

AGRICULTURAL GUIDE

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Forestry

Pruning forest trees

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Pruning trees in both the yard and in the forest can yield many benefits—if it is done correctly.

In a woodland or plantation, pruning helps maintain a central leader, repairs storm damage, or improves the chances of a clear bole to produce a higher grade of lumber or veneer.

In your yard, pruning shade trees controls the tree's size or shape, removes undesirable branches, or reduces a hazard posed by dying or broken branches. Poorly formed branches in the unpruned shade tree can get weaker each year. It is also necessary to prune trees along power lines in both rural and urban settings to prevent damage during storms.

Trees in Christmas tree plantations are sheared to produce a tapered shape and dense foliage. Guide 5706, "Shaping pine Christmas trees for quality," provides more information on this subject.

Whether in a forest setting or yard, start proper pruning early in the life of a tree and continue when necessary as the tree grows. In the forest setting, economics dictate that only the higher-value species, such as black walnut or possibly white oak, should be pruned in Missouri. A clear walnut bole, free of rot and damage, will bring a much higher price at the mill. Because of the thin foliage of black walnut, it is a poor self-pruner. Its natural pruning ability is further reduced in the plantation setting, where it is planted in wide spacing to promote diameter growth.

When to prune

All pruning is potentially harmful to a tree; prune so the resulting wound can close as easily as possible. At the time of planting, trees can be pruned to correct multiple leaders. Select one strong central stem and do not prune this stem or any twigs along the upper branches of the tree. Remove any other weakened or damaged branches. Always maintain at least two-thirds of the total tree height in living branches.



Figure 1. The branch bark ridge is the dark area where the branch and stem meet.



Figure 2 shows the proper place for a pruning cut.

As a shade tree grows and total height increases, you can remove lower side branches. Do not prune all side branches in a vertical line in one year. If you start pruning early, tree-splitting may be avoided later because low, heavy branches often split during storms or when laden with snow and ice. Check UMC Guide 6866, "Pruning and care of shade trees," for more details.

Trees do not "heal" in the sense of restoring cells at



Figure 3. The branches of this tree were cut properly and callus rings completely encircle the wounds.

the site of injury or damage. Trees have the ability to compartmentalize, or form a barrier zone at the damaged area to help prevent disease infection. Prune properly to help this natural process occur as quickly as possible. Trees may be healthy but still have numerous infections walled off in pockets throughout the stem. The genetic makeup of some trees allows them to form this barrier zone tissue more easily than others.

The best time to prune live branches is during the dormant season—late winter or early spring before leaves form. These wounds heal most rapidly and sprouts from dormant buds are less likely to develop. If possible, avoid pruning at the time of leaf formation and leaf shedding. If sprouts do develop, remove them promptly. Remove diseased and dead branches any time you notice them.

Pruning guidelines

Much of the following information on pruning guidelines is based on the years of experience and extensive research of Dr. Alex L. Shigo, retired Chief Scientist on tree decay, Northeastern Forest Experiment Station, Durham, New Hampshire, and Dr. E. A. McGinnes, Jr., University of Missouri-Columbia. They have conducted extensive studies on the effects of pruning black walnut. To produce walnut veneer and timber, prune in stages until a clear bole is reached. On a medium quality site, black walnut should be pruned to 9 feet by about the tenth year and to 15-17 feet by the 16th year. That produces at least a clear 14 foot log at harvest. Your local forester from the Missouri Department of Conservation can give you more advice on black walnut management.

Follow these steps to help promote fast healing of your pruned trees, whether in the forest or yard:

1. Prune living branches as close as possible to the trunk, but do not cut behind the branch bark ridge. Each branch has a thick bark ridge separating it from the main stem (Figures 1 and 5).
2. Do not use flush cuts. (Figure 2) A large callus will have to form to help seal the wound. Branches which have been pruned correctly will have callus material completely encircling the wound rather than in a horseshoe or semi-circular pattern (Figure 3).
3. Do not leave branch stubs. They will just have to decay and fall off.
4. If removing dead branches, do not cut into the collar that has formed at the base of the dead branch. The collar is the raised ring of protective tissue circling the branch and acts as a barrier to further decay.
5. Concentrate pruning on the smaller limbs to promote faster healing. Cut larger branches using a three-step method so the branch's weight will not cause the branch to break and tear the bark below the limb (Figure 4). Relieve the major weight of the branch by using two cuts and then cut at an angle near the branch



Figure 4. The bark of this tree tore because a heavy limb was improperly pruned.

bark ridge (Figure 5). If the job looks too large or dangerous, **hire a professional.**

6. Do not top trees. Even if upper branches are damaged in a storm, make repairs by cutting the branch at about a 45 degree angle or along the branch bark ridge. Remove broken tops and branches as soon as possible after injury.
7. Wound dressings have not been proven to increase the rate of wound healing, so use them only for cosmetic reasons.
8. Use the proper tools for pruning (Figure 6). Use chain saws only to remove the larger portion of storm damaged limbs; otherwise use smaller pruning tools that are more easily controlled. Keep pruning tools clean and sharp. Diseases can be spread by tools from tree to tree after you cut an infected plant. To sterilize pruning tools, clean them in a mixture of one-part household bleach to 10-parts water. If branches are too high to reach, use a pole saw or ladder.
9. Cavities require special treatment and should be handled by a professional arborist. Remove only decayed wood that easily comes out of the cavity. Do not cut into the hard rim of tissue surrounding the cavity or decay will spread.

