



Investing in your future

Columbia Green Square Mile Initiative
Tree Certification and Application

columbia
green

**Planting and
Establishing
Container Grown
Trees**



Disclaimer:

Information and documentation was primarily adopted and adapted with permission from “Planting and establishing trees” [capitalization as in original] by Dr. Edward F. Gilman and Traci Partin, which can be found at <https://hort.ifas.ufl.edu/woody/powerpoints.shtml>



Steps for Proper Planting

- ✓ **Assess** the planting site
- ✓ **Select** a suitable tree
- ✓ **Find** the top-most root and **dig** a shallow hole wide enough for the root system
- ✓ **Treat** root defects
- ✓ **Place** tree in hole
- ✓ **Position** top root 1–2 inches or more above surrounding grade
- ✓ **Straighten** tree
- ✓ **Add** backfill soil and **firm** the root ball
- ✓ **Add** mulch
- ✓ **Stake** and **prune** only if needed
- ✓ **Irrigate** frequently





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✿ How close are buildings and other structures?

✿ Are there overhead obstructions?

✿ How much sun does the site receive?

✿ How moist is it?

✿ Is irrigation available?

✿ Are the soil structure and chemistry appropriate?

✿ Are there nearby trees or other plants that will compete with a new tree?

✿ Will the shade cast by the tree cause any problems?



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- ✿ Do your research. Local Extension offices, native plant societies, Master Gardeners, libraries, and nursery staff are great resources.
- ✿ Native species are usually well adapted to local conditions and more supportive of local wildlife—some native trees support dozens or even hundreds of butterflies and moths; some exotic species support none.
- ✿ Select a healthy, good quality specimen. See: <https://hort.ifas.ufl.edu/woody/documents/EP313.pdf>



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✿ Plant the smallest tree you can! There's a lot to be said for planting a small tree. Because they require a smaller root system than larger trees to support their above ground structure, small trees take a much shorter time to become established at the planting site and are more likely to survive. Within a few years, they also usually “catch-up” to the size of larger trees planted at the same time. They are also less expensive and require less physical labor to transport and plant!

Additional Tip:

This is your last chance to be sure you have selected the right tree for the right place. If there is a wire, security light, or building nearby, plant elsewhere, or plant a small-maturing tree

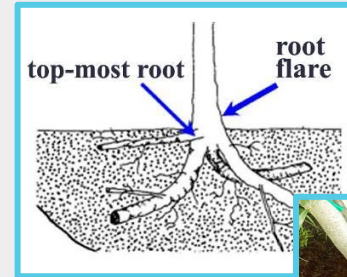




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- ✿ **Find the Top-Most Root:** The point where the top-most root meets the trunk of the tree should be no more than 2 inches deep in the root ball. Assess this before you take the tree home or finalize the purchase.



- ✿ **Desirable Root Ball:** The point where the top-most root emerges from the trunk is at the surface.



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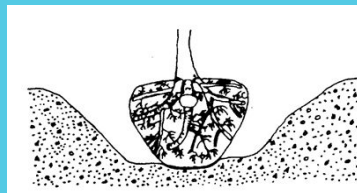
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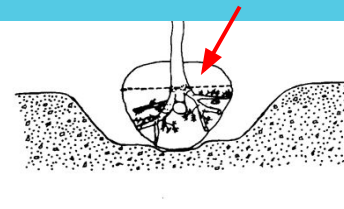
- ✿ **Remove excess soil above the top-most root:** Three inches of soil and media were from the top of this ball (see picture above).
- ✿ **Root Ball Quality:** (LEFT) Trees with the top-most root near the surface of the root ball have a better developed root system. (RIGHT) Too much soil on top of the root ball can indicate a poor-quality root ball.

Additional Tip:

Remove excess soil



Good-Quality Root Ball



Poor Quality Root Ball



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- ✿ **How Deep?** Measure the distance between the top-most root and the bottom of the root ball. Dig the hole to about 90% to 95% of this depth.
- ✿ **Position the tree in the soil:** It is better to plant the tree a little high than too deeply. The top-most root in the root ball should be higher than the surrounding soil.



