



Steps to Follow When Planting Trees and Shrubs

Most woody ornamentals are purchased as container-grown or balled-and-burlap (B&B) plants. Container plants are usually grown in a mix containing peat and bark, with either sand, vermiculite, or perlite. B&B stock are grown in a variety of field soil types with some amendments.

Plant Selection

It is important to choose the best plant for a particular site. Landscape design principles, individual plant requirements, and site analysis are all important to insure a successful planting. When evaluating a site, consider soil type, shade or full sun, available planting space, soil pH, and drainage. Plant hardiness and mature size are other important considerations.

Before planting inspect plants and identify potential problems such as root ball size too small for tree trunk diameter or shrub size, loose or broken ball of earth, drought-stressed plants, small or off-color leaves, mechanical damage or evidence of disease or insect damage.

Time of Planting

B&B plants lose 80 to 95 percent of their roots when dug from the field; therefore, it's best to plant them in early spring before budbreak. This enables the plant to take advantage of a growth regulator that is translocated from the growing shoot tips to the roots, promoting rapid development of the root system.

Container-grown plants are best planted in warm soils during summer and fall to encourage rapid root development. The roots must grow at least one-half inch before the plant begins taking up water and nutrients. Most planting in central New Hampshire should be completed by October 1st to allow time for adequate root establishment to prevent the plant from heaving during winter freeze-thaw cycles.

Soil Preparation

Before planting have the soil of the planting site analyzed for pH, nutrients, texture and percentage of organic matter. (For a soil test kit, call UNH Cooperative Extension's Family Home & Garden Education Center, 1-877-398-4769, weekdays 9 AM - 2 PM.)

pH

Unless previously amended, most New Hampshire soils are too acidic for most plants to grow well and will need to be amended with lime or wood ashes. Rhododendron, mountain laurel, and other broadleaf evergreens grow best within a pH range of 5.0 - 6.0; some needle evergreens, such as yew and arborvitae

have a range of 5.5 - 6.4; and most deciduous trees and shrubs (oak being an exception) do best when the pH is 6.0 - 6.5. Ground limestone or ashes from a wood stove will raise the pH, while ground sulfur will lower it. The rate of application depends on soil test results.

Nutrients

Never place a complete commercial fertilizer, animal manure or fortified compost in the hole at planting time or root injury may result. If soil test indicates low phosphorus, superphosphate (0-20-0) can be used safely at planting time to promote root development. If needed, apply at the rate of one-half pound per bushel of soil removed from the planting hole.

Soil Texture

Soil texture refers to the relative percentages of sand, silt, and clay. The ideal composition is less than 55 percent coarse sand, 10 percent clay, and the remainder silt. Soil should contain no greater than 60-70 percent sand or moisture retention could be a problem. If soil contains greater than 20 percent clay, drainage and aeration could be a problem.

Topsoil buyers beware! Some vendors cut the soil with sand, raising its level to 75 percent. Soils containing high levels of sand are usually light in color unless wood ash has been added for a dark “rich” appearance.

Organic Matter

The organic components of the backfill may have a dramatic impact on root establishment. A B&B plant has a root ball comprised mainly of soil, while a container-grown plant is in an artificial mix of varying percentages of peat, bark, and sand or vermiculite.

Adding large amounts of organic matter is no longer recommended when planting trees and shrubs, after researchers have found a negative response when vermiculite, compost, peat, bark or other amendments are placed in the planting hole. This practice creates an abrupt interface between the root ball and the mix, a textural barrier that will inhibit expansion of the root system outside the ball.

