

Homeowner's Guide to Pruning Ornamental Trees

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Most homeowners can safely prune small trees from the ground or a short ladder. Large trees require a certified tree care specialist. One way to locate a certified arborist is through the International Society of Arboriculture (ISA) website (<http://www.isa-arbor.com/findanarborist/arboristsearch.aspx>).

The focus of this publication is pruning ornamental shade trees, such as oaks, maples, honeylocust, ash and elm, where flowering is not a primary landscape attribute. For flowering trees, such as crapemyrtle and magnolia, it is important to consider flowering when pruning. A prime consideration would be whether or not the species forms flower buds on new or old wood.

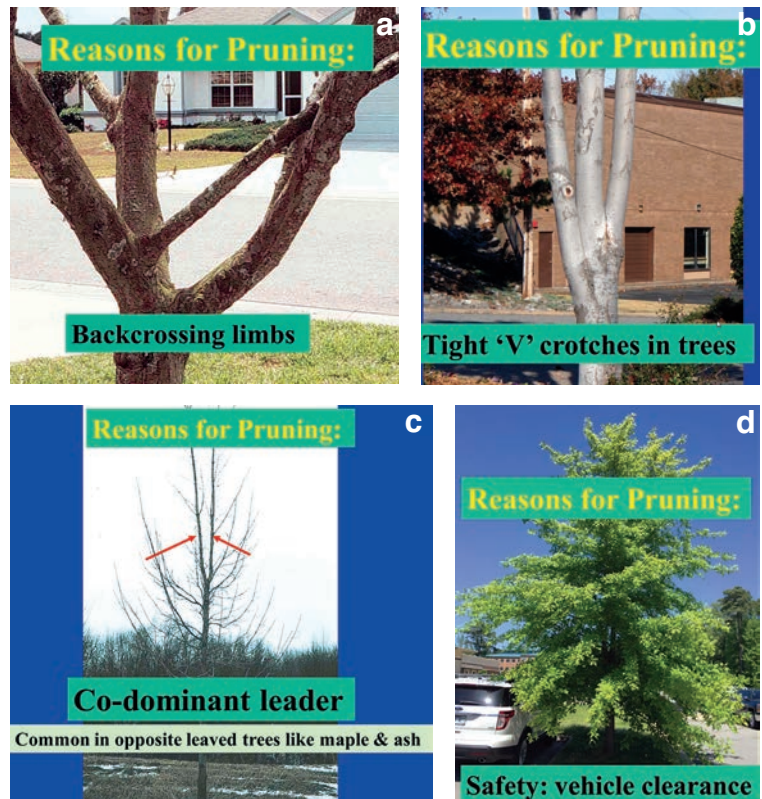
WHY am I pruning?

Gardeners should have a reason to prune. Pruning because your neighbors are pruning a similar tree does not mean you also have to prune. Some valid reasons for pruning include:

- 1) To remove dead or diseased wood
- 2) To eliminate structural problems such as crossing branches, tight 'V' crotches or co-dominant leaders (Figures 1a, 1b and 1c)
- 3) To eliminate hazards such as branches blocking a sidewalk or road (Figure 1d)

FIGURE 1. Common reasons to prune a tree include:

- a) backcrossing limbs
- b) tight 'V' crotches
- c) co-dominant leaders
- d) low hanging branches blocking pathways



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- 4) To reduce tree size
- 5) Shaping a tree to fit a specific landscape style
- 6) Plant rejuvenation

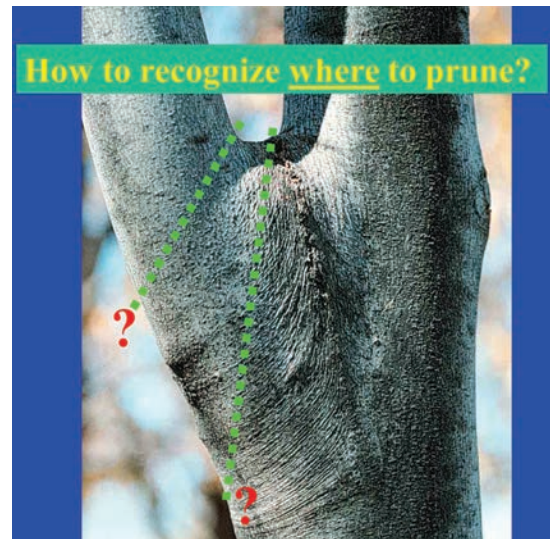
WHEN should I prune?

