

GardenNotes #635

## Care of Newly Planted Trees

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### Root Establishment Phase

During the establishment phase in a tree's life cycle, primary growth occurs in the root system with minimal growth in the canopy. The *Science of Planting Trees* is to encourage this root growth reducing *post-planting stress*. Refer to CMG GardenNotes #111, *Plant Health Care* for additional information on a tree's life cycle and #633, *The Science of Planting Trees*.

With good planting techniques and soil conditions, the establishment phase takes one growing season per inch of trunk diameter (in hardiness zones 4 and 5). On small trees, trunk diameter is measured at six inches above the soil line. That is, a one-inch caliper tree typically takes one year for roots to establish. A two-inch diameter tree typically takes two years. In cooler regions with shorter growing seasons, it will take longer. In warmer regions, like along the southern USA, the establishment phase is measured in months.

With poor planting techniques and/or poor soil conditions the establishment phase may take many years. It is common to observe trees that never establish, but rather simply hang-on for a few years and gradually decline.

A significant increase in annual twig growth indicates that roots have become established and that the tree is shifting into the growth phase.

The purpose of this CMG GardenNotes is to summarize tree care during the establishment phase.

## Watering

In watering non-established trees, check the soil frequently and water according to need. Too many factors of soil-water movement are involved to predict the irrigation needs of newly planted trees. Soil could be dry in the root ball and wet in the backfill, or wet in the root ball and dry in the backfill. If the tree is planted in a newly sodded/seeded irrigated lawn, it is often over-watered. [Figure 1]

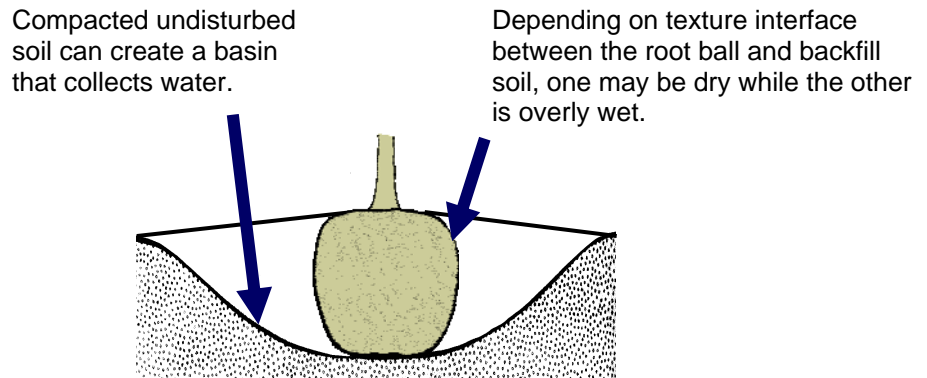


Figure 1. On non-established trees, check the water needs in the root ball and back fill soil frequently. Water according to observed needs.

The only way to know the watering needs of non-established trees is to check soil moisture levels. A useful tool for the home gardener is a houseplant water meter. While somewhat inaccurate, they can indicate wet or dry. (Note: If the fertility is high, it will read on the wet side. If fertility is low, it will read on the dry side.)

Check both the root ball soil and the backfill soil. It takes 4-5 months for the roots to extract significant amounts of water from the backfill soil, and two plus years for significant water extraction from the soil beyond the planting hole. [Figure 2]

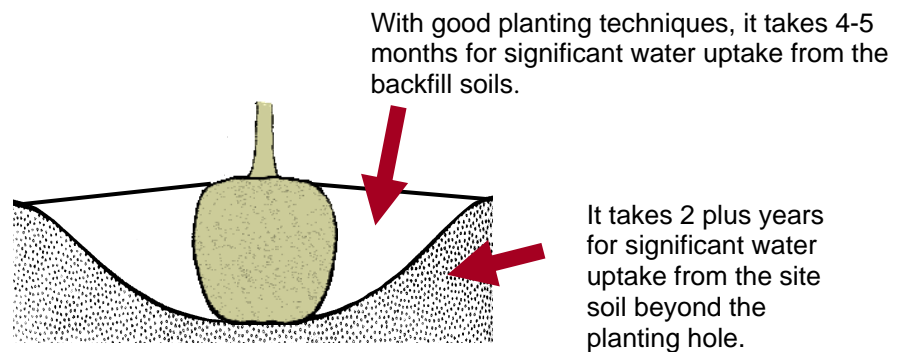


Figure 2. Check water needs in the root ball soil and the back fill soil.

Learn by carefully monitoring the amount and frequency of irrigation needed for each tree. A rough estimate of the amount of water to apply to the root ball of newly planted trees is 4 to 10 gallons total per week per inch of trunk diameter. For example a two-inch diameter tree may need 5 gallons, twice a week.

Since the root ball is prone to drying out, newly planted trees may need frequent watering. However, in compacted clayey soil with poor drainage, it's common for the planting pit to become a bowl holding excess water. Check the soil moisture often. Water use will be higher during hot and windy weather.

