



Caring for Trees in a Dry Climate

This area is naturally a semi-arid, shortgrass prairie that would have few trees without irrigation. Growing trees here is difficult in wet years let alone in drought years. Drought makes growing healthy trees in this region all the more challenging and reinforces the value of a majestic shade tree. Properly placed and maintained trees are an asset to the environment and to our community.

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What a tree under “drought stress” looks like

Symptoms of drought injury to trees can be sudden or may take up to two years to be revealed. Drought injury symptoms on tree leaves include wilting, curling at the edges, and yellowing.

Deciduous leaves may develop scorch, brown outside edges or browning between veins.

Evergreen needles may turn yellow, red or purple. They may also turn brown at the tips of the needles and browning may progress through the needle towards the twig.

In continued drought, leaves may be smaller than normal, drop prematurely or remain attached to the tree even though brown.

Often times, drought stress may not kill a tree outright, but set it up for more serious secondary insect and disease infestations in following years. For more information and pictures of drought symptoms, see: [Recognizing Drought Injury Symptoms on Plants](#).

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Where to water your tree

- Deep watering to a depth of 12” inches below the soil surface is recommended.

- Saturate the soil around the tree within the “dripline” (the outer edges of the tree’s branches) to disperse water down toward the roots.
- For evergreens, water 3’ -5’ beyond the dripline on all sides of the tree.
- The objective is to water slowly, dispersing the flow of water to get the water deep down to the trees roots. Watering for short periods of time only encourages shallow rooting which can lead to more drought damage.
- Don’t dig holes in the ground in an effort to water deeply. This dries out roots even more. A soil needle/deep root feeder attached to a hose is acceptable to insert into the ground if your soil is not too hard and compact.
- Overhead spraying of tree leaves is inefficient and should be avoided during drought conditions. Watering at ground level to avoid throwing water in the air is more efficient.

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Tree Watering: Amount of water needed and methods to use.

During the drought, trees must be given top watering priority over your lawn. However, caring for trees requires different watering methods than your lawn. During water restrictions, irrigation systems designed to water turf do not sufficiently water your trees. During the drought, trees should be given a higher priority than lawns. Lawns can be replaced in a matter of months whereas a 20 year old tree will take 20 years to replace.

- How much water your tree should receive depends upon the tree size. *A general rule of thumb is to use approximately 10 gallons of water per inch of trunk diameter for each watering.* Measure trunk diameter at knee height. *General formula:* Tree Diameter x 5 minutes = Total Watering Time.
- Example: When you hand water using a hose at medium pressure, it will take approximately 5 minutes to produce 10 gallons of water. If you have a 4” diameter tree, it should receive 40 gallons of water - multiply by 5 minutes to equal total watering time of 20 minutes.
- All size trees should be watered April through September according to the guidelines below. All trees should also receive adequate water during the winter months too –For more information on winter watering, see below.
- Water should be distributed evenly under the dripline of the tree.

The best watering method depends upon whether you have a small (1-7” diameter), medium (8-15” diameter) or large sized (16”+ diameter) tree.

- **Small Trees (1-7” diameter)** –3 times per month, April through September.
- Newly planted and smaller trees can get adequate water within the existing watering restrictions by hand watering with a soft spray hose attachment as a separate zone on your designated day.

Small trees are best watered using the following methods:

Automated drip irrigation system/soaker hose.

End of the hose using a soft spray attachment at medium pressure

5-gallon bucket (with ¼” holes drilled in bottom) or watering bags – filled and set under the dripline.

Soil needle (deep root feeder) - Work the needle into the soil at an angle to a depth of 8 inches. Use the needle at low to moderate water pressure. Water the area under the branches in at least twelve sites.

Scatter the sites around the area bordered by the drip line. For new trees and those planted within five years, place the needle at least three feet from the trunk. Water a minimum of four sites around young trees.



Medium Trees (8-15" diameter) -3 times per month, April through September.

Medium sized trees are best watered using the following methods:

Soaker hose coiled several times under the dripline of the tree.

End of the hose with a soft spray attachment to disperse the flow – use a medium pressure.

Soil needle (deep root feeder) - Work the needle into the soil at an angle to a depth of 8 inches. Use the needle at low to moderate water pressure. Water the area under the branches in at least twelve sites. Scatter the sites around the area bordered by the drip line. For new trees and those planted within five years, place the needle at least three feet from the trunk. Water a minimum of four sites around young trees.

