

Planting Container-Grown Trees and Shrubs in Your Landscape

William M. Fountain, Richard E. Durham, and Dewayne L. Ingram, Horticulture

Many landscape plants are installed as container-grown (containerized) specimens. These, along with balled and burlapped (B&B) and bareroot, are the three major ways we transplant trees and shrubs from nurseries to our landscapes. These plants are most frequently grown in containers made of plastic but sometimes other materials such as wood or metal. The keys to quick establishment and decades of satisfaction are following proven techniques in installation and providing proper care after transplanting.

Why Containerized Plants?

There is no one best method (containerized, bareroot, or balled and burlapped) of buying and establishing plants in landscapes. Each has advantages and disadvantages. Container plants are relatively light weight and easy to handle. There are no major labor expenses in harvesting them. You just pick them up and move them. This makes them less expensive to ship than balled and burlapped plants but more than bareroot plants. The roots are protected by the container and light weight, soil-less media so are not exposed to the drying effect of sun and wind like bareroot plants.

The biggest disadvantage of containerized plants is that they are sometimes grown for too long in their container. When this happens the roots begin to circle the inside of the container. If this problem is not addressed and corrected, the plant will struggle and die after it has been installed.

Plants growing in containers must grow in a very well-drained, soil-like material. Soil that drains well in your home garden will not drain very well if you put it in a container. The material used in containers rarely contains any real soil. It is usually a mixture of tree bark and/or wood chips and/or peat moss or similar materials. Because there is no soil in this mixture, it is called media, substrate, or soilless mix.

The Planting Hole

The quality of the planting hole is one of the most important factors in reestablishing plants in your landscape. Don't take shortcuts here. The general rule of thumb is that the planting hole should be at least two to three times the diameter of the root system. The wider you dig the planting hole, the more rapidly your new plant will become established and grow. The harder, more com-



These containers are small for the size of the tree. This is a good indication that the roots are going to be so confined in the container that they will be circling the inside of the container. Circling roots often result in the decline and death of the plant years after it was installed.

pacted your soil is, the more important it is to dig an even wider planting hole.

You can't dig a planting hole too wide, but it is important to make sure that the planting hole is never deeper than the height of the root system. If you mistakenly dig the planting hole too deep, add soil to the bottom of the planting hole and tamp it firmly to ensure that it will not settle. Loose backfill will settle. If it settles below the root system it can result in a depression that will collect water, roots that are too deep will suffer from low levels of oxygen. Oxygen in soil is essential for healthy root development and uptake of water and mineral elements. Plants with root systems that are too deep will also be predisposed to root diseases.

When planting containerized plants it is important that circling roots be unwound and spread out in all directions. Once planted and out of sight, circling roots can continue to grow around in a circle and eventually girdle the other roots and stem. Never try to force the roots into a small planting hole. Dig a bigger planting hole.



Hydrangea macrophylla plant taken out of the container. Note the circling roots.

Checking the Drainage

Certain sites can have poor drainage. Water standing for extended periods of time is always a reason for concern, as is the presence of blue-gray clay. Soil that is too hard to easily dig a planting hole is an indication of compacted soil. If you find any of these concerns, you should dig the planting hole and fill it with water. The water should drain at the rate of 1 to 3 inches per hour. If the planting hole has not fully drained after 24 hours, you should fill it in and find another spot to plant. If a tree or shrub is essential for this location, you can select a floodplane species such as alder or bald cypress. Small shrubs can be grown if raised beds or berms are used to provide sufficient soil volume and adequate drainage. Mounds must be watered more frequently during droughts.

Into the Planting Hole

Containerized plants are lighter weight than balled and burlapped plants. This is an advantage in handling them before planting. Small plants can usually be removed from their containers by turning them upside down and giving them a gentle downward shake. Make sure that you are holding the rim of the container in the palms of both hands with your fingers across the rootball. If it falls out of the container and your fingers are not there to catch it the plant will hit the ground and break the branches. Hold the plant by the rootball. Carrying plants by their stems puts too much weight on the base of the plant and breaks roots.

Never attempt to pull large plants out of their containers. Lay these plants on their sides. Tap on the rim until the container begins to slide away from the root system then pull the container off of the roots. If the container does not slide off, set the container right side up and water it then tap the container of the horizontal plant. If the pot still does not slide off the root system you will need to cut the plastic container away from the root system.

