

TREES FOR YOUR HOME

A REFERENCE GUIDE TO GROWING HEALTHY TREES



Alabama
Urban Forestry
Association

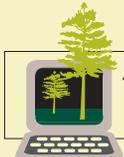


Using This Guide

While trees provide aesthetic and economic benefits for your home, they require a certain amount of care to remain beautiful and healthy. *Trees For Your Home* is a reference for anyone with a question or interest in planting and maintaining trees. Whether you're doing the work yourself or planning to hire a professional, this booklet gives answers to many questions on caring for your trees. You'll also find references to other resources for more in-depth information, such as AUFA's website, authoritative books, and articles. Trees help make a house a home – we'd like to help you enjoy the experience of growing and keeping your trees healthy.

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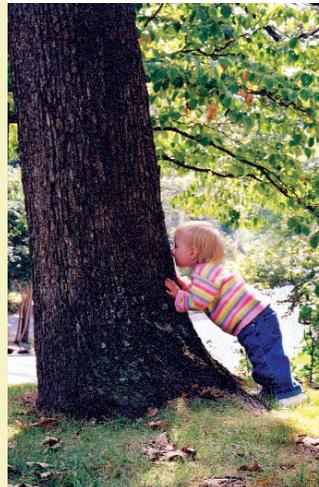
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Trees are a vital part of the urban landscape. They enhance our quality of life by providing shade and beauty for our neighborhoods. That’s why it is in everyone’s interest to keep our trees safe, healthy, attractive and plentiful.

Trees affect how people feel and act. They improve the quality of the air we breathe and provide a multitude of health benefits – to individuals and to the community as a whole. Trees help maintain the ecological balance. For example, they reduce run-off in urban and suburban settings, which in turn reduces pollutants and sediment in waterways.

Researchers at the Human Environment Research Laboratory of the University of Illinois at Urbana-Champaign studied the effect of trees on domestic violence at a public housing project in Chicago. Their work indicates that the presence of trees contributes to a sense of community by creating gathering places, and also seems to reduce the incidence of crime in urban settings.

Researchers at NASA and elsewhere have proven that trees help reduce heating and cooling costs in urban “heat islands.” Ongoing studies like these continue to make us more aware of the value of trees in our lives.



No one questions that trees are important, making us feel better and making our communities more attractive for both residents and visitors. Yet as clear as this amenity value is, trees have many other real values. How do we determine the true worth of trees in the urban environment?

There are a number of ways to estimate a tree’s dollar value. You can get a rough idea of a small tree’s value by pricing the cost of labor and materials to replace it at a local nursery. The International Society of Arboriculture has developed ways of estimating the dollar

value of larger trees as landscape elements by using a formula that factors in the tree’s species, size, location and condition. An experienced arborist is the best person to perform this type of evaluation.



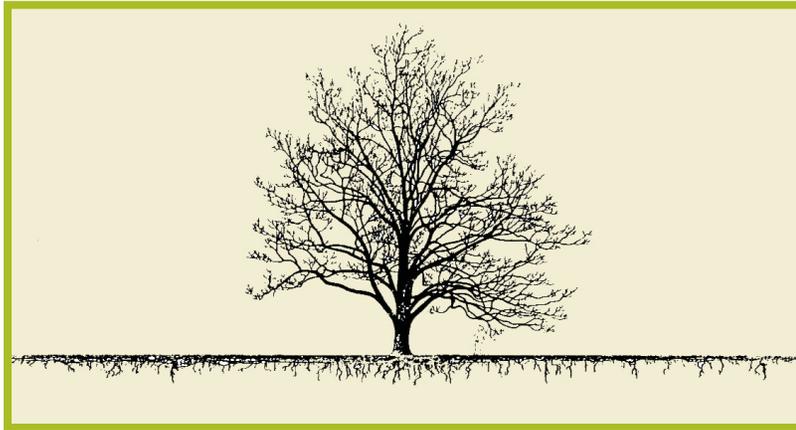


Figure 1 – Size relationship of tree and root system



UNDERSTANDING TREES

The more you know about trees, the easier and more economical it will be for you to keep your trees healthy. This general information will help you understand the structure and growth cycle of trees, whether you are planting, pruning, building on a wooded lot, hiring an arborist to do tree work, or just admiring your favorite tree.

Here are two key things to remember about the root system of most trees: 1) They usually extend out well beyond the tree's branch tips; and 2) They are mostly confined to the top 12 to 18 inches of soil— especially in heavy clay soils. This is because the roots must have oxygen from the air. Figure 1 gives you a good idea of the size relationship of the roots and the rest of the tree. Not shown, however, are many important details, such as the root hairs and the colonies of beneficial fungus among the roots.

Growth in the tree's trunk and branches comes from the cambium zone (shown in figure 2 in green), which lays down new layers of wood over what was formed in previous years. The oldest wood, and the least important, is in the center. The outer layers of wood are alive, with tubular cells that carry water, minerals, and other materials within the trunk, and other cells that store energy.

Outside the cambium zone is the inner bark, also composed of tubular cells. These cells carry dissolved sugar and growth-regulating hormones, made by the leaves, downward through the branches and trunk toward the roots.

