



New Concepts in Tree Planting

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Successful establishment of new plantings is dependent on correctly matching species to site and creating a soil environment that will allow new transplants to rapidly regenerate a root system. During transplanting, more than 95% of a root system is lost during digging. Soil surrounding the new plantings must have sufficient water, air space and nutrients to support rapid root regeneration to ensure plant survival. The following 10 steps will help ensure planting success.

1. Assess planting site characteristics prior to species selection. Soil analysis for pH, nutrient levels, organic matter content and texture is essential to match species with the site. Attempting to alter soil conditions to support a species cultural preferences can be expensive and is seldom successful. The presence of utility lines, buildings, and other structures must be considered when selecting species that are suited to the site. A computer based tree selection program has been developed for the Southeast that assists in selecting species which are compatible with site characteristics (Gilman, et al., 1993).

2. Determine the available soil volume for the site and select species and planting distances that allow the plant to reach maturity. Most premature decline of urban plantings is the result of water deficiency related to insufficient soil volume (root space). Recent research has provided methods to determine soil volumes to meet the water demands of mature urban trees. In general, at least two cubic feet of soil is required for each square foot of crown projection (crown projection is the soil area beneath the crown). Calculating available soil volumes and selecting species whose mature size is compatible with the site is an integral component of the planning stage. (Lindsey & Bassuk, 1991).

3. Specify small caliper trees when possible: Small caliper nursery stock regenerates a root system to pre-transplant levels more quickly than larger transplants. This translates into higher survival rates and lower maintenance costs during the establishment period. Crown growth rates of small transplants are much faster than larger stock following transplanting. After a ten year period, two inch transplants will be a similar size to ten inch stock (Watson, 1985). In general, 2 - 2 1/2" caliper stock is recommended. Larger sizes may be necessary in high use areas where vandalism is a factor.

4. Prepare a large planting area. The planting hole should be three-to-five times wider than the root ball especially in heavy clay or compacted soils. This will allow rapid regeneration of the root system following planting. The depth of the planting hole must be no greater than the root ball to prevent settling and root mortality. When preparing the planting site, amend the existing soil rather than use different backfill. In clay soils, using a well-drained loam backfill will result in water collecting in the planting hole following high rainfall that can result in root mortality. Amend the soil with fertilizer, organic matter, lime or sulfur per soil analysis results. (Himelick, 1992).
5. Ensure the **Root Collar** of the transplant is flush with or slightly above the natural grade. “Planting too deep” is a leading cause of death of new transplants. Specifications traditionally have required that the top of the root ball be flush with grade. In recent years, B & B stock arrives from some nurseries with soil on top of the root collar and against stem tissues. In these instances, the soil must be removed from the top of the ball until the root collar is exposed. Plant with the collar on or above grade. Soil on top of the root collar will increase the incidence of stem disease and root disorders including root disease and girdling roots. (Smiley, 1991).
6. Remove “foreign” materials from root balls. Wire baskets must be removed from the upper 6-8 inches of the ball to prevent girdling of major support roots. Synthetic burlap, nylon twine and straps must be removed entirely from the root ball. Natural burlap is hydrophobic and must be removed from the upper part of the ball to facilitate water infiltration. (McNeil et al. 1982).
7. Do not wrap the trunk. Recent research reveals that tree wraps provide no benefits in terms of stem protection from temperature extremes. Wraps may actually increase the incidence of certain pest infestations. (Appleton & French, 1992). Leave lower limbs to shade the trunk.
8. Stake or guy the plant only if necessary to provide support or protect against strong winds and vandalism. Inspect guys periodically to ensure against girdling and bark injuries. Guys usually can be removed after one year. (Harris et al., 1982).
9. Remove only broken, dead and diseased limbs at planting time. Research has shown that pruning the crown to “compensate for root loss” actually impedes root regeneration and slows establishment. Structural pruning should be delayed until the tree is established. (Shoup et al. 1981).
10. Implement an intensive plant health care program following installation. Young transplants stressed by root loss are sensitive to environmental stress and pest infestations. Periodically monitoring the trees for soil moisture conditions, decline symptoms, pest infestations, nutrient deficiencies and other plant health related conditions will facilitate early detection and correction of problems before mortality occurs.

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