The cut is the key to good pruning. As a rule, always cut back to a branch, twig or bud that is pointed in the direction you want the tree to grow. This method encourages controlled, healthy new growth. If you're unsure whether to remove a branch, don't cut. You can always cut it later, but you can never put it back.

At the position where each branch originates from the trunk is a "collar" between the branch and the trunk (fig. 4). This branch collar contains vascular tissues from both the branch and the trunk. If you cut into the trunk tissue, you will interfere with the tree's natural protective mechanisms, allowing the entry of disease and insect pests which damage the tree trunk. Make your pruning cut outside the collar on the branch side without leaving a stub.

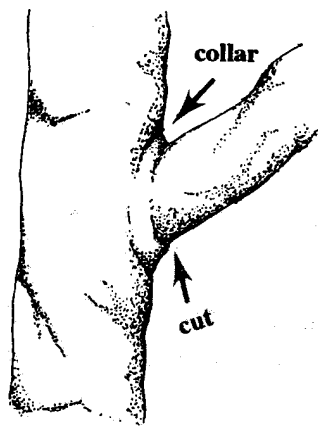


Figure 4. Branch collar and proper location for pruning cut

## CUTTING SMALL BRANCHES

Most pruning shears have only one cutting blade. Orient your shears so that the blunt jaw presses on the portion of the limb that will be discarded. Improper orientation may damage the tissue of the branch collar, slowing the wound-closing process.

### Cutting Large Limbs

Removing large limbs requires three cuts (fig. 5) to avoid stripping bark from the trunk. Make the first cut (1) into the underside of the limb about 6 inches beyond the bark collar, cutting 1/4 to 1/3 upward through the limb. Make the second cut (2) from the top downward several inches farther out than the first cut, cutting until the branch breaks away (2a). With the weight of the branch removed, a third cut (3) removes the stub.

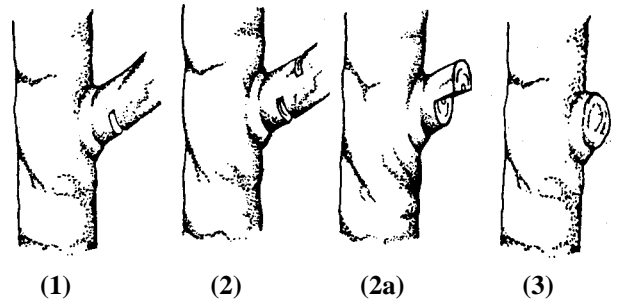


Figure 5. Cutting large limbs

### Removing V-Shaped Crotches

V-shaped crotches threaten tree health and pose a public safety hazard, as bark often becomes trapped between limbs, resulting in weak attachment. To eliminate narrow crotches before they become serious problems, remove the least desirable limb (fig. 6). If no branch collar is obvious, start at (1) and cut upward at a 30° angle, completing the cut at the branch's point of origin (2).

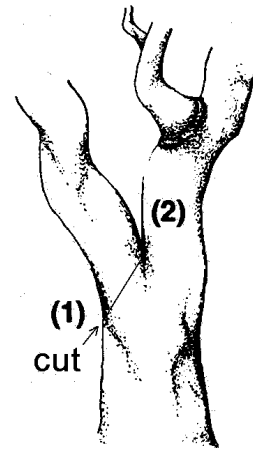


Figure 6. Removing V-shaped crotches

### Never Top a Tree

Topping is the indiscriminate shortening of limbs that causes a cluster of unruly, weakly attached branches to emerge near the cut (fig. 7). These branches are subject to damage from wind, crop loads, insects, diseases and breakage under their own weight. Topped trees have shortened life spans, pose safety hazards to people and property and require continuing intensive maintenance.

Remember to cut where the tree's growth may be redirected into a branch, twig or a bud that is pointed in the desired direction of growth.

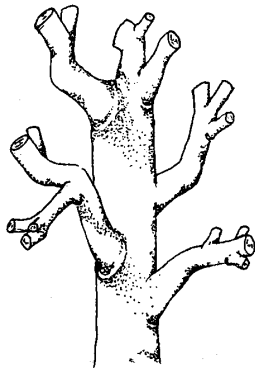


Figure 7. Never top a tree

### Pollarding

Pollarding looks like topping, but there are differences in the process that relate to the manner in which trees grow. In pollarding a tree, a branch is cut back when it is no more than 2 years old. The tree is capable of protecting itself from entry of disease and insects at this stage of growth but not later. Another important aspect of pollarding is that the branches, which are produced from “knuckles” that develop near the pollarding cut, are removed at least every two years so that heavy, dangerous branches do not develop. This style of pruning is seen in street trees in European countries. The process was developed to produce long, slender, pliable branches for basket weaving and as a source of annually renewable stove wood in the Middle Ages. Use of pollarding to maintain a small tree is a misuse of the process. It is better to plant a tree that won't become too large for the site and thereby avoid size-reduction pruning.

### SHOULD I PUT SOMETHING ON A WOUND?

No: Trees have their own mechanisms for closing an injury. During its life span, a tree will suffer many millions of injuries, some as tiny as an insect bite and others as large as a split trunk. A tree protects wounds from invasion by “walling-off” (compartmentalizing) an injury. According to U. S. Forest Service research, pruning sealants can actually harm trees by slowing wound closure. For rapid healing, use proper pruning techniques and periodically clean your pruning blades with alcohol to avoid spreading disease.

### HOW DO I TRAIN A YOUNG TREE?

A young tree can be successfully trained to grow into a well-structured mature tree. In fact, pruning young trees helps establish their structure and can prevent future

problems. It is always easier and more efficient to use pruning as a training technique throughout a tree's development than to correctively prune mature trees. Here's what to do:

Select strong branches for the tree's structure. Proper vertical and radial spacing makes stronger, more efficient trees. Vertical spacing is the vertical distance between branches; radial space is their arrangement around the tree trunk. When selecting branches, also consider the attachment angle. Branches with attachment angles of greater than 30° usually grow well anchored into the trunk and will support heavy fruit crops and snow and wind loads (fig. 8).

Pruning to train a landscape tree should be done in a manner consistent with the tree's natural form. It is difficult and unwise to try to make a round-topped tree into an ascending-form tree, or to make an ascending tree into

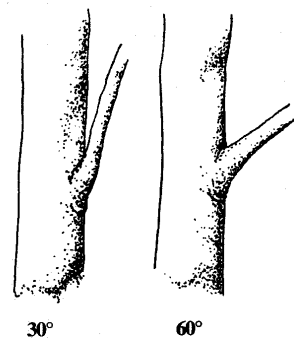


Figure 8. Selecting branches

a round-topped tree. Prune to train the tree into a natural form, eliminating potential problems but not changing the form drastically. Eliminate inward-growing branches, potentially crossing branches, branches that will obstruct traffic, interfere with buildings or have narrow V-shaped crotches. Also eliminate branches originating at the same level on the trunk or secondary branches. Allow no more than two branches at the same distance from the ground. Space branches vertically at least 8 to 16 in. apart, and space them radially so that a branch does not form directly above a branch below. Training when branches are small allows development of a well-formed, safe and attractive landscape tree.

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