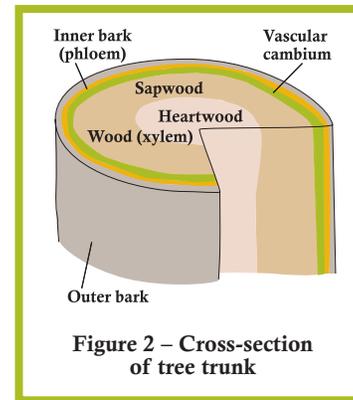


Figure 2 – Cross-section of tree trunk





TREE INJURIES AND DECAY

The trunk, branches, and roots of a healthy tree grow in diameter **from the outside outward**. But when a tree is injured, decay-causing organisms (usually fungi) can gain access to the inside of the tree and damage its strength and health. The tree's internal defenses – some pre-existing and others created in response to an injury – slow down the spread of decay while the tree adds strength by growing outward. The decay may be covered over by new growth on the outside, compensating somewhat for the loss of strength, but the decay remains. **Tree wounds do not heal.**

Some or all of the wood present at the time of a serious injury may rot. As decay advances, the center of the tree may become hollow, making it weaker and more susceptible to further damage. But wood produced after the injury is protected from decay by a barrier zone, created by the tree in response to the injury. This barrier zone is very resistant to decay, although it can be damaged by later injuries to the tree.

The protective reactions of trees come at the cost of stored energy. To keep trees strong, take care not to damage them needlessly, and work with their

natural defenses. An important thing to remember is: **Take care of tree problems early in the tree's life when the wounds are easy for the tree to deal with — and when the work is easiest and least expensive for you.**

BRANCHES VS. FORKS

Whether you're pruning a tree or choosing a new tree to plant, it helps to understand the difference between a true branch and a fork, and to recognize what is called "included bark."

A well-formed branch (figure 3) has a "collar" at its base that resembles the knuckle at the base of your thumb. This collar is the key to the strength of the branch attachment and also provides the tree's protection from decay. **When you prune a tree, the final cut must leave this branch collar undamaged.**



Figure 3 –A true branch, well-formed and well-attached



Figure 4 –A fork with included bark

A well-attached branch also has an outward turning "bark-ridge" which looks like a tiny mountain range running across the top of the attachment.

In contrast, if the bark of a fork or a poorly attached branch disappears down into the crotch, it is called "included bark" (see figure 4).

Forks with included bark have much less strength, no collar, no bark ridge, and little natural protection from decay. Forks often cause serious trouble for trees and the people around them.

TREES & CONSTRUCTION – BUILDING WITH NATURE

CONSTRUCTION CHALLENGES

Trees on a wooded construction site usually have been ignored for many years. Because these trees have not been maintained, insects, disease problems and weather damage may be extensive. Yet these trees are expected to survive the pressures of construction and become safe, healthy and attractive features of the new landscape.

Construction is stressful to existing trees because it can cause many problems, including:

- Damage to trunk and branches.
- Direct root damage through grade changes, paving, trenching, etc.
- Soil disturbance, including topsoil removal, compaction, etc.
- Micro-climate alterations involving water, sunlight, and wind exposure.

These problems can be aggravated by poor tree-care practices such as topping and flush cutting of branches. The tree's difficulties may then be compounded by problems such as mower and string-trimmer damage, extremes of moisture, and trenching for irrigation systems.

To keep these problems to a minimum, it is important to take care in selecting trees for preservation, and in preparing the construction site.

SELECTING TREES FOR PRESERVATION

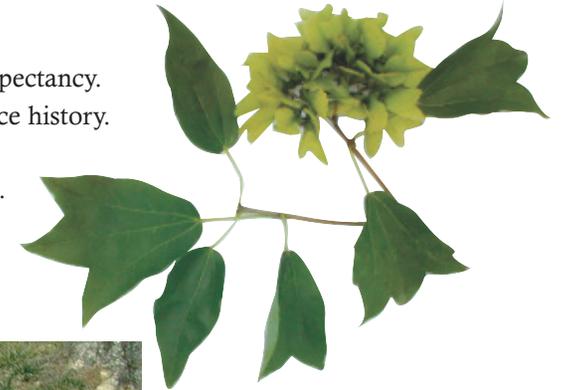
Before any site preparations or construction, map the location, species, size, condition and, if possible, ground



elevation of each important tree— not just big trees but also important younger trees and other unusual plants. Get help on this from an experienced arborist. This information will help you make good decisions about the trees on your land, which in turn can save you money.

One common mistake is favoring a few “monarch” trees at the expense of great numbers of more resilient small-to-medium trees. To some extent, trees are more or less valuable according to their species. But the final decision must be made on the basis of each tree's condition, with these considerations:

- Structure of the tree.
- Hazards and useful life expectancy.
- Condition and maintenance history.
- Compatibility with construction requirements.
- Aesthetic and practical characteristics.



In general, you should favor:

- Healthy specimens with good structure.
- Abuse-tolerant species.
- Trees with a diameter of 6-24 inches.
- Open-grown trees, or clusters of trees with open-grown trees around the perimeter.

When choosing trees for preservation, avoid:

- Trees that will become too large for the site.
- Species noted for weak or easily-decayed wood.
- A tendency toward weak forks.
- Poorly attached branches.

- A tendency toward surface roots (this may have more to do with soil and water than with the trees themselves).
- Susceptibility to serious insect and disease problems.
- Messiness, especially with fruit-bearing trees.
- Special problems, including thorns, susceptibility to vandalism or injury (bark that is thin or easily peeled), poisonous parts, etc.

Many of these problems are linked to specific tree species, so check lists of “problem trees” in your area. The U.S. Forest Service has researched various species’ tolerance to construction-related abuse. Of those found in Alabama, the most tolerant species include: elm, hackberry, cherry, hickory and red cedar; the most sensitive was American beech. Oaks (both white and red) and loblolly pine came out about in the middle.

They also studied the storm-breakage of 24 tree species in the Southeast. Of the trees grown in our area, the toughest are baldcypress, gums, most of the oak species and sugar maple. The most fragile are soft maples (*i.e.* silver, box-elder, red), dogwood, yellowpoplar and cherry. Again, loblolly pine ranked near the middle.

