Prune Your Trees

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Prune early, prune often, prune for safety

In Your Backyard Woods

Why should I prune?
Safety, tree health, aesthetics, and value are the primary reasons for pruning trees.
A single pruning can accomplish more than one objective and save time.

Safety
Pruning for safety removes branches that could fall and cause personal injury or property damage. (See the Backyard Woods Tip Sheet on Identify and Manage Hazardous Defects in Your Trees for more information.) Removing low branches in fire-prone areas can prevent a ground fire from climbing into the tops (crowns) of the trees. (See the Backyard Woods Tip Sheet on Protect Your Property From Wildfire for more information.)

Tree health
Pruning for tree health removes diseased or insect-infested wood, thins the crown to increase airflow and reduce some pest problems, and removes crossing and rubbing branches. Removing broken or damaged limbs encourages wound closure and prevents diseases from entering the tree. Pruning encourages trees to develop a strong structure and reduces the likelihood of damage during severe weather. (See the Backyard Woods Tip Sheet on Keep Your Woods Healthy for more information.)

Aesthetics
Removing lower limbs to improve visibility in your woods and to stimulate flower production are primary reasons to prune for aesthetics. Pruning also increases the amount

of sunlight that reaches the ground, stimulating growth of wildflowers and flowering shrubs.

Value
Pruning for value increases the amount of high value wood products produced on individual trees. Pruning preferred trees produces knot-free wood. (See the Backyard Woods Tip Sheet on Help Your Preferred Trees Grow for more information) A knot is the portion of a branch that becomes incorporated within the trunk of the tree. Knots are the primary reason for reduction in lumber value. (See the Backyard Woods Tip Sheet on Generate Wood Products for more information.)

Which trees should I prune?
Prune trees that pose a safety hazard, threaten to damage property, pose a fire hazard, and will have improved health as a result of pruning. Your objectives for your backyard woods will determine whether you also prune trees that will improve the aesthetic appearance of your woods or that will have increased value for wood products as a result of pruning.

Trees that pose a safety hazard or threaten property
For safety, focus on trees that are in your immediate backyard, and trees that are in high-use areas of your backyard woods, such as near a bench, picnic table, fire pit, or trail. To reduce the risk of property damage, focus on trees that could fall on a vehicle, building, or other structure. Examine trees once a year and after severe storms, being sure to check all parts and sides. Remove any broken branches lodged in the tree crown. Look for and prune branches with the following:

- Dead wood
- A crack that extends through the bark and into the wood
- A weak V-shaped union with the stem or another branch
- Decay—wood that is soft, or crumbly, or a cavity where wood is missing
- A canker—a localized area of sunken or missing bark

(See the Backyard Woods Tip Sheet on Identify and Manage Hazardous Defects in Your Trees for more information.)

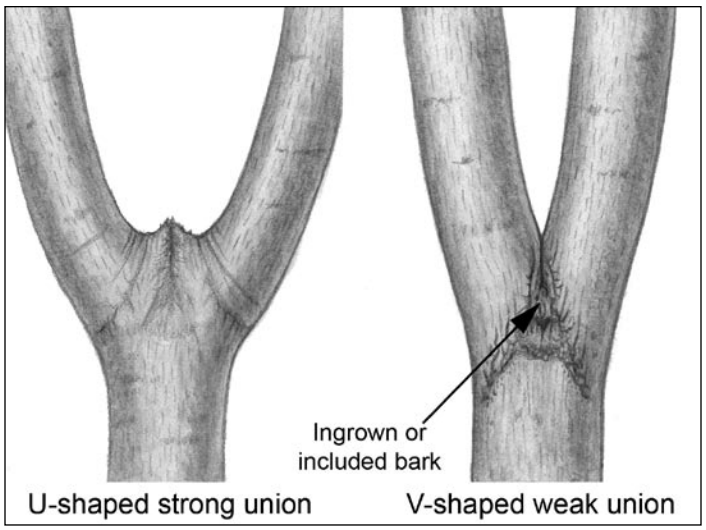
Trees that pose a fire hazard
Focus on trees in a safety zone around your home. This zone should be at least 30 feet wide on level or gently sloping ground, and 100 feet or more on slope grades 30 percent or greater down hill from all structures. Outside the safety zone, prune branches near power lines and outbuildings, low hanging limbs, and dead branches. (See the Backyard Woods Tip Sheet on Protect Your Property From Wildfire for more information.)

Trees with health problems
Pruning trees with diseased and insect-infested branches may help alleviate the problem. For example, prune infected lower branches of white pines to reduce damage due to white pine blister rust. (See the Backyard Woods Tip Sheet on Keep Your Woods Healthy for more information.)

