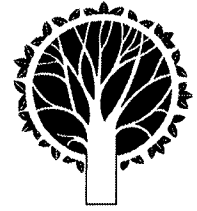




# Pruning Shade Trees



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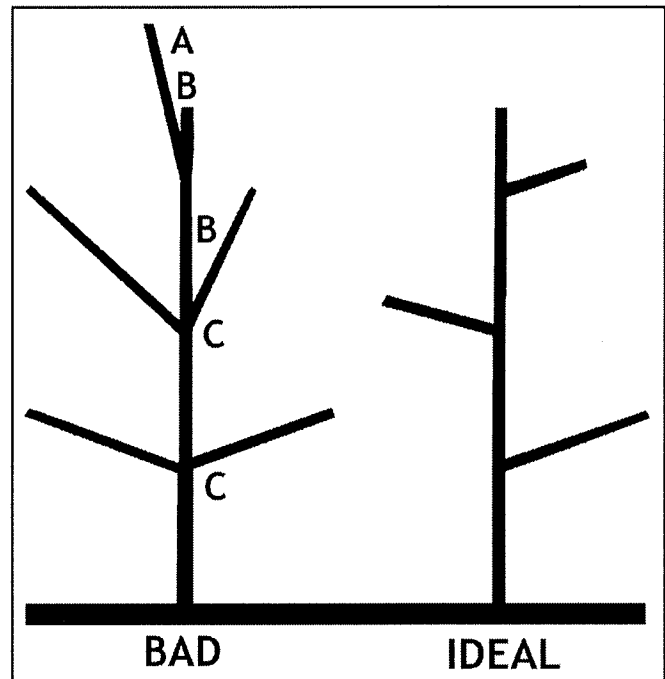
Pruning can be one of the most beneficial or one of the most detrimental maintenance practices for a tree. If done correctly, pruning can lengthen a tree's life, increase its value to the landscape, and minimize liability problems for its owner. Improper pruning can cause a host of structural and biological problems leading to decreased tree life, pest and decay problems, liability problems (from deadwood, hollows, or splitting), and a number of other significant problems that decrease tree values. Proper pruning is one way to keep trees healthy and maximize the benefits they provide to their owners.

## Branch Training

Usually a shade tree needs some selective pruning or "branch training" to develop into its best form. Branch training means removing unwanted branches that are in poor locations, correcting structural faults that could pose liability risks, and directing the tree into an aesthetically appealing and biologically efficient form. Trees can be trained to minimize ice and storm damage, splitting, blowing over, and top-loss (*i.e.*, crown breakage) problems, and to increase the trees' wind-firmness (*i.e.*, ability to adjust to wind loads from different directions). Branch training involves removing branches or twigs when they are smaller than one inch in diameter (Fig. 1).

Because branch attachment points are structurally weak areas, proper branch training can develop a strong stem and crown. Hardwood branch growth should alternate along the main stem. You should not have two or more branches attached at the same horizontal location on the trunk. The portion of the tree above these branches can break or all of the branches can split away. In trees that normally grow branches in whorls like pines, cedars, hemlocks, spruces and firs, however, alternative branching is not desirable. Instead, you should keep three to five well-spaced, strong branches growing from each whorl or node.

Another type of essential branch training is pruning a fork to leave a single limb (Fig. 2). Retain the side that is stronger, more vigorous, larger crowned, and in the most direct vertical line to the roots. Forks are hazardous to a tree's life and to the people around it. Within the fork



**Faults:** (A) side branch taller than main leader; (B) narrow crotch; (C) co-dominant branches

*Figure 1. Branching problems and using branch training to develop an ideal tree.*

crotch, bark can become trapped or included. A crotch with included bark has little strength and can split during a storm, causing property damage, injuries, and a severely damaged tree. Correction of forks early in their development is beneficial to trees.

In tree species that normally have opposite branching, such as ash and maple, proper fork correction is important for at least 10 to 15 feet up the trunk. This provides a strong base for the tree to grow upon.