PRESERVING EXISTING TREES

As your site plan develops, include the best of the trees already on the site and remove the high-risk trees. When you add new trees to your site, use as many of the following design elements as possible, as they have been found to make home sites more livable:

- Place the building to take advantage of site features, as well as to fit needs of the occupants.
- Use deciduous trees around south and west exposures.
- Use evergreen windbreaks between houses and prevailing winter winds.
- Channel prevailing summer wind across the building.



- In developing planting plans don’t shade areas that need light, such as gardens and solar collectors.
- Trench *around* or tunnel *under* the roots of saved trees.

PREPARING THE CONSTRUCTION SITE

The actual preparations for construction must include several vital steps:

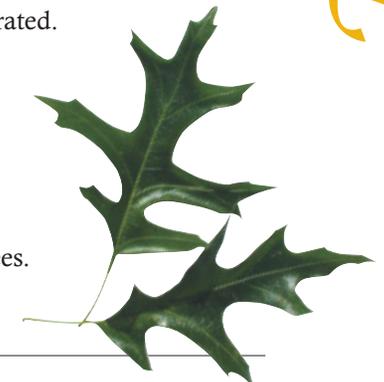
- Get technical assistance in the early planning stages, to determine the kind, condition, life expectancy, and usefulness of the trees present.
- Establish cooperation with contractors

and workers. Educate them about your tree plan. You may want to include a reasonable tree protection penalty in the construction contract to ensure the contractors’ commitment.

- With your builder’s help, determine where the building footprint, the lawn, the driveway, and utility entries will go. Be prepared to lose all trees within construction zones, or shift the construction zone to protect essential trees.
- Fence off the area outside the construction zone to prevent any traffic, parking, materials storage, equipment washing and maintenance, paving, and other harmful activities in the root zone of trees to be saved.
- Totally clear the building footprint, the driveway corridor, etc.
- Remove other unwanted trees – carefully.
- When possible, do not clear undergrowth in the tree-save zone. Avoid using a landscaping box or other scraper that will disturb the topsoil, since this is where the trees’ feeder roots are concentrated.

Take care to avoid:

- Grade cuts and fills in important trees’ root zone.
- Mechanical damage to the trees being saved.
- Traffic over root zones.
- Unnecessary or uncontrolled fires.
- Attachment of signs, fences, utility boxes, etc., to trees.
- Improper handling and dumping of toxic materials.





NEW TREES – GET THEM OFF TO A GOOD START

When choosing a new tree, you want one that is:

- **Attractive.** This depends largely on the species and variety, but you can influence it by choosing high-quality nursery stock, by planting well, and by giving your tree special first-year care.
- **Useful.** A tree can provide shade, soil stabilization, seasonal color, summertime or year-round screening, protection from winter winds, flowers, bright berries and evergreen foliage for the holidays, and many other benefits.
- **Healthy and safe.**
- **Reasonably fast growing.** While you may be tempted to buy a so-called “fast-growing tree,” this often means a bargain tree such as a silver maple, boxelder or hybrid poplar. With these species, what you gain in growth rate you usually lose in strength. A better approach is to get a good tree that meets your needs, then plant it and care for it well.
- **Easy and economical to maintain.**

All in all, what you get depends on what kind of tree you buy, how you plant it, and how you care for it. Before you decide on a species, determine what you want the tree to do for you. Then get the right tree for the job. Seek professional assistance if you need it, and remember that this is an investment, not just an ornament.

KNOW YOUR SITE BEFORE SELECTING NEW TREES

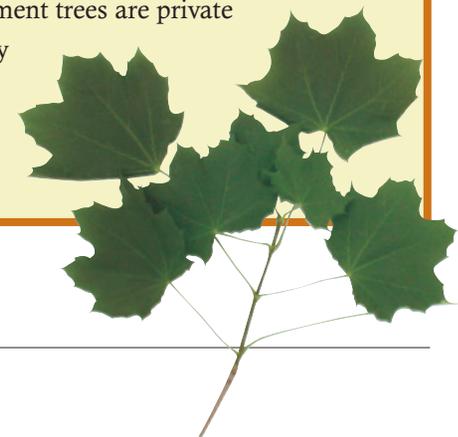
Site factors that contribute to the success or failure of your tree include:

- Soil, moisture, drainage, sunlight direction and intensity, seasonal wind flows, and overall climate.
- The need for privacy, blocking out headlights, neighbors and things you would rather not have to look at. Plantings seldom do much to screen out noise, but research indicates that if you can’t see the source of the noise (especially traffic), the sounds are much less bothersome.
- Possible conflicts with buildings, pavement, easements (see box below), overhead wires, underground utilities and other plants.

To avoid having large-growing trees severely pruned for power line clearance, plant them at least 20 feet back from the nearest electric line. Smaller-growing trees and shrubs can be closer, or even under the power lines. But always think in terms of the plants’ mature size.

Once you’ve evaluated the site, get what you really need. Make a profile and see what trees fit it. Get help in identifying and locating the right trees. Look around your neighborhood to see what kinds of trees are growing well on similar sites. Then learn all you can about them and make sure they fit your situation. Do some reading on the preferences of various kinds of trees before you make any decisions about what to buy and plant.

WHAT IS AN EASEMENT? An easement is not a piece of property — it is someone’s right to use a certain part of someone else’s property for limited purposes such as drainage, utility distribution, or access. Land under a “utility and drainage easement” is not city property. It is usually part of a larger private property. In such a case, the easement trees are private trees, but a city or utility company may have authority to remove or severely prune easement trees.
See p. 15 for more details.



SELECT QUALITY NURSERY STOCK

Before you buy a tree, check it for the following:

- Medium- to large-growing trees should have a single trunk with no forks. You should be able to see all of the bark in each branch angle. Look for the bark ridge and collar at the base of each branch.
- A full, balanced crown, with well-formed branches.
- The root ball should be appropriate to the size of the tree, and neither broken apart nor separated from the tree's roots.
- The tree's trunk diameter or height should be as advertised.



