

Georgia Tree Planting & Care Series

Proper Planting & Aftercare



**Center for Invasive Species
and Ecosystem Health**
UNIVERSITY OF GEORGIA

Introduction

This is the third publication in the Georgia Tree Planting & Care Series (see references for others). Digging a saucer, placing a tree into it, refilling the saucer with soil and maintaining the new transplant during the establishment period are the last steps in the process of tree planting. All the work leading up to these steps- site assessment and tree stock selection- could be negated if these steps are not carried out properly.

The methods outlined in this publication are meant to summarize for homeowners and community tree care specialists within the state of Georgia specific Best Management Practices (BMPs) developed by the International Society of Arboriculture (Watson, 2014) on how to properly plant trees and maintain them during the establishment period. This document is meant to be introductory and cannot fully answer all questions. Specific questions can be directed to a local extension office and further information can be found in the references listed at the back of this publication.



Figure 1: The best site and tree stock cannot make up for a botched planting job. This tree was planted improperly, so its beautiful canopy shape and site do little to relieve its stress.

Time of Planting

Minimize water stress and subsequent maintenance by planting at the right time and avoiding hot, droughty months. Time of planting and corresponding establishment period are also influenced by the choice of nursery stock and the completeness of its root system.

- Most trees are best transplanted while dormant just before spring/bud expansion when they do not have a canopy to sustain, and food/energy stores are at their peak.
- The best time to plant in Georgia is between November-February, when demand for water is least. This way, newly planted trees are given plenty of time to establish roots before the onset of summer heat. Do not plant when air temperatures exceed 80° F.



Planting

PLANTING SAUCER

The term “hole” implies a space just big enough for the root ball, such as one dug by an auger, or a tree pit (Figure 2). The term “saucer” is more appropriate, as this wider bowl shape offers more friable soil through which the developing roots of a young tree can penetrate.

- Dug just deep enough so the root flare (more or less distinct curve where the main root tops enter the soil- see Figure 6) are at or above the soil line.
 - ▶ Some species have more obvious root flares (Figures 3 and 4). Many seedlings will not have obvious flares.
- The saucer should be dug 3x wider than the root ball, with sloping sides so new roots radiating out from the root ball within the upper 6-12 inches of soil have space to develop (Figure 5).
 - ▶ Soil at the edges of the saucer should be loose, not compacted, so the roots can expand outward.
 - ▶ Soil at the bottom of, and surrounding, the saucer should be undisturbed. Loosen the soil as needed to permit drainage, but avoid placing the tree where its root flare can sink below the soil line and be covered by soil.

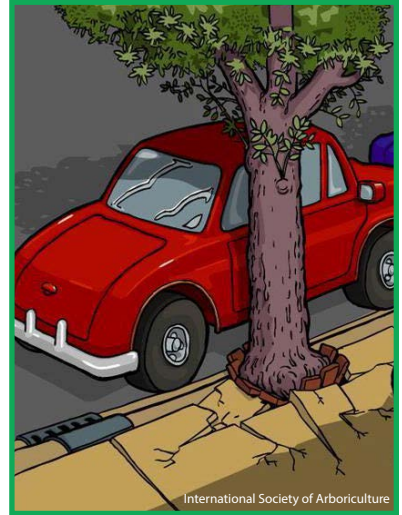
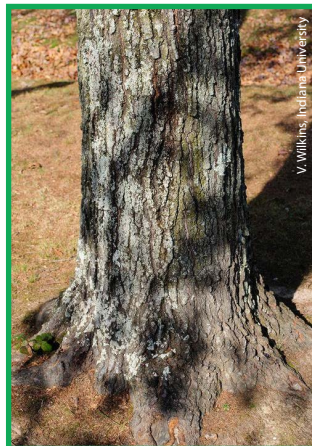
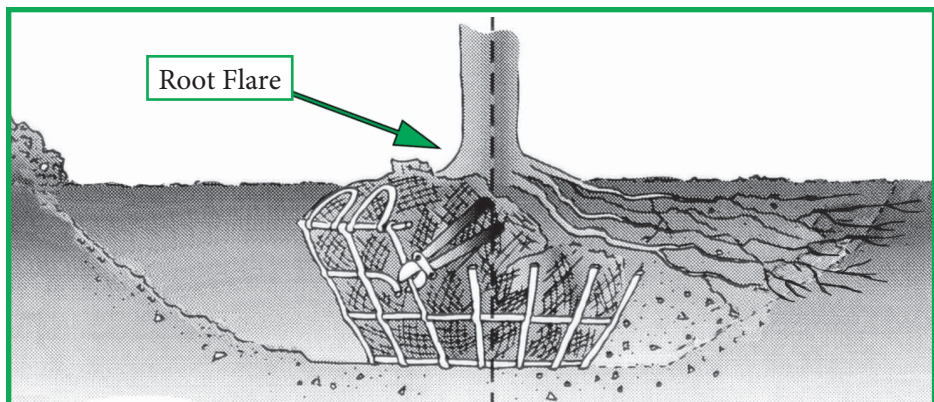