If your reason for pruning is 1, 2 or 3, the time to prune is now. These reasons supersede any other reason. The time to prune for reasons 4 through 6 is more complicated and influenced by many factors. In general, the ideal time of year to prune is just before rapid growth in the early spring when the tree is still dormant. At this time when a deciduous tree has no leaves, it is easy to see the branching structure, there is less weight because there are no leaves and we are past the period when ice/snow damage may have occurred that would require corrective pruning. When pruned in early spring, trees such as maples, birch, yellowwood, elm and dogwood may bleed sap from the pruning cuts. Bleeding (Figure 2) in these trees is a minor aesthetic problem that can be avoided by pruning in early summer or midwinter.



FIGURE 2. Sap flow 'bleeding' on yellowwood (left) and Eastern flowering dogwood (right).

How do I know where to make my pruning cut?



The connection between a lateral branch and the main trunk or branch is complex. The goal is to remove the branch with minimal impact on the tissues associated with the main trunk or branch (Figure 3a). Imagine that tissues associated with the main trunk are separate from those in a lateral branch (Figure 3b). Think of the main trunk as having its own 'systems' separate from those in the lateral branch. At the branch/trunk union, there is a transition region from trunk 'systems' to those of the lateral branch. This transition region is called the **branch collar** (Figure 3c). An ideal pruning cut would be just outside this branch collar (Figure 3d) and would remove only branch tissue.

In a very few cases, it is obvious where to make the proper pruning cut, thanks to a visible branch collar (Figure 4a). However, in the majority of cases, we make an educated guess where the proper

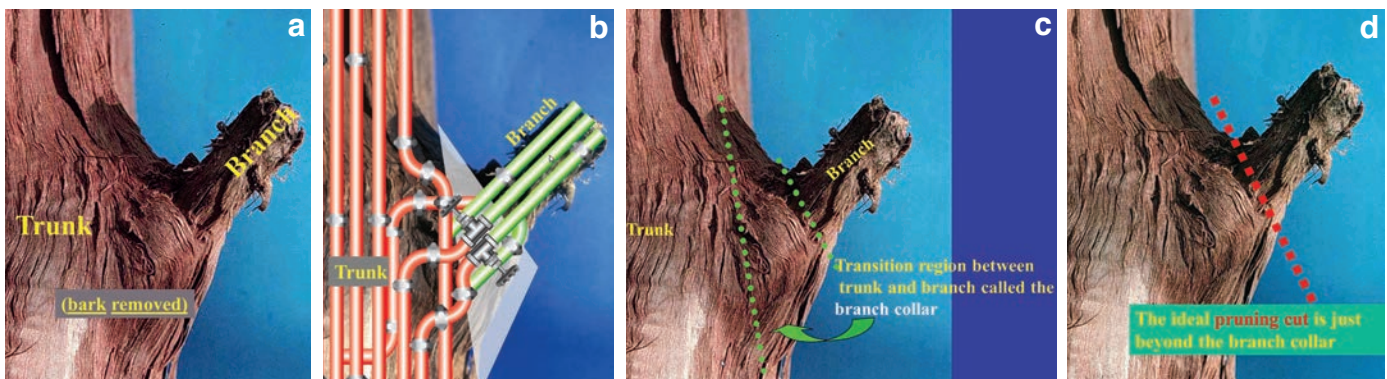


FIGURE 3. In all of these images, the bark has been removed to reveal the underlying wood (secondary xylem) of the main trunk and lateral branch (a). Although an extreme oversimplification, imagine plumbing systems running throughout the trunk and lateral branch (b). The transition region from the trunk and lateral branch is called the branch collar (c). To remove the branch, the ideal pruning cut would be outside the branch collar (d).