Trees with aesthetic value
If having an aesthetically pleasing woods is one of your objectives, evaluate and prune trees that block your view and thin crowns of broadleaf trees to increase flower production. (See the Backyard Woods Tip Sheet on Help Your Preferred Trees Grow for more information.)

Trees with wood products value
If your objectives include producing high-value timber or veneer, prune preferred trees that have good local markets for these products. Pruning is a long-term investment. Even under good conditions, it takes 20 years to add a 5-inch layer of clear wood on a tree. (See the Backyard Woods Tip Sheet on Generate Wood Products for more information.)

How big should a tree be when I start?
Begin pruning broadleaf trees, such as oak, maple, and hickory for strong structure shortly after they are planted. Retain branches with strong U-shaped attachments.



The shape of branch unions on young broadleaf trees indicates their future strength.

Remove branches with narrow V-shaped attachments because they are weak and could fail when the tree matures. As two branches with narrow V-shaped angles of attachment grow, they produce a wedge of inward-rolled bark between them. This included bark prevents strong branch attachment, which often causes a crack at the point below where the branches meet. Removal of one branch will prevent a potential failure of the branch attachment when they are much larger.

Needleleaf trees, such as pine, spruce, and fir that have branches in whorls around the trunk, rarely need structural thinning except to restore a dominant leader. This becomes necessary occasionally, when the leader—branch at the top of the tree—is damaged and multiple branches form at the top of the tree. Select the strongest branch from among them and remove the competing branches to prevent the development of a bushy or forked tree.

Producing strong structure or value or both is the emphasis when pruning young trees. Pruning goals shift to maintaining safety and tree health as trees mature.

Begin pruning for fire protection when trees are 3 to 5 inches in diameter at breast height (d.b.h.). (Breast height is about 4½ feet above the ground.) Through periodic pruning remove all branches to a height of 6 to 10 feet.

Begin pruning needleleaf trees for aesthetics when they are 3 to 5 inches d.b.h. Through periodic pruning remove all branches until the desired view is obtained. Flowering broadleaf trees can be pruned at any age. Crowns should be thinned to increase sunlight penetration and air movement throughout the crown. Avoid unnecessary stress to the tree by removing no more than one-quarter of the living crown.

Begin pruning for value in broadleaf trees such as walnut, oaks, and hickory when they reach 2 to 8 d.b.h. Begin pruning needleleaf trees when they reach 3-5 inches in d.b.h. The sooner you start, the greater the amount of high quality knot-free wood is produced. Usually, it is uneconomical to prune trees larger than 10 inches in diameter. Continue pruning all live and dead lower branches until the trunk is free of branches to a height of 17-18.5 feet. Be sure to leave 50 percent of the total tree height in live branches to maintain healthy tree growth. Following these guidelines and reaching the desired branch-free height will require pruning the tree more than once.

Measure the diameter of trees by making a diameter tape.

Take a regular flexible tape measure and make a mark every 3.14 inches (the first mark is "1," the second "2," and so on).

Use these marks to measure tree diameter.

Place the tape measure around a tree at a height about 4½ feet above the ground.

If the tree measures 3 marks that you made on the tape, then the diameter is 3 inches.

At what time of year do I prune?
Prune needeleaf trees at any time of the year, but pruning during the dormant season may minimize sap and resin flow from cut branches.

Prune most broadleaf trees in the dormant season, when tree structure is easy to see. Pruning during the dormant season maximizes wound closure during the following growing season, reduces the chance of transmitting disease, and discourages excessive sap flow from wounds. Recent wounds and the chemical scents they emit can actually attract insects that spread tree diseases, especially in oaks and elms. Usually, the best time to prune oaks and elms is late fall and winter. Check with your local Cooperative Extension Service or arborist for additional information for your area.

Remove dead branches at any time of the year.

Which pruning tool should I use?
The choice of tool depends largely on the size of branches to be pruned and the amount of pruning to be done. Use hand pruners on small branches (under 1 inch diameter). Cut larger branches (up to 2 inches) with lopping shears. Hand pruners and lopping shears are available in anvil and by-pass cutting styles. The anvil style cuts the branch

between a straight blade and an anvil or block. The by-pass style uses a curved cutting blade that slides past a broader blade, much like a scissors. To prevent tearing or crushing of branches, the by-pass style cutting blade is the best.

Use a pruning saw for branches 2 to 4 inches in diameter. Unlike most other saws, pruning saws are designed to cut on the "pull-stroke."

A chain saw is preferred when pruning branches larger than 4 inches. Safety dictates not using a chain saw above shoulder height and using additional safety equipment. (See the Backyard Woods Tip Sheet on Work Safely with a Chain Saw for more information.) To avoid the need to use a chain saw, prune when branches are small. Also, a small branch leaves a small wound and generally heals faster.