- The tree should have a tag identifying its species, and preferably the name of the nursery that grew it.

What to avoid when selecting a new tree:

Poor Form

- Inadequate root development.
- V-shaped forks or narrow branch angles that are likely to develop included bark.

Damage and Wounds

- Open wounds on the trunk, branches, or roots.
- Cracks or bark splits surrounded by in-rolled callus.
- Dead, cracked, broken or flush-cut major branches.
- Separating grafts.

Poor Preparation

- Flush-cut pruning scars, or branch stubs left at pruning.
- Evidence of topping.

- Pruning done in an effort to “shape up” a derelict tree or shrub.
- An improperly prepared root ball. Use a probe to insure that the main roots are within about an inch of the top of the root ball.

Signs Of Health Problems

- A sparse or yellowing crown.
- Abnormal sunken places in the bark, especially below branches.
- Signs or symptoms of harmful insects, *i.e.* eggs or damage.
- Signs or symptoms of fungi or other disease organisms, *i.e.* visible fungus growths or damage.

Before you buy a container-grown tree, gently slide it from its pot to be sure the roots are healthy and not grown into a solid mass.

PLANT WITH CARE FOR BEST RESULTS

Trees and construction don't mix easily. That's why so many trees die prematurely in cities. Your goal when you plant a tree is to fool the tree into thinking it's not in the city! Here's how:

1. Create a root zone (figure 5)—not just a hole. Break up the soil, 12" to 18" deep, in a space 3 to 5 times as wide as the tree's root ball. The objective is to de-compact the soil so new roots can spread sideways out into the surrounding soil and create a strong base for the tree. This becomes especially important in times of drought, flooding, and storms. If you think soil amendments are needed, spread them across the entire planting area, and till them in well.

2. Examine the sides of the root ball, or use a probe to locate the roots within the root ball. Then, in the middle of the prepared root zone, dig a hole deep enough so the main roots will be just below the surrounding soil (figure 6).

3. Set the tree in place, and turn it to suit you. Remove all the ties, burlap and other ball-wrapping materials from the top half of the root ball. This encourages good contact between the soil of the root ball and the surrounding soil.

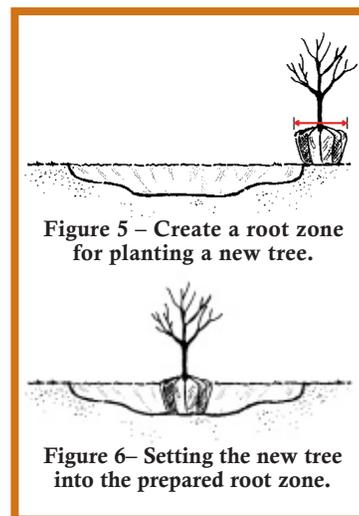


Figure 5 – Create a root zone for planting a new tree.

Figure 6– Setting the new tree into the prepared root zone.

4. Backfill around the root ball. Use water to float out air pockets that can cause the roots to dry out and the soil to sink.

5. Firm and level the soil, but don't recompact it solidly (figure 7).

6. Don't replace sod over the root-zone.

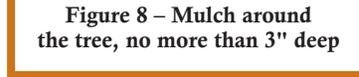
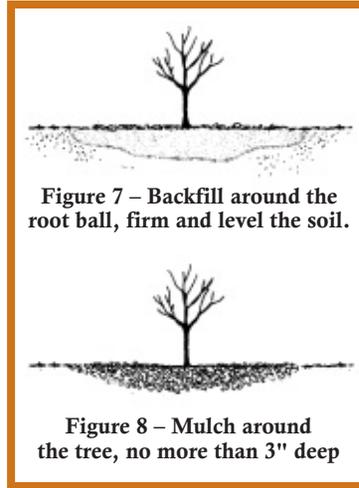
7. Remove stem-wrapping materials. These are intended for protection during shipping and handling, but they can cause problems if you leave them in place.

8. Mulch (figure 8) takes the place of the natural layer of leaf-litter found on the forest floor, and its benefits to the tree are many. It is especially important during the tree's first few years of life, particularly for a freestanding lawn tree. Mulch should be made of a coarsely chopped organic material like pine needles or shredded pine bark, applied no more than 3 inches deep – and never piled up around the base of the tree.

Staking is a controversial subject. There is much disagreement about whether it should be done at all, and if so how, and with what materials. The goal of staking is to hold the root ball still so that new roots can become established in the surrounding soil, but to allow the trunk to sway a little, promoting good taper toward its base. Here are some guidelines for staking:

- On trees that may be unstable during strong winds, set two 5- to 8-foot stakes (depending on the height of the tree) firmly into the ground. Don't drive them through the root ball.
- Install padded supports that are just tight enough to prevent the tree from tipping, and low enough to permit some swaying motion.
- Remove all supports about a year after planting.

Water is critical. Trees need water in every season. Nature may provide enough rainfall, but in dry weather extra watering may be needed. If the soil does not feel cool and moist, give the root zone a good soaking. This is especially important during the first year after planting!



PRUNING NEW TREES

A new tree needs time to become established, so major pruning should not be performed until about a year after planting.

Limit immediate actions to the following:

- Trim loose bark from around any stem wounds. To promote proper closure, the tips of bark wounds should be rounded, not pointed.
- Prune out badly damaged branches from the newly planted tree.
- **A newly planted tree should never be topped** or receive other major pruning.

MAINTENANCE AFTER THE FIRST YEAR

In the second full growing season after planting, soon after the leaves reach full size, address the tree's problems, beginning with the most serious, but don't prune out more than 25% of the crown in any one year.

