

LANDSCAPE DESIGN AND INSTALLATION

Lesson 21: LANDSCAPE INSTALLATION

Segment One – Planting Trees, Shrubs, and Herbaceous Perennials

When selecting plants, look for a good natural shape, free from thin spots or broken limbs. Make sure the root ball is solid and the bark has no broken places. Avoid container grown plants where you can see roots circling on the surface or coming out of the drainage holes. Plants chosen should be free of any insects or diseases. Generally, the small sizes of a plant will cost less, and may establish faster. Don't buy plants so small they are in danger of being walked on or mowed over. Choose quality plants.

The proper installation of plants in the landscape involves much more than just digging holes and setting plants in them. The person doing the planting is responsible, as far as possible, for developing a satisfactory microclimate for optimum growth and development of the plant. A healthy and vigorous plant is required if the landscape is to achieve the desired effect. A healthy plant will need less maintenance in the years following establishment.

During this reading assignment you can refer to drawings in a free publication, "Planting Ornamentals", a 16-page publication covering nursery stock selection and proper planting techniques. This publication can be downloaded at <http://pubs.cas.psu.edu/freepubs/pdfs/uj253.pdf>.

Refer to the drawing on page 10 of the publication "Planting Ornamentals." To start, dig a hole at least twice as wide as the diameter of the ball. The depth of the hole should be equal to, or slightly less than, the distance from the bottom of the root ball to the rootflare, the area where the base of the trunk begins to spread out to the roots. You may need to excavate around the base of the trunk to find the rootflare. This ensures that the rootflare will be at or slightly above ground level when planting is completed. This is the only method of planting which will ensure that the tree is not affected by girdling roots in the future.

If potted in a metal, plastic or treated wood container, remove the container carefully. Paper mache containers may be left intact, but are best removed. Plant tree with container attached. If burlapped, set the plant and fill hole $\frac{1}{2}$ full with soil mixture and firm the soil. Then cut the burlap loose from around the plant and fold down. If the root ball is wrapped in plastic burlap and twine, remove the materials entirely.

Backfill the hole completely and firm the soil to secure the root ball. Apply a 3-4" layer of mulch to retain moisture, being careful not to pile up mulch against the trunk. Mulch

should never touch the trunk of a tree and should lay flat on the ground. Mulch should never form a mound, plateau, volcano or other raised shape.

Water the tree thoroughly, immediately upon completion of planting. Water thoroughly every week to ten days. The best method is to place a garden hose at the base of the tree, letting it trickle slowly until the soil is saturated, usually ½ hour to 1 hour. New plantings should be watered to provide a minimum of 1" of water each week (including precipitations until well established, 3-5 years.

Probably more plants are lost because they were planted too deep than for any other reason. When planting on a poorly drained site, set plant so that several inches of the root ball and the rootflare are above the soil level.

Larger sized containers, five gallons or more, should be cut away with special cutters. If plants have become overgrown in the container and the root mass is growing in a tight, compact circle around the soil ball, cut out the outer roots with a sharp knife in two or four places around the soil ball. Make the cut from the top to the bottom of the soil ball.

Another solution to container or pot bound habit is to split the lower half of the root system and spread the roots horizontally. This practice will prune the roots (thus encouraging new laterals), prevent girdling roots, and raise the lower roots closer to the soil surface.

Bare-root plants should have the packing material and all damaged or dead roots removed. If possible, before planting, the roots should be soaked in water for at least one hour, but not longer than twenty-four hours. Do not allow roots to be exposed to sunlight or dry out before planting. It is best to keep bare roots covered with moist burlap or some reasonable substitute until planting time. For bare-root plants, the key is to keep them cool and moist until planted.

After the B & B plant or container grown plant has been placed in the hole, fill in around the plant with the backfill until the hole is two-thirds full. With bare-root plants, the soil should be worked gently in and around the roots while the plant is being supported. Some practitioners feel the most satisfactory way of firming the soil and removing air pockets is to fill the hole with water. This can be effective but is also quite messy. Firming the backfill to secure the root ball is just as effective. Firm the soil, but avoid compaction.

Before finishing the process, make certain the plant is straight and at the proper depth, then complete the filling process with the backfill. Water the plant thoroughly and cover the planting area with mulch. Organic mulches such as pine needles, bark, and wood chips provide the best environment for future root development.