Remove branches with narrow crotch angles. The narrower the crotch angle, the weaker the branch connection and the more potential for damage or loss. Do not allow side branches to grow taller than the main stem. A single main stem in the most direct vertical line from the base of the tree should be maintained as the dominant portion of the tree. Any surrounding branches that compete with the top of the main stem should be cut back.

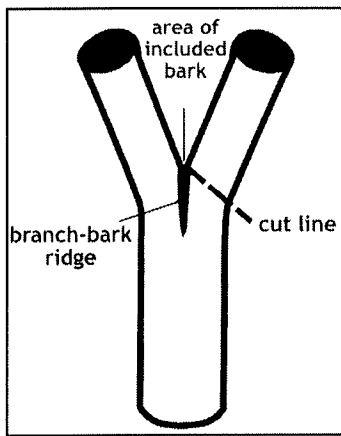


Figure 2. Correcting forks by removing one side early in tree life. Note the weak area of included bark.

Trees should never be trimmed or hedged (cutting the branch tips around the outside of the crown) or headed or topped (removing the top-most branches main branches). Some types of hedges are trimmed, but trees must be properly pruned at the base of a twig or branch; never leave a stub on the outside of a tree crown. This is extremely damaging and leads to many more problems. Shearing, trimming, rounding-over, or hedging trees are not approved aboricultural practices. Never top a tree. Topping is a severely damaging form of trimming.

### Pruning Methods

You can always prune a tree correctly, because the tree provides targets at which to aim. At the base of every branch and every twig is an area called the *branch-bark ridge*. The branch-bark ridge is where the growing, expanding branch and the expanding trunk push up bark between them. If the bark ridge is squeezed up and out of the crotch, there is a corky or a raised ridge (Fig. 3). Sometimes the bark is not squeezed up and out of the crotch; the expanding branch and trunk have grown around it and "included" it. The bark ridge is a crack or slit in this case. Included bark from an in-turning bark ridge can be a sign of later branch problems and weakness.

Once you have found the branch-bark ridge in the crotch of a branch, look on the underside of the branch just before it enters the trunk. There is a slight swelling on the bottom of the branch just before it enters the trunk. The area around and between the branch-bark ridge and the bottom swelling on the underside of the branch is called the *branch collar*. Branches are stuck into the side of a tree, and the trunk establishes a collar around the branch base to hold it. The guiding principle of good pruning is to cut the branch but not the branch collar: **Do not damage the branch collar around the branch base.**

By practicing proper pruning, you can form a tree properly. Do not flush cut or leave a long stub. Cut the

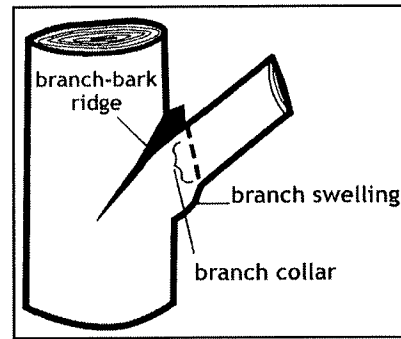


Figure 3. Getting ready to prune. Locate the branch-bark ridge and the extent of the branch collar at the base of each branch.

base of the branch at the edge of the collar. With dead branches, the tree has already formed a collar at its base that can clearly be seen. When pruning live branches, locate and protect the branch collar.

If you flush cut or damage the branch collar at the base of the branch, you will initiate a whole host of problems that can include decay, pests and vertical cracks. All can be damaging to the tree for the rest of its life. Since trees do not heal but, instead, seal off and grow over old wounds, bad pruning damage can haunt the tree and tree owner for the rest of the tree's life.

For branches smaller than your thumb, use a good pair of hand clippers or a hand saw and carefully cut off the branch at its base without damaging the collar.

For larger branches, use a three-cut method of pruning (Fig. 4). First, undercut the branch a few inches away from the trunk to prevent bark tearing.

Next, move a short distance from the first cut farther out on the branch and remove the entire branch. This will eliminate the weight of the branch, so you can make a final pruning cut.

Start the third pruning cut on the outside edge of the branch-bark ridge and cut through the branch to the outside edge of the collar swelling on the underside of the branch. Remove only the branch; do not damage the trunk.

