

Recommendations for Planting and Maintaining Trees and Shrubs

In regards to the planting and maintenance of woody plants, many of the established cultural guidelines practiced by landscape professionals have undergone scrutiny in recent years. Based on research findings and field observations, many of these practices have been modified or changed in order to improve overall plant health in a landscape setting.

Improper planting techniques, particularly planting too deep, have been shown to be a major cause of tree mortality in managed landscapes. In addition, research has shown that accepted practices governing the size and shape of the planting hole and the nature of the backfill mixture require some modification.

Site Evaluation

Before choosing and planting trees and shrubs, consideration and careful attention should be given to the site itself. Each site should be evaluated for the following:

- Slope
- Hardiness Zone
- Soil Type
- Exposure
- Amount of light
- Drainage
- Space or size
- Soil pH/Nutrient availability

Plant Selection

After site evaluation, select plant material that will adapt well to that location. Match the needs of the plant to the site. When choosing plant material, it is also important to know growth habit and ultimate size, maintenance needs, pest resistance, function and potential invasiveness.

The debate continues on the use of “native” plants over “introduced” or “exotic” species. Where appropriate, choose the best plant for a given location. This choice may or may not be a “native”. Most urban landscape sites have been so modified and the microclimate so changed through the placement of buildings, underground wires, pavement, traffic, and soil compaction, that native plants may not perform as well as non-native plants. Do not choose plant material based solely on the merit of its being a native. Consider selecting plants that have no significant pest problems, are not invasive, are drought tolerant and have extended seasonal appeal.

Choose the “right plant for the right location” but also consider existing plant communities and avoid planting monocultures.

Site Preparation

It is recommended that the planting hole be dug no deeper than the rootball as measured from the trunk flare to the bottom of the ball. Planting holes dug deeper than the rootball often result in the settling of the plant above the trunk flare and structural roots which can result in the rootball being planted too deep. Research shows that the fibrous or absorbing roots of most woody

ornamentals are usually found within the top 6 to 12 inches of soil, and since root development often extends beyond the canopy or dripline, it is now recommended that the planting area be loosened and aerated at least three to five times the diameter of the rootball.

Planting Hole Preparation

One of the most common errors in tree planting is that the rootball is either planted too deep or too high, both of which can cause serious problems.

To properly plant containerized plant material, start by locating the point at which the trunk flare begins. In some cases, the trunk flare junction may be buried in the top of the rootball. Measuring from the trunk flare to the bottom of the ball will give the correct planting hole depth. Generally the uppermost structural roots in the rootball should be planted within 1 - 3 inches of the soil surface, measured 3 - 4 inches from the trunk. Source: "A Best Management Practice", ISA- Arborist News)

Try to maintain the integrity of the rootball until it is secure in the hole. In the event that some of the soil should fall away from the roots, simply proceed with the planting, taking care to ensure that the roots do not dry out from sun or wind. The planting hole size should be approximately three to five times the width of the ball and have sloping sides.

Setting the Plant

Carefully set the plant in the hole so that the trunk flare is at, or 1 to 2 inches above, the existing grade. Once the plant is properly placed, cut away and remove all visible rope and burlap. If the rootball appears in danger of completely collapsing, remove the rope and burlap from only the top one-third of the ball. Although still subject to debate, it is recommended that as much of the wire basket as possible, or at least the top 8 to 16 inches of the wire basket, be removed **once the root ball is stable in the planting hole**. Do not leave any protruding points of wire, which could cause injury.

Backfilling the Planting Hole

According to research, backfilling with soil dug from the planting hole is preferable to mixing the soil with large amounts of organic soil amendments such as peat moss, compost, etc. The addition of an organic soil amendment may be called for if the existing soil is of poor quality, such as excessively sandy or heavy clay soils or those consisting of undesirable fill material. Alternatively, quality topsoil, similar in texture to the existing soil, may be brought in and used for backfill.

While backfilling the hole, it has been customary to tamp the soil to avoid leaving large air pockets. However, this practice often results in the soil being packed so firmly as to drive out all the fine air spaces needed for a well-aerated soil. An alternative to tamping the soil would be to water the soil halfway through the backfill process and allow it to drain. When the water has drained away, resume backfilling and water again thoroughly. If the practice of tamping the soil is chosen, it should be done lightly so as to not compact the soil in the planting hole.

To complete the backfilling, smooth the surface soil and check to ensure that the trunk flare is completely exposed. (The structural roots should be within the top 3 inches of soil as measured 4 inches from the trunk.) Water the rootball and planting area immediately after backfilling.

Watering

Water is a critical factor to the successful establishment of landscape plants. Excessive or insufficient water will impede the formation and/or elongation of new roots. Immediately after planting, water the root ball and the planting area deeply. The root ball of newly planted trees must receive adequate water weekly during the entire first growing season, right up until dormancy in the fall, to become established. More frequent irrigation may be needed during the summer season or in times of extended drought. Rainfall alone may not provide the adequate, consistent moisture necessary for establishment. On larger caliper trees, weekly watering is necessary through the next several growing seasons. According to research, "in the Northern part of the US, the establishment period, for recently transplanted trees, is approximately one year for each one inch of trunk caliper" (Dr. Gary Watson, Morton Arboretum)

Fertilizing

According to research, "fertilization is not likely to be effective during the first growing season, as long as there is no nutrient deficiency" (Dr. Gary Watson). The addition of fertilizer and limestone should be made according to recommendations based on a soil test. Avoid placing water-soluble (quick-release) nitrogen fertilizer directly in the planting hole as this may cause injury to roots. If needed, a slow release or organic form of nitrogen could be mixed into the planting area or be applied on the soil surface around the tree basin.

Staking

While there are many opinions on the method and value of staking trees at planting time, most experts agree that staking is not necessary for all trees. Trunk strength, size of the canopy, wind direction and site traffic problems should all be considered before staking a tree. Research has shown that staked trees may develop a smaller root system and decreased trunk taper. If the rootball is stable in the soil, then it may not need to be staked. However, if the root ball is unstable and staking is required, try to attach stakes low on the trunk and allow some sway. In most instances, stakes should be removed after one growing season.

Mulching

Mulching is a cultural practice that can be of benefit in the landscape when done correctly. Mulching will reduce weeds, moderate soil temperatures, conserve soil moisture in the root zone and add an aesthetic quality to the landscape. However, improper mulching can impair plant health and may lead to the decline of the plant material.

Organic mulch should be placed in a wide band, approximately 3 times the diameter of the rootball, over the root zone and **no more than 2 to 4 inches deep**, tapering to, **but not touching**, the trunk. Mulch piled up against the trunk may cause rotting of the bark and can create entry points for insects or disease organisms. Field mice may also inhabit deep mulch and feed on the bark. **AVOID "VOLCANO MULCHING"**.

Pruning

After transplanting, prune only broken or damaged branches. Top pruning to compensate for root loss is no longer recommended. It is important to leave as much foliage on the tree as possible because carbohydrates and other products produced by photosynthesis in the leaves are necessary for root system regeneration and development. Allow the tree to come out of the shock of planting and re-establish itself. Later, remove leaves and branches that die back due to the transplanting.