Note that no fertilizer is added to the backfill mixture. Newly developing roots can be damaged by too much fertilizer. If it is apparent from knowledge of the soil condition that fertilizer is needed, add a water soluble material at the recommended rate during the final watering phase. Slow release fertilizers may also be used. Large areas should already have an established fertility level based on recommendations from soil test results before the planting of individual plants takes place. A fertility program should begin late in the fall of the first growing season.

With all newly planted woody plants, it is usually more successful to avoid heavy pruning at planting if you can insure that the plants will be well-watered during their first year or two in the ground. Pruning reduces the leaf area; this reduces transpiration but also reduces the leaf surface area that produces photosynthates for root growth. Since the plant will not resume a normal growth rate until the original root system size is re-established, one is better off to avoid wilting by watering, than by reducing the size of the canopy. This also avoids the proliferation of suckers in the inner canopy.

Segment Two – Staking and Guying

Most trees and shrubs do not need to be supported after planting unless bare-root stock has been planted that is quite large, or very tall B & B specimens have been used. If staking is required, consider the following techniques for shrubs that will be described for trees.

A general rule of thumb is to provide support for all bare-root trees over eight feet in height. Smaller B & B or container-grown trees usually do not need support. Trees that are quite large, six inches or more in diameter, should be supported. There are several methods for supporting smaller trees. A single stake about three-fourths the height of the bare-root tree should be driven at a distance of two to four inches from the center of the planting hole, so that the stake will be on the southwest side of the tree trunk. This should be done before the tree is placed in the hole. Then plant the tree according to the procedures described in the previous paragraphs. After the planting is completed, fasten the tree to the stake with a wire or a suitable substitute formed in a loose loop. Before fixing both ends of the wire to the stake, slip a short length of rubber hose onto the wire. The part of the wire in contact with the trunk should be covered with the rubber hose to prevent injury to the bark as the tree moves in the wind. The advantage of this method of support is that the stake is close to the trunk and does not cause maintenance problems. In turf areas, stakes and guy wires outside the perimeter of the planting hole can be troublesome since they hinder mowing operations. Under no circumstance should this method of support be used on B & B or container-grown stock. It is usually not possible to locate a stake close to the trunks of such stock before planting, and if driven through the soil ball, the stake may cause damage to the soil ball and the roots.

A more satisfactory method of supporting small trees is to use two parallel stakes driven solidly at least eighteen inches into the firm soil about a foot beyond the planting hole on opposite sides of the tree. The height of the stakes after being driven into the ground should be approximately one-third that of the tree. Strapping attached to both stakes and looped loosely around the trunk support the tree. The straps should be attached no higher than 1/3 the tree's height.

A third method is to fasten three guy wires to stakes that have been fixed in firm soil around the edge of the planting hole at an equal distance from the hole and from each other. Refer to the drawing on page 13 of the publication "Planting Ornamentals." Stakes are generally used on smaller plants. They should be driven 18 to 30 inches into the ground at a 45° angle away from the tree trunk. It is absolutely essential that all three stakes be firmly fixed so that one or more of them will not pull out in high winds. The top of the stake is notched to hold the wire. The wire is then fastened at the lowest scaffold limbs by a loose rubber-hose covered loop. The other ends of all wires should be fastened equally tightly, without putting a strain on the trunk, to the stakes. The wires should be firm but loose enough to allow slight movement of the tree, a factor essential to its proper development.

Finally, stakes may be driven into the firm soil adjacent to the root ball with just a few inches remaining above ground. Next attach a crosspiece between the stakes and across the top of the root ball by attaching with screws. The staking materials may now be covered with mulch. This method is more aesthetically pleasing, secures the root ball while allowing movement of the top (important for the development of trunk strength), and eliminates the need to remove the staking materials at a later date. Staking materials that restrict movement of the trunk should be removed within one year of staking.

Newer tools and techniques now exist for staking trees and are far superior to traditional methods. One of the best systems currently available is the "Tree-Mate-O" staking system. This system employs a plastic arm and heavy rubber band to gently secure the trunk of the tree to a single metal snow fence stake installed outside the root ball. The system is fast, easy to use, effective and re-usable for many years.