For the first two years, focus the water application on the root ball. If a raised ring is used for basin irrigation, make the ring at the edge of the root ball for the first year. Enlarge the ring for years two and three.

When roots are drought stressed, they mature rapidly decreasing growth and water/mineral absorption. Mild, short term water stress significantly slows root establishment.

- Mild drought stress (defined in a research study as 10 days or less) slows root growth temporarily. Once water becomes available, it may take 1-5 weeks for growth to resume.
- Long-term water stress (defined in a research study as 22 days and longer) can reduce root growth for the current season and the following season!

## **Mulch to Protect Tree from Lawn Mowers, Weed Eaters, and Grass Competition**

Wood/bark chip mulch is highly recommended on newly planted trees. The mulch helps stabilize soil moisture levels and protects the trees from lawn mower and weed eater injury. Trees with a mulch ring typically have 20% more early growth compared to trees where the grass grows up to the trunk.

Ideally, the mulch area is the width of the planting area. However, two to four feet wide is better than nothing. Keep mulch back six inches from the trunk. Over the root ball, wood/bark chips should not exceed two inches in depth. Over the backfill area and beyond, three to four inches give better weed control and prevents additional soil compaction by foot traffic.

[Figure 3]

Never pile wood/bark chips up against the trunk. The wet chips can lead to bark decay. Never make mulch volcanoes! On wet sites, mulching may help hold excessive soil moisture and may be undesirable. On open windy sites, wood/bark chip mulch blows away.

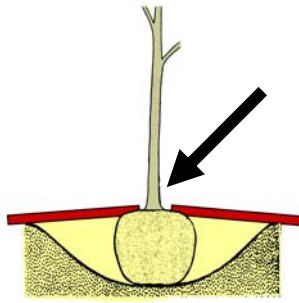


Figure 3. Never pile wood/bark chip mulch up against the tree trunk. Keep mulch six inches from the trunk, about 1-2 inches deep over the root ball and 3-4 inches deep over the backfill and beyond.

Mulch rings help protect trees from lawn mowers and weed eaters that readily damage the tender bark. When the bark is removed down to the wood (xylem tissue) roots on that side of the tree starve over time. Due to root decline, consider replacing any young tree with bark removed down to the wood on more than 50% of the tree's circumference.

## Trunk Wrap

To protect tender bark of deciduous trees from winter injury, trunk wrap may be desirable during the winter season. Winter bark damage is a factor of rapid temperature change of the bark and inner wood, a common concern in Colorado's climate. It is aggravated in dry soils, windy sites and with reflected winter sun (heat).

Use white or light colored trunk wraps that reflect the winter sun. To shed rain, wrap from the bottom up. To prevent girdling, remove trunk wrap each spring (including ties). Secure wrap with masking tape (not duct tape, electrical tape or wire ties) as masking tape decomposes faster, and therefore reduce the chance of bark injury.

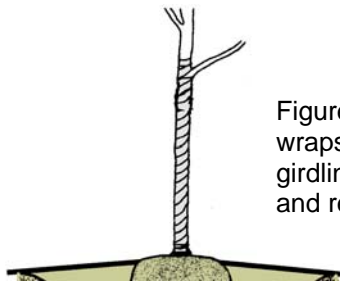


Figure 4. Apply light colored trunk wraps from the bottom up. To avoid girdling trunk attach with masking tape and remove each spring.

## Fertilization

During the establishment phase, fertilization needs are none to minimal. High nitrogen fertilization rebalances the canopy-to-root growth ratio encouraging canopy growth at the expense of root growth.

In situations where soil fertility is low—but water and other growth factors are not limiting—a very light fertilization with a time-release product may be beneficial. Never use a quick-release fertilizer on trees.

Never fertilize trees in the establishment phase that are showing signs of stress. Woody plants do not respond to “starter fertilizers” like herbaceous plants.

## Pruning

In the establishment phase of a tree’s life cycle, pruning is undesirable. Pruning lowers the Auxin levels, a hormone produced in the canopy terminal buds that stimulates root growth.

Pruning should be limited to the removal of dead and broken branches and minimal pruning required to maintain a single leader. In purchasing trees, select trees with a good structure that won’t require immediate pruning.

Structural training for the tree continues in the growth phase (after the roots establish and the canopy show significant annual growth). For additional information on pruning, refer to CMG GardenNotes #614, *Structural Pruning of Young Shade Trees*.

## Additional Information

### *CMG GardenNotes* on Tree Selection and Planting

- #631 Tree Placement: Right Plant, Right Place
- #632 Tree Selection: Right Plant, Right Place
- #633 The Science of Planting Trees
- #634 Tree Staking and Underground Stabilization
- #635 Care of Newly Planted Trees
- #636 Tree Planting Steps

- Books: Watson, Gary W. and Himelick, E.B. *Principles and Practices of Planting Trees and Shrubs*. International Society of Arboriculture. 1997. ISBN: 1-881956-18-0
- Web: Dr. Ed Gilman’s tree planting information at <http://hort/ifas.ufl.edu/woody/planting>

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