Trees for planting come in three different forms: bare root, container grown or ball and burlap.

Bare root trees are field-grown trees that are dug, usually when small, then the soil is removed from the roots and they are kept cool and packed in moist material until planted. Container grown trees, and some ball and burlap trees, can also be reduced to the bare root form at the time of planting by removing the soil on their roots. Bare root planting is often the most successful form of tree planting.

Container grown trees are grown in pots or containers and are not field grown. As container trees grow, they are placed in larger and larger pots, but if not repotted in a timely manner, their roots become tangled, circling the pot, and require significant effort when planting for them to survive.

Ball and burlap trees are field grown from seedlings. When about 4 or more feet tall, they are dug out and their root ball is placed in a wire basket lined with burlap to hold the soil in place.

If your tree has been purchased from the Charlottesville Area Tree Stewards, it will be in a pot (container), but it has usually not been potted long and therefore it is easy to reduce to the bare root state - the potting soil can be removed simply by gently shaking the tree and using only your hands to dislodge the potting soil.

Whatever form you find your tree in, we recommend bare-root planting. Taking the soil off the roots makes it easier to handle and plant and they are more likely to succeed. A small bare root tree will usually grow to the size of a larger container or ball and burlap tree in just a few years.

In the following pages, we describe how to plant a tree that has had the soil removed from the roots, i.e., bare root planting. We then go on to provide guidance on how to prepare the root ball of a tree that cannot be reduced to bare root - most container or ball and burlap where the soil cannot be fully removed from the root ball.

But the first step to help your new tree succeed is to make sure that you plant it in a location where it can succeed. Some sites may be too sunny or shady, or fit the tree well when it is young, but will be too small when the tree grows to maturity. To avoid these kinds of problems go to the "Documents"
section of our web site (url on front page) and view the document titled Right Tree Right Place to learn about the characteristics and needs of your tree.

### Planting Your Tree (Bare Root Planting)

**Pre-Planting**

Lay out a tarp on the ground to store the soil from the pot and from the hole (see photo cover page.)

Place the potted tree on the tarp and gently pull it from the pot (if it does not come out easily, lay the pot on its side on the tarp and roll it on the tarp while tapping on the outside of the pot). Once removed, gently clear away all the soil from the roots with your hands.

Note - if the tree won't come out of the pot (this is referred to as a pot-bound tree) or if once removed, the soil cannot be removed from the roots, the bare root approach to planting won't work - go to page 5 for a guide to planting a pot-bound tree. If your tree comes wrapped in burlap, go to page 9 for a guide to planting a ball and burlap tree.

After removing the soil, place the tree in a bucket of water deep enough so the roots are completely immersed to keep them wet until the hole is ready.

Dig the hole - it should be shallow and wide with sloping sides (see Diagram 1), three to five times as wide as the pot the tree comes in, to allow the roots to spread. It should only be as deep as the longest of its roots or the depth of the container it comes in. Break up the sides of the hole with a shovel so that it will be easier for the roots to penetrate the sides as they grow.

Note - if the tree is being planted in the area adjacent to your house or garage or any other former construction site, the soil may be of poor quality, containing gravel, left over construction materials and other debris. If this is what you find, remove the soil from the hole to another location and replace it with local topsoil.

Build a mound in the center of the hole around which the roots should be splayed so they won't be compacted when you return the soil to the hole (see Diagram 1).
**Planting**

Untangle and spread the roots, then place the tree in the hole, draping the roots over the mound, as shown in Diagrams 1 and 2.

Position the tree on top of the mound such that its topmost roots are slightly *above* ground level as indicated by a board or shovel handle laid across the hole. When you return the soil to the hole, as described below, put in enough soil to cover the roots. The soil in the hole will be a little higher than ground level to accommodate natural settling after planting.

Using some soil from the tarp, secure the tree in a straight, upright position, then fill the hole about half way with soil, and using your hands, gently pack the soil into the hole around the mound and roots.

When the hole is about half full, add some water to the hole and *without disturbing the soil making up the mound that the roots rest on*, add water to create a slurry of mud and water. With your hands, manipulate the loose soil and water to make sure there are no air pockets, then let the water drain.

