



Pruning Landscape Trees

Flowering and shade trees in the landscape require periodic pruning to control size and shape, to correct undesirable growth, and to remove low-hanging or damaged branches.

The pruning tools for trees are the same as those required for ornamental shrubs:

- Hand pruners are used for branches 1/4 to 1/2 in. in diameter.
- Loppers are used for cuts more than 1/2 in. in diameter.
- Pruning saws are used to remove larger limbs.

Note: Do not use fine-toothed carpenters' saws. Hedge shears are of no use in pruning trees unless a formal hedge or screen is desired.



Figure 1.—Tools used in pruning include (left to right) hedge shears, loppers, pruning saw, and hand pruners.

When to Prune

Flowering Trees

Ornamental trees that flower before June first should be pruned immediately after flowering. These include redbuds, smoke trees, magnolias, flowering and kousa dogwoods, hawthorns, crabapples, flowering cherries, peaches, pears, and plums.

Trees that flower after June first should be pruned in winter or spring before new growth begins. These include goldenrain trees, sourwoods, and other late-flowering trees.

Shade Trees

Trees restore themselves more rapidly if they are pruned in early spring before they leaf out. The framework is bare, and you can easily see which branches need to be removed. When pruning is done in early spring, the plants are soon in full leaf and actively photosynthesizing, thus providing food and energy required for closing or sealing wounds after pruning.

Some trees, such as birch, yellowwood, elm, pine, spruce, fir, and maple, will bleed excessively if pruned in the spring. Bleeding, or loss of sap, will not harm the tree, but may be unsightly or messy around the home. Bleeding may be reduced by pruning such trees when they are in full leaf (June).

What Trees to Prune and How to Do It

Making Cuts

There are methods for pruning trees to get the best results. Proper pruning involves removing dead, dying, or living branches without damaging or removing the branch collar. (See Fig. 2)

Start at the top of the tree and work down. This makes it easier to shape the tree.

- Make the cut at the bark ridge of the branch. This is the point where the branch meets the main stem.
 - Don't flush cut. Cuts made into the bark ridge are too close; these "flush cuts" may remove tissue that signals the plant to set boundaries for resisting the spread of infection. Thus, the tree is not able to compartmentalize the injury made at pruning.
 - Don't dehorn. Leaving several inches or several feet of branch beyond the bark ridge is an equally serious mistake, called dehorning, pollarding, or topping the tree. Callous tissue will not form from the stub wound. The stub dies back to the bark ridge, and often infection spreads deeper into the tree because the wound was not compartmentalized. (See Fig. 3)



Figure 2.—Notice the location of the bark ridge marking the branch collar.

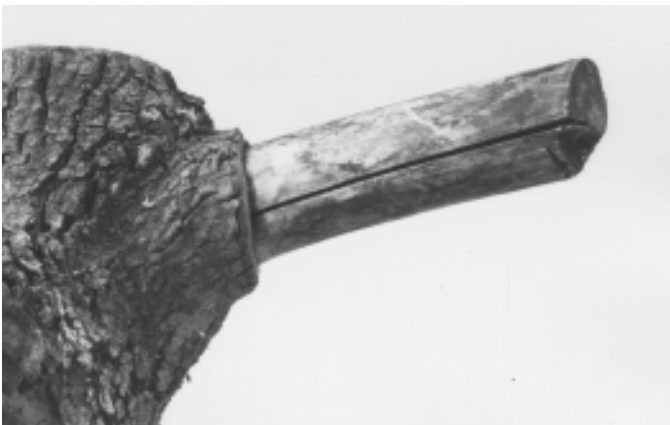


Figure 3.—Stubs remaining after pruning die back and the decay often spreads to the interior of the tree.

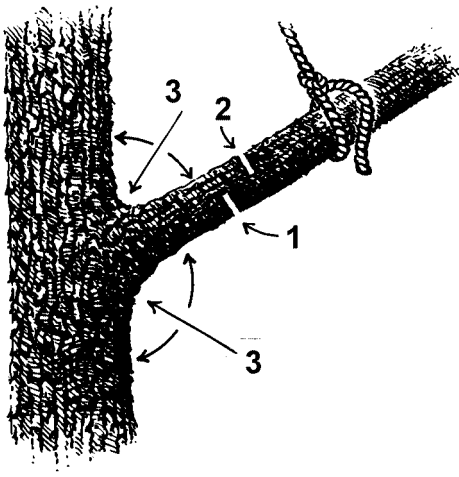


Figure 4.—The downward stroke is for stubbing the branch and removing excess weight. The final cutting stroke is at the branch collar, matching its angle, and leaving the collar intact.

