Dispelling Misperceptions About Trees[1]

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There are many misperceptions about trees and their care. Many have been passed from one generation to the next without critical evaluation. ***Each of the statements below is true***. Each is discussed with regards to the most recent research findings.

Injuries

Trees are very different from people.

People and other animals are able to heal by replacing or regenerating injured tissue. A laceration on your finger quickly heals, so that several weeks later, the injured area is hardly noticeable. Trees are unable to replace injured tissues. Instead, they form boundaries around it which seal the area from the rest of the tree. The wood within the area which has been sealed off can no longer supply the rest of the tree with stored food. Additional injuries seal off more wood, which further reduces the supply of available food. The tree can slowly starve in this manner from repeated injuries.

Roots

Most trees do not have tap roots.

In sandy, well-drained soils some trees such as oaks and pines develop deep roots directly beneath the trunk. These are commonly called tap roots. Many trees never develop tap roots. When the water table is close to the soil surface or when the soil is compacted, tap roots do not develop. Tap roots generally do not form on trees planted in our urban landscapes.

Roots grow far beyond the edge of the branches.

Trees growing in the woods have root systems reaching well beyond the edge of the branches. Frequently, roots extend from the trunk as far as the tree is tall. Roots on trees and shrubs planted in a landscape grow to 3 times the branch spread within 2 or 3 years after planting.

Damaging roots on one side of a tree may cause branch dieback on that side only, or at random throughout the crown.

Roots on one side of trees such as oaks and mahogany generally supply the same side of the crown with water and nutrients absorbed through the roots. When roots on one side of a tree are injured, branches on that side often will drop leaves. On other trees such as the maples and rosewood, damage on one side of the root system may cause branch death anywhere in the crown of the tree.

Root pruning does not stimulate root branching all the way back to the trunk.

Roots are often pruned before moving a tree in hopes of creating a denser root ball. However most root growth after root pruning occurs at the end of the root just behind the root pruning cut, not back toward the trunk. Therefore, dig the root ball of a recently root pruned tree several inches beyond the location of the root pruning. Root pruning should be conducted 6 to 10 weeks before moving the tree. Root pruning more than 10 weeks before moving the tree may reduce the advantages of pruning, because regenerated roots will quickly grow outside of the root ball.

Roots circling around a container do not continue to grow in a circle once the tree is planted in the landscape.

Roots frequently circle within the perimeter of a container several times before the tree is planted into the landscape. The portion of the root which grew in the container does not straighten out, but new growth on this root will not continue to circle.

Most roots are in the top 3 of soil. The finer roots are concentrated in the top several inches of soil.

Most tree roots are located within the top 3' of soil. However, because the majority of the fine roots are concentrated in the top several inches of soil, minor soil disturbances can injure or remove a large portion of the absorbing roots on a tree. This often happens in landscapes surrounding recently constructed buildings.

Construction

A small trunk wound inflicted by heavy equipment during construction or at any other time can cause major injury to the tree.

Trees cannot replace injured tissue (heal) like animals, therefore injury permanently reduces the trees capacity to fight future stress caused by insects, disease or other factors. In addition, many roots are destroyed as heavy equipment operates over the root system. Even one pass over the root system with a bulldozer, earth scraper or other piece of heavy equipment can cause significant root damage. Do not allow equipment to operate within the dripline of trees which are to be saved.

To save a tree during construction, do not disturb soil beneath the branch dripline.

Tree roots extend to 3 or more times the dripline of the tree. Approximately 50% of the root system is located outside of the dripline. No equipment should operate within this area if the tree is to be saved. Sturdy fences should be constructed at the dripline to encourage enforcement of this guideline. This serves as the best guide to helping prevent construction-related tree decline.

Grading to prepare a site for laying sod or planting shrubs can harm trees.

Since many of the fine roots are located close to the soil surface, changing the soil grade by as little as 6 inches can cause extensive damage to the root system of existing trees. Design the landscape to largely fit the existing grade. If grade changes are necessary close to a tree, remove the tree and plant several younger, healthy trees.

Building a "tree well" around the trunk of a tree will not help save a tree from the effects of fill soil.

Never remove soil from or add soil to the area within the dripline of a tree that is to be saved. Building a wall, which is commonly called a "tree well," several feet from the trunk and adding more than 3 or 4 inches of soil to the area outside of the well will kill the tree. If a tree well is to be used, construct it no closer to the tree than the dripline and grade the soil outside of the well to prevent runoff water from entering the well. There have been reported cases of success using a system of gravel spread over the existing grade. Vertical vent pipes are installed every 10 feet to supply the roots with oxygen. Coarse-textured fill soil is then carefully spread over a soil-separator fabric placed over the gravel.

If a tree survives the first 2-4 years following construction, it may still die from construction-related injuries.

Trees frequently decline after the construction of a building. Often, branches begin dying within a year or two due to severe root damage. The tree may be dead within 3 or 4 years. However, it is not uncommon for trees to show a slow decline over a 5 to 15-year period. The tree may not show obvious signs of decline for many years, but, following a drought period, branches may quickly lose leaves and begin a rapid decline. The tree may be dead a year or two later.

Tree Trunk and Branch Structure

A trunk with a crook in it is just as strong as a straight one.

Trunks with slight doglegs, crooks, or bends are not weaker than those that are straight. This is a normal development on many trees. Healthy trees will grow out of this condition, and the trunk will appear straighter as it becomes larger in diameter.

Horizontal-oriented branches are better attached to trees than upright branches.

