The Establishment Period

A tree is fully established when its roots have grown out of the original planting pit and into the surrounding undisturbed soil. Obviously, this is impossible to observe directly, so we must estimate the length of the establishment period. The establishment period will vary depending on several factors, including age of the tree at planting, the quality of care it receives after planting, and its species.

Small young trees establish more quickly than larger older trees of the same species. For example, a 2" caliper Shumard oak receiving good care may be fully established in one year. An 8" caliper Shumard oak may require several years to establish. Fast growing species establish somewhat more quickly than slow growing ones. Extremes of weather, especially drought, lengthen the establishment period.

The establishment period is not the same as the warranty period. The warranty period is a contractual matter regarding tree mortality and replacement, and is not directly related to establishment.

Several years of root growth are required for a newly planted tree to fully reestablish its root system. Roots grow at a similar rate regardless of tree size, but for a larger tree, roots must grow over a longer distance to redevelop a normal root spread after transplanting. This requires more years of growth and results in a longer establishment period for a large tree.

Irrigation

After proper planting, the single most important factor in tree survival is proper watering. Over-watering is surprisingly common, and is more quickly fatal to the tree than under-watering. Trees may be irrigated by hand watering, automatic irrigation, or temporary tree watering devices like Gator Bags or Ooze Tubes. You must not assume that the water needs of a newly planted tree are the same as those of the surrounding landscape. Each tree must receive separate individual irrigation customized to its needs, based on soil moisture in the root ball, planting pit, and surrounding soil. The use of a simple soil probe to determine soil moisture is strongly recommended.

In north central Texas, we should water our trees deeply but infrequently, using the most efficient method available. Overhead spray irrigation is least efficient, whether from automatic systems or hose-end sprinklers. Drip irrigation, tree bubblers, and irrigation bags are much more efficient. All irrigation methods are made more efficient with the use of mulch.

Duration of irrigation depends on the rate at which water is applied by the method used. Hand watering usually applies a large amount of water in a short time. Overhead spray methods require longer periods. Run time for bubblers and drip irrigation may need to be an hour or longer. Irrigation bags are designed to slowly release water over as much as 24 hours, and allow the deepest penetration of water into the soil.

Frequency of irrigation is affected by weather, with no irrigation at all during wet weather and much less frequent irrigation during the dormant season. Newly planted trees may need to be watered every two days during hot, dry weather. For very young (small at planting) trees, one to two gallons of water are usually sufficient. Soil type also affects frequency of irrigation. The heavy clay soils typical of Dallas County need water less often, and the guidelines in this manual assume this soil type. If your site has the uncommon sandy or very gravelly soils found in some parts of Dallas County, you

may need to water more often. See Section 5.0 Soils for more information about soil types in north central Texas

Where do I put the water? Location of application depends on how long the tree has been planted. New trees need moisture in the original root ball; the soil that came with the tree in the container or inside the wrapper of balled and burlapped trees. It is possible for soil in the root ball to be dry even when soil in the planting pit is moist, and vice-versa. The use of a soil probe becomes critical here. Use the probe to determine moisture in the root ball, and adjust irrigation accordingly. Use this method until the end of the first growing season (March through October).

As trees become established, the most active roots are located under the outer edge of the canopy. In the second and third growing season, apply water to the planting pit and beyond to encourage root growth into the surrounding soil.

How do I water mature trees? The roots of fully established, mature trees extend into surrounding soil for a distance of two to three times the height of the tree. The most active roots are under outer edge of the canopy and far beyond it. Dropping a hose next to the trunk of a mature tree may water the ground cover, but does little good for the tree.

Most of the root system of a mature tree is in the top 12 to 16 inches of soil. This is especially true in the clay soils of north central Texas. When we water a mature tree, we want the water to soak in to this depth. This requires slow, deep watering. Similarly, soil at this depth dries slowly, so we do not need to water often. A soil probe is very helpful in determine soil moisture at this depth. Water your trees deeply but infrequently.

Always follow City of Dallas and Dallas Water Utility rules and restrictions on irrigation schedule. Permitted schedule for irrigation varies with time of year and drought status. Typical water needs of established north central Texas trees under normal weather and soil conditions are shown below.

Water Need of Species	**Summer Watering Interval**	**Examples of Tree Species**
LOW	<90º, once per month >90º, twice per month	Texas red oak, cedar elm, Texas persimmon, American smoketree, Texas mountain laurel, desert willow, mesquite, Texas ash
MODERATE	<90º, once per week >90º, twice per week	American elm, chinquapin oak, Shumard oak, southern live oak, Eve's necklace, red bud. buckeye, green ash, bald cypress
HIGH	<70º, check soil for dryness, water only when soil is dry 70º - 80º, once a week 80º - 90º, twice per week >90º, three times per week	Southern magnolia, Japanese maple, flowering dogwood