Figure 2: Traditional tree pits surrounded by hardscape restrict rooting space due to size, lack of surface area and subgrade compaction, so they are usually not viable planting sites. Consider a more modern planting strip designed by professionals.



Figures 3 & 4: Sweetgum (left) does not have as distinct a root flare as oak (right).



International Society of Arboriculture, with modifications

Figure 5: A wider, saucer-shaped hole gives new roots more friable soil for rapid initial growth and establishment. The base of the saucer should be undisturbed soil or firmly packed to hold the root ball base in place.

PREPARING THE ROOT BALL

- Remove all staking from the nursery.
- If possible, cut the bottom off the container (on containerized trees) before placing in saucer; the rest can be cut off once the tree is placed in the saucer.
- Ball-and-burlap (B&B) trees are easier to maneuver while the root ball is wrapped, lessening risk of damage (Figure 6).
- Roots growing against the inside of a container can be “shaved” with a shovel or saw (Figure 7).



A. O'Connor, Larimer County Extension



Figure 6: It is easier to move a B&B tree with the wrap intact, but the top 1/3 of the wire basket and burlap should be removed once the tree is placed in the saucer so they do not restrict root growth.

Figure 7: Some circling roots can be corrected by “shaving” off an inch on all sides of the root ball, as well as the bottom. Keep in mind this will reduce the size of the root ball.

PLANTING & BACKFILLING

Always support the tree by the root ball, with another hand on the root flare for stability. Larger trees may require several workers.

- Lifting by the root ball, never the trunk, place the tree ***gently*** into the center of the saucer, ***on firmly packed soil***.
 - ▶ For containerized trees: slice the side of the container and slide container off root ball.
 - ▶ For B&B trees: remove at least the top 1/3 wire and burlap (Figure 5, right side); remove all synthetic burlap or plastic. If left on the root ball, synthetic materials can interfere with proper root development (Figure 8).
- Hold the trunk vertical (check it from several angles to make sure it is straight) while backfilling soil and tamping it moderately around the base of the root ball for stability.
- Remaining backfill can be added in layers, lightly tamping or watering soil between each layer to reduce air pockets.
- For bare-root trees, use water to wash soil down between the roots and stabilize the tree by lightly tamping the filled planting saucer.
- Slowly and thoroughly water the entire planting saucer area after backfilling.



Figure 8: Synthetic burlap and plastic do not biodegrade like natural burlap, so if they are not removed at planting, they can affect root development and overall tree stability.

J. Murray, Treebio.com

MULCHING & STAKING

Mulch and composted tree materials can add organic material to the root zone and help retain moisture. A “1-4-4” ring rule can be employed: added mulch should be no more than 1-1½ inches deep, no closer than 4 inches from the root flare, and at least 4 feet outward beyond the trunk (Figure 9).

- Inorganic mulch such as rocks or chipped rubber is not recommended, as these materials do little to retain moisture or add necessary elements, and can absorb and reradiate excess heat.

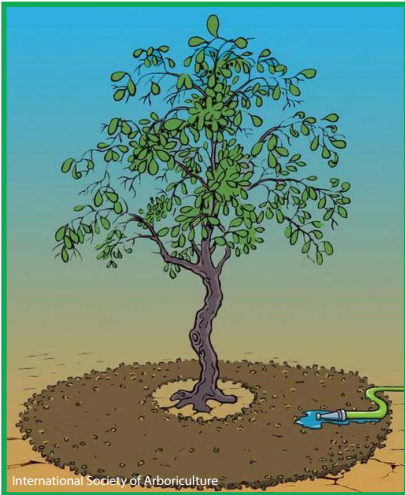


Figure 9: Keep mulch away from the root flare, limit depth to 1.5 inches maximum, and make sure the radius of the mulch ring extends out beyond the newly-transplanted tree's canopy; approximately 4 feet.