Upright branches are poorly attached to trunks. Horizontally oriented branches are usually well secured to trunks. A branch growing in an upright manner parallel to the trunk becomes a second trunk. The tree is said to have a double leader. Double leaders are dangerous because they can easily split from the tree during a storm.

Topping a tree creates a dangerous tree.

Topping is cutting branches or stems to random lengths. Trees should never be topped. Topping creates hazardous trees because the wood inside the cut branch begins to decay. The sprouts which grow in response to topping are not well secured to the topped branch and they can easily split from the tree as they grow larger. To avoid this, always prune a branch back to a living branch crotch. This technique is called drop crotching.

A tree with multiple leaders (trunks) will become hazardous to people and property as the tree grows larger.

Never allow trees to grow with multiple upright leaders. These trees may look handsome when young, but will become hazardous as they grow older. Always prune so that leaders or branches are spaced 18-36 apart along the main trunk, and be sure they form an angle of more than 40° with the trunk.

Pruning

Trees do not heal, but they are capable of isolating injured tissue from healthy wood.

Trees are not like people because they do not heal. They lose the storage capacity and function of injured tissue forever because cells cannot be replaced. In contrast, animals heal by replacing injured tissues. Plants must seal off the injured tissue from the healthy portion of the plant in order to stay alive. The swollen callus tissue developing around a trunk wound or pruning scar is closing over the injured tissue, not healing.

Never cut a branch flush with the trunk. That is, never make a flush cut.

It has been standard practice to prune a branch flush with the trunk. Extensive research has shown that this practice injures the trunk and is extremely detrimental to tree health and shortens the life of trees. Flush cuts make a tree more susceptible to frost cracks, heat injury, root problems, cankers and sprouting. To avoid this, always cut to the outside of the branch collar which is located at the base of every branch. This collar is easily seen as a swelling where the branch meets the trunk. When pruning in this manner it may appear as though a stub is left on the trunk; however, properly done, this technique removes all of the branch and does not injure the trunk.

Rapid, thick callus growth around a pruned branch does not indicate the branch was pruned properly.

The callus forming around a pruning scar often forms rapidly, regardless of the pruning technique. This tissue should form a ring or donut-shape if the branch was removed properly. If the callus is elongated or oval-shaped, the branch was pruned too close to the trunk. Despite rapid callus formation around a pruning cut or injury, extensive wood rot can develop inside the tree.

Wound dressings and pruning paints do not prevent wood rot.

Wound dressings do not prevent wood decay behind a pruning cut. They provide no benefit to the tree. Some research indicates that wound dressings promote decay in certain situations. If pruning paints or wound dressings are to be used for cosmetic purposes, apply only a very thin coat. Only proper pruning practices prevent wood rot.

Planting

Plants should be planted no deeper in landscape soil than they were in the nursery.

Trees and shrubs should be planted at the same depth or slightly shallower than they were in the nursery field soil or container medium. This allows for the quickest root growth which is crucial to tree and shrub establishment. Planting too deep slows root growth which can lead to poor establishment or death.

Transplanted trees do not benefit from amending the backfill soil.

The soil removed from the planting hole should be used to fill in around the root ball. No amendments should be added to the backfill soil, since it does not improve survival or growth after planting. Apply 2-3 inches of mulch after transplanting around the base of each plant.

Trees should not be pruned at transplanting to compensate for root loss.

Pruning the shoots and branches to compensate for root loss on field-grown trees is not recommended. The signal initiating root regeneration originates in the shoot tips. Pruning removes shoot tips and therefore reduces root regeneration. Begin corrective pruning 1 year after planting.

Fertilizing

Established trees do not need to be fertilized in order to maintain their health.

Established trees growing in a maintained landscape receive enough fertilizer for moderate growth because their root system grows into fertilized shrub beds and turf areas. In most instances, additional fertilizer is not necessary to maintain healthy trees. Some trees with micronutrient deficiencies respond to applications of minor elements.

Tree fertilizer does not need to be injected into the soil.

Tree roots grow among turf and shrub roots. Most are located within the top 12" of soil. Fertilizer broadcast over the surface reaches tree, shrub and turf roots in adequate amounts.

Fertilizing in the fall generally does not stimulate growth in the fall.

Many trees and shrubs will not respond to an application of fertilizer until the following year. Fall is an excellent time to fertilize trees and shrubs. Crape myrtle and some other plants may grow in the fall in response to fall fertilization.

Tree fertilizer is not tree food.

Trees utilize the elements in fertilizer to produce glucose, proteins and other materials which might be considered food; i.e. they manufacture their own food. Fertilizers supply some of the elements necessary for plants to produce tree food, but fertilizer is not tree food.

Trees do not require 6 lbs. nitrogen/1000 ft^2/year to maintain good growth.

Established trees probably require much less than this to maintain good growth, particularly if lawn clippings and leaves are recycled back into the landscape. This high rate may promote rapid growth on young trees. Fertilize established plants with 2 lbs. nitrogen/1000 ft^2/year.

Miscellaneous

Moss and bromeliads are native plants, and they do not kill trees.

Trees are often weakened by root damage caused by soil disturbances such as construction related activities. Because these trees are under stress, they often loose many leaves allowing more light to penetrate the branches. This stimulates growth of moss and bromeliads. They grow fast because the tree is weakened, but are not the cause of poor tree growth.

[1] This document is SSORH3, one of a series of the UF/IFAS Environmental Horticulture Department, Gainesville, FL. Original publication date June 1991. Revised October 1998. Reviewed August 2011. Reposted October 2025. Visit the Ask IFAS website at http://edis.ifas.ufl.edu.

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