



PURDUE UNIVERSITY

# Trees Need a Proper Start – Prune Them Right

*Rita McKenzie and Harvey Holt, Urban Forestry Specialists,  
Forestry and Natural Resources*

The shape of a tree is determined by genetics. Trees with a central stem, for example, have a pyramid shape pattern called excurrent growth (Figure 1). Round shaped trees have a decurrent growth pattern (Figure 2). The pruner should consider these natural shapes before beginning the job. A properly pruned tree should maintain its natural shape.



Figure 1. Excurrent Growth    Figure 2. Decurrent Growth

Understanding tree biology, knowing important terms, and using that knowledge when pruning, produces a properly pruned tree.

## Pruning Terms

Proper pruning is the removal of a branch where two branches meet or at a node.

The following terms highlighted in Figures 3 and 4 are used to determine how and where to make cuts.

**Branch collar** is the area just below the junction where two branches meet. Stem wood and branch wood intersect at this point.

**Branch bark ridge** is the raised area located in the junction where two branches meet.

**Stem or trunk wood** forms as the trunk or stem grows in diameter.

**Branch wood** forms as an individual branch grows in length and diameter.

**Node** is the point on the branch from where a leaf or flower grows.

**Internode** is the space between nodes.

**CODIT (Compartmentalization of Decay in Trees)** is the tree's natural process of walling off or compartmentalizing wounds to prevent decay from spreading into the tree from the point of the wound.

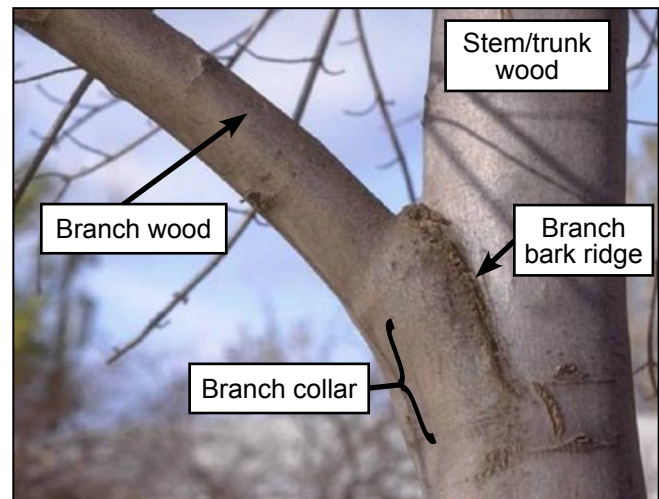


Figure 3. Important tree biology terms.

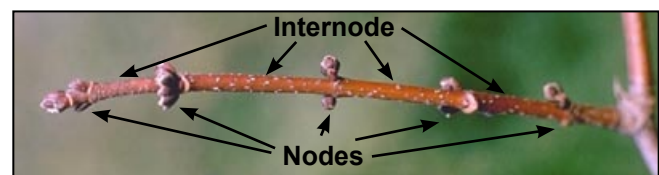


Figure 4. Biology terms located on a branch.

## Removing a Branch

Use the three-cut method to remove a branch (Figure 5).

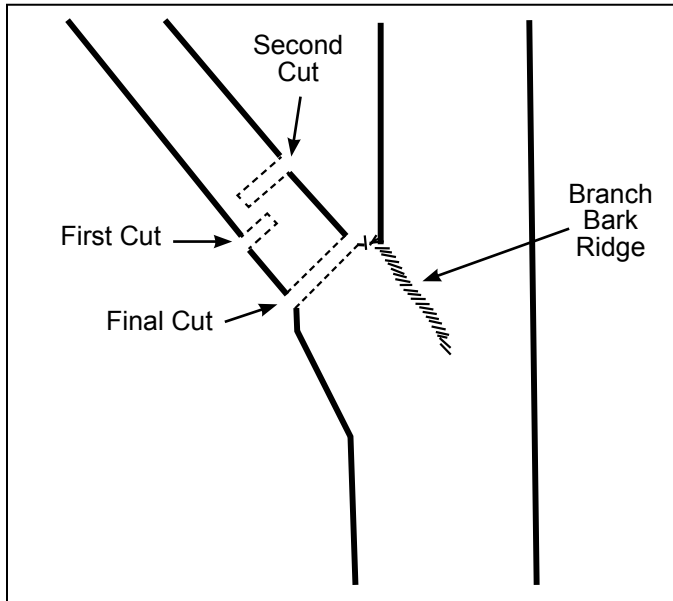


Figure 5. Terms for removing a branch.

