



CENTRAL HARDWOOD NOTES

Pruning Central Hardwoods

Pruning, properly done, is one of the best ways to assure high quality wood. Although the overall volume of hardwood has been increasing during the last several years, the volume of high quality hardwood continues to be in short supply. So high quality logs will continue to be worth more at market time. Potentially, pruning can be an important silvicultural treatment for central hardwoods. The primary questions are which species should be pruned and what is proper pruning?

Deciding Whether to Prune

The 70+ species that comprise the central hardwood forests vary considerably in how well they shed branches naturally and in the value placed on knot-free wood. Based on those two criteria, the following species should be considered for pruning in decreasing priority:

Very poor to poor branch shedding

black walnut
sugar maple
scarlet oak

Poor to good branch shedding

black oak
white oak
butternut

Good branch shedding

red oak
cherrybark oak

The local markets and the stand stocking level will determine whether you should undertake pruning. A price differential of only 40 dollars per MBF between clear, pruned compared to rough, unpruned logs, is all that is needed to make pruning an economically viable treatment for black walnut, sugar maple, and scarlet oak. If, in addition, a stand is growing at less than "B" level stocking, you should consider other species for pruning as well, as they may not shed branches sufficiently well at this low stocking.

What To Do

Once you decide to prune, your most important job is to be sure that the pruning is done right. A proper cut removes the living, dying, or dead branch by cutting as close as possible to the collar at the branch base (fig. 1). The collar should not be injured or removed. The collar may be swollen, and the swollen collar that remains is not a stub. On dead branches, a ring or "doughnut" of living tissue surrounds the branch at its base. Do not injure or remove the ring of living wood.

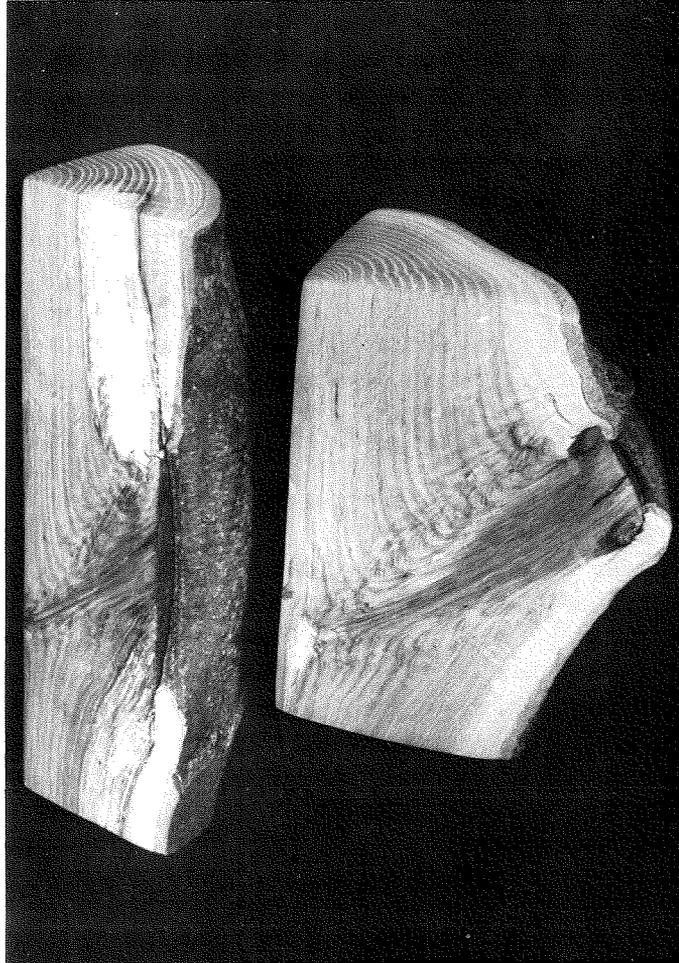


Figure 1 .-A proper cut (right) and improper flush cut (left) on red oak. Both samples are from the same tree 6 years after pruning. Decayed wood developed above and below the flush cut.

