

 UI Extension Forestry Information Series

## Watering and Feeding Landscape Trees

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Do you want the trees in your yard to grow faster or perhaps look prettier? Try feeding them in the spring and watering them during the hot, dry summer months and into the fall to increase growth. Extended periods of time without moisture can stress trees and reduce vigor even if the signs of stress are not visible.

Trees are able to stand upright because their roots are firmly anchored in soil. The soil holds water and nutrients essential for tree growth. Soil texture, structure, and depth are extremely important to trees throughout their lives. Soils are composed of small particles of either sand, silt, or clay. Clay particles have the ability to become grouped together in aggregates so that each aggregate acts as a single, larger-sized particle. This aggregation is referred to as structure. Well aggregated soils have the desirable properties of sand (good water movement and good aeration) as well as the high water and nutrient holding capabilities of clays. Soils that are primarily sand or silt aggregate poorly, so their properties depend essentially on their texture. Knowing the type of soil you have can influence the duration of watering periods. Soils with high clay content cannot absorb large water applications as rapidly as sandy soils can.

**Water Requirements.** All plants require water for growth. Plants obtain water from the soil and lose most of it through their leaves by evaporation (transpiration). Plants receive water from either precipitation or irrigation. How much of this water is available to a tree depends on soil type, but also on the depth and width of the root system. Most roots are located within three or four feet of soil. In dry periods, deep rooted plants can draw water from deeper in the soil.

During dry periods, or in areas where irrigation is necessary, keep a close eye on your trees to deter-

mine when they need water. Signs of water stress include wilting, a change of leaf color (from shiny to dull, or from dark green to light gray-green), a decrease in growth, an increase in susceptibility to insect and disease problems, and premature leaf fall. Trees should be watered before any of these signs are apparent. The best way to determine if your tree needs water is to observe the surrounding vegetation and soil surface. When surrounding, smaller plants show signs of wilting and the soil is dry to an approximate depth of 2-3", it's time to water your trees. Once moisture stress begins, dormancy may set in.

There are a number of ways to water efficiently: basins, furrows, sprinklers, soaker hoses, drip systems, or micro-emitters. The most important goals to remember are to avoid runoff, confine water within the drip line of the branches, and to apply the water uniformly. Soaker hoses, drip systems, or micro-emitters are the best ways to apply water slowly, uniformly, and without runoff. The purpose is to make as much of the applied water available to the tree as possible. Take care when using sprinklers to irrigate – moist foliage is a prime breeding ground for fungal diseases.

**Fertilizer Requirements.** Nitrogen fertilization helps young trees grow and reach landscape size more rapidly. However, mature trees may need little or no fertilization as long as they have good leaf color and grow reasonably well. In fact, increased vigor may needlessly increase the size of the trees and density of the leaves, which is fine if trees are intended for future harvest, but not necessary for landscaping purposes. Leaves on the inside of such trees, or plants under them, grow poorly because of heavy shade. However,

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this may be a benefit in that it can inhibit undesirable plants (weeds). You may want to wait until the trees are 2-3 years old, since fertilizers have been shown to have an insignificant effect on young seedling unless the site has been shown to have a specific nutrient deficiency.

As a starter, apply nitrogen at a rate of 2-4 pounds per 1000 square feet. Try to apply a “complete fertilizer” containing nitrogen, phosphorous, and potassium, and perhaps sulfur. Be sure to read the directions and follow the recommendations on the label. If the fertilizer bag says 18-10-10-7, this means that the contents are 18% nitrogen, 10% phosphorous, 10% potassium, and 7% sulfur. So if you have a 100 pound bag of fertilizer, 18 pounds of it is nitrogen.

One method used to determine how much fertilizer to apply is to measure the diameter of the tree trunk. For each inch, use .1 to .2 pounds of actual nitrogen. In other words, 1 to 2 pounds of a 10% nitrogen fertilizer, such as 10-8-7. It should be mentioned here that most fertilizer applications are made based on the percentage of nitrogen in the fertilizer.

Because nitrogen is mobile in the soil, apply only the necessary amount in two intervals. One-half in the spring and one-half in the summer is a good program to follow.

Keep the fertilizer at least 6 inches away from the trunk to avoid injuring the tree. After the first year, apply nitrogen fertilizer to an area with a radius of 1.25 times that of the tree canopy. After application, sprinkle or irrigate the area to dissolve the fertilizer and enable it to move into the ground where the roots can access it. Remember, fertilizers are salts, and if you do not irrigate to dissolve the fertilizer, the tree and surrounding grass may get “burned”. Fertilizing in the fall with nitrogen is not recommended as it may keep the tree actively growing well into the frost season which will severely injure the new succulent growth.

So how much fertilizer should you apply? Let the trees be your guide. If growth is excessive on young trees, put on less per area next time, or skip the next intended application. If shoot growth is shorter than you want and leaf color is pale, increase the applied

amount up to twice the previous amount. As trees mature, fertilize them only if growth or leaf color is not up to expectation.

In most soils, you need not worry about soil pH, as trees grow satisfactorily over a wide range of soil pH's. Well-drained soils in high-rainfall areas usually are acid, as are a lot of forest soils, while those in low rainfall or arid areas are usually neutral or alkaline. In many alkaline soils (soils with a pH higher than 7.5), a number of trees may be low or deficient in iron, as evidenced by pale yellow leaves with finer dark green veins. These symptoms are most obvious on the first growth in early spring.

If a tree is not responding to nitrogen, show or describe the symptoms to experts such as your County Extension Educators or Extension Forester in your area.

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