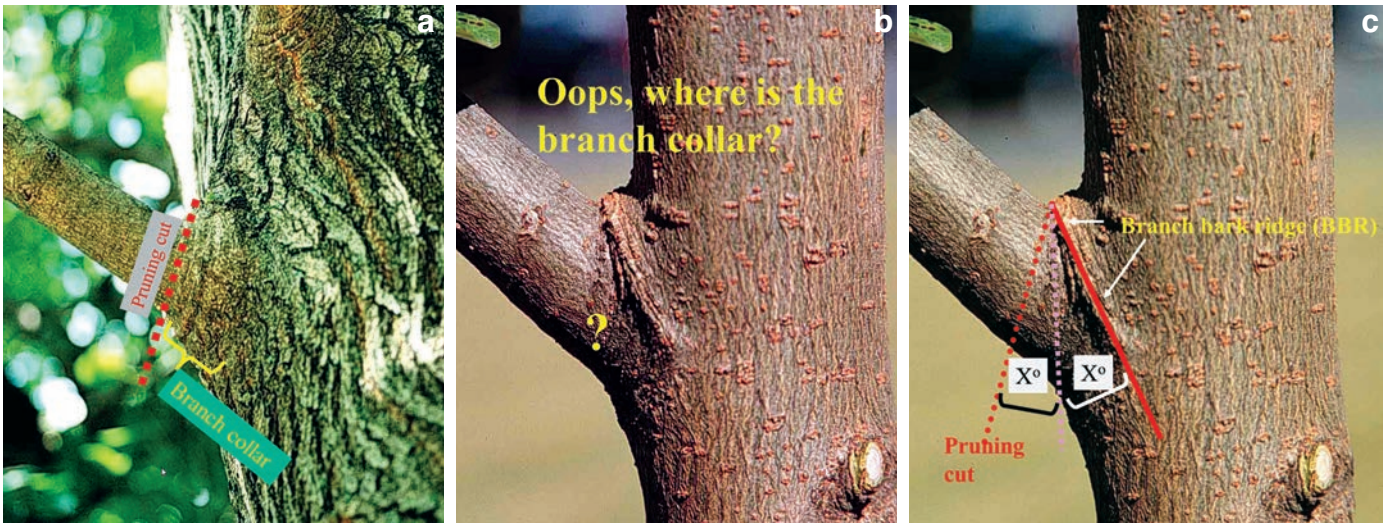


FIGURE 4. In the case of a mulberry tree, the branch collar (i.e., swollen area at the base of some branches) is very visible, making the location for the ideal pruning cut easier (a). However, in the majority of trees, a branch collar is not readily identified (b). Use the branch bark ridge to estimate where the pruning cut should be made (c).

pruning cut should be made (Figure 4b). Using the **branch bark ridge** as a reference point, you can estimate where the pruning cut should be made (Figure 4c).

Process of removing a large branch

The problem in safely removing a large branch is that most people underestimate the weight of a branch, especially when leaves are present. The process to safely remove a large branch involves

three steps (Figure 5). The **first cut** is made about 12 inches from the trunk, starting on the underside of the lateral branch and cutting upwards about one-fourth the diameter of the branch. The purpose of this first cut is to prevent tearing of bark as the heavy branch begins to fall from the second cut. The **second cut** will be made **OUTSIDE** the first cut, approximately 1 inch, and you will continue cutting downward until the branch falls away. *Before making this cut, make sure you have identified a safety zone for yourself and your ladder if one is used.* After removing