To cut branches beyond reach use a pole pruner. Generally, pole pruners have a pruning head (similar to a lopping sheer) and a pruning saw. The pruning head can cut branches up to 1.5 inches; and once again, the by-pass style is preferred.

Sanitizing tools helps prevent the spread of disease from infected to healthy trees. Tools become contaminated when they come into contact with fungi, bacteria, viruses, and other microorganisms that cause disease in trees. Pathogens need some way of entering the tree to cause disease, and fresh wounds are perfect places for infections to begin.

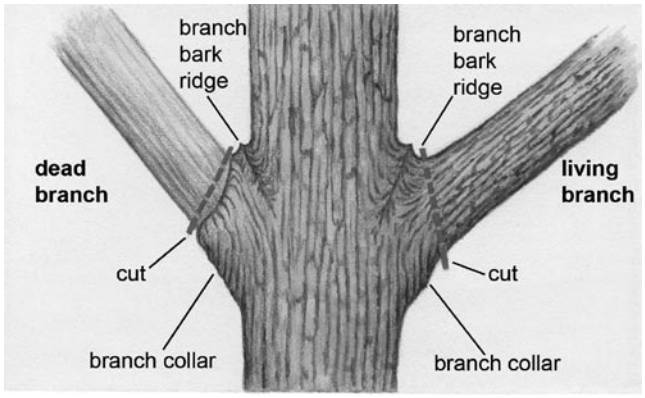
Sanitize your tools by using either 70 percent denatured alcohol or a solution of 1 part liquid household bleach to 9 parts water. Before making each cut, immerse the tool in the solution for 1 to 2 minutes, and wipe wood particles from the cutting surface. Bleach is corrosive to metal surfaces, so when you are finished pruning clean tools thoroughly with soap and water.

Tool sanitation is not needed during the dormant season.

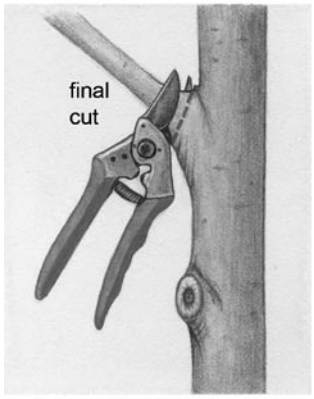
Where and how do I make pruning cuts?
Make pruning cuts at a node, the point at which one branch or twig attaches to another. In spring growth begins at buds, and twigs grow until a new node is formed. Remove only branch tissue and take care not to damage stem tissue so it will not decay, and so the wound will heal more effectively.

To find the proper place to cut a branch, look for the branch collar that grows from the stem tissue at the outside of the branch. On the upper branch surface, there is usually a bark ridge that runs (more or less) parallel to the branch angle, along the stem of the tree. A proper pruning cut leaves both the branch bark ridge and the branch collar intact.

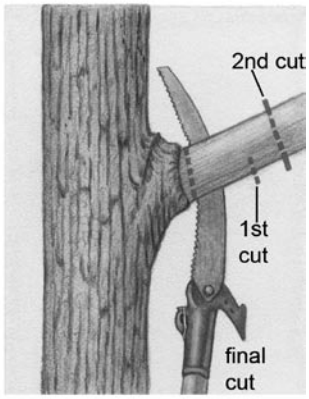
You can evaluate the quality of pruning cuts after one growing season. A concentric ring of woundwood forms from proper pruning cuts. Improper cuts made inside the branch bark ridge or branch collar result in pronounced development of woundwood on the sides of the pruning wounds and very little woundwood on the top or bottom. A cut too far from the stem leaves a branch stub, and wound closure is delayed because the woundwood must grow over the stub.



Targetting the cut



Cutting a small branch



Cutting a larger branch

Branches large enough to require saws should be supported with one hand while the cuts are made. If the branch is too large to support, make a three-step pruning cut to prevent bark ripping.

1. The first cut is a shallow notch on the underside of the branch, outside the branch collar. This cut prevents the falling branch from tearing the stem tissue.
2. Make the second cut outside the first cut, all the way through the branch, leaving a short stub.
3. Cut the stub just outside the branch bark ridge and branch collar, completing the operation.