You can treat pines and other conifers like hardwood shade trees, but they can develop problems similar to those of hardwoods if mistreated. Prune conifer trees as described above for hardwood trees (Fig. 5). Find the

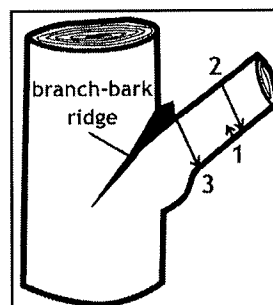


Figure 4. Three-cut method of pruning hardwoods.

circular branch collar and the branch-bark ridge. Prune the branch away without damaging the branch collar, and give your tree its best chance for a long, healthy life.

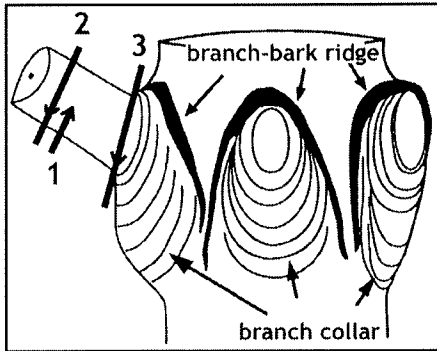


Figure 5. Three-cut pruning in conifers.

## “Topping”

Trees should never be topped; it destroys the branching control and shape of a tree. The only trees that may need to be topped are ones that are growing toward overhead obstructions. Never plant medium or large trees near or under utility lines, awnings, or anywhere else that will require extensive pruning to keep them from damaging property. Pick the right tree for the right site and you will not have extensive pruning damage or topping problems. Conifers should never be topped.

Sometimes you cannot avoid severely reducing the size of a hardwood tree. Under these circumstances, be sure to prune the tree properly using the proper drop-crotching cuts. (See Fig. 6.) Find a strong side branch along the main stem that can assume control over the tree. Then remove portions of the tree above that point. Instead of trimming the top, which leaves flat, squared-off stubs, use the proper drop-crotching method. This will allow the tree to react quickly and effectively to damage, although long-term problems can still occur.

As with any proper pruning cut, the three-cut method for drop-crotching a tree should be used (Fig. 6). First, use a back cut to prevent bark tearing. Next, make a cut a little bit above the back cut to remove the weight of the top of the tree. Finally, make a slanted drop-crotch cut – a good pruning slice parallel with but a small distance above the branch-bark ridge of the branch that will be the new top. In most cases, homeowners should seek professional help with drop-crotching or large branch pruning.

## Pruning Season

In the real world, the time of year to prune is when the saw is sharp and you are thinking about it. Trees are resilient to abuse and damage even if you prune in the wrong season. Late dormant-season pruning is usually recommended, although some trees will ooze liquid if cut too close to the time of spring growth.

One period to avoid is when buds are expanding in spring. Do not prune once buds first start to expand until after the leaves are at their mature size. Pruning during this period can disrupt tree growth and stress trees badly.

Pines should not be pruned during the warm months. Dormant-season pruning during cold periods is best to prevent pruning-associated insect problems.

## Wound Paints

Do not use wound paints. Wound paints are primarily cosmetic and many disturb and disrupt the ability of the tree to seal off wound sites. Wound paints do not prevent decay.

If unavoidable, use a commercial tree wound paint to color the wound area. Do not use black tar-like paints, since these can inhibit wound closure and kill surrounding tissue. Do not use latex or oil house paints because the paint carriers disrupt wound closure.

You should not scribe, cut or try to shape or sterilize pruning wounds. This damages the branch collar at the base of the pruned branch and can lead to many bad structural and biological problems.

Minimize any mechanical damage to the trunk of a tree and you will have a healthy, long-lived tree. Tree values can be maximized and liabilities minimized by proper pruning and other sound maintenance practices. Take care of your tree and it will take care of you!

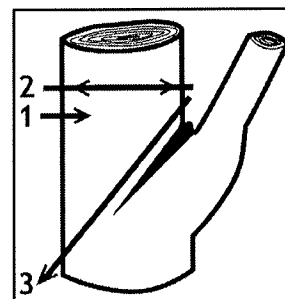


Figure 6. Proper drop-crotch cut.