



Tree Conservation Notes

Athens-Clarke County Community Tree Program

Drought Management

The record low rainfall during the summer and fall of 2007 has resulted in a drought of historic proportions. This has been a high-stress period for our trees. Water is the most limiting ecological resource for our trees. Homeowners have already seen some of the effects drought can have in the landscape. Drought stresses trees, making them more susceptible to pest, diseases, or other environmental factors. More than 80% of tree growth variation is because of water supply. Because trees have large energy reserves, the impacts of drought are not always immediately obvious. We can expect to continue to see drought-related decline for the next few years.

How to Help Your Trees During a Drought

Trees need water to move materials between the roots and leaves. Trees are constantly removing water from the soil and releasing it into the atmosphere; this process is called transpiration. Transpiration is one of the reasons why cities with adequate canopy cover are cooler than cities with limited canopy cover.

The amount of water required by a tree varies depending on its size, species, location, time-of-year, and other environmental factors. As a general rule of thumb, trees in our area require one inch of water per week during the growing season. During a watering ban, rain barrels and condensate collection systems are an effective way to collect water for landscape use.

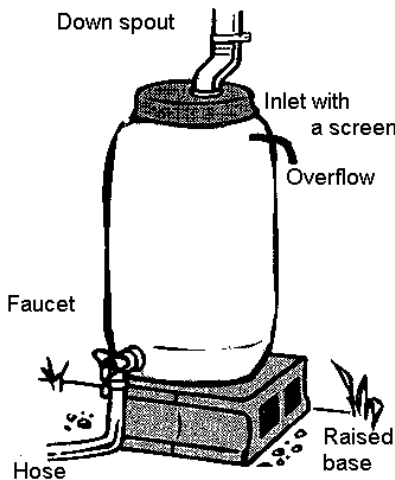


Figure 1. A Rain Barrel Water Collection System

Mulch can help trees survive a drought. Mulching is the application of organic materials over a tree's root systems to improve soil moisture and fertility and to enhance root and tree growth. Mulch helps to retain soil moisture and encourage favorable rooting conditions. Mulch should be applied to all urban trees. Trees need to be mulched to the drip line; be sure to keep mulch at least six inches away from the trunk. Mulch should be comprised of organic materials and applied in a 3-4 inch thick layer.

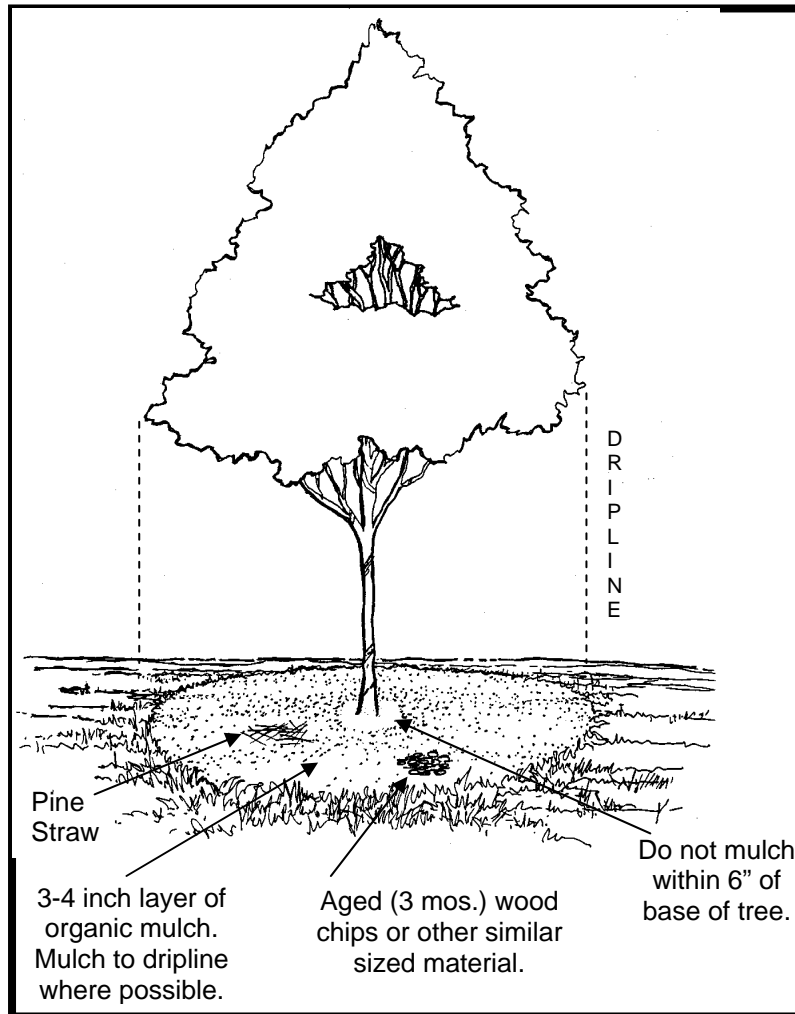


Figure 2. Recommended Method for Tree Mulching

How to Help Your Trees After a Drought.

During the dormant season, test your soils to determine your tree's nutrient needs. Many homeowners apply fertilizer, lime, or gypsum based on assumptions. Not all sites are alike. Trees should not be treated like turf; they have very different nutrient requirements. A soil test can tell you exactly what nutrients a tree requires. Use a small trowel to collect samples from around the tree. Samples should come from several different locations and depths. Mix the samples together in a bucket and remove a small amount for testing. Your local extension agent can test your soil samples for a small fee.

In early spring, apply soil amendments as prescribed in your soil test results. Avoid time release fertilizer. Nitrogen applications can increase sap activity in a tree. If a tree receives nitrogen at the wrong time, it may not be dormant during the entire winter season. Proper tree fertilization will ensure your tree is not suffering undue stress after a drought.

Urban soils tend to be a very difficult environment for tree roots. They are heavily compacted and do not have the same structure or nutrient cycling capabilities of a forested soil. Be sure to decompact your soils during the dormant season. If your soils are found to be compacted, aerate them using an Air Spade or vertical mulching. Aerated soils provide a favorable rooting

environment. Loose soils allow water to easily infiltrate and become available to trees. Although the above ground portions of a tree might not be active during the winter, the roots will continue to grow and exploit new resources during this time. Soil aeration can encourage roots to grow into new areas.



Figure 3. An Air Spade or Vertical Mulching Can Decompact Soils

Be sure your trees are mulched. Trees should be mulched twice a year. As mentioned above, mulch provides your trees with the best defense against the impacts of drought.

With changing land use and continued population growth, Georgia is likely to see years of prolonged drought. Prudent landscape planning and proper tree care can help mitigate the effects of drought on trees.

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