- Keep mulch away from the trunk. Piling it up against the trunk like a volcano holds moisture against it and provides habitat for pests (Figures 10 & 11).

It is unnecessary to stake a new transplant unless it has a very small or light root ball, or it is located on a hillside or in an area with persistent wind or human activity. Unstaked transplants will naturally develop good windfirm roots and appropriate trunk thickness and taper if allowed to sway in the wind.

- Larger evergreen trees may need stabilization, because their thicker canopy may act as a wind sail (Figure 14). Bare-root trees may also need minimal staking.
- The best method of staking is to use 2-3 stakes with wide, flexible, non-abrasive ties, allowing "wiggle room."
- Ties should be placed ***no higher than 1/3 the way up the tree***. This allows the top to sway in the breeze (Figure 12).



Figure 10: "Volcano" mulching holds moisture against the trunk, creating the perfect environment for fungal growth and pests. This mound shape also diverts water away from the root ball.



Figure 11: Piling mulch against the trunk holds moisture against it. In this instance, it has caused the bark to rot.

- **Remove staking implements after one year to prevent them from interfering with tree growth** (Figure 13).
- ▶ Larger trees may need guy wires and soil anchors installed and monitored by a professional for several years or longer (Figures 14 & 15).



Figure 13: Staking implements that are not removed can interfere with tree growth, becoming embedded and affecting the structural integrity of mature trees.

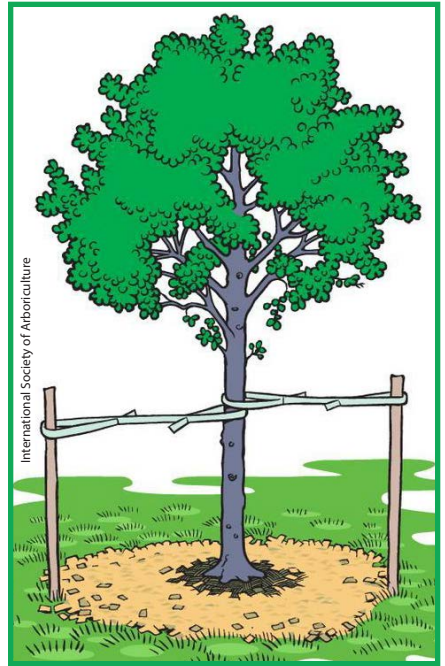
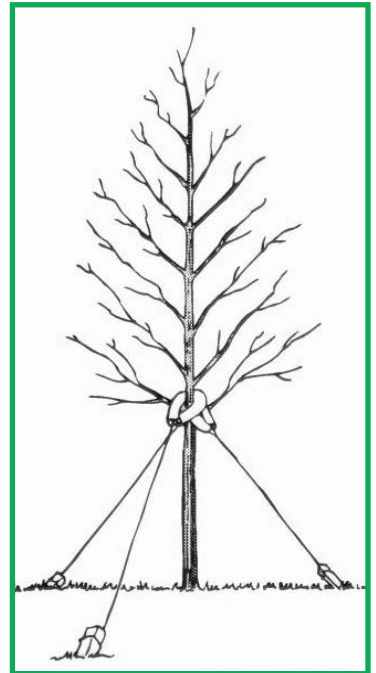


Figure 12: If needed, stake newly transplanted trees on opposing sides, giving adequate slack to allow the trunk to sway in the breeze.

Figures 14 & 15: Guying and soil staking of evergreen and larger trees are best left to professionals, since installation and yearly adjustment is very specialized.



Care During Establishment

WATERING

For the first 1-2 years, newly transplanted trees will need to be kept moist but not overwatered. This will help to prevent transplant shock (Figure 16).

- Soil around the planting saucer may hold moisture better than the root ball, but both soil areas need regular watering in the form of a slow drench.
- Use a stiff wire to gauge soil moisture: very dry soil resists penetration while a muddy wire indicates oversaturation.
- Expect to water **at least** twice a week or more, especially in warmer weather and/or if the soil is excessively well-drained.
 - ▶ Larger containerized trees may require daily watering, especially if located in sandy soil.