**First Cut.** About 1 foot from the point where two branches meet, make a cut about  $\frac{1}{3}$  of the way through the underside of the branch. This cut prevents the bark from tearing when the second cut is made. Bark tearing leaves a large wound on the trunk which invites insects and disease to the open wound (Figure 6).

**Second Cut.** About 2-3 inches beyond the first cut, remove the branch. This cut removes branch weight in preparation for the final cut (Figure 5).

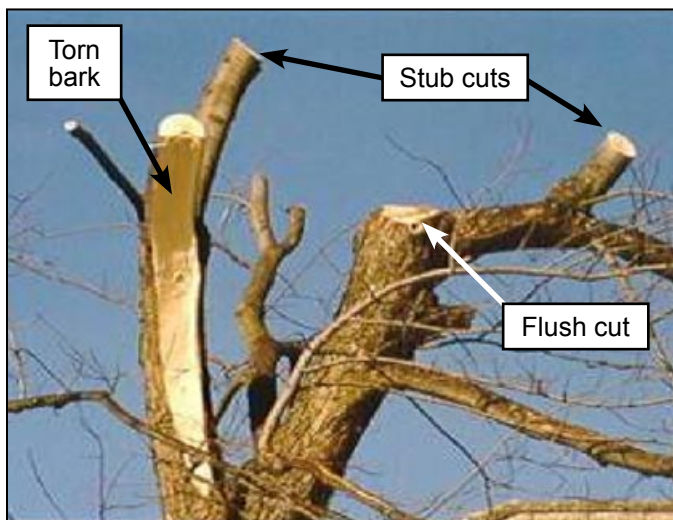


Figure 6. Improper pruning cuts.

**Final Cut.** Remove the remaining stub by cutting just outside the branch collar (Figure 5). If a stub is left on the tree, it becomes an entrance point for insects, disease, and fungi. The tree cannot compartmentalize or wall off the stub (Figure 6).

## Improper Pruning Practices

**Flush cut** is created by removal of a branch inside the branch collar. This cut is flush with the trunk leaving a large wound which invites insects, fungi, and diseases (Figure 6).

**Lion-tailing** is the removal of all branches in the interior portion of the canopy, leaving small branches and leaves at the tip of the branch instead of even distribution of branches and leaves along the full length of the limb (Figure 7). The branch needs the leaves to supply the tree with carbohydrates produced in photosynthesis.



Figure 7. Lion-tailing removes all interior branches

**Topping** is the indiscriminate removal of branches between internodes and not where branches meet. The tree responds by producing many sprouts at the point of the cut (Figure 8).

**Shearing** is a technique used on shrubs (Figure 9). It creates a flat topped tree that ignores the tree's natural growth.





Figure 8. Multiple sprouts produced from a topping cut.



Figure 9. Shearing ignores the natural shape of the tree.



Figure 10. Wound paint on a large tree.

**Wound paint** is material used to cover a wound. It creates a moist and dark environment between the paint and the wound that is perfect for fungi and diseases (Figure 10).

### Proper Tool Selection

Well sharpened by-pass pruners should be used rather than anvil pruners. Anvil pruners crush tender tissue. Hand saws are very useful for limbs too large for pruners.

Using a chainsaw on very small branches often leads to bark damage. Never attempt to use a chain saw without reading the manual, obtaining qualified instructions, and wearing the appropriate personal protection equipment (hard hat, hearing and eye protection, chaps, and steel toed boots).

### For more information contact:

Purdue University, Forestry and Natural Resources Extension - 765-494-3583, [mckenzie@purdue.edu](mailto:mckenzie@purdue.edu), [holth@purdue.edu](mailto:holth@purdue.edu), or <http://www.agriculture.purdue.edu/fnr/Extension/extension.html>.