

Planting Trees Correctly

When to Plant

Container-grown plants and balled and burlapped (B&B) plants with well-developed root systems can be planted throughout the year. However, most B&B plants are dug and planted during the cooler months after leaf drop. Red maples, crape myrtles, hollies and Southern magnolia can be dug at certain times during the summer. Innovative methods of digging during the winter and then potting the B&B trees for subsequent sale during the summer have begun in South Carolina.

As stated, container grown plants can be safely planted at any time of the year, but they are best planted in the fall to take advantage of the dormant season root growth. Unlike the tops of ornamental plants that go dormant and cease growth for the winter, roots of ornamental plants in the Southeast continue to grow throughout the warmer fall and winter months. Fall planting allows the carbohydrates produced during the previous growing season to be directed to root growth since there is little demand from the top. This additional root growth may lessen the dependency of the plant on supplemental irrigation the following summers.

Trees and shrubs must be planted at the right depth and receive the right amount of water if they are to establish themselves and flourish. Planting too deeply and under- or overwatering are among the most common and serious planting errors.

Soil Preparation

While shaping the final grade of the planting beds, remember the importance of good drainage. Poorly drained soils are a leading cause of plant problems in the landscape. Therefore, before placing the first plant in the ground it is important to take steps to assure adequate drainage.

If a site is known to be poorly-drained, create raised beds. Often beds can be elevated 8 to 12 inches above the existing grade by using native soil on site, but sometimes it is necessary to bring in additional well-drained soil. In extreme cases, you may have to install a drain tile to help carry water off the site.

In shaping the final grade, avoid leaving dips or pockets where water is likely to stand. Shape beds so that excess water will be carried off the site and away from buildings. Water also can be directed to unplanted areas. Few ornamental plants, with the exception of pond plants, can tolerate long periods of standing water. Good drainage is critical for most ornamental plants.

If you are planting around new construction, remove any debris left on the site that may cause plant growth problems. Chunks of concrete, roofing shingles, globs of tar, oil spills and sheetrock are a few of the hazards of new construction sites. These can result in long-term growth problems. Soil compaction is also a problem near new construction. Tilling deeply and incorporating organic matter is often sufficient to loosen hard compacted soils.

Soil Test

In addition to examining the physical properties of the soil and taking corrective measures on poorly drained soils, a soil test will determine which nutrients need to be applied and whether you need to adjust the pH. A soil sample is best taken several weeks before planting so you will know how to treat the soil at planting time. However, if new soil is brought onto the site at planting time or if soil is moved around during the final grading, it is best to wait until all the soil is in place before sampling. You can adjust pH or surface-apply fertilizer at the

recommended rate later, after plants are established. Soil testing is available at a nominal fee through county Extension offices. For more information on soil testing, refer to the fact sheet [HGIC 1652, Soil Testing](#).

The majority of ornamental plants prefer a soil pH from 5.8 to 6.5. Above or below this pH range, nutrient deficiencies often result. To raise the pH level of an acid soil, dolomitic lime is usually added, while the pH level of alkaline soils can be lowered with amendments like sulfur or aluminum sulfate. Adjusting soil pH without the benefit of a soil test can result in nutrition problems that are difficult to counteract and correct. Follow soil test results.

Organic Amendments

Organic amendments such as composted products are applied to soils to improve the nutrient and water-holding capacity of soils, or, in general terms, to improve soil tilth. Research has shown that when adding organic matter to a soil, it is best to incorporate it throughout the rooting zone as opposed to placing it in the planting hole. By incorporating an amendment uniformly in the soil, the entire rooting area becomes a uniform growing environment for roots.

On the other hand, when a planting hole alone is amended, the structure of the soil in the hole can differ significantly from that of the surrounding native soil, if an excessive amount or the wrong type is added. This can encourage the roots to stay within the confines of the hole and discourages them from entering the surrounding native soil, especially if a perfectly round planting hole is dug.

