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EXTENSION

# Installing Trees and Shrubs

Buying trees and shrubs for landscaping can be expensive. For a newly built home, the estimated cost for a landscape design is 5 to 15 percent of the home's cost. This type of investment must be well planned and designed for years of pleasure. In many situations, people do not follow instructions for installing individual plants in the landscape.

Establishing landscape trees and shrubs successfully depends on proper soil preparation, planting methods, and follow-up care. Plants require oxygen, nutrients, and water for proper growth. Improper planting and inadequate follow-up care are the main causes of plant death. This is a chance to get new plants off to a good start and to examine planting techniques for greater success in establishing a home landscape.

Preparing planting sites for shrubs in a landscape design involves two methods. When installing several plants, prepare a planting bed by tilling or double-digging the site 10 inches deep, working in organic matter while preparing the planting site. Add fertilizer and amendments by mixing thoroughly into the soil. This soil preparation is ideal when installing several plants in an area.

The second site preparation method involves digging a hole for each plant. The hole planting method is used for replacing or adding plant material. Site preparation involves more than just digging a hole for each plant.

Most nurseries grow ball and burlap and bare-root plants in sandy to loamy soil. When you move these plants to the landscape site, the difference in soil texture can make transplanting more difficult. Getting new plants established in tough, clay soil is a challenge. Clay soils are rich in nutrients but are difficult to manage. A loam soil has fairly balanced amounts of clay, silt, and sand, making it ideal for transplanting shrubs and trees.

## Preparing the Planting Site

Dig the planting hole at least twice as wide as the diameter of the root ball. Dig the edges of the hole at a 45-degree angle. If a landscaper uses a mechanical tree spade, they should cut grooves in the sides and bottom of the hole to encourage root growth into the surrounding soil.

## Amending the Planting Site

If you are adding amendments to the soil, choose carefully. Remember, young plants eventually send roots beyond the planting hole. Peat moss or other soil-structure improvers often are added to the growing medium. This results in the newly planted tree growing an intensive root system that will soon become mated with the good soil but will not easily penetrate beyond it into the heavier soil.

The recommendation for amending clay soils is to add organic matter such as pine bark or leaf mold. Add the bark at the rate of 2 to 3 inches per 6-inch depth of clay-like soil. Add 1 inch of peat moss to a 6-inch depth of sandy soil. Ideal soil consists of 15 percent air, 50 percent solids, and 35 to 40 percent water.

## Ball and Burlap Plants

For ball and burlap plants, dig the planting hole no deeper than the height of the soil ball. Digging the hole deeper lets a plant settle and can suffocate the roots. Planting depth needs to be the same as in the field where the plant was grown. Leave the bottom of the hole undisturbed, with firm soil so the plant will not settle. The discoloration on the bark near ground level indicates the soil level. Lift the plant by the root ball, not the trunk. When filling the hole, be careful not to disturb the root ball. Add backfill up to two-thirds of the root ball's

depth, firm the soil, then settle it with water. Remove the remaining burlap from the top of the root ball. Burlap left on top of the soil line will have a “wick effect,” drying the root ball. Cut all strings or metal wire. Finish backfilling the hole with soil.

Make a 3- to 4-inch berm or raised area surrounding the root ball. (A berm is a ring of soil around the base of the plant outside the planting hole. This helps hold water and protects the shrub or tree from possible damage by a lawn mower.) Be sure the berm is well beyond the edge of the root ball so water will be directed to the right place (Figure 1). If drainage is poor, remove the berm after the plant is established to avoid excess water in the hole.

## Container-Grown Plants

Handle container-grown plants the same way as ball and burlap plants. Make the planting hole at least twice the diameter of the soil ball but no deeper than its height. Spread the roots by gently teasing to break the circular root pattern. If the plant is pot bound, make three or more vertical cuts through the root system. Also, cut the bottom of the root ball to remove matted roots.

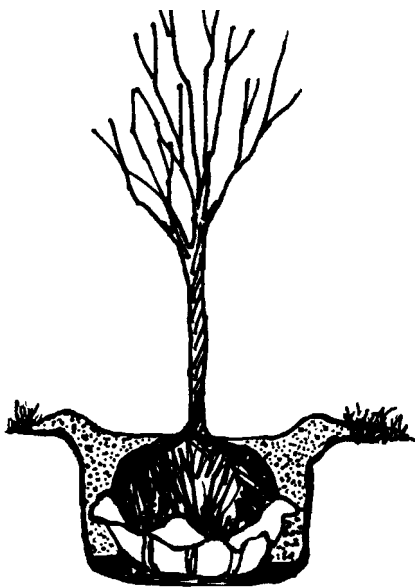


Figure 1. Ball and burlap planting with a berm to hold in water.

## Bare-Root Plants

Some bare-root plants are packed with materials to keep roots moist in the bag. Carefully remove any packing material from the roots. Inspect the roots for any diseased, broken, or dead roots, and clip these roots with pruning shears before planting. Clip exceptionally long roots. Immerse the roots in a bucket of water to soak for at least 1 hour.