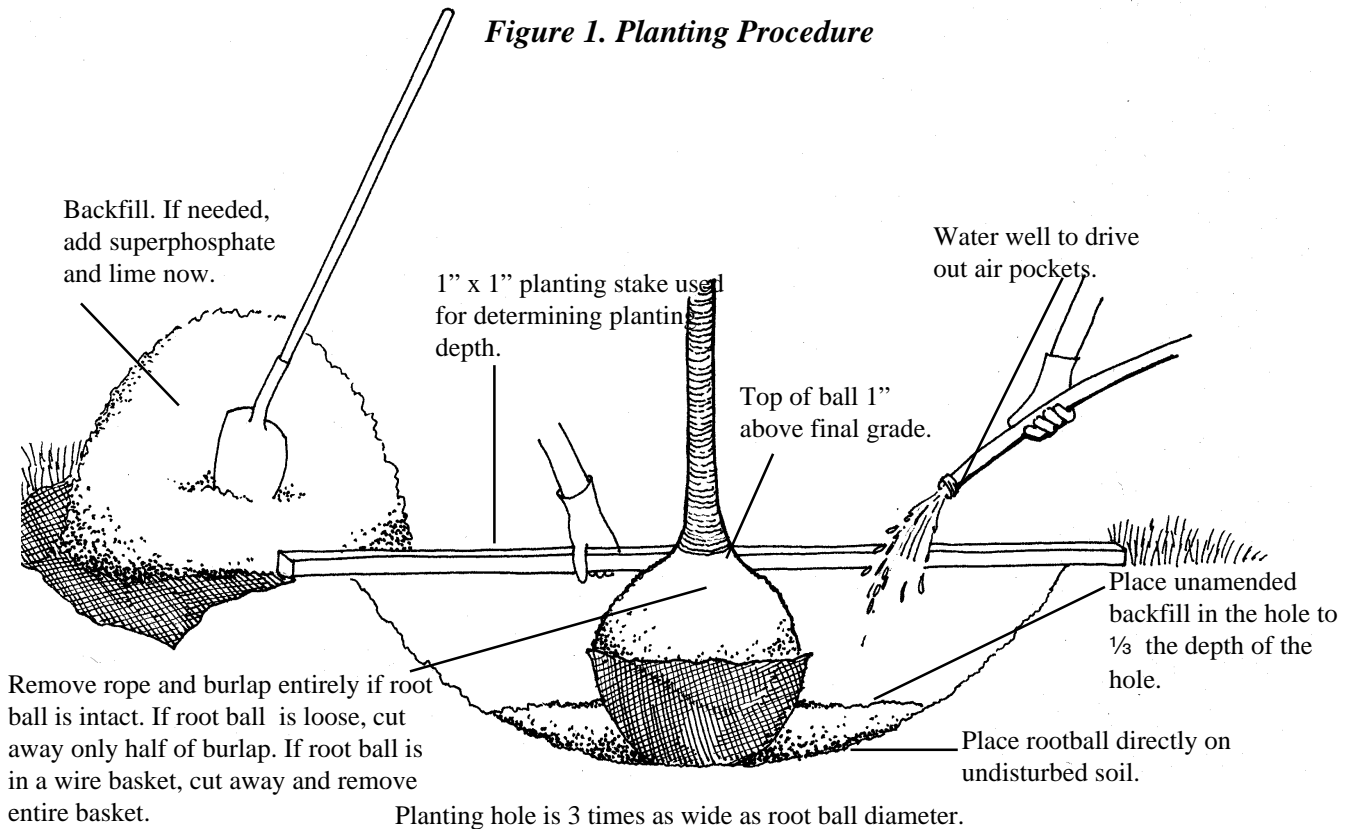
During dry periods water will move from a coarse-textured material (peat/compost mixes) to a fine-textured material (mineral soils), resulting in a drying out of the root ball. During periods of excessive rainfall the ball may become too saturated and the roots will suffer from lack of air.

The best solution for handling backfill is to use soil dug from the planting hole. If the soil quality is poor, purchase and use loam similar in texture to the existing soil. If the existing soil is excessively sandy or contains heavy clay, the first choice is to replace the loam. The second choice is to add a small amount of an organic soil amendment to improve the soil structure. It is most common and desirable to have soil organic matter composition near 7 percent.

Planting Procedure (See Figures 1 & 2)

Research conducted by a large national tree firm showed improper planting depth as the major cause of tree mortality in maintained landscapes. This is most true with balled and burlapped plants because the trunk flare and soil line are hidden beneath the burlap, making it difficult to determine the height of the ball.

Figure 1. Planting Procedure



1. Pre-plant tips

- *Do not pick up plants by their tops; the heavy weight of the soil will injure root hairs.*
- *Remove plants from containers just prior to planting, so plants will not sit on the ground in the hot sun.*
- *Water plants three hours before planting.*
- *Consider inoculating container-grown plants at this time with mycorrhizal fungi. Products containing both Ecto- and Endo-mycorrhizae (biococktails) help promote rapid plant establishment. The fungi have a symbiotic relationship with the plants, whereby the fungus provides phosphorus to the plant in exchange for a small amount of carbohydrates.*

2. Dig a hole 3 times as wide as the root ball and as deep as the height of the ball. If the plant is balled and burlapped, loosen the burlap and feel the top of the ball for an accurate measurement. When planting a tree make sure the trunk flare remains above ground level. If planted too deep, the roots will suffer from lack of oxygen.

3. Place a tree in the planting hole with the trunk flare $\frac{1}{2}$ - 1 inch above the surrounding grade to allow for some settling. Place a straight 1" x 1" stake across the hole to help determine planting depth.

4. Remove all twine, rope, and as much of the burlap as possible. Synthetic burlap or other non-degradable materials should be completely removed. If the tree ball is in a wire basket, cut away and remove the entire basket.

