

Watering Trees

What is water stress?

Tree health and growth are dependent upon an adequate supply of water. Natural rainfall usually supplies enough moisture to sustain trees without artificial watering. Periods of moderate dryness are natural, and can be tolerated by healthy trees.

Trees show signs of water stress when they cannot take up enough moisture from the soil to replace water loss from transpiration. Water stress can develop when dry periods are especially long or when severe hot or cold weather conditions develop. Wind accelerates drying by causing increased transpiration and evaporation from the soil.

Symptoms of water stress during the growing season include leaf droop, then drying of the foliage, especially at leaf edges. Even moderate wilting can mean some damage to a tree. Evergreens are susceptible to winter drying because moisture is continually lost through the foliage. However, yellowing or browning of the needles or leaves is usually not noticed until late winter or spring, after the damage is done.

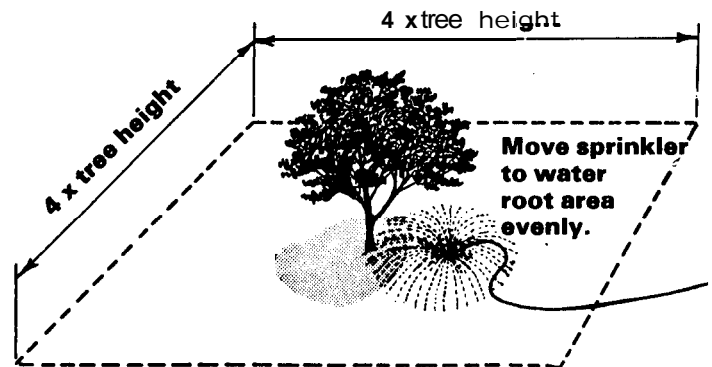
What techniques can be used to water established trees?

Established trees may be watered to avoid stress by several methods. Surface irrigation can be accomplished with any lawn watering device, such as a whirling or oscillating sprinkler. A hose running very slowly on the ground is effective, but must be moved frequently for an even distribution. Lance-type root feeders can be used, but must also be moved often. Tight, clay soils may not be conducive to lance watering if moisture cannot penetrate the soil as quickly as it is supplied.

With any watering method, care should be taken to apply water slowly enough to prevent excessive run-off. Very dry soils may resist water because of surface tension. Wetting agents, available from lawn and garden suppliers, may be applied to the ground prior to watering to improve penetration.

Tree-Water Facts

- * Living plants are up to 90 percent water.
- * 99 percent of the water taken up by tree roots evaporates from the leaves through transpiration.
- * A mature tree can lose hundreds of gallons of moisture a day.
- * An ideal soil for root growth is $\frac{1}{4}$ water, $\frac{1}{4}$ air, and $\frac{1}{4}$ solid.
- * Browning wilting, scorch, and dieback after very hot or cold weather are usually caused by lack of available water.



Tree roots may grow in a large area.

How much water is needed?

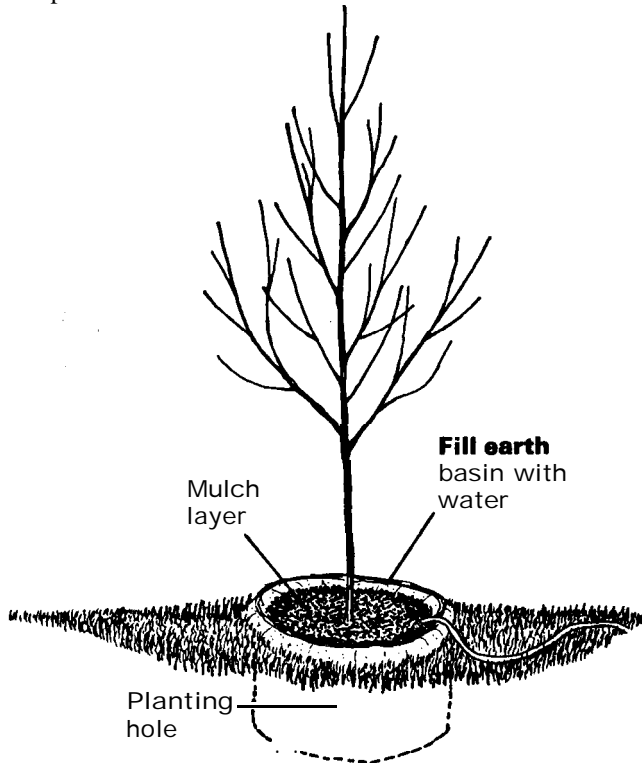
Any amount of water is better than none during dry conditions. However, most experts agree that deep, thorough watering is best. A single application of water equal to one or two inches of rainfall is considered generous. The amount of water applied with a sprinkler can be measured by placing coffee cans within the watered area. The average depth of water in the cans is the amount of water applied.

To test the effectiveness of watering, check the moisture content of soil in the root zone. Dig a hole about 6 to 8 inches deep. Squeeze a lump of soil from the bottom of the hole and roll it between two fingers. If soil feels sticky or gummy, soil is wet. If soil sticks together and forms a ball or ribbon, soil moisture is probably adequate for established trees. If soil crumbles apart or powders, soil is dry and trees would benefit from more watering. Heavy, clay soils absorb water more slowly than sandy or gravelly soils, but can take in more water and hold it longer.

What are the water needs for transplanted trees?

Watering for recently planted trees is essential. Trees dug from nursery beds lose many roots when they are lifted. The tree is then much less efficient at taking up water and must receive more water than a tree with established roots. Extra water should be provided for at least 2 years after planting.

Form an earthen basin just above the planting hole. When the basin is filled with water, moisture will soak into the soil around the roots. A 2 inch thick layer of bark or wood chips in the basin will help to conserve soil moisture. Don't wait for symptoms of moisture stress to show before rewatering — keep the basin filled perhaps once a week.



Transplanted trees must be watered.

Can trees be overwatered?

An excessive amount of water, especially in heavy or tight clay soils, may force air from the soil and cause roots to suffocate. However, many more planted trees are lost from dryness than from overwatering. Keep soil moist, but not soggy.

Well established trees are rarely affected by overwatering, except after prolonged flooding or in poorly drained areas after excessive rainfall.

Will watering always help?

Water stress may be associated with problems other than drought. Root damage, soil compaction, vascular wilt diseases, and insect infestations can cause water stress symptoms. These problems may be difficult to diagnose, but must be corrected to relieve the stress.

Some water stress may be impossible to avoid. Extreme hot or cold, windy weather can cause wilting or browning of foliage, even when soil moisture is normal. If severe weather is of short duration, healthy trees can recover on their own. During a prolonged drought, watering can help to reduce the effects of stress.