Natural Target Pruning

Because every branch and every collar will be slightly different, a pruning method centered about targets was developed and is called *natural target pruning* (fig. 2). To implement:

1. Locate the branch bark ridge.
2. Find *target A* - outside of the branch bark ridge.
3. Find *target 5* • where the branch meets the branch collar.

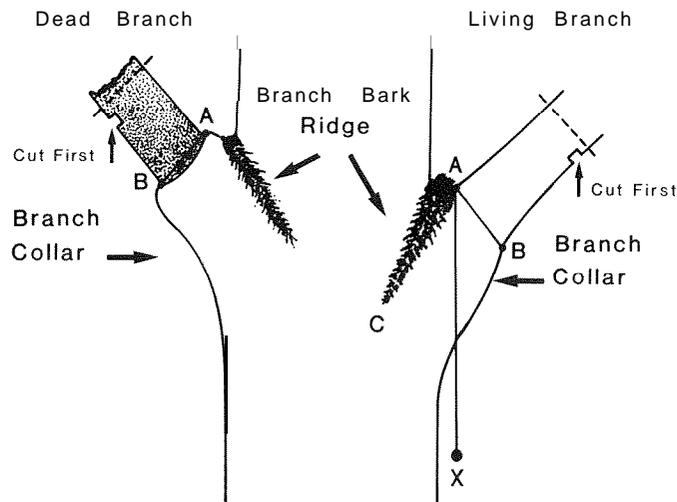


Figure 2.-Diagram of natural target pruning.

4. If B is hard to find - drop a line at AX. The angle XAC is equal to the angle XAB.
5. If the branch to be pruned is large, avoid splitting and tearing by making a stub cut a few inches from the branch collar.
6. Make the final cut at line AB.

CAUTION: Do not cut behind the branch bark ridge. Do not leave stubs. Do not cut the branch collar. Do not paint cuts.

When branches are pruned properly, a ring of callus will form completely around the cut after the first full growing season (fig. 3). Flush cuts will have callus only to the sides of the wound or in a horseshoe shape (open at the top if the cut was flush at the top and open at the bottom if the cut was flush at the bottom).

The best time to prune is during the late dormant season. However, when proper pruning cuts are made, pruning can be done at anytime. But it is best to avoid pruning when leaves are forming in the spring and are falling in the fall.

What Not To Do

Avoid making flush pruning cuts. We know through research that flush cuts start at least 14 serious problems, including discolored wood, decayed wood, resin-soaked wood in conifers, wetwood, a host of cankers, circumferential and radial cracks, and weak spots with low amounts of energy reserves that are sites where sudden cold or heat will cause cracks and dead spots, and where insects often infect wood. Indeed, the flush cut is one of the most injurious treatments man has inflicted on trees both in the forest and in the city.



Figure 3.-When proper pruning cuts are made, a circle or "doughnut" of callus will form about the cut after a complete growing season.

Flush cuts cause large wounds and rapid callus rib formation. We know now that callus formation is not associated with the decay process, and if wounds close rapidly, infection into the wood will be stalled. Unfortunately it is rare that large wounds completely close. And, when callus forms too rapidly, as it frequently does on flush cuts, the ribs of tissue turn inward to form a "ram's horn." When this happens, the wound will never close because bark will be between the inrolling ribs. Such a condition benefits the wood-inhabiting pathogens. Likewise, there are no data to show that any wound dressing stops rot.

How Much To Do

For best results, prune in two or more steps, starting when the trees are 4 inches d.b.h. and continuing until at least the first 17 feet of the bole is clear. Generally only dominant and codominant trees, and no more than 100 to 150 trees per acre, should be pruned. Pruning can reduce growth if too much of the live crown is removed. The "rule of thumb" is to remove no more than 25 percent of the live crown at any one pruning and to maintain a 50 percent live crown/bole ratio.

The time needed to prune depends upon several factors; the most important are the numbers and sizes of branches removed. Estimates of pruning time per tree range from 1.5 minutes to 9 minutes. The average time to prune to a height of 17 feet is 6 minutes.

Reference

Shigo, Alex L. 1986. A new tree biology. Durham, NH: Shigo and Trees, Associates. 595 p.

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