5. For containerized plants, inspect the planting media for roots growing in a circle. Correct this situation by freeing and spreading out the roots, roughing up the sides or cutting through the roots in several places. If left unattended the roots will continue to grow in a circle and possibly girdle the plant.

6. Stabilize the ball by placing good loam in the hole at $\frac{1}{2}$ the ball depth. When needed, mix lime and superphosphate (with no additional fertilizer, manure or compost) with the backfill.

7. Stake the plant now, but only on very windy sites. Research has shown that staked trees may develop a smaller root system and decreased trunk taper. Trees should not be staked longer than one year.

8. Water the plant thoroughly until the surrounding soil is saturated to the depth of the root ball. Then allow the soil to settle.

9. Resume backfilling and tap the soil lightly to eliminate air pockets. Do not “pack” the soil too firmly. Compaction will reduce fine air spaces needed for root development.

10. When planting is completed, water the planting area deeply.

11. Place mulch to a depth of 2 to 3 inches (deeper over lighter soils and shallow over heavy soils) tapering inward, so that no mulch touches the trunk. Mulch piled up against the trunk may promote crown rot and create a favorable environment for insects. The most common mulches are pine bark, aged wood chips and pine needles.

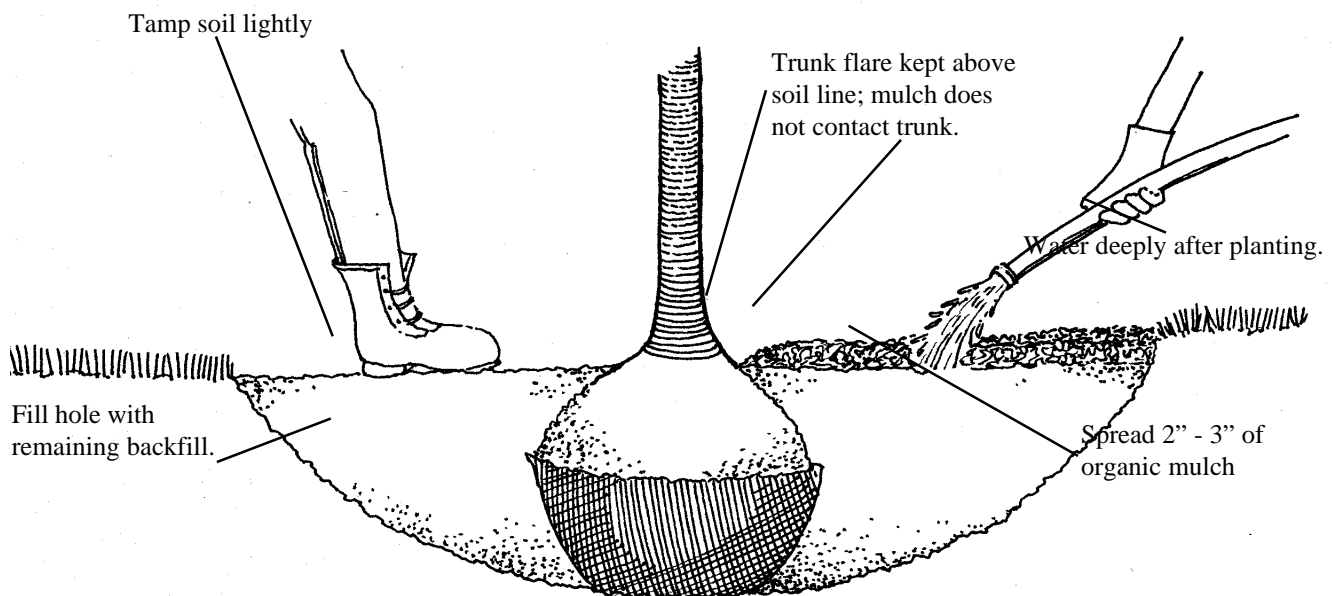


Figure 2. Planting Completed

Maintenance Practices

Watering

Water is a critical factor in plant establishment. Excess or insufficient water will restrict the formation and growth of new roots. Newly planted trees and shrubs must receive adequate irrigation weekly during the first growing season. Allow water to run slowly, soaking the soil around the plant once or twice a week. Apply water at the edge of the planting site.

Fertilization

A slow-release fertilizer applied four weeks after planting will benefit bud formation in the fall and microorganisms feeding on the cellulose in the mulch. A general recommendation is 2 oz. 18-6-12 Osmocote per 4 sq. ft. area.

Pruning

Prune only dead or injured branches the first year after planting. Roots are replaced faster when there are more leaves to produce carbohydrates and hormones.

Tree Wrapping

Tree wraps are sometimes used to protect young, thin-barked trees from sun scald and frost cracks during winter. To help prevent moisture from building up and insects from taking shelter under the plastic, remove the wrap before the buds break in early spring.

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