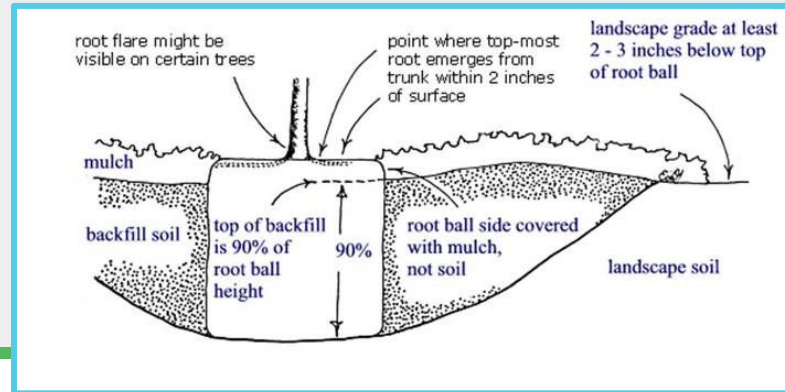


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- ✿ **Too Deep?** Add soil to the planting hole. Compact it. Replace the tree.
- ✿ **Dig the planting hole wide enough to accommodate the roots:** The planting hole should be wide enough to accommodate the roots of the tree when they are spread out and arranged to grow away from the trunk. This may be considerably wider than the container the tree came in.



Fun Fact:

There's a good reason that South Carolina Arbor Day is celebrated the first Friday in December. That's a good time to plant a tree. Here, the most stressful time of a tree's life is the first summer following planting. By planting in the fall or winter, there is sufficient time for a tree to grow a sizable root system before the stress of summer's heat, and its likelihood of survival will be maximized. Plant a tree as soon as possible after you obtain it, but only shop for trees in the fall.





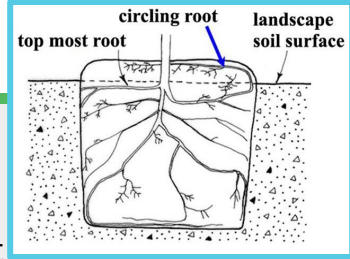
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✿ **Treating Root Defects:** Cut away any damaged roots. Spread out any circling or kinked roots. If you can't position them to grow away from the trunk, you'll need to cut them.

✿ **Circling Roots:** Remove media from the top of the root ball and cut circling and crossed roots.

✿ **Cutting Circular Roots:** New roots will grow quickly into backfill soil following cutting, and stem girdling roots are less likely to form.



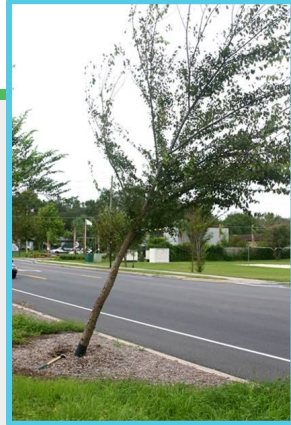


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✿ **Leaning Trees:** Trees with circling root defects are often found leaning or fallen after a storm.

✿ **Straighten the Tree:** Before adding backfill, be sure to check that the tree is straight by looking at it from two perpendicular directions.





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- ✿ **Water the backfill to settle the soil**
- ✿ **Adding a berm:** If a tree is planted on a slope or if the irrigation water is delivered rapidly, sometimes water will run off instead of soaking into the root ball. A 3 to 4-inch berm can be constructed at the edge of the root ball to direct water to the roots. Prevent soil from washing over the root ball by covering berm with a 3 to 4-inch layer of mulch, or by constructing the berm entirely from mulch. On a slope, the berm should notice extend to the uphill side.

Additional Tip:

Only Water, do not add anything else to the backfill soil. No compost, no fertilizer, no magic tree remedies, no peat moss, no symbiotic fungi. Nothing else.





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✿ Ready for Mulch!

About two inches of the root ball

should remain above ground after all the backfill soil is added. This ensures the top-most root remains above ground, even if the root ball settles.

- ✿ **Mulching:** Apply a 3-inch thick layer of mulch from the edge of the root ball (but not on top of it!) to at least an eight-foot diameter circle.

Mulch as large an area as possible to allow the tree roots to expand without competition from turf roots.





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❁ **Improper Mulching:** If turfgrass grows up to the trunk, trees often perform poorly.

Turf and weeds rob trees of moisture and nutrients and some produce chemicals that inhibit tree growth.

Lawn mowing equipment can damage the trunk.

