How to Care for Trees

New & Old!

Water is the single most limiting essential resource for tree survival and growth. Drought conditions can severely affect young and old trees alike leading to tree decline, pest problems, and non-recoverable damage as well as decreased rates of diameter and height growth. More than eighty percent of the variation in tree growth is because of water supply. Although providing adequate water to newly planted trees is essential, replacing older, more valuable trees lost or damaged due to lack of water can be especially difficult since they can take decades to grow to the same size. With the many social, economic and environmental benefits that trees provide, it is important to continue caring for our trees even in times of drought and tightening water restrictions.

The signs of drought stress can be observed mostly in the foliage of trees. Symptoms such as leaf drop and curling, wilting, or discolored leaves as well as dead branches are all signs of dry roots. Many people may not realize that their mature trees are stressed since these symptoms first appear in the top center portion of the canopy which may be far from view. However, it is better to apply water preventatively before these symptoms even appear.

CITY OF WOODSTOCK WATER CUSTOMERS

Due to the possible frequency of changes to water restrictions and potential bans, depending on changing weather conditions, it is recommended that you check the city's website for up to date restrictions. At the time of this printing, 1-7-13, the following information is correct.

Water Restrictions: It's The Law

Outdoor Watering

Due to significant rainfall and improved water supplies, Georgiaõs rivers and streams have rebounded. Effective June 10, 2009, the Georgia Environmental Protection Division (EPD) issued a non-drought schedule for outdoor water use for the first time since June 2006. Under a non-drought schedule, outdoor water use is allowed three days a week on assigned days using the odd and even numbered address method. The mayor and council voted at the June 15, 2009 City Council meeting to change our drought condition water restrictions in order to conform with the State's.

Schedule

- Odd-numbered addresses can water on Tuesdays, Thursdays, and Sundays.
- Even-numbered and unnumbered addresses are allowed to water on Mondays, Wednesdays, and Saturdays.
- Water use may occur at any time of the day on the assigned days, but to be water efficient, landscape watering should not occur between 10:00 am and 4:00 pm. The non-drought schedule is included in the rules for outdoor water use. No outdoor watering on Fridays is permitted.

For complete Rules, Regulations and Exemptions please go to the website, www.gaepd.org, click on ñOutdoor Water Use Scheduleò and then click on ñRules for Outdoor Water Useò. For up to date restrictions for the City of Woodstock, visit www.woodstockga.gov under the Public Works Department.

FINES FOR VIOLATIONS BY WOODSTOCK WATER CUSTOMERS ENFORCED BY CITY OF WOODSTOCK, GA.

First offense..... Warning Second offenseé é .. $500.00

Third offense. . . Mandatory court appearance and up to $1000.00 fine. May also include loss of service, which will result in additional service fees for reconnection or reinstallation.

Watering

Newly planted trees should be regularly watered for the first three years. Water newly planted trees every few days initially, then once a week depending on soil conditions and rainfall. Weekly to monthly watering should continue until the tree is established in the landscape.

Established, mature trees should be watered every 2 to 4 weeks during drought conditions by thoroughly wetting the top 12 inches of soil under the treeôs canopy. This may takes several hours or more depending on what type of application devices are available to you. If you have limited time to devote to your trees, it is better to completely wet a small area than to only wet the surface few inches over a large area. Limit pedestrian, mower and vehicle traffic under the tree.

A good slow soaking over several hours is the most efficient way to water trees. Using a soaker hose, drip irrigation, a Tree gator watering bag, or slow drip bucket which applies water at ground level is the best way to accomplish this and to avoid water loss due to evaporation or runoff. This method also focuses the water over the root area and keeps the leaves and trunk dry which can prevent opportunities for harmful pests and diseases. Donôt over water. Too much water can kill a tree by eliminating the air from the soil and suffocating the roots. The soil should not stay saturated, but have time to dry out between waterings. As a general rule, 2 gallons of water should be applied for every 1ò of tree diameter.