Continue filling the hole with soil until the soil covers the top of the roots (see Diagram 3). Add water to create a slurry again and add more soil if the surface settles and exposes the top of the roots.

![Diagram 2](image)

**Post-Planting**

If using a tree shelter (tree tube), position it around the tree with the flared end up. Secure a stake to the shelter to support it. Keep the shelter in place until the tree reaches 3 to 3 1/2 inches in diameter. It may take four or five years to reach this size. If the shelter is taken off before the tree reaches this size, it will likely need to continue to be staked for a year or longer.

Use the remaining soil to build up a rim around the edge of the hole about three feet away from the tree trunk to create a water-holding basin around the tree (see Diagram 3).

There is no need to use fertilizer or chemicals when planting. It is OK to amend the soil by mixing in some compost or by laying about a 1-inch layer of compost over the finished soil surface before placing the mulch. This can help a newly planted tree to succeed. But since the tree has to survive in the native soil, too much soil amendment could impede adaption.
Mulch the tree by adding a 3 to 4-inch layer of wood chips on top of the entire surface of the hole, *keeping an area of about three inches outward from the tree trunk completely free of any wood chips* to avoid creating a sheltered environment next to the trunk for insects and rodents. The mulch should extend outward from the tree about three feet. *If the tree is located on a lawn,* the mulch should be extended outward 12 to 24 inches per year for at least 3 years, to avoid competition from grass roots while the tree establishes its own root system.

Watering is crucial to the survival of the tree, particularly right after planting and for the next two to three years. If it has not rained, water generously every 7–10 days, allowing the water to reach the top of the water-holding basin.

---

Planting a Pot-Bound Tree

**Root Ball Preparation for Planting**

Growing a tree in a pot is not natural - the tree wants its roots to grow outward in every direction, but the sides of the pot restrict it, entangling the roots with each other and forcing them to grow inward and around in circles. The longer the tree remains in the pot, the worse this situation becomes, leading to it becoming "pot bound" (or "root bound"). It may be best to return the tree to where you bought it for a replacement with a good root ball, or you can try to correct the problem, but it will require forceful treatment to remove the tree from the pot and then to prepare its roots for successful growth. Making the effort to deal with pot-bound roots will most likely assure that your tree will survive.

**Pre-Planting**

To remove the tree from the pot, roll the pot on a tarp and tap the sides to try to loosen the root ball so that it comes out. If it won't come out, immerse the pot in a bucket of water and let it soak for at least a half an hour and as long as overnight, then try again to remove it. If it still won't come out, take a pair of pruning shears and cut the pot off the tree. Cut from the center hole in the bottom of the pot to one of the side holes and continue cutting upward to the top of the pot. Try again to
remove it. If it won't come out, make upward cuts from the other drainage holes in the pot to the top of the pot until it separates from the root ball. Once it comes free, it will probably look like the images in photos 1 and 2.

![Photo 1](image1)
![Photo 2](image2)
![Photo 3](image3)

The root ball in photo 1 is pot bound. Using a saw or a serrated knife, cut an X into the bottom inch of the root ball as shown in photo 2 and then make four equally-spaced cuts from the top to the bottom of the root ball as shown in photo 3.

![Photo 4](image4)
![Photo 5](image5)

The root ball in photo 4 is seriously pot bound. In cases like this, either return the tree for a good replacement, or using a knife or saw, cut off the outer inch of the bottom and sides of the root ball as shown in photo 5.

Next, try to remove as much of the soil and cut root ends as possible. If you find roots that have right angles or are growing upward or into the center of the root ball, they need to be cut just above the right angle or the point where the root turns upward or inward toward the center of the root ball.
Return the root ball to the bucket of water periodically as you work your fingers or a tool into the root ball to pull the roots outward and remove the potting soil. Once you have removed as much of the soil as possible, and as many of the roots as possible are pointed outward, it will be ready to plant.

Keep the tree in the bucket of water deep enough so the roots are completely immersed to keep them wet until the hole is ready.