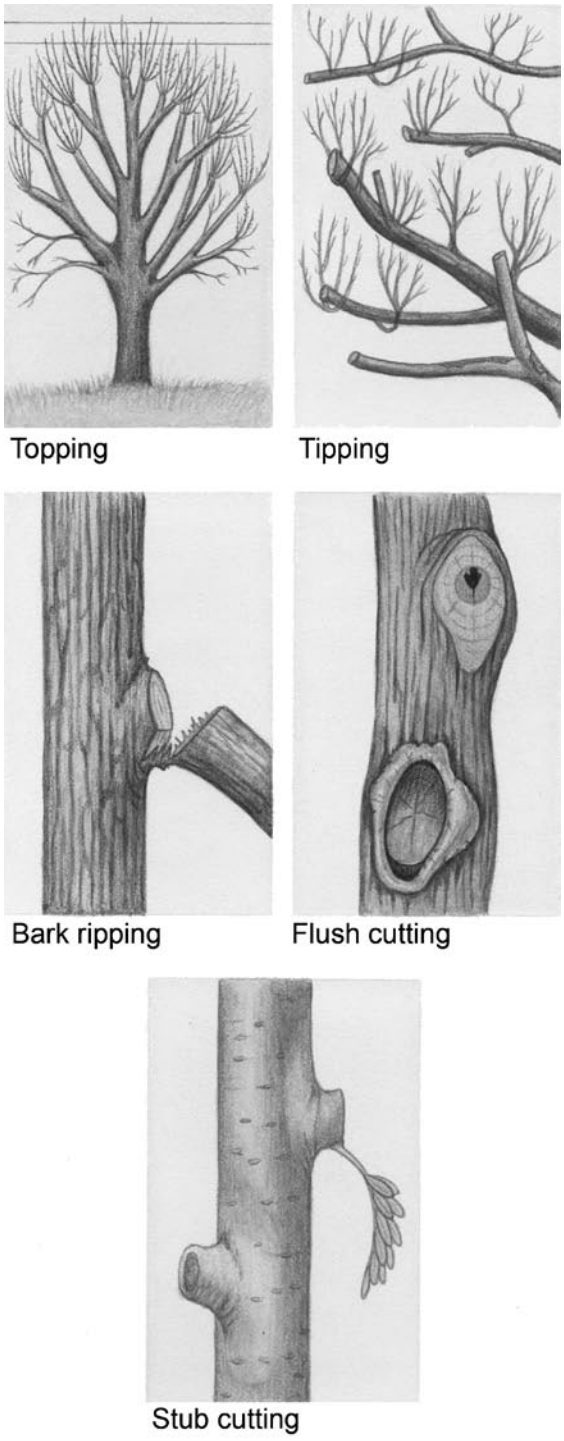
Prune dead branches the same way you would live branches. Making the correct cut is usually easy because the branch collar and the branch bark ridge continue to grow and can be distinguished from the dead branch. Make the pruning cut just outside the ring of woundwood tissue that has formed, being careful not to cause unnecessary injury. Large dead branches should be supported with one hand or cut with the three-step method.

Can I harm trees by pruning?
Topping and tipping are pruning practices you should not use. Topping is the pruning of large upright branches to reduce the height of a tree. Tipping is the cutting of lateral branches to reduce crown width. Both practices result in the death of the cut branch back to the next lateral branch below and the development of numerous sprouts. These sprouts are weakly attached to the stem and eventually will be supported by a decaying branch.

Improper pruning cuts cause unnecessary injury and bark ripping. Flush cuts injure stem tissues and can result in decay. Stub cuts delay wound closure and can provide entry to canker fungi, delaying or preventing woundwood formation.

Avoid producing "lion's tails" (tufts of branches and foliage at the ends of branches) caused by removing all inner lateral branches and foliage. Lion's tails can result in sunscalding (bark damage caused by freezing and thawing), abundant branch sprouting, and weak branch structure and breakage.

Should I treat tree wounds?
With the exceptions noted below, do not apply wound dressing. Tree sap, gums, and resins are the natural means by which trees combat invasion by diseases. Although unsightly, sap flow from pruning wounds generally is not harmful.



A proper pruning cut does not damage either the branch bark ridge or the branch collar.

Wound dressings will not stop decay or cure infectious diseases. They may actually interfere with the protective benefits of tree gums and resins, and trap moisture behind the dressing and promote the growth of wood-decaying fungi.

The only benefit of wound dressing, such as you can buy at farm and garden stores, is to prevent introduction of oak wilt and Dutch elm disease. When oaks and elms are wounded accidentally or by necessary pruning during the critical time of the year (usually spring for oaks, and the entire growing season for elms), apply some type of dressing to the wound immediately after it is created.

In the Forest

Trees are pruned in public and private forests to increase tree value. Pruning is the forester's "value added" effort, because it produces higher quality boards and veneer. Pruning is time consuming and, therefore, expensive. Foresters select only the highest value tree species on the best growing sites for pruning. They only prune trees selected for harvest. Finally, they keep good records on pruned trees so they can be marketed for the value obtained by pruning.

Although pruning is done primarily to enhance tree value, it can fulfill other objectives. Pruning in large forests increases fire resistance by removing lower branches that spread fire to tops of trees. Pruning improves walking access into dense tree stands. Pruning also lessens the impact of blister rust in young white pine stands, and reduces incidence of leaf diseases, like Swiss needle cast, that thrives in humid environments.

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