Some types of organic materials and quantities of them can also upset the water equilibrium between the surrounding native soil and the soil in the hole. Fine-textured organic matter such as peat moss, placed in the planting hole can act like a sponge in a bathtub, holding too much moisture after rain or irrigation. Coarser-textured material, such as composted pine bark, is less likely to hold excess moisture. In heavy clay soils, use a shovel or mattock to notch out the sides of the round planting hole. This will enable growing roots to more easily enter the surrounding soil.

Organic matter should comprise approximately 10 to 20 percent of the total soil volume. For example, preparing a bed 8 inches deep requires the addition of about 1 to 2 inches of organic matter such as compost, leaf mold, or composted pine bark. Drainage can be improved in clay soils by subsoiling or deep tilling prior to adding organic matter.

Composted materials immediately provide organic matter to the soil. Do not use uncomposted bark products as amendments. Freshly milled bark that has not been composted will slowly rob plants of nitrogen when used as an amendment. As microorganisms in the soil feed on bark and decompose it, they will use nitrogen in the soil. Also, the pH of the soil often drops dramatically below the desirable range when uncomposted materials are used as amendments.

Well-composted organic products have a rich, earthy smell, a crumbly appearance, and the original organic materials are no longer recognizable. For the best choices of composted material, choose either well decomposed material from your home compost pile, or purchase composted pine bark. The composted pine bark may still contain some small bark chips, but this can aid in improving the internal drainage in fine-textured clay soils. Additionally, composted pine bark may help suppress certain soil borne disease causing organisms.

How Deep to Plant

Trees and shrubs must be planted at the right depth and receive the right amount of water if they are to establish themselves and flourish. Planting too deeply and under- or overwatering are among the most common and serious planting errors.

In well-drained soil, the planting hole should never be dug any deeper than the height of the root ball. This means that the soil at the bottom of the hole is left undisturbed. Setting the root ball on loosened soil will cause the tree to settle and sink too deeply into the soil. Locate the topmost layers of roots in the root ball so that it will be level with the soil surface. Check to be sure that there is not an excess layer of soil (or container media) already covering the root ball. As little as a half-inch of excess soil over the root ball can inhibit or prevent water from entering the root ball, especially on trees planted

from containers. Only mulch should be placed over the root ball. In well-drained soil, the planting hole should be at least twice and preferably five times wider than the root ball. Roots will grow more quickly into loosened soil, thus speeding up the tree's establishment time.

In poorly drained or compacted soil, the plant is best placed higher than its original planting depth at about 2 to 4 inches higher than the surrounding soil. Be sure to build the soil up beside the root ball so that the sides are not exposed, and do not place additional soil on top of the root ball. This will allow oxygen to reach the roots in the upper surface of soil. It will also cause excess water to drain away from the plant rather than collecting beneath it. Do not disturb the soil under the root ball to prevent any later settling, which will move the plant roots deeper into the soil. The top of the root ball may dry out quickly in the summer on some sites, so be prepared to irrigate accordingly.

Preparing & Setting the Root Ball

Trees and shrubs grown in plastic or other hard-sided containers can be removed from their containers and placed directly in the holes prepared for them. Cut any circling roots so they will not strangle the tree later on. If a tree or shrub is pot-bound, use pruning shears or a serrated knife to make slices 1 to 2 inches deep going from the top of the root ball to the bottom. Make these slices in three or four places around the root ball. Pull the roots growing along the outside of the root ball away from the root ball. Research has shown that although this kind of pruning does not increase root growth after planting, slicing root balls, whether pot-bound or not, enhances the distribution of regenerated roots in the surrounding landscape soil. New roots grow from behind the cut ends.

When preparing the hole for a bare-root tree, dig it wide enough so that roots can be spread out. Do not cut or break roots or bend them in order to fit the hole. Use a sharp pruning tool to cut or trim any roots that are obviously dead, injured or dried.

Spread the roots out and position the topmost root just under the soil surface. Shallow roots either may be parallel with the soil surface or angled slightly downwards. Some people spread the roots over a mound of firm soil in the planting hole and carefully place soil between groups of roots; others wash soil between the roots.

Natural or synthetic burlap is used on trees that are balled-and-burlapped (B&B). To determine which type has been used, hold a match to a small portion of the burlap. As a rule, natural burlap will burn and synthetic will melt.