Insects and Diseases

Insect pests and diseases often attack trees which are already under stress or weakened. Drought, improper planting and disturbance of the root system through digging, trenching, construction activity or addition of soil to the root area can make trees more susceptible to attack. First, find out why the tree is weak and then treat the primary cause of the stress.

Examine your tree regularly, looking for anything out of the ordinary: sap coming out of the bark, smaller leaves that are less green than usual, leaf spots, branch die-back in the canopy or leaves changing color early. Mushrooms at the base of a tree can sometimes indicate root rot and may warrant removal. Consult a Certified Arborist.

Always identify the pest or disease before applying sprays to control it. Some tree pests do not require control measures and some diseases have no practical control. A fungicide will never control an insect problem. If you cannot diagnose a problem, get professional assistance from a local nurseryman, professional arborist, the Georgia Forestry Commission or the University of Georgia Cooperative Extension Service.

Mulching Trees

Mulch is a material placed over the soil surface of the treesôroot zone to maintain moisture and improve soil conditions. Mulching is one of the most beneficial things that can be done for the health and growth of a tree. A thin layer of mulch (2-4 inches deep) can improve soil structure, oxygen levels, temperature, and moisture availability.

Recommended Mulch Materials

Good quality mulch materials are usually readily available. Organic materials are preferable over inorganic materials (rock, stone, shredded rubber). When organic mulching materials decompose, they must be replenished.

- Wood chips, composted for 4 months minimum
- Pine needles
- Tree bark
- Leaf mold
- Compost

When to Mulch

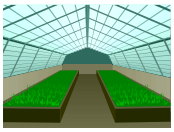
- Annually, in spring, before soil moisture decreases and temperatures increase
- Prior to, during, and after construction or infrastructure changes affecting tree roots and tree health
- After tree injury

How to Mulch

- Apply mulch in a circle covering the entire root system of a tree. Most of the fine, absorbing roots of a tree extend well beyond the tree canopy, or drip line.
- Mulching with a deep layer can be harmful! The general recommended mulching depth is 2-4 inches.
- Mulch piled high against the trunks of young trees may lead to insect and disease problems. Keep mulch at least 6 inches from the base of the tree trunk.

Benefits of Mulch

- Conservation of soil moisture
- Improvement of soil structure
- Reduction in soil compaction
- Increase in soil aeration
- Increase in nutrient availability
- Suppression of grasses and weeds
- Aesthetically pleasing
- Helps prevent damage from mowers and weed whackers



Nursery Stock - Tree Selection

The successful growth of a tree to maturity depends on the quality of the tree itself.

Do not choose a tree that has:

- Had the central leader cut back (topped).
- Damaged back or old wounds on the trunk or branches.
- Been pot bound by a container, or has girdling roots. Remove the container and inspect the root system.
- Been planted too deep in the container (trunk root flare should be obvious).
- Too small a root ball for the diameter of the trunk. Root ball diameter should be 10 to 12 inches for every inch of trunk diameter measured at 6 inches above the soil.
- Broken branches, diseased or discolored leaves or cracked bark.
- Been marked down in price (seems like a bargain). Don't expect it to do well even if it is properly planted and maintained.

Do plant and maintain a tree that:

- Meets the American Standards for Nursery Stock (ANSI) for landscape trees.
- Is the correct species for the selected planting site.

Arborday.org Tree Guide

Your source for accurate tree information.

Mature Height
The average height of the species when it reaches maturity.

- Under 24 Feet - ideal for planting near overhead utility lines because it matures below the pruning zone. Plant at least 8-10' from one-story building.
- 25-49 Feet - should be planted at least 20 feet away from overhead utility lines. Plant at least 15' from one-story building.
- 50-75 Feet - should be planted at least 50 feet away from overhead utility lines Plant at least 15' from one-story building.
- Over 75 Feet - should be planted at least 50 feet away from overhead utility lines. Plant at least 20' from one-story building.

Mature Spread
Means the average width the species might achieve when it reaches maturity.

- Small - ideal for narrow spaces
- Medium - denotes an average spread
- Wide - requires significant space

Sun
Refers to the sun/shade requirements best suited to the species.