Photos 6 and 7 show the root ball prepared for planting. In photo 6, it was possible to remove all the soil, but more likely the root ball will look like photo 7.

Now dig the hole - it should be shallow and wide with sloping sides (see Diagram 1 on page 4), three to five times as wide as the pot the tree comes in, to allow the roots to spread. It should only be as deep as the container the tree came in. Break up the sides of the hole with a shovel so that it will be easier for the roots to penetrate the sides as they grow. *Note - Diagram 1 shows a mound built in the hole. This mound is only needed if you have been able to remove all of the soil from the roots.*

**Planting**

When the hole is ready, position the tree in the hole such that its topmost roots are slightly *above* ground level as indicated by a board or shovel handle laid across the hole.

Using soil from the tarp, secure the tree in a straight, upright position at the proper depth, while keeping its roots directed outward and downward toward the sides and bottom of the hole. Fill the hole about half way with soil, and using your hands, gently pack the soil around the root ball.

When the hole is about half full, add some water to the hole and with your hands, manipulate the loose soil and water to make sure there are no air pockets.

Continue filling the hole with soil until the soil covers the top of the roots (see Diagram 3, page 5). Water heavily again and add more soil if the surface of the hole settles and exposes the top of the roots.
Post-Planting

If using a tree shelter or tree tube (see photos 8 and 9) to protect your tree from deer browse and rubbing, position it around the tree with the flared end up. Secure a stake to the shelter to support it. Keep the shelter in place until the tree reaches 3 to 3 1/2 inches in diameter. It may take four or five years to reach this size. If the shelter is taken off before the tree reaches this size, it may need to be staked for a year or longer.

Use the remaining soil from the hole to build up a rim around the edge of the hole about three feet away from the tree trunk to create a water-holding basin around the tree (see Diagram 3, page 6).

There is no need to use fertilizers or chemicals when planting a new tree. It is OK to amend the soil by mixing in some compost or by laying about a 1-inch layer of compost over the finished soil surface before placing the mulch. This can help a newly planted tree to succeed.

Mulch the tree by adding a 3 to 4-inch layer of wood chips on top of the entire surface of the hole, keeping an area of about three inches outward from the tree trunk completely free of any wood chips to avoid creating a sheltered environment next to the trunk for insects and rodents. The mulch should extend outward from the tree about three feet. If the tree is located on a lawn, the mulch should be extended outward 12 to 24 inches per year for at least 3 years, to avoid competition from grass roots while the tree establishes its own root system.

Watering is crucial to the survival of the tree, particularly right after planting and for the next two to three years. If it has not rained, water generously every 7–10 days, allowing the water to reach the top of the water-holding basin.
Planting a Ball and Burlap Tree

Pre-Planting

Lay out a tarp on the ground next to the site where the hole will be dug to store the soil taken from the hole (see photo on the front page) and to position the heavy root ball close to where it will be planted.

Measure the distance from the bottom of the root ball to the top of the tree's highest root (see photo 10).

If the roots are not visible, remove some soil from the top of the root ball until the roots are exposed. The depth of the hole should be one to two inches less than this distance so that the tree ends up positioned slightly higher than ground level.
For small ball and burlap trees, place the tree on the tarp immediately next to where the hole will be dug to make it easy to roll the tree into the hole once it is ready. (See instructions below for heavier trees.) Using wire cutters, cut and remove the lower half of the wire basket from around the root ball. Then cut away the lower burlap exposing the root ball. Don't remove the soil from the root ball.

Dig the hole - it should be much wider than it is deep with gradually sloping sides. The width should be three to five times as wide as the root ball. The depth should be a couple inches shallower than the distance from the bottom of the root ball to the top of the highest root. Break up the sides of the hole with a shovel so that it will be easier for the roots to penetrate the sides as they grow.

Planting

When the hole is ready, move the tree into it by gently rolling it down the sloping side of the hole or lifting it in. Then remove the rest of the wire basket and burlap. Also remove any tags, wire, nails, twine, etc., from the root ball, trunk and branches.