- To make a cut properly, stub the branch on the downstroke. Then make an upstroke cut at the branch bark ridge that forms the slightly swollen branch collar, leaving the branch collar intact. The cut line should be at an angle downward that is approximately the same as the angle of the branch bark ridge. (See Fig. 4)

Treating Cut Areas

Do not paint wounds. When cuts are made properly at the branch bark ridge, trees are able to compartmentalize, or set boundaries, at the injury (pruning) site. This process helps resist the spread of infection. Trees can resist the spread of microorganisms if they are fast and effective in setting the boundary defense system, but some are fast and others slow at this process.

No matter how efficiently or inefficiently the tree sets boundaries, wound dressings do not stop decay and actually increase the rate of decay. Therefore, it is not necessary to paint wounds once a cut is made. Rather, leave the tree to its own defenses.

Pruning Trees is an Annual Job

If minor pruning is done every year, the job is manageable and the plant remains healthy. A beautiful plant form is retained, and pruning cuts remain virtually unnoticed unless close inspection is made.

However, when plants are neglected over a period of years, major pruning considerably changes the plant's form. Furthermore, removing large amounts of wood at one time is detrimental to the plant's health.

Pruning Newly Planted Trees

Corrective pruning of a tree at the time of planting sometimes works for the tree's good. Dead, damaged, or misshapen branches can create problems later and therefore should be removed at planting time.

- **Do not remove the leader or central stem.**
- **Do not remove tips of branches** unless they are growing to the tree's interior, creating a crowded condition.
- **Remove the less dominant branch** if two branches are growing at a tight angle.

Prune newly planted trees to remove problem branches and to "shape up" the tree to a form typical of the species. Generally, entire branches should be removed, as shown in these "before" and "after" pruning shots of *Stewartia pseudocamellia* (see Figs. 5 and 6).



Figure 5.—Before pruning. Figure 6.—After pruning.

Pruning Young Established Trees

A regular pruning program begun while trees are young will prevent extensive repair work when they are older.

- **Establish well-spaced branches** when the tree has been planted for approximately two years. This allows stronger limbs and a better canopy to develop because sunlight is more evenly distributed through the tree.
- **Prune young trees so that major scaffold branches are spaced vertically 18 to 24 inches apart** (more for larger trees). Choose five to seven main scaffolds that are evenly distributed radially; leave these, and remove other branches. In this way, you prevent any one branch from growing directly over another.

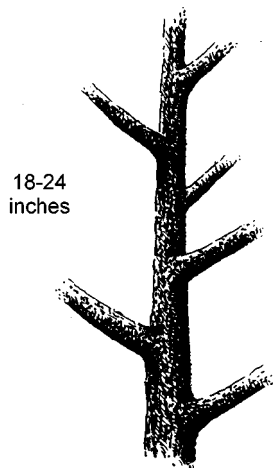


Figure 7.—Major scaffold branches should be spaced vertically at least 18 to 24 inches apart.

- **Do not remove or cut back the central leader in trees where it forms the trunk.** Such trees include tulip trees, black gums, sweet gums, pin and shingle oaks, 'Aristocrat' Callery pears, and other conical or pyramidal trees (see Fig. 8). Other trees have a modified leader: maples, ashes, honey lo-

custs, lindens, dogwoods, flowering crabapples, and other shade or flowering trees with oval or round canopies (see Fig. 9). This modified leader may be cut back lightly to a lateral twig or bud if desired.