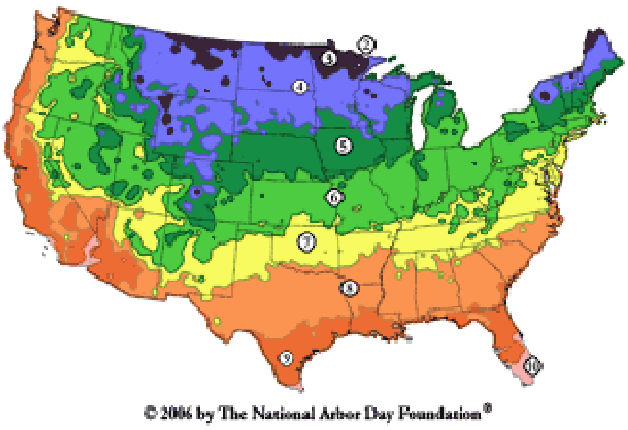
- Full Sun - shade intolerant
- Partial Shade - intermediate shade tolerance
- Full Shade - shade tolerant

Soil
The type(s) of soil for optimum growth. Kits & instruments are available from garden stores or forestry suppliers that allow you to determine the pH of your soil. Complete analysis including soil pH and the presence of nutrients can be done by commercial laboratories, your state agriculture university, or local arborists.

- Acidic - low pH
- Alkaline - high pH
- Clay - smaller soil particles with wafer-like shapes, higher ability to hold water and nutrients
- Loamy - combination of all particle sizes, with the desirable attributes of each
- Moist
- Sandy - largest soil particles with spherical and cubical shapes, better aerated and easier to work, but lowest water and nutrient holding abilities
- Silty Loam - between clay and sand in particle size, spherical and cubical in shape
- Well-drained
- Wet
- Wide Range
- Drought Tolerant

Growth Rate
Means the average speed with which the species grows. Slow growing species typically live longer than fast growing species.

- Slow
- Medium Slow
- Medium
- Medium Fast
- Fast



Hardiness Zone
Means the area of the U.S. where the species can be expected to grow in the zone's temperature extremes, as determined by the lowest average annual temperature.

Zone	Lowest Average Annual Temp. in Degrees Fahrenheit
Zone 2	-40 through -50
Zone 3	-30 through -40
Zone 4	-20 through -30
Zone 5	-10 through -20
Zone 6	0 through -10
Zone 7	10 through 0
Zone 8	20 through 10
Zone 9	30 through 20
Zone 10	40 through 30

Shape
means the typical shape of the species at maturity. If your planting site has space limitations you may want to select a columnar species. Round and v-shaped species provide the most shade.

- Round
- V-shaped
- Oval
- Prostrate
- Columnar
- Pyramidal

Planting - Basic Installation

1. The tree planting area should be tilled to a depth of 6 to 8 inches (deeper if the soil is compacted) for an area 10 times the diameter of the root ball.
2. Dig a hole 3 times the diameter of the root ball and no deeper than the ball or the container. Leave the soil at the base of the hole compacted.
3. Remove the container, cut girdling roots and place the tree in the hole. For Ball and Burlap trees, remove all ties, strapping, wire basket and burlap. The top of the root ball should rest no

more than one inch above the existing soil line for every 10 inches of root ball depth and never lower than the existing soil line. (A 15 inch deep root ball should rest 1.5 inches above the existing soil line.)

4. Backfill the hole with the un-compacted, previously removed soil. Lightly pack the soil and water the trees as you go to eliminate any air pockets. Build a mound of soil or mulch in the ring at the outer edge of the planting hole. See mulch.
5. Stake the tree if wind throw is a significant issue and allow for 3 inches slack in the tie wires. Never allow bare wires to contact bark. Remove stakes and all wires, hoses and ties after the first growing season.

Topping

Topping is a harmful pruning practice in which tree branches are cut back to stubs. Topping trees will make them more hazardous in the long term. Proper pruning methods exist to reduce tree height versus topping, which can cause decay of the branches and attract insects and disease.