- Start by pruning out deadwood and damaged branches.
- Eliminate the weaker side of any fork in the main trunk. Prune out branches with included bark that disappears down into the crotch.
- Prune out limbs that are crossed or rubbing, growing back toward the center of the crown, or interfering with better branches nearby.
- Don't worry if the tree appears somewhat lopsided for a time after pruning. A healthy, vigorous tree will quickly fill in gaps in its crown, and grow stem wood that straightens out minor crooks and bends.



ESTABLISHED TREES – KEEP THEM GROWING STRONG

HAZARD TREES – RECOGNIZE TROUBLE EARLY

Every tree-owner should learn to recognize potential tree hazards. Especially in this lawsuit-prone age, you owe this duty to your family, to your guests, and to yourself. You may need a professional tree expert in making decisions about certain hazards, but you are your own first line of defense.

Be alert for:

- Trees in contact with (or near) power lines.
- Weak tree structure – especially trunks or branches with “included bark” (see explanation on p. 3).
- Deadwood.
- “Hangers” – branches that have partially broken free but have not fallen.
- Cracks or splits in the trunk, branches, or branch attachments.
- A “lodged” tree, supported by other trees nearby.
- A “leaner,” whose roots are tearing from the ground, or whose top is not growing straight upward.
- Root damage from construction, trenching, grade change (cut or fill), mower injury, pavement repair, etc.
- Severe pruning or topping.
- Dieback of leaves, twigs, and branches.
- Signs of decay are: rotten places or cavities in the wood of the trunk or larger branches, and mushrooms or conks on the trunk, branches, or soil over the root system.



Solutions to hazardous tree situations include:

- Move potential “targets” – objects that might be damaged or draw people to spend time under defective trees.
- Prune the tree, and keep it healthy by watering and fertilization.
- Cable or brace the tree (see p. 14).
- Remove the tree.

A trained and certified arborist can help you with the details of recognizing and resolving these situations.

PRUNING – THE KEY TO TREE HEALTH

PRUNING BASICS

Proper care of your trees is critical to their continued health and beauty, and pruning is a key element of this work.

Here are some basic concepts and definitions to help you:

- **Making collar cuts** means pruning so that the final cut of each branch removal runs just outside the branch collar without damaging it (see p. 3).
- **Pruning to lateral branches** is done to allow these branches to assume the dominant role formerly held by the part being pruned off.
- **Directional pruning** means planning each pruning cut so that the lateral branch left below the cut will grow in an acceptable direction.
- **Gradual pruning** means removing no more than one-quarter of the tree’s living crown in any year. More severe pruning creates unnecessary stress, susceptibility to insect damage and disease, and the production of many poorly-attached sprouts.
- **Crown thinning** is the selective removal of branches in the interest of safety, health, appearance or usefulness.



- **Crown raising** refers to removing the lowest branches from the crown. This is usually done in cities to provide clearance and visibility for vehicles, pedestrians, buildings, traffic signals, etc., though there may be other benefits as well. To maintain the tree's health, the tree's crown should not be reduced to less than 2/3 of the tree's overall height.
- **Crown reduction** means cutting back the main leader of a tree. If done by so-called drop-crotch pruning, it works to some extent with a tree's natural defenses. It is, however, a drastic measure that has a heavy impact on the tree. The larger the cut, the more decay will enter the trunk. Consider it a last-ditch effort to preserve a tree that is too large or too hazardous for its location. (See the section on topping, p. 12)

PRUNING CUTS – THE 3-STEP METHOD

The first two cuts eliminate most of the weight of the branch:

1. Cut upward until the saw binds slightly in the cut.
2. Cut downward about 1" from the first cut. The wood will split between the two cuts. Be sure the piece you are cutting off is small enough so you can control it.
3. The third cut removes the stub without hurting the natural protection in the base of the branch. Make this cut just outside the branch collar. Don't hit the bark ridge.

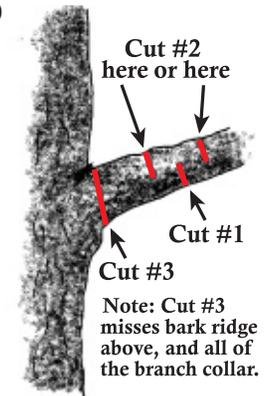


Figure 9– Pruning cuts

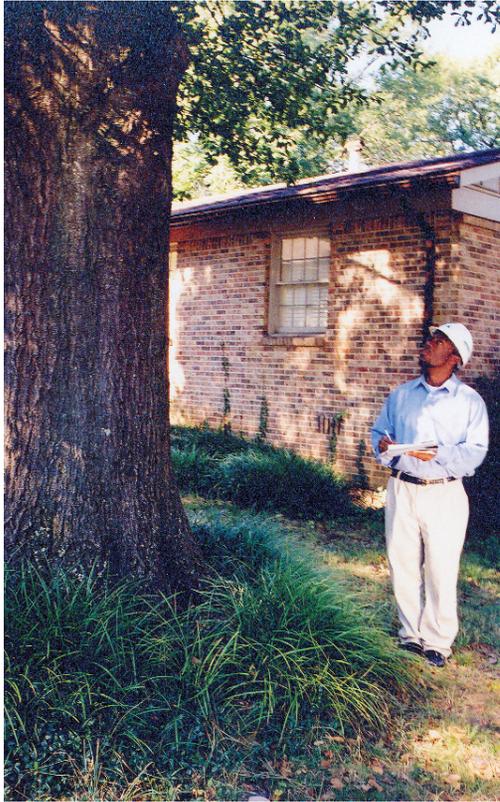


GOOD PRUNING PRACTICES

Remember, pruning cuts in living wood are wounds. The larger the wound, the more difficult it is for the tree to prevent decay. Have a good reason for every pruning cut — especially if the wound will be over 2 inches in diameter. Here are some simple rules to follow for effective pruning:

- Assess how a tree will be pruned from the top down.
- Favor branches with strong, U-shaped angles of attachment.
- Remove branches with weak, V-shaped angles of attachment and/or included bark, preferably when they are still small.