Large Trees (16"+ diameter) -3 times per month, April through September.

Healthy mature trees should be able to withstand a short-term drought.

Large trees are best watered using the following method:

End of the hose with a shower like hose attachment to disperse the flow – use a medium pressure.

Soil needle (deep root feeder) - Work the needle into the soil at an angle to a depth of 8 inches. Use the needle at low to moderate water pressure. Water the area under the branches in at least twelve sites. Scatter the sites around the area bordered by the drip line. For new trees and those planted within five years, place the needle at least three feet from the trunk. Water a minimum of four sites around young trees.

Additional Watering Tips...

- Reuse the water you save waiting for the shower to warm up.
- If you drain your kids' pools, pour the water under a tree.

- Redirect your rain gutters toward your trees.

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Understanding tree roots

Most people do not understand what their trees' root system looks like. Tree root systems consist of large perennial roots and smaller, short-lived, adsorbing roots. The large, woody tree roots and their primary branches increase in size and grow horizontally. At least 90% are located in the top 12" inches of the soil. Root functions include water and mineral conduction, food and water storage, and anchorage.

In contrast, adsorbing roots, although averaging only 1/16 inch in diameter, constitute the major portion of the root system's surface area. These smaller roots grow outward and predominantly upward from the large roots near the soil surface, where minerals, water and oxygen are relatively abundant. The major function of adsorbing roots is the absorption of water and minerals.

Large roots and small adsorbing roots occupy a large area under ground. Typically, the root system of a tree extends outward well past the dripline, up to two to four times the height of the tree.

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Listed below are tree maintenance procedures that can significantly increase a tree's chance of making it through drought periods.

Mulch around your trees with 4 inches of organic mulch to reduce moisture loss.

- Use wood chips, shredded bark, leaves or evergreen needles as mulch – avoid the use of stone or rock near trees as this increases air temperatures and moisture loss from leaves and stems.
- Pull back mulch 6" from the trunk of the tree.



Newly planted tree, mulched

Do not fertilize a tree that is under drought stress. Salts in fertilizer may burn roots when there is not sufficient water. Fertilizers may also stimulate top growth resulting in too much leaf area on the plant for the root system to maintain during periods of limited soil moisture.

Keep your trees healthy and pest free. Postpone any construction activities planned near your tree to reduce impact to the trees' roots. If your tree has any insect or disease problem that may be adding additional stress – treat them accordingly to reduce the overall stress to your trees.

Properly prune trees and shrubs during time of drought to improve structure, limb stability and to remove dead and weakened branches. Leaving broken, dead, insect-infested or diseased branches can further weaken a tree during drought and set the tree up for deadly secondary insect and disease problems.

Many tree species are harmed by herbicides used in the lawn. Trees already stressed by drought can be harmed by a heavy application of herbicide in the root zone.

Following these guidelines will help preserve our trees, the most valuable assets to our landscapes, and will also meet guidelines for water conservation during drought periods.

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Prioritizing watering needs for different types of trees

The first trees to consider watering are those that will be most vulnerable and affected by dry conditions.

- Newly planted and young trees (1-7" diameter) are not yet established and have a limited root system. These trees generally need supplemental water even when we are not experiencing drought conditions. Generally it will take one full year per inch of trunk diameter to get established. Ex. It will take 3 years for a 3" caliper tree to establish itself.
- Trees growing within a restricted root zone. Examples are trees adjacent to a driveway or house, growing within a landscape strip between your sidewalk and the street, growing in a median or traffic circle.
- Trees that have recently received root injury due to construction work will need supplemental watering because the root system has been compromised.

Next to consider are the trees that are generally better equipped to withstand drought conditions.

- In continued dry conditions even older trees will start to show symptoms of drought stress and will need supplemental water although less frequently than younger trees.
- Established drought tolerant species may also need supplemental watering with continued drought.
- Volunteer trees (self-seeded) or "weed" trees typically have extensive root systems and need less water.

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The need to water your trees in the winter

Even in years when drought is not a concern – winter watering is crucial, especially with evergreen trees! Well-timed fall and winter watering may allow a tree to survive on less water than a regime of plentiful water applications during the growing season. Tree roots continue to grow throughout the winter and need moisture to survive. Generally, water one to two times per month October through March on a warm day when the ground is not frozen. Use the same amount of water as during the summer months.

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Photos: Judy Sedbrook

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Date last revised: 01/05/2010