Pruning Young and Mature Trees

Pruning controls the appearance, shape and growth patterns of the tree and keeps branches from harming structures or people. Improper pruning can cause damage that will last for the life of the tree, or worse, shorten the tree's life.

Pruning Young Trees

What to Prune

- Only remove dead, dying, diseased, broken or crossing branches.
- Remove branches when there are conflicts with utility lines (always consult a professional) and lines of sight related to pedestrian and vehicular traffic, and low limbs over sidewalks.
- If young trees are forked at a narrow angle, prune to create one central leader. This trains the tree to grow straight.
- Remove sprouts or suckers at the base of the tree or inside the tree crown that are upright and grow rapidly.
- Pruning should be done sparingly. If you remove too many leaves, a tree cannot gather and process enough sunlight to make food.

When to Prune

- For most trees, prune in late winter or early spring before leaves emerge.
- Prune dead, diseased and broken limbs as soon as you notice them. Prompt pruning prevents the spread of decay and cavity development.
- Young trees should not be pruned for shape until after the first two growing seasons.
- Never remove more that 25% of the live crown (leaves, twigs and branches) in a single year.

How to Prune

- When pruning diseased branches, dip the pruners in household bleach or rubbing alcohol before storing or making the next cut.
- Once you begin a cut, always finish it.
- Trees do NOT need wound dressings to recover from pruning. Through natural processes, the tree will callus over the wound by itself.
- Pruning mature or large trees should be left to Certified Arborists. Large branches are removed by making three cuts.
- Consult the International Society of Arboriculture for more information.

Pruning Mature Trees

Pruning mature trees may require special equipment, training and experience. If the pruning work requires climbing, the use of a chain or hand saws, or the removal of large limbs, the use of personal safety equipment, such as protective eye wear and hearing protection is a must. Certified Arborists can provide a variety of services to assist in performing the job safely and reducing risk of personal injury and damage to your property. Trained crews will have all of the required safety equipment and liability insurance. They are also able to determine what type of pruning is necessary to maintain or improve the health, appearance and safety of your trees.

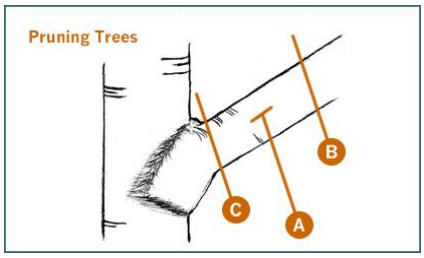
Avoid using the services of a company that:

- Advertises tree topping as a service. Topping is harmful to trees and is not an accepted practice.
- Uses tree climbing spikes to climb trees that are being pruned. Climbing spikes can damage trees, and their use should be limited to trees that are being removed.

If branches have broken, stubs remaining on the tree should be pruned back to the next largest branch.

Correct Steps to Pruning

- **Step A** ï Cut through ½ of the branch from underneath about 1 foot from the trunk. This will help prevent stripping or peeling the bark off of the trunk.
- **Step B** ï A few inches further from the first cut, make a cut from the top of the branch downward. This will remove the entire branch.
- **Step C** ï Locate the branch collar (a layer of wrinkled bark where the branch attaches to the trunk) and where the branch bark ridge (a raised area of bark at the branch/trunk union). Make the final cut just outside of the branch collar and the branch bark ridge, at a slight downward and outward angle. Do not cut into the collar or leave a stub.



Fertilization of Trees

Fertilization aids in tree growth, reproduction and development. Before you fertilize, it is best to have a soil analysis test. Tests are available through the University of Georgia Cooperative Extension Service. Fertilization is not a ñcure-allò for declining trees, but may be used to complement other tree maintenance activities, such as watering and mulching.

The ideal time to fertilize is late winter or early spring just as the leaves begin to expand. Fertilizer is not plant food, but a mix of essential elements necessary for plant survival. The most common nutrients found in fertilizers are nitrogen, phosphorus and potassium.

Fertilizer should always be applied to moist soil and watered in afterward, to improve uptake and to reduce the chance of root injury.