- Ideally, branches should be evenly spaced up the trunk of a young tree.
- Remove any branch that rubs or crosses another branch, or grows back toward the interior of the crown.
- Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.
- Avoid “lion-tailing” – pruning off all the secondary branches except at the tip of a main branch. This causes branches to whip violently during strong winds.
- Maintain live branches on at least the upper two-thirds of a tree’s total height. Removing too many lower branches will hinder the development of a strong stem. Remove basal sprouts and vigorous trunk sprouts. If allowed to remain, these can grow into co-dominant trunks with included bark in the forks.
- Use crown reduction pruning only when absolutely necessary. Make the pruning cut at a lateral branch that is at least one-third the diameter of the stem to be removed.
- To prune living branches, it is important to prevent the bark from tearing below the pruning cut. Use the three-cut method (figure 9) to ensure a proper cut.
- **To prune dead branches**, make the pruning cut just outside the living wood, being careful to cut only dead wood. Support large dead branches by hand or with a rope. Use the three-cut method (figure 9) when needed. Dead branches can be removed any time of the year.



PRUNING PRACTICES THAT HURT TREES

The following pruning practices are harmful to trees and should be avoided or used only as a last resort:

- **Topping** refers to pruning a large upright trunk or branch between lateral branches, to reduce crown size. If topping seems to be the only remedy for

a tree problem, it is preferable to remove the tree and replace it with one better suited to the site. For more details on topping, see p. 12.

- **Tipping** means cutting off the ends of horizontal branches, to reduce crown width.

Topping and tipping can both result in dieback down to the next lateral branch, or development of epicormic sprouts. Such sprouts are weakly attached to the stem, and grow from a stub that is likely to die back.

- **Failure to use the three-cut method** often causes unnecessary injury and bark ripping (see p. 10).
- **Flush cuts** injure stem tissues and can result in serious decay.
- **Stub cuts** delay wound closure, and can provide entry for fungi that may kill the cambium, and create cankers or wood decay.

PRUNING PRIORITIES

The primary consideration in pruning must be safety. First, remove:

- Deadwood.
- Branches that are cracked, diseased, insect-damaged or declining.
- Branches that interfere with visibility for vehicles or pedestrians.
- Forks or branches likely to develop included bark.

Never prune trees that are touching or near utility lines; instead contact your local utility company.

The tree’s health should be your next pruning priority. Look for branches that are crossed, rubbing, or growing back into the crown; suppressed branches in the space of better branches; and branches that restrict air flow and light penetration into the crown.

Keep the tree’s appearance in mind. Look for opportunities to enhance the tree’s natural form and character, shade, flower production, and other qualities.

Favor branches that contribute to a strong structure.



TOPPING—THE BEGINNING OF THE END OF A TREE

People often “top” trees, thinking that this improves them.

Sometimes there may be short-term benefits from topping, but in the long run it does much more harm than good. To begin with, the appearance of a topped tree is offensive to most people. But the real problems involve the tree’s health and safety. Because of the way trees grow, topping starts processes that create future problems for the tree.

- First, topping stimulates sprouts to grow from just below the topping cut. This makes some people believe that topping rejuvenates the tree. But these sprouts grow from the outer layer of wood just under the bark, so they are very poorly attached. They are much more likely to break off under load than a branch that has formed and developed normally.
- Second, a topped tree has no way to keep rot from spreading down through wood below the topping cut. Even in species with decay-resistant heartwood, the sapwood begins to rot out, undermining the newly-formed sprouts. As it spreads downward, this rot joins with other pockets of decay, weakening the trunk and the branches attached to it.



Figure 10 – Topping

- Topping often removes a large part of the tree’s live crown. This stimulates the tree to replace the lost leaf area by producing many new shoots. This depletes the tree’s stored energy reserves, but few of these shoots are located so as to create a strong and attractive growth pattern. And to make matters worse, the weakened tree becomes more attractive to harmful insects, but less able to deal with their damage and that of disease and decay.
- Topping also exposes the trunk and branches to weather damage in newly exposed parts of the tree. This is particularly true in very hot or very cold weather, in seasons with wide temperature swings, and when the tree’s new growth is tender. This can cause the death of living tissues within the tree, and result in the entry of insects, disease organisms, and rot within the tree.

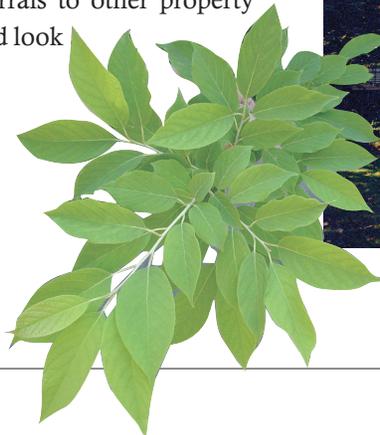
Even the least harmful topping cut, made just above a healthy side-branch, introduces decay into the trunk of the tree. Such a “drop-crotch” cut is sometimes needed to get trees away from power lines, or during initial clean-up after a storm. However, this is a last-resort procedure. When topping is the only solution for a tree problem, the best answer is usually to remove the tree and replant with a different species or in a different location.