Care after pruning

Maintain the vigor of your shade trees both before and after pruning by watering during dry spells, fertilizing when necessary (usually from late September through early April), and avoiding unnecessary wounding. Injury at the tree base can occur if you hit it with your lawn mower.

In the forest setting, practice good timber management by cutting out less desirable and poorly formed species to benefit your more valuable trees. A well-thought out plan can help your trees stay "fit" for many years.

For free technical advice on forest management, contact a forester from the Missouri Department of Conservation. Additional information can also be obtained through local University Extension Centers.

For more detailed information on tree health and biology, contact Dr. Alex L. Shigo, Shigo and Tree Associates, 4 Denbow Road Durham, New Hampshire 03824.

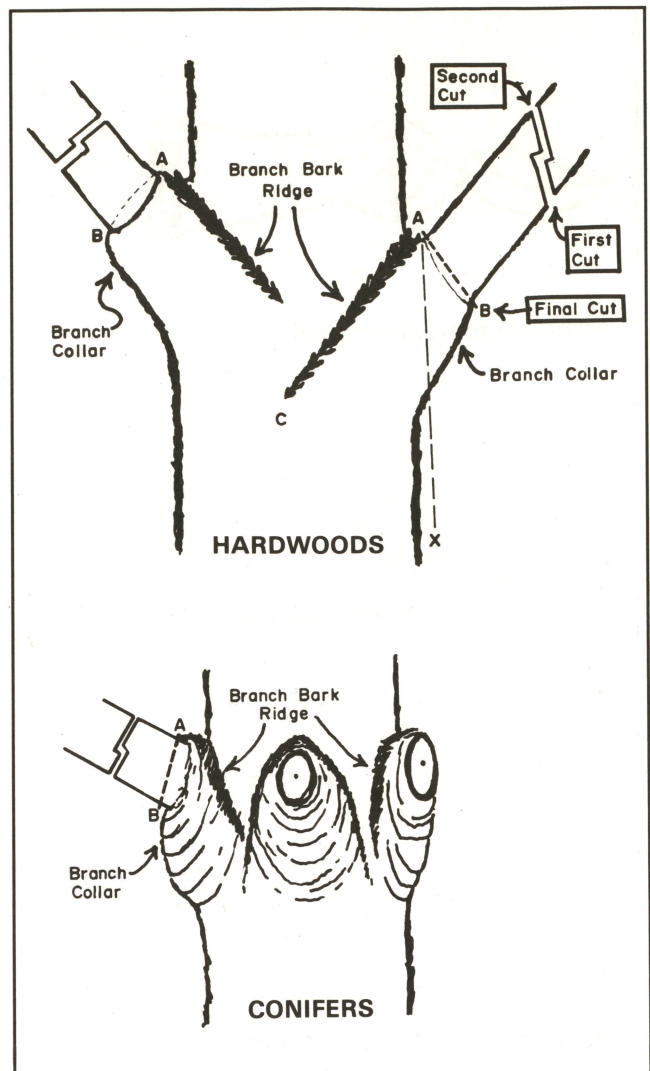
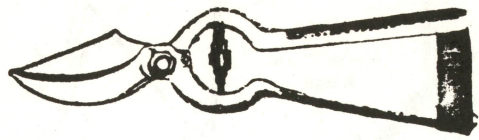
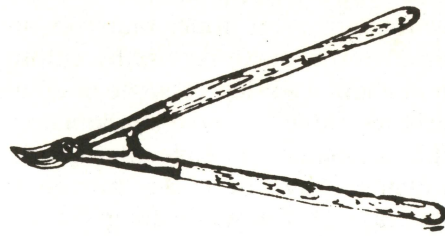


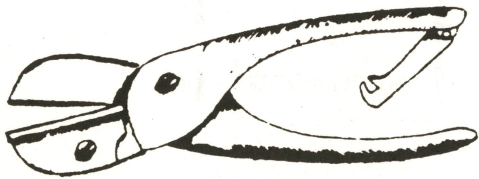
Figure 5. Natural pruning steps include locating the branch bark ridge. Then find target A—the outside of the branch bark ridge—and target B, the swelling where the branch meets the branch collar. If B is hard to find, drop a line from point A. The angle from XAC equals the angle from XAB. Next, stub the branch to be cut. Finally, make a cut on line AB. (Drawing courtesy of the Missouri Department of Conservation.)



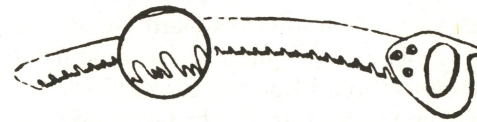
Hand pruning shears with curved blade.



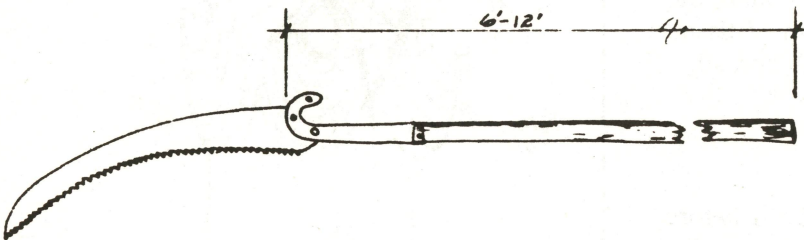
Lopping shears used for large branches and difficult to reach places.



Hand pruning shears with straight blade.



Pruning saw that saws on the pull stroke.



Pole saw for upper branches.

Figure 6. Tools for pruning.