Synthetic burlap will not decompose in the soil and can cause roots to girdle the tree. Because this could ultimately strangle the tree, remove synthetic burlap entirely. After pulling burlap away from the sides of the root ball, tip the root ball to one side and push the burlap underneath it as far as possible. Then tip the root ball to the other side and slide the burlap out from under it. The tipping should be performed by handling the root ball; pushing on the trunk of the tree could crack the root ball. When a wire basket is holding synthetic burlap in place, cut away the basket to remove the synthetic burlap, or, if the lower portion of the basket must be left intact, cut an "X" in the burlap in each section of the basket.

Natural burlap is biodegradable and can be left along the sides and bottom of the root ball, but should always be removed from the top of the root ball where it is subject to drying out. Dry burlap repels water, making it difficult to rewet the root ball. In poorly drained areas, remove the natural burlap entirely, if possible, to prevent it from holding too much moisture near the roots.

Wire baskets and wire wrapping are frequently used to help hold a B&B root ball intact during shipping and handling. Trees that are stored after being dug with a tree spade are also placed in wire baskets. This is an effective means of keeping roots in contact with soil until planting. Remove at least the top portion of the wire basket after the root ball is in place.

Filling the Planting Hole

The soil used to fill in around the root ball of the newly planted tree or shrub is called backfill. Your best backfill will be the loosened original soil from the planting hole mixed with 10 to 20 percent compost.

Loosen and break up any clods of soil before backfilling. Clods in the backfill create detrimental air pockets around the root ball and could hinder root growth and establishment. Place the plant into the planting area or hole at the correct depth, and then backfill the bottom half of the space around the root ball.

Tamp the soil lightly with your foot. If amendments are not used, do not tamp so heavily as to compact the soil. Finish filling the hole with loose, unamended soil, and gently tamp again.

Construct a 3-inch-high water ring around the edge of the root ball to hold irrigation water. Initially the root ball will need to be watered directly because roots have not yet spread into the surrounding soil.

Pruning at Planting

Little if any pruning should be necessary at the time of transplant. Do not prune a B&B plant to compensate for root loss. Research indicates that pruning does not help overcome transplant shock unless the plant is receiving insufficient water.

Branches that are injured, diseased or dead may be pruned but are also an indication of a poor-quality tree. It would be best to exchange it for a healthy one.

Trees with poor structure should be pruned at planting to correct the problem, especially if no further pruning is planned for the next year or two. Poor form should not be permitted to develop, as it will become increasingly more difficult to correct. On trees with adequate form, begin pruning for structural development a year or two after planting.

Mulching

Apply 2 to 4 inches of organic mulch over the planted area. Do not allow mulch to touch the stem or trunk to reduce chances of stem rot. Mulching helps to eliminate weeds, retain moisture in the soil, moderate soil temperatures, and eventually adds to soil organic matter content. It also helps decrease erosion of raised soil around plants that are planted above the soil level. Some commonly used mulches include pine needles, pine bark, hardwood bark, wood chips and partially ground leaves.

Watering

Initially the root ball will need to be watered directly because roots have not yet spread into the

surrounding soil. The raised soil water ring will help concentrate the water in the root ball area. Water the plant slowly and well after mulching. It is important to note that many plants die from too little or too much water during the first few months after planting. Plants in well-drained soil often get too little water, and those in poorly drained soil get too much water.

Become familiar with the planting site, and try to maintain constant moisture (not saturation) in the root ball for the first few months after transplanting. Some sites dry out more quickly than others and will require more watering. Water rings should be removed by the end of the second growing season if they have not settled on their own. Good watering practices result in plants that establish more rapidly and thus become more quickly resistant to drought, pests and disease. For further information on watering newly planted shrubs and trees, refer to the fact sheet [HGIC 1056, *Watering Shrubs & Trees*](#).

Maintenance

For more information on fertilizing trees and shrubs, refer to the fact sheet [HGIC 1000, *Fertilizing Trees & Shrubs*](#). For more information on tree care after planting, refer to [Forestry Leaflet 17, *Newly Planted Trees: Strategies for Survival*](#).

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