Make individual planting holes for bare-root plants wide enough to spread the roots but no deeper than the original soil depth. To prevent settling, build a crown for fibrous-rooted plants, such as roses. Leave the center of the bottom portion of the planting hole higher than the edges to let the plant rest firmly. This mound at the bottom of the hole keeps the plant from settling and helps spread roots in a natural position (Figure 2).

## Watering

Thoroughly water newly transplanted trees and shrubs. Water is crucial during the first growing season, as it is the leading cause of transplant failure. Properly watered plants have a greater chance of survival.

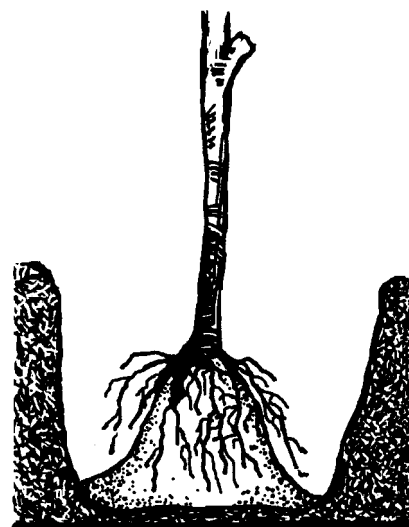


Figure 2. Planting a bare-root plant on a crown of soil.

## Mulching

Mulching is essential for young shrubs and trees. It helps save and extend available water, reduces competition by controlling weeds, moderates temperature extremes, and acts as a barrier or visible marker for landscape maintenance equipment.

Too much mulch can be harmful. Mulching with only 2 to 3 inches of bark or 6 inches of pine straw is enough to control weeds and hold moisture in transplanted plants. See [Extension Publication 2301 Mulches for the Landscape](#).

## Staking and Guying

It is sometimes necessary to stake or guy a tree that cannot stand up by itself or that is in a windy or heavy-traffic area. Guying anchors young trees to the ground with wires and stakes (Figure 3). Young trees have a small trunk diameter relative to their height; guy wires support slender trees and protect them from wind damage.

When staking trees, remember that the main tree stem grows stronger more quickly if the treetop is free to move with the wind. Set staking posts in line with the tree trunk, far enough away so the trunk cannot rub against

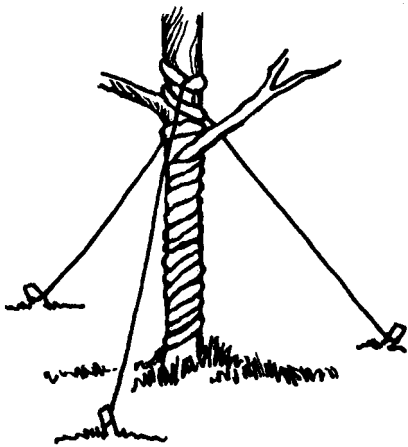


Figure 3. Guying anchors young trees to the ground.

the post and damage its bark. Use a broad bandage or run the wire through a piece of rubber hose to secure it to the tree. Tie the tree at a point just high enough to hold it upright in calm weather (Figure 4). After windy conditions, the tree should return to its vertical position.



Figure 4. Staking uses posts parallel to the trunk to support trees.

## Easy Test to Determine Soil Drainage

To help determine soil drainage, choose a day when the soil is not excessively wet from rain or other factors. Use a large coffee can (approximately 46 ounces) with the top and bottom removed. Dig a 4-inch-deep hole and set the can on the bottom of the hole. Firm the soil around the can so water cannot slip under the bottom edge.

Fill the can with water; wait an hour, and then measure the water level. If the water level drops at least 2 inches in 1 hour, the drainage is considered normal. If the level drops more than 5 inches in 1 hour, it is considered too much. If the level doesn't seem to drop at all, the soil drainage is poor.

Another option is to dig a hole 1 foot by 1 foot wide and fill with water. Follow the same drainage rate as above.

## Planting in Poorly Drained Soils

There are alternatives if a planting site does not allow for surface drainage to remove excess water:

- Install a French drain, which removes water through a network of drains. There must be a point lower than the landscape site for the water to drain.
- Plant in a raised bed, which needs to be at least 12 inches deep.
- Prepare a large berm (from 1 to several feet deep). Such structures can complement your landscape.
- If you are planting directly on heavy soil, incorporate a 3-inch layer of new soil to form a transition layer. A sudden change in soil texture disrupts the flow of water through the soil profile, possibly causing a stagnant area beneath the new soil profile.

## Transplanting Existing Landscape Plants

The ideal time to transplant is during the dormant season. Temperatures are lower, the soil has more moisture, and plants will be less stressed. Dig/remove the plant with a large enough root ball to sustain the plant. Move to a new location and install by following the previous instructions.

If a plant has to be moved during warmer months, prepare the new location beforehand so the plant can be installed immediately after removing it from the soil. These plants may need frequent irrigation through the remaining summer season.

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