Application rate
In the absence of a soil analysis, a fertilizer ratio of 3:1:1 or 3:1:2 should be used. These numbers refer to the percent content of nitrogen, phosphorus and potassium respectively. Slow-release nitrogen fertilizer and a salt index of less than 50 percent is preferred.

- Slow-release fertilizer should be applied at rates between 2-4 lbs. of actual N/1000ft2.
- Quick-release fertilizers should be applied at rates between 1-3 lbs. of actual N/1000ft2.

A soil test is the best method for determining what is lacking in the soil. For most areas, the following guidelines based on the distance to the edge of the branches may be used for fertilizing established trees.

Step 1: Measure the distance from the trunk to the edge of the branch spread; this is the crown radius.

Step 2: Use the table below to determine the amount of fertilizer to apply. Find the crown radius in the left column, then look in the appropriate column for the type of fertilizer that you are using to determine how many pounds of the fertilizer to apply.

Best Ratio	**Good Ratio**
3:1:1	3:1:2
N:P:K	N:P:K

One pound of fertilizer is approximately two 8 oz. cups.

Fertilizer Application Rate Table

Crown Radius (feet)	Pounds 16-4-8 to Apply	Pounds 30-10-10 to Apply
1ôï 4ô	0.4 lb	0.3 lb
5ôï 9ô	3.0	1.5
10ô	5.5	3.0
15ô	13.0	7.0
20ô	23.0	12.0
25ô	35.0	19.0
30ô	50.0	28.0
35ô	70.0	38.0
40ô	90.0	50.0
45ô	114.0	63.0
50ô	141.0	78.0
55ô	171.0	94.0
60ô	203.0	113.0

If the area under the branches is restricted by sidewalks or driveways, or the root system has been damaged by construction, this area should be subtracted from the fertilization application area and the rate should be reduced by an equal percentage to avoid damage to the tree.

Application method for mature trees
A broadcast method may be applied to the soil surface, starting near the tree trunk and extending several feet beyond the furthest branch tip. If the soil is compacted or grass is present, you may want to consider the drill hole method of fertilizer application.

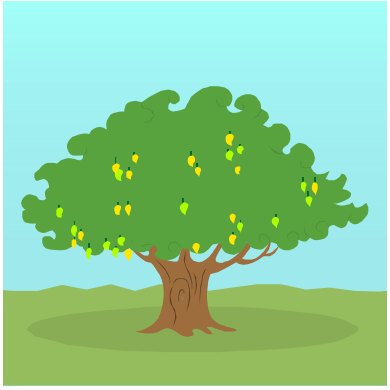
The drill hole method requires that holes be dug in a grid pattern starting near the trunk and extending slightly beyond the edge of the branches. Holes should be 4òï 8òdeep and 2òï 4òin diameter, and may be made with a drill auger, pipe, or post-hole digger. Fill holes with specified amount of fertilizer leaving a space 2òfrom the top of the fertilizer to fill with soil. The total amount of fertilizer should be divided evenly among the holes. The increased amount of air available to the roots is often as beneficial as the fertilizer.

Grid pattern spacing and number of holes
2ôX2ôgrid pattern = 250 holes
3ôX3ôgrid pattern = 111 holes

*****Warning*****
Do not use herbicide-type fertilizers or soil sterilants in the area beneath the branches of trees which may cause tree damage or mortality.

Arborists frequently apply liquid fertilizer through a probe into the soil which results in faster uptake by trees, and a more visible response. Injecting or implanting fertilizer into the trunk is useful for specific nutrient deficiencies or where root area is limited. But since injection and implants wound the tree, their use should be limited.

Thank you for helping to make Woodstock beautiful and supporting our Arbor Day efforts!



Please visit the following websites for more information on caring for your trees!

www.arborday.org

www.isa-arbor.com

www.treesatlanta.org

www.americanforest.org

www.atlantabotanicalgarden.org/

www.gfc.state.ga.us

www.natlarb.com

www.parkpride.org

www.forestry.uga.edu/efr/

www.treelink.org

www.walterreeves.com

www.pikenursery.com

www.grips.org

"*He who plants a tree, plants hope.*" ~ Lucy Larcom