J. O'Brien, USDA Forest Service

Figure 16: Transplant shock can result if a newly-transplanted tree is frequently stressed due to lack of water. This tree had the added injury of being placed directly next to a paved area, which reflects solar energy.

- ▶ Up to 10 gallons per diameter inch per week may be required during hot summer weather.
- ▶ Products such as irrigation bags can be used but will need frequent refilling (Figure 17).
- ▶ Irrigation systems designed for turf often over-irrigate trees. Such systems should be zoned to separate trees and shrubs, and be properly calibrated. Nozzles should direct water over the top of the root ball to assure penetration to active roots and to avoid keeping bark wet.



W. Fountain, University of Kentucky

Figure 17: Tree irrigation bags provide a drip irrigation option for new transplants.

FERTILIZATION

Adding fertilizer at planting will not generally speed up a tree's establishment. In most cases, it is best to contact the University of Georgia about soil sample analysis *before* planting, as directed in the first publication in this Georgia Tree Planting & Care Series: *Site Selection & Assessment* (BW-2019-01), mentioned in the references section.

- A small amount of a slow-release product ($\geq 50\%$ nitrogen as water-insoluble) may be useful the next growing season after planting for:
 - ▶ smaller trees to bounce back from transplant stress faster;
 - ▶ frequently-irrigated trees;
 - ▶ containerized trees grown in soil-less substrate or B&B stock with sandy root balls, or;
 - ▶ trees planted in climates with year-round warm soils.

PEST MANAGEMENT

Newly transplanted trees are susceptible to bark and twig borers, wood-boring insects, and fungal cankers. Minimize risk by making sure newly transplanted trees are not stressed by drought or damaged by human activity. The healthier the newly transplanted tree, the better able it is to defend itself against pests.

- Pesticides labeled for the appropriate tree and pest to be controlled can be applied, with strict adherence to label directions and safety guidelines to prevent injury.
- Any wounds created during transplanting should be closely monitored for insect, vertebrate, or fungal activity and treated appropriately.

PRUNING

It is not necessary to prune a tree before or immediately after planting, or to “balance” top growth with roots.

- Pruning should be restricted to the “3Ds”: diseased, damaged and/or dead branches, which should generally not be an issue if the tree is healthy and structurally sound (Figure 18).