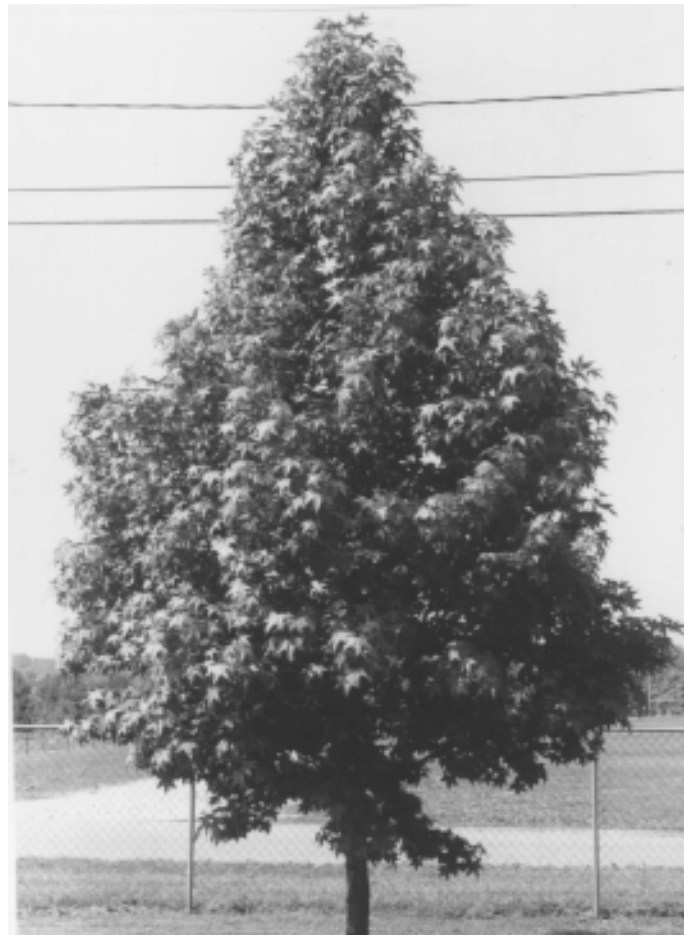


Figure 8.—The sweet gum is a dominant leader tree.



Figure 9.—An example of a modified leader tree is the honey locust.

- **Remove one of the two branches forming tight forks** to allow the tree's normal shape to develop. If one of the balanced branches is not removed during early development, bark will accumulate in the angle of the two branches. Because this wood is weak, a heavy load of ice or a strong wind may break one of these branches or split them apart.



Figure 10.—Note this plant's tendency to develop two forks each time it forms a new set of branches. Keep the stronger branch, and remove the weaker (less desirably placed) one.

- **Remove or cut back any side branches that assume dominance** unless this growth is desirable (i.e., it replaces a damaged leader). Remove or cut back these side branches to an out-facing bud or side branch lower than the leader (see Fig. 11).
- **Remove branches that may develop into potential hazards**, such as low-hanging branches that interfere with traffic.

Pruning Large Trees

Pruning requirements for large, mature trees are the same as those listed for younger plants. The major difference is size: working in large trees can



Figure 11.—Branches growing much faster than the rest of this juniper need to be totally removed so the plant will resume its natural pyramid form again.

be dangerous. When pruning is necessary, it is best to obtain the service of a certified arborist.

- **Pruning cannot replace proper plant selection and planting under power lines.** Large shade trees cannot develop properly under power lines and thus should not be planted there. Remove them totally once they become too large.
- **Do not** try to remove trees or limbs that are under and in power lines yourself.
- **Do not top trees.** Homeowners are sometimes “conned” into topping or dehorning trees as a “rejuvenation” process. Large branches are cut back leaving only stubs, while all small branches are removed. This process is not recommended. The shape of the tree is ruined, and the large



Figure 12.—Dehorned trees are unsightly and prone to quick decline. Never leave stubs of branches in pruning.

wounds will not heal properly. Furthermore, the new witches' broom type growth is more susceptible to disease, insect attack, and storm damage. The tree's useful life is greatly reduced.

- **Prune out dead, dying, or diseased twigs and branches.** Southern magnolias, like the one in Fig. 13, often suffer extensive winter damage. The tree needs to be opened, and the damaged branches must be removed at the branch collar of the main stem.
- **Remove branches that cross or rub against other branches.** Continued rubbing causes open wounds that enable diseases and insects to get inside the tree. If you see rubbing branches on a tree like this southern magnolia (see Figs. 14, 15, 16), you must choose which limb to remove.



Figure 13.—A southern magnolia suffering from extensive winter damage should be reshaped after the dead wood is removed.



Figure 14.—Continuous rubbing provides easy access for diseases and insects.



Figure 15.—Which limb do you remove? The smaller or less thrifty one.



Figure 16.—The smaller branch was saved.

Analysis—We kept the smaller branch because it was healthier, showed better leaf development and placement, and grew to the outside rather than crowding other branches in the interior of the tree. In removing the other branch, we took care not to damage the healthy one and not to leave a stub.

- **Remove water sprouts**, which develop on many ornamental plants such as crabapples, hawthorns, flowering cherries, flowering peaches and blackhaws. These rapidly growing, vertical shoots need to be removed because they seldom flower or fruit and will eventually destroy the shape of the tree. They also rob the tree of needed nutrients that could be used for developing flowers or fruit. These shoots should be removed at the point of origin (see Figs. 17, 18, 19, 20).



Figure 17.—Water sprouts grow vertically from the branches and cause crowding in the middle of the plant. They should be removed as they appear.



Figure 18.—Suckers growing near the base of the Katsura tree's trunk (above) may rob the plant of nutrients and water. Therefore, they should be removed.



Figure 19.—To remove suckers, use a hand pruner close to the ground, removing the sucker as close to its origin as possible.



Figure 20.—This picture shows the same Katsura tree with all suckers removed.