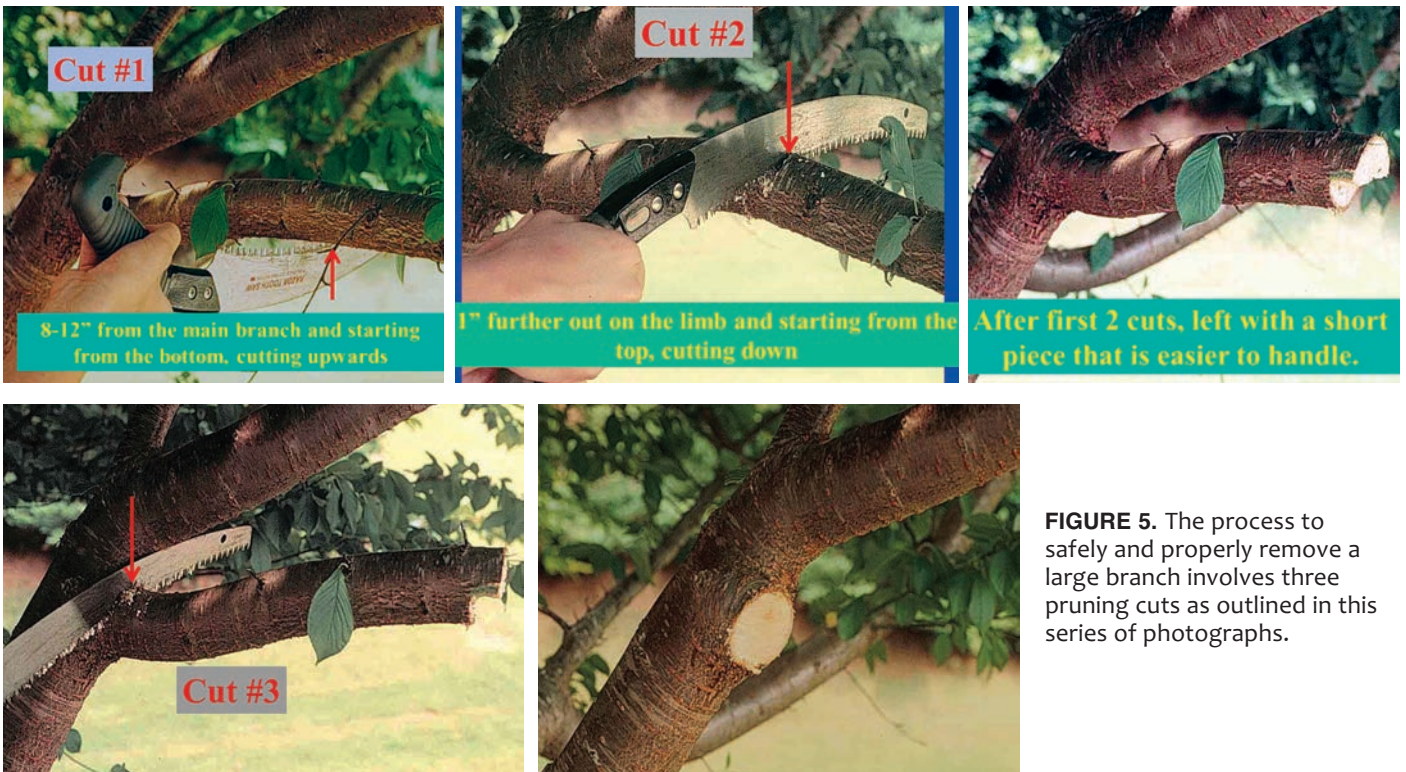


FIGURE 5. The process to safely and properly remove a large branch involves three pruning cuts as outlined in this series of photographs.

most of the branch weight, make the final cut near the trunk or branch source following the pruning cut location rules discussed above. Using this three-step process avoids tearing into trunk tissue (Figure 6).



FIGURE 6. Left: A poor pruning cut which exposed trunk tissue below the branch cut. This larger wound surface makes ‘wound closure’ more difficult and is more likely to result in increased tree decay. Right: Side view of a good finish pruning cut.

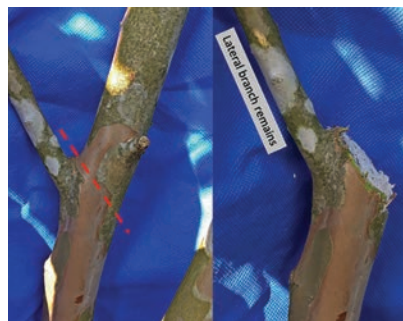
Types of pruning cuts

We need to differentiate types of pruning cuts from overall pruning techniques or outcomes. Arborists apply specific technical terms to both, but we will try to clarify in simple terms.



Thinning/removal cut: A pruning cut that removes a branch back to its point of origin.

Reduction cut: A pruning cut that decreases the length of a larger branch back to a smaller-sized lateral branch large enough to assume the terminal role. To a layperson, a ‘thinning’ cut and a ‘reduction’ cut appear similar; however, from a technical detail standpoint, they are different. Both types of pruning



cuts are made at the ‘point of attachment,’ but what is removed is almost the inverse of the other method.

Heading cut: A cut that reduces the length of a stem or branch back to a point **without regard** to the position or diameter of nearby lateral branches. Heading cuts often result in a proliferation of structurally weak and vigorous shoots called water sprouts.



Pruning techniques

Crown thinning can be used to reduce the overall size and yet maintain the overall natural shape of the tree. This procedure involves selectively removing the entire branch back to the point of origin. The point of branch origin or attachment may be back to a lateral branch or to the main trunk. A rule of thumb is to not remove more than one-quarter of the entire living crown at one time.

Topping, in contrast to crown thinning, is an arbitrary cutting back of tree branches with no regard for position relative to the branch origin. Topping is a haircut and **is not an acceptable pruning practice**.