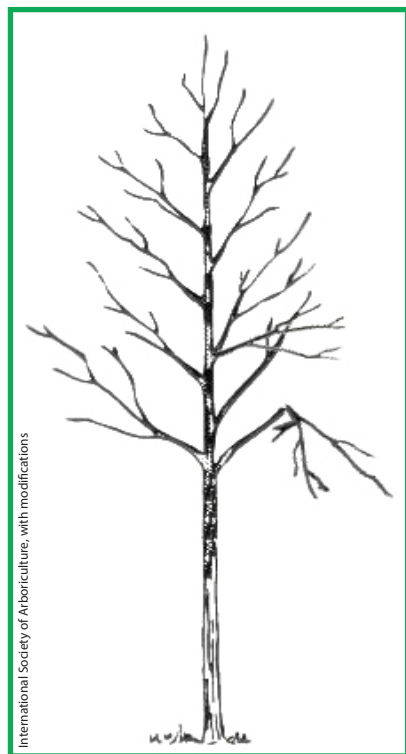
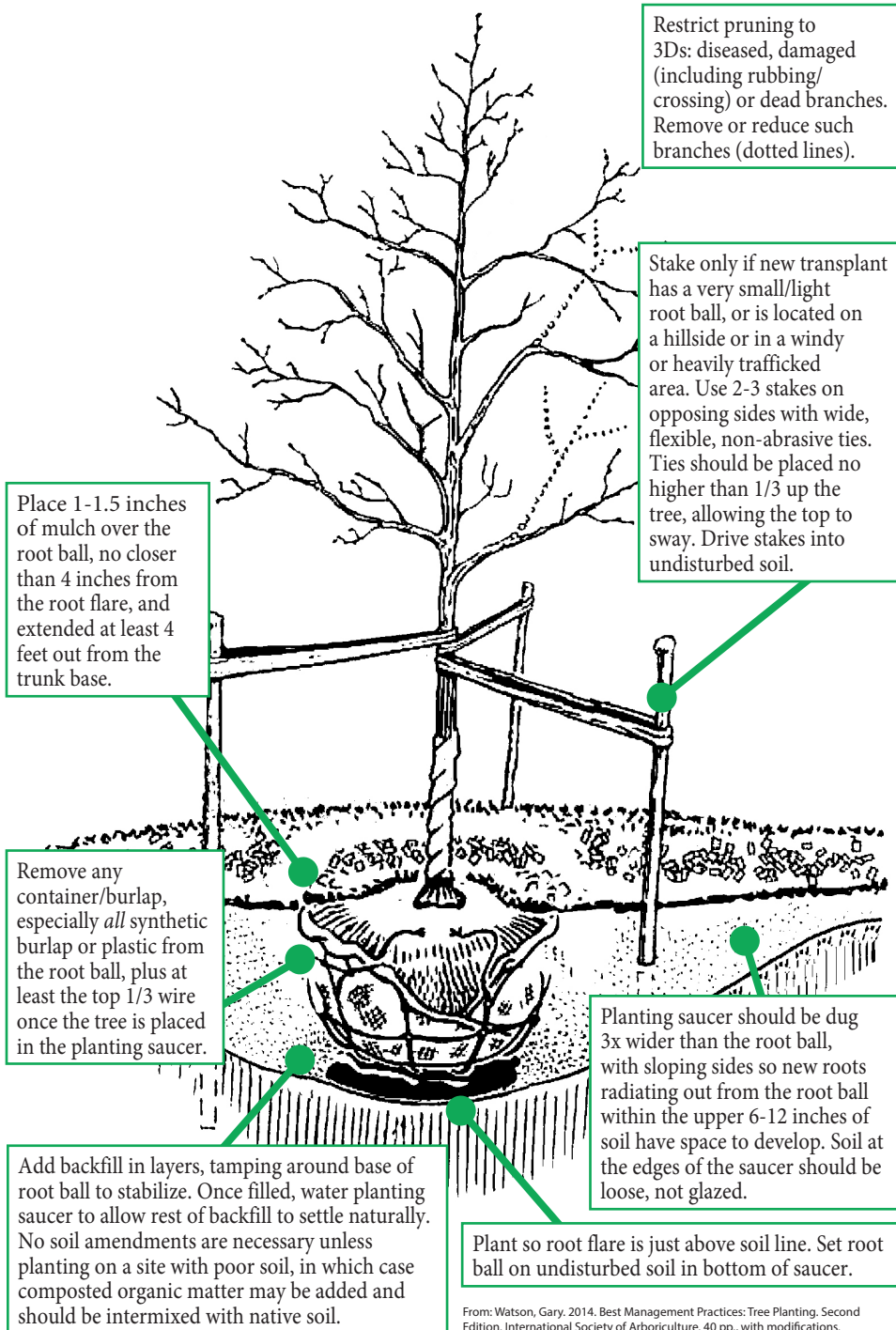


Figure 18: Pruning of newly-transplanted trees is generally not necessary, but sometimes branches can be broken in transport or planting, and on occasion branches can be crossed. These should be cleanly reduced or removed.

Planting Summary



Selected References

American National Standards Institute. 2012. *American National Standard for Tree Care Operations- Tree, Shrub, and Other Woody Plant Management-Standard Practices (Planting and Transplanting)* (ANSI A300 Part 6). 9 pp.

Moss, E. J., K. D. Coder, D. J. Moorhead and C. Barger. 2019. *Georgia Tree Planting & Care Series: Site Selection & Assessment*. University of Georgia. Center for Invasive Species and Ecosystem Health, Tifton, GA. BW-2019-01. 10 pp.

Moss, E. J., K. D. Coder, D. J. Moorhead and C. Barger. 2019. *Georgia Tree Planting & Care Series: Tree Planting Stock Selection*. University of Georgia. Center for Invasive Species and Ecosystem Health, Tifton, GA. BW-2019-02. 10 pp.

Watson, Gary B. and E. B. Himelick. 2013. *The Practical Science of Planting Trees*. International Society of Arboriculture, Champaign, Illinois, USA. 250 pp.

Watson, Gary. 2014. *Best Management Practices: Tree Planting*. Second Edition. International Society of Arboriculture. 40 pp.

Moss, E. J., K. D. Coder, D. J. Moorhead and C. Bargerion. 2019. *Georgia Tree Planting & Care Series: Proper Planting & Aftercare*. University of Georgia. Center for Invasive Species and Ecosystem Health, Tifton, GA. BW-2019-03. 10 pp.

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