

Trees.... Working to Make Our World Better.



What are we talking about today

- A little tree introduction
- Benefits of trees
- Navigating I-Tree
- Some Practical Stuff

First a little trivia

- Trees can live a long time

- Researchers at the Rocky Mountain Tree-Ring Research Group found a *Pinus longaeva* in the White Mountains that was found to be 5,062 years old.



Old growth bristlecone pines in the White Mountains of California

- The Pando, or "trembling giant," is a clonal colony made up of more than 40,000 individual quaking aspen (*Populus tremuloides*) trees. Located in Fishlake National Forest in south-central Utah, the colony is estimated to be 80,000 years old.



By J Zapell - Archived source link, Public Domain,
<https://commons.wikimedia.org/w/index.php?curid=27865175>

- The mean life expectancy of a planted urban tree is 19-28 years.
- For every 100 street trees that get planted, only 50 will make it to 13-20 years



Jacqueline W.T. Lu, et al., "Biological, social, and urban design factors affecting young street tree mortality in New York City," *Cities and the Environment* 3 (2010).



- The largest tree in the world is a giant sequoia (*Sequoiadendron giganteum*) in California's Sequoia National Park.
- The tree is called General Sherman
- The tree is about 52,500 cubic feet (1,487 cubic meters) in volume.

- The largest live oak in Florida is the Cella Oak in LaCross, NE of Gainesville
- The tree is 79 ft tall, with a circumference of 28.7 ft, and a crown spread of 106 ft.





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- Florida's famous bald cypress..“The Senator”



SEMINOLE COUNTY HISTORIC MARKER

BIG TREE

The Senator is one of the oldest and largest cypress trees in America. The Seminole Indians, and other Native American Indians who lived throughout Central Florida used this tree as a land mark. A hurricane in 1925 destroyed the top of the tree, reducing it's original height of 165 ft to its present 118 feet.

In the late 1800s, the Senator attracted visitors even though much of the land around the tree was swamp and reaching the tree was done by leaping from log to log. A walkway was later constructed by the Works Progress Administration (WPA).

In 1929 former President Calvin Coolidge visited the Senator and dedicated the site with a commemorative bronze plaque. The plaque and portions of an iron fence were stolen by vandals in 1945 and never recovered.

In 1927, Senator M.O. Overstreet donated the tree and surrounding land for a park to Seminole County.

- On Jan. 16th, 2012 a fire burned through the inside of the tree which was hollow.
- Sara Barnes, was arrested for setting the fire. She lit the fire in order to see the methamphetamine she was smoking.