COMMERCIAL TREE SERVICES—CALL IN THE EXPERTS

HOW TO HIRE A COMMERCIAL TREE SERVICE

If you are considering hiring a commercial tree service, it is important to educate yourself about trees so that you can make a good choice. A person with a saw can do an amazing amount of work, very quickly – but he can either improve the situation or make matters worse. A professional arborist is your best bet. Follow these guidelines to help you find quality services:

- Don't hire on the basis of price alone. Make a list of what needs to be done and get comparative prices on that work only. If an arborist points out additional work beyond what you have requested, wait to negotiate about other work until you're sure you have found the right arborist.
- Understand trees and pruning to be sure all work performed causes the least possible damage, and to preserve the tree's natural defenses. Require that the arborist comply with good pruning basics as described in this booklet.
- Look for an experienced arborist. Ask for referrals to other property owners who have used the arborist's services, and look at the trees themselves.
- Go to the website of the International Society of Arboriculture (ISA), and look for a certified arborist in your area. To become certified, an



arborist must pass a comprehensive test, and to maintain certification must stay current on new scientific developments.

- Make sure any arborist you hire has liability insurance and insurance on his employees. If the arborist is not insured, you can be responsible for an injury that occurs on your property or damage related to his work.
- Before any work begins, make sure any arborist you hire understands and follows the city sanitation department's rules for debris disposal. Contractors are usually responsible for disposing of debris from the work they do.
- Be present when the work is done, to make sure it is done correctly.

TREE SERVICES BEYOND PRUNING

Commercial tree services often recommend a variety of techniques to help trees. Before you agree to allow anyone to do this work, you should know what is involved and how it will impact your trees. Here are some common practices that are sometimes recommended:

Use of Pruning Paint.

Rather than providing protection, pruning paint can actually promote rot and disguise the spread of rot where poor pruning has been done. Proper pruning methods, which work with the tree's own defenses, are the best way to protect a tree.

Cable Reinforcements. The decision to cable a tree should never be taken lightly. Cabling is not a permanent fix and should never be a substitute for good tree management. Cabling may buy time to get replacement trees started. But a deteriorated or improperly installed cable system can create a false sense of security about a tree's stability, and can lead to disaster.

Never attempt to cable a "hopeless case" – a tree so severely damaged that it should be removed. Cabling should be done only if a thorough inspection indicates that it can be done safely, and it should always be part of a regular program of inspection and care. Cabling requires experience, a good eye for materials, and an understanding of how trees grow and how they deal with injury and decay.

Cavity Filling. This is sometimes recommended to stop rot. But it does not stop rot, and it does not prevent failure of a tree that has become hollow. The process of cleaning out the cavity almost inevitably destroys the barrier zone that the tree produced to keep rot from spreading into new wood. In addition, the concrete used to fill the cavity becomes a hazard in future tree care. If a cavity must be filled for cosmetic reasons, make sure that an expandable foam is used properly. But remember, it has no structural strength.

Special Fertilization. The best method of preserving trees is to keep them healthy through proper pruning, watering, mulching (especially while they are young), protection of the root zone, and long-term management.

When a tree's health is at risk, fertilizing with quick-release nitrogen can actually be destructive, as this will stimulate leaf growth, when what is needed is improved root growth. Often fertilization can help in correcting a tree problem, but it should be planned and carried out with the help of a person who understands soil testing and plant health.

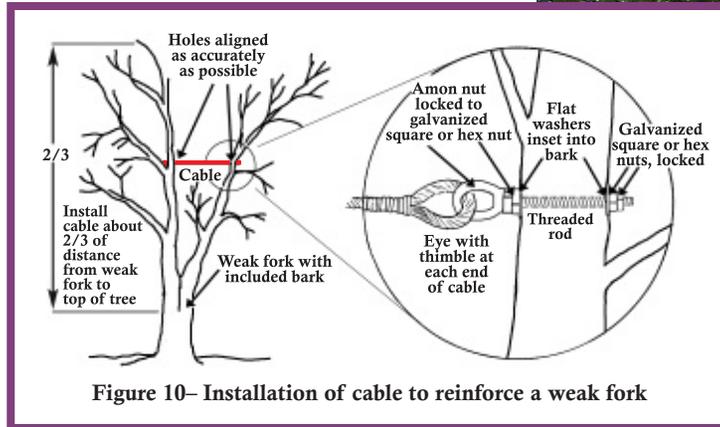
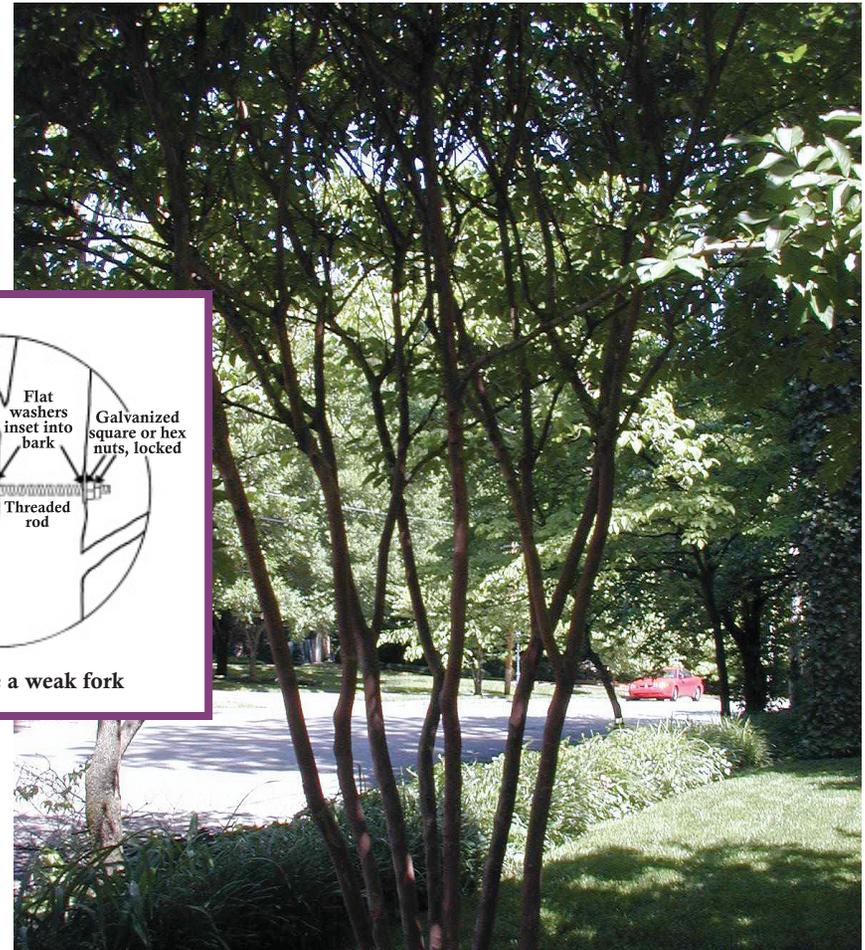