All large circling roots should be loosened from the media and straightened so that they will be able to grow away from the plant. If you cannot pull them away from the edge, try putting the root system in a tub of water. After it has become thoroughly wet, swish it around in the water to loosen the roots from the media. Working your fingers into the wet media will help loosen the roots. While this may seem severe, remember that many plants are dug, shipped and installed in landscapes without any soil on the root systems (bareroot).

Make sure that the planting hole has been dug to the correct depth and you are ready to plant before you take the plant out of the container and expose the roots to the air. The less time the roots are exposed to the drying effects of air and light, the better.

Now that the roots have been loosened from the media, carefully place the root system in the planting hole. The upper roots must be no deeper than 1 to 2 inches below the soil surface. Planting too deep will prevent the roots from getting enough oxygen. Planting too high will allow the roots to dry out too quickly. A broom stick or small board laid across the top of the planting hole will help you see how much to raise or lower the plant. Work soil around roots making sure that longer roots are directed away from the plant.

The only thing that should go back into the planting hole is the soil that came out of the hole, less any foreign materials like rock and construction debris (brick, metal, wood, etc.). This is especially true for sites with heavier, more poorly drained soils. Organic matter or sand added to these soils may make them drain even more slowly. Research has shown that the planting hole acts like a bucket, inhibiting the drainage of water from the loose, porous amended backfill into the unamended clay. The exception is where large, raised mounded beds are being created for growing shrubs like rhododendrons and azaleas.

Gently firm the soil around all of the roots. When the planting hole is about half or three quarters filled and you have gently firmed it, fill the hole with water. This will settle the soil and remove air pockets. Stomping the soil to firm it will damage roots and compact the soil. Roots will have difficulty growing through layers of compacted soil.



The plant has been gently placed in the hole. Lay a flat board across the top to ensure that you are not planting it too deep.

When the water has drained and the soil has settled, continue adding soil to the planting hole working it throughout the root system until the hole has been filled. Build a small donut-shaped dike around the outside of the planting hole and refill with water to settle the upper layer of soil and remove any air pockets. If the soil (but not the roots) has settled significantly, add more soil to bring the level up to that of the surrounding soil.

Staking

Unlike bareroot plants, container grown plants rarely need to be staked unless you have removed all of the media from the roots. This will then only be necessary for trees. Shrubs are shorter and rarely need to be staked unless they are large. Research indicates plants produce a more vigorous root system when they are allowed to move in the wind. If there is a sound fear that the plant will blow over and needs to be staked, all of the staking materials should be removed after one growing season.

Mulch

Two inches of mulch should be placed on the soil surface around your plant. This layer of mulch should go out from the trunk for a minimum of two to three feet and should not touch the trunk or bury branches on shrubs.

Pruning

Trees and shrubs should not be pruned to compensate for roots lost in the process of transplanting from the nursery to the landscape. The exception is corrective pruning. Remove broken branches or branches that will not recover. Branches that are already crossing (rubbing) and co-dominant (double) leaders should also be removed. All other pruning should be deferred until the following year.

Post-planting Care

For the first year the most important thing for your newly planted tree or shrub is water. Water is more important than fertilizer or soil additives. Most trees and shrubs that die in the first year after planting die as a result of improper (too little or too much) watering.

After the plant has been through one full growing season it is acceptable (but not required) to fertilize the plant. This can be done by adding 1 to 2 pounds of actual nitrogen per 1,000 square feet. Trees and shrubs should be fertilized in the late fall (late November to late December). Avoid fertilizing in the spring or summer. If you are already fertilizing your lawn, it is not necessary to add additional fertilizer for the woody plants. Your local county extension agent for horticulture or agriculture and natural resources will be glad to assist you with fertilizer and rates.

All Photos by William M. Fountain

Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, or physical or mental disability. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Nancy M. Cox, Director of Cooperative Extension Programs, University of Kentucky College of Agriculture, Food and Environment, Lexington, and Kentucky State University, Frankfort. Copyright © 2016 for materials developed by University of Kentucky Cooperative Extension. This publication may be reproduced in portions or its entirety for educational or nonprofit purposes only. Permitted users shall give credit to the author(s) and include this copyright notice. Publications are also available on the World Wide Web at www.ca.uky.edu.

Issued 9-2016