The tree should be positioned such that its topmost roots are slightly above ground level as indicated by a board or shovel handle laid across the hole. When you return the soil to the hole, as described below, put in enough soil to cover the roots. The soil in the hole will be a little higher than ground level to accommodate natural settling after planting.

Using some soil from the tarp, pack it around the base of the root ball to secure the tree in a straight, upright position, then fill the hole about half way with soil. Next, add some water to the hole and with your hands, manipulate the loose soil and water to make sure there are no air pockets.

Continue filling the hole with soil until the soil covers the top of the roots. Water heavily again and add more soil if the surface of the hole settles exposing the top of the roots.

For larger/heavier ball and burlap trees, dig the hole first, measuring the root ball depth and preparing the hole as described above for smaller ball and burlap trees.

To move the tree into the hole, put a piece of burlap, a drop cloth or old blanket under it. Then using the ends of the cloth as handles, lift the tree into the hole as shown in photos 11 and 12.
Lean the tree over and using wire cutters, remove the bottom half of the wire basket and burlap from the root ball. Lean it in different directions until all of the wire basket and burlap can be accessed and removed, fully exposing the root ball. Then remove any tags, wires, nails, twine, etc., from the root ball, trunk and branches. Once the root ball is in the hole, make sure it is level and add soil and water as described above for smaller ball and burlap trees.

**Post-Planting**

If using a tree shelter (tree tube), position it around the tree with the flared end up. Secure a stake to the shelter to support it. Keep the shelter in place until the tree reaches 3 to 3 1/2 inches in diameter. It may take four or five years to reach this size. If the shelter is taken off before the tree reaches this size, it will likely need to continue to be staked for a year or longer.

Use the remaining soil to build up a rim around the edge of the hole about three feet away from the tree trunk to create a water-holding basin around the tree (see Diagram 3).

There is no need to use fertilizer or chemicals when planting - this can harm a young tree. It is OK to amend the soil by mixing in some compost or by laying about a 1-inch layer of compost over the finished soil surface before placing the mulch. This can help a newly planted tree to succeed.

Mulch the tree by adding a 3 to 4-inch layer of wood chips on top of the entire surface of the hole, keeping an area of about three inches outward from the tree trunk completely free of any wood chips to avoid creating a sheltered environment next to the trunk for insects and rodents. The mulch should extend outward from the tree about three feet. If the tree is located on a lawn, the mulch should be extended outward 12 to 24 inches per year for at least 3 years, to avoid competition from grass roots while the tree establishes its own root system.

Watering is crucial to the survival of the tree, particularly right after planting and for the next two to three years. If it has not rained, water generously every 7–10 days, allowing the water to reach the top of the water-holding basin.
Contact us at [www.charlottesvilletreestewards.org](http://www.charlottesvilletreestewards.org) - click on the "Contact" button on the main menu and leave us a note if you have any questions about planting your tree or if you would like to share with us your experience or photos of your newly planted tree.

**Drawing/Photo Credits**

Photo, page 1: Tim Maywalt, Charlottesville Area Tree Stewards
Drawing, p. 2: Buffalo Green Fund
Photos, page 3: West Lafayette Tree Friends; Winton Tree Services; Nurseryman.com
Drawing, pps. 3-5: Robin Hanes, Charlottesville Area Tree Stewards
Photo 1: Diggin Food
Photo 2: 420 Magazine
Photo 3: Chris Candello
Photo 4: Gettin' Fresh Blog, [https://gettinfreshblog.wordpress.com/](https://gettinfreshblog.wordpress.com/)
Photo 5: Gettin' Fresh Blog, [https://gettinfreshblog.wordpress.com/](https://gettinfreshblog.wordpress.com/)
Photo 6: Photo Bucket
Photo 7: Media Cache
Photo 8: Arbor Day Foundation
Photo 9: Wilson Forest Supply
Photo 10: Mike's Backyard Nursery
Photo 11: This Old House, [https://www.thisoldhouse.com/](https://www.thisoldhouse.com/)
Photo 12: Mike's Backyard Nursery