Figure 10– Installation of cable to reinforce a weak fork

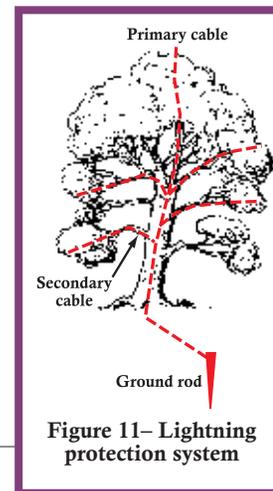


Figure 11– Lightning protection system

Lightning Protection. While it is possible to protect trees from lightning strikes, the question is whether or not it is a good idea. It is well established that a properly installed system provides effective protection. One major consideration is the cost of a lightning protection system. Often the cost of materials and installation is far less than removing and replacing an important tree. The economics of lightning protection works best for large, valuable trees of good species that are in good condition.

LAWNMOWER AND STRING-TRIMMER DAMAGE—EASY PREVENTION

Most people would never dream that you can kill a tree with a lawnmower or a string-trimmer. It usually takes a while, but it happens all the time, especially when mowing is done by unskilled or inattentive people.

The deadliest method is to knock off patches of bark around the base of the tree. Bark damage:

- breaks the “plumbing” connections that carry sugar and growth regulators from the tree’s crown to its roots,
- destroys the cambium area where growth takes place, and
- exposes the wood to drying, insect attacks, and decay.

In addition, wounds cause the tree to “wall off” the injured area. This slows the spread of rot in the tree, but energy stored as starch in the outer layers of wood is also walled off and no longer available for growth and damage control. See p. 3 for more information about how this works.

String-trimmer damage usually occurs more gradually, but it can be just as serious. Even thick bark eventually gives way to trimmer cord, leaving multiple small cuts that produce the same effects on the tree.

When this happens every week or so over a few summers, the trunk and branches lose contact with the root system, decay takes over, and the tree dies.

How do you prevent mowing damage? The best way is not to let grass and weeds get started around the base of the tree. After initial weed pulling, a layer of mulch 2-3 inches deep helps suppress new weed growth. However, there is no substitute for education of mower operators.

TREE PLACEMENT—WHOSE TREE IS IT?

Trees on public rights-of-way.

In some states, a municipality owns land designated as street right-of-way, once it has been accepted by the municipality and legally recorded. The municipality owns the trees on this land. While adjoining property owners

deserve some say in what happens to the trees on this public right-of-way, the city has the final say, especially where public safety is concerned.

Municipal responsibility for safety also includes trees growing on private land, if they extend out over public rights-of-way. Clearly, when such trees are pruned, the city must do all work according to high standards.

An easement (figure 12) is not a piece of property. It refers to someone’s right to use a designated part of someone else’s property for limited purposes such as drainage, utility distribution, or access. So trees on easement-laden land are generally the property and responsibility of the property owner. There may be limitations on what you are allowed to plant there, and a city may accept responsibility for working on easement trees only under limited conditions.

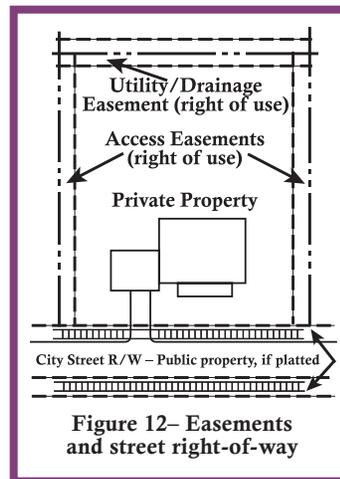


Figure 12— Easements and street right-of-way

Trees On Other People’s Property

You may have a right to prune a tree that overhangs your property, but not in such a way as to hurt the tree’s health and safety. A “boundary line tree” growing astride a property line requires the agreement of both property owners before removal or any major action that affects the tree’s well being.



Tree law is based on a combination of case law and statutes on negligence. Unfortunately, these cases are decided after trees have been damaged, so the best options are usually lost.

If there is any doubt about what needs to be done, or who is responsible for doing it, call in an arborist who can help you understand the tree’s needs. Then work toward a solution that accommodates this with the needs and preferences of all the affected property owners.

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TREE QUESTIONS? <http://www.aufa.com>

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For information about the Alabama Forests Forever car tag, call (334) 265-8733 or visit their website at <http://www.alaforestsforever.org>



ABOUT ALABAMA URBAN FORESTRY ASSOCIATION

The Alabama Urban Forestry Association is a not-for-profit organization dedicated to ensuring the highest standards in the planting, care, and protection of trees in Alabama's towns and cities. To this end, we promote quality tree care by encouraging professional certification, licensing and continuing education for arborists; we offer seminars and workshops to increase knowledge in arboriculture; and we work with public officials and concerned citizens on issues affecting urban forestry.

Our work is directed and supported through a strategic partnership with the Alabama Cooperative Extension System, Auburn University's School of Forestry and Wildlife Services, the Alabama Forestry Commission, and the U.S.D.A. Forest Service.

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