❁ **No Mulch Volcanoes!** Never pile mulch in a volcano-like manner against the trunk. This can rot the trunk, cut off oxygen to roots, keep vital irrigation and rainwater out, and can keep roots too wet in poorly drained soils. Stem girdling roots form from this on some trees.





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✿ Traditional Staking Methods

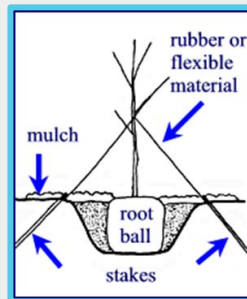


Figure 1

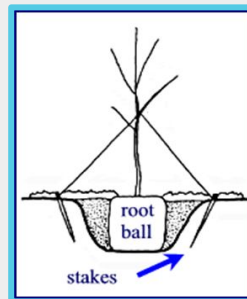


Figure 2

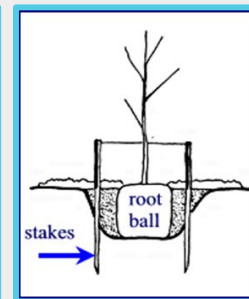
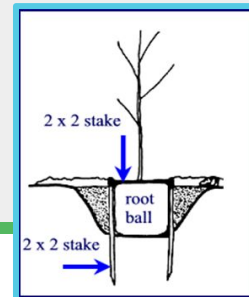


Figure 3

- ✿ **Most trees will not need to be staked:** all of these systems require removal within one year of planting to prevent damage to the tree.

- ✿ **Preferred Staking Method:** This inexpensive staking system does not need to be removed because the wood will simply decay in a year or two (if untreated wood).





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✿ Prune to finish the job:

Remove broken branches

Perform structural pruning at planting if pruning will not be possible in the next two years.

Do not prune to compensate for root loss.



Question & Answer:

Fertilizer at Planting?

Not necessary - fertilizing at planting time is not likely to improve survival or growth. Only in very poor soils might a slight benefit occur.

Risky - soluble fertilizers could burn roots if too much is applied, which could injure or kill the tree.



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- ✿ **Establishment Period:** the time it takes for a tree to regenerate enough roots to stay alive without irrigation. In dry sites or during drought, many trees will need supplemental irrigation well past the establishment period.
 - ✿ Roots grow to pre-transplanting length
 - ✿ Trunk & shoot growth match pre-transplant rate
 - ✿ Time: about 6 months per inch of trunk diameter
- ✿ **During Establishment:**
 - ✿ Mulch: Do not let weeds or turf grow into the mulch and increase mulch diameter over time to keep pace with root growth
 - ✿ Minimize soil compaction by not walking on the filled-in planting hole.
 - ✿ Protect lower trunk from injury
 - ✿ Remove stakes within a year





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✿ Establishment Rate is influenced by a variety of factors:

<u>Encourages Growth</u>	<u>Limits Growth</u>	<u>Little or no Effect</u>
Loose soil	Compacted soil	Peat or organic matter added
Proper irrigation	Insufficient irrigation	Water absorbing gels
Mulch 8' around planting hole	Grass and weeds close to trunk	Root stimulant products
Root flare above soil surface	Planting too deeply	Adding spores of mycorrhizae
Leaving shoots intact	Pruning at planting	Fertilizing at planting



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✿ **Irrigate Frequently:** At planting, water the tree with five gallons of water per inch of trunk diameter, applied slowly so that it soaks into the root ball.

In SC, it takes a tree approximately 6 months for every inch of trunk diameter to establish a fully functional root system after planting.

To maximize your tree's odds of survival, check the soil moisture daily & water if the soil is dry at 1" deep. Plan on watering twice weekly through the end of the tree's first summer (for fall & winter plantings). Trees planted in spring & summer may require regular watering for more than a year. Well draining soils will require more frequent watering than clayey soils. When it's hot & dry, a new tree might require water daily.

When you water, apply 2–3 gallons per inch of trunk diameter.



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Congratulations!

You have completed this education piece of the Columbia Green Tree Certification and Application

- * For more information about Columbia Green, and our projects, visit our website [here](#).
- * To visit the *Columbia Green Square Mile Tree Certification & Application* site, click [here](#).
- * To view our *Impact Map* which shows our community projects, click [here](#).

Thank You!