Pruning Multistemmed Trees

Multistemmed trees, such as the Washington hawthorn and saucer magnolia, present special problems. They usually become thick and matted in the center. To keep the multistemmed effect, the center should be kept open. Remember when pruning multistemmed trees that the stems compete with each other. The weaker member will be crowded out.

- Give major limbs growing room and enough open space to display leaves, flowers, and fruits.
- Completely remove:
 - deadwood,
 - suckers,
 - sprouts,
 - crossing limbs,
 - branches growing toward the center of the plant, and
 - branches with narrow angles.
- **Never stub a limb to reduce its size.**



Figure 21.—Multistemmed trees require annual pruning to prevent this type of cluttered, untrained growth habit.



Figure 22.—Remove entire branches at soil level when pruning multistemmed trees.



Figure 23.—The multistemmed tree has been opened by the removal of excess branches. Old or unthrifty branches should be cut first; then, remove additional branches to reshape the plant into a desirable form.



Figure 24.—Growth of extra branches is not uncommon when a tree is under stress from pruning or environmental conditions. This is a typical example of how latent buds will be forced into growth. These undesirable branches should be removed as they occur, definitely before their diameter interferes with the normal development of the branch to the left of the tree.



Figure 25.—The same tree after pruning shows how the new branches can be taken out without harming the tree's basic structure.



Figure 26.—Unusual growth forms can occur on plant material such as the upright branch in the center of this photo, which has looped around the branch above and adjacent to it. Though it gives an interesting form, it should be removed before it rubs open wounds or girdles another branch.



Figures 27-28.—Pruning of roots is also necessary at times. These are two examples of girdling roots. Girdling roots can develop when roots are not spread out at planting time. As the trunk and roots grow in diameter, the encircling root chokes or strangles the tree since there is no way for it to loosen itself. The situation gets progressively worse, until the tree dies from lack of food and water transport in the phloem and xylem vessels.

Treat it by severing the root at the point of attachment. A wood chisel usually makes the job easier than using a pruning saw. Leave the root in place, since pulling it loose may expose open wounds caused by the rubbing of roots and trunk.

Figure 29.—Trees, even when they are young, should have a flared base where the framework roots form off the trunk similar to the flared roots seen in this photo. When a trunk descends into the ground straight rather than with this type of flare, you should suspect girdling roots similar to the top photo.



Figure 30.—When girdling roots are not corrected, the tree may simply snap at soil level. This photo shows why a large tree toppled for seemingly no good reason. Close examination of the remains showed this severe case of girdling roots.



Figure 31.—Not all Callery pears are noted for narrow branching angles. The cultivar 'Aristocrat' is noted for the potential of horizontal branching, as shown here.



Figure 32.—Many young trees are not pruned correctly in the nursery and are sold with this quantity and arrangement of branches. If left like this, the plant will develop problems as the branches increase in diameter.



Figure 33.—In time, the tree will grow to be like this—CROWDED!



Figure 34.—When there has been too much branch competition, the tree will lose branches in high winds.



Figure 35.—This Callery pear did not develop horizontal branching and has the potential to develop structural problems. Training and pruning at a young age would have avoided this problem.

QUICK RULES OF PRUNING

Flowering Trees and Shrubs

As a rule of thumb, if it flowers before June 1st, prune it after flowering. If it flowers after June 1st, prune it before flower buds are visible.

Spring Flowering

<i>Aesculus</i>	(horse chestnut, buckeye)
<i>Amelanchier</i>	(serviceberry, sarvistree, shadbush)
<i>Carpinus</i>	(hornbeam)
<i>Carya</i>	(pecan, hickory)
<i>Castanea</i>	(chestnut)
<i>Cercis</i>	(redbud)
<i>Chionanthus</i>	(fringetree)
<i>Cladrastis</i>	(yellowwood)
<i>Cornus</i>	(dogwood)
<i>Corylus</i>	(filbert)
<i>Crataegus</i>	(hawthorn)
<i>Halesia</i>	(silverbell)
<i>Hamamelis</i>	(witchhazel)
<i>Ilex</i>	(holly)
<i>Magnolia</i>	(magnolia)
<i>Malus</i>	(crabapple, apple)
<i>Prunus</i>	(cherry, plum)
<i>Pyrus</i>	(pear)

Summer Flowering

<i>Albizzia</i>	(mimosa)
<i>Cotinus</i>	(smoke tree)
<i>Koelreuteria</i>	(goldenrain tree)
<i>Sophora</i>	(Japanese pagodatree)
<i>Oxydendrum arboreum</i>	(sourwood)

Original authors: M.L. Witt, R.E. McNiel, and W.M. Fountain
Contact: W.M. Fountain, Department of Horticulture