Pollarding is a defined tree pruning technique, but it has **extremely limited** uses. Pollarding is initiated using a heading cut, which causes a flush of water sprouts from the abruptly cut surface. In subsequent years on a regular basis (typically annually), the vigorous shoots are removed back to the ‘callus knob.’ Pollarding is an extreme example

of pruning that creates a desired, unnatural appearance. It is frequently used on London planetrees (*Platanus × acerifolia*).



Crown raising is the technique of gradually removing branches from the bottom of the crown to provide clearance. Although it may be used on established mature trees, it is often more likely associated with pruning young trees, which is discussed below.

Pruning to train young trees

After a tree is planted, it will require some pruning to direct the future growth and establish a framework that will reduce future pruning needs and tree failure. Trees are a long-term investment, and they benefit from small amounts of critical pruning when young to establish a foundation for future growth. There are at least two objectives of what is called structural pruning. The first objective is to develop and maintain a single, dominant leader when it is appropriate for that tree species. A single central leader is typical and desired for an oak or maple; however, it is not typical for a honeylocust.

The second objective is to distribute branches around the leader to reduce the likelihood of future

structural weakness in the crown. Clusters of similarly sized lateral branches originating from the same region on a trunk often result in structural weakness long term. For tree species with opposite leaf arrangement, such as maple and ash, it is very common to have forked branches arising from a common point and having nearly identical diameter. Referred to as 'co-dominant' leaders, these are structurally weak due to included bark between them (Figure 7). It is much easier to correct tight 'V' crotches while a tree is young, thus avoiding near certain structural problems long term.

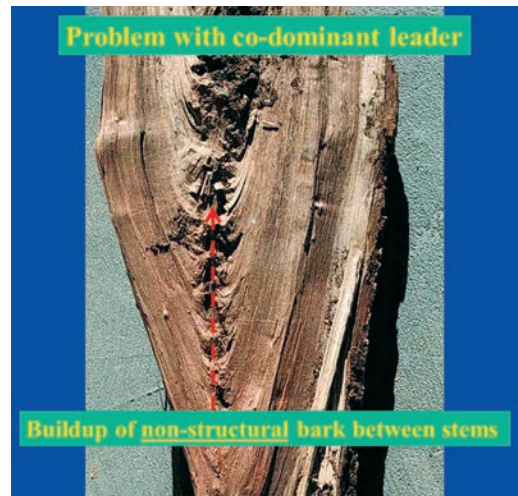
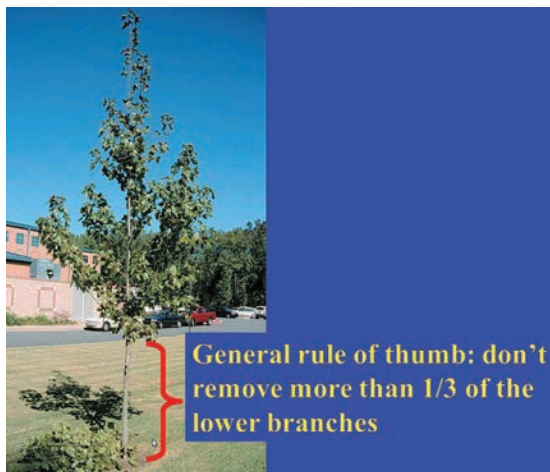


FIGURE 7. A buildup of non-structural bark between tight 'V' crotches results in a structural weakness that often results in branch failure long term.

Another objective of pruning young trees is crown raising, which is a gradual process of removing lower branches as the trees grow to set the ultimate clearance requirement for the location and tree species. The removal of lower branches over time is a balancing act between the presence of these branches, which contribute to trunk growth, and removing appropriately sized lateral branches to minimize wound size. **A general rule is to avoid removing more than one-third of the lower branches at one time.** Common sense would tell you that if the branch



Right amount of pruning



Too much pruning

being removed is significantly smaller than the branch it is attached to, the smaller the wound size and thus faster the time to complete 'wound closure.'

Treating pruning cuts

Research has shown that there is no value in applying pruning paint to cut surfaces.



Pruning equipment

At least four tools are needed for pruning. They include a by-pass hand pruner, a lopper, small saw (bow, curved or straight blade pruning saw) and a pair of leather gloves.



Printed by University of Arkansas Cooperative Extension Service Printing Services.

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