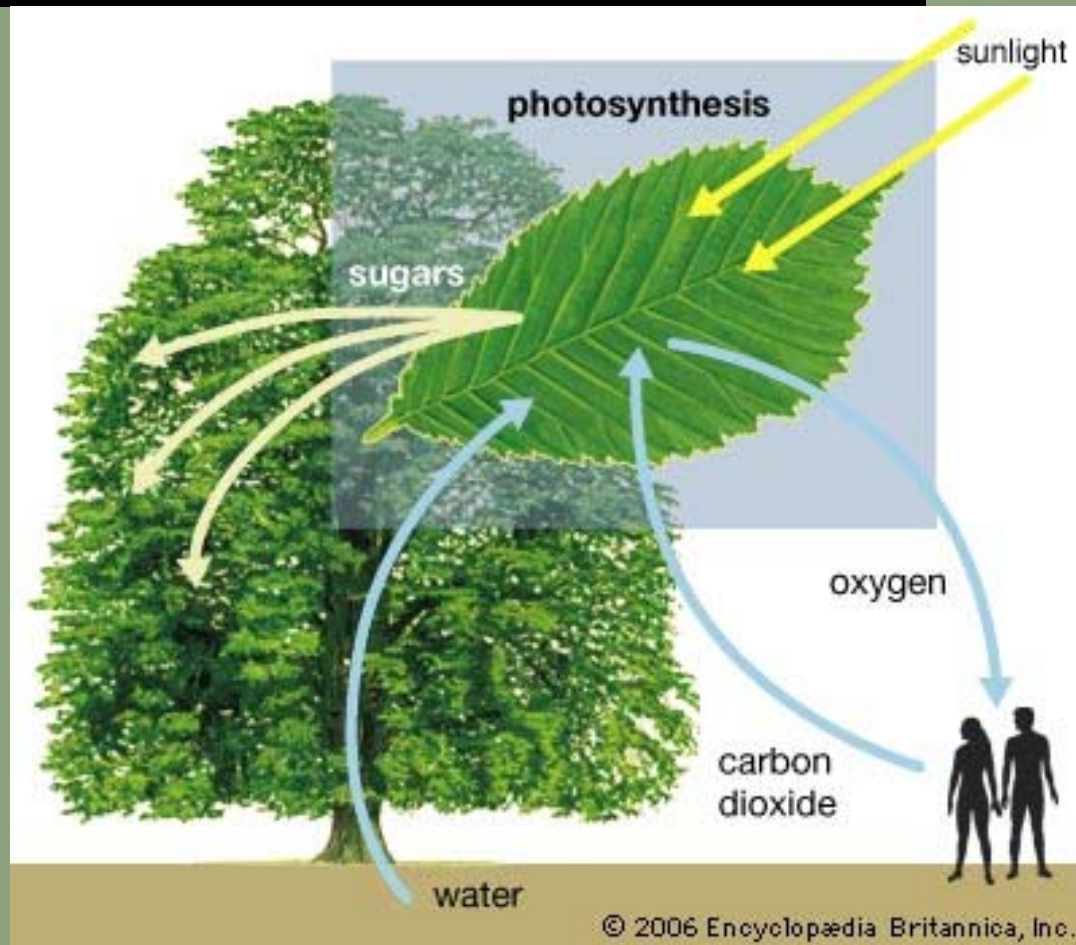


While all these individual trees are important, trees in general also provide us with many things.

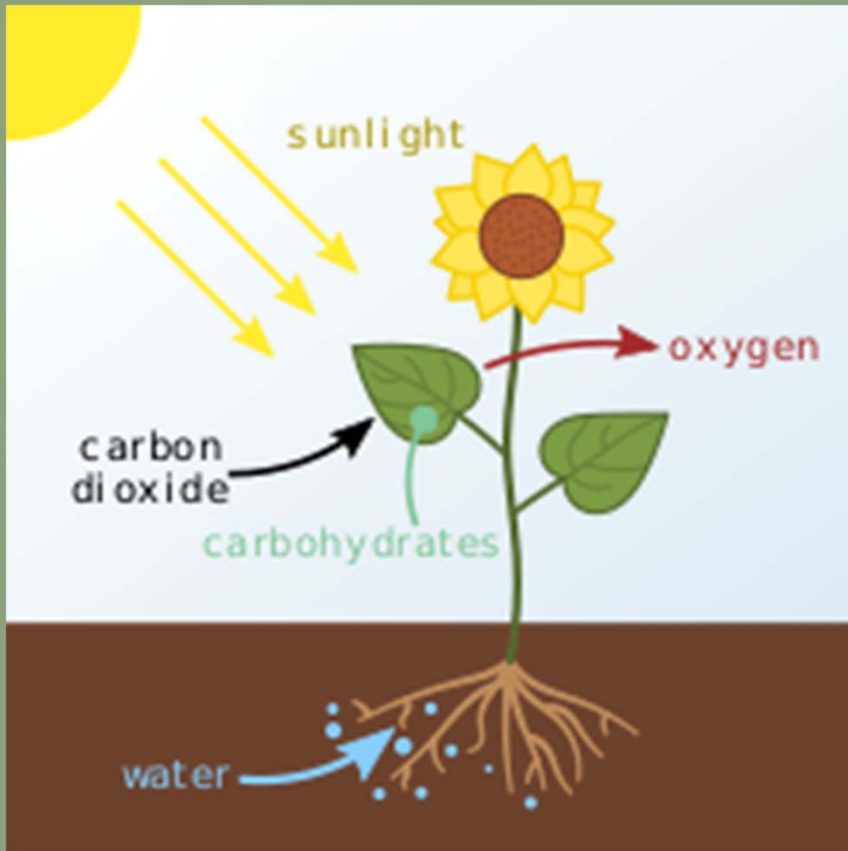
They are pretty



They provide us with oxygen.



As a by-product
of making their
food



The Balanced Equation



Sunlight energy

Trees provide us with wood products.



Those were the easy ones

Here are some other lesser known values that
are backed by current research

Trees add value to our homes.

- According to the U.S. Forest Service's Pacific Northwest Research Station, having a tree in front of an urban house increases the home's sale price by an average of \$7,130!



Trees help us save energy

- A large shade tree cools an equivalent of 10 room sized air conditioners running 20 hours a day



Trees save us energy

- Trees planted on the SW exposure of our homes reduces our electric bill
- More on this later



Trees Mean Better Business.

In tree-lined commercial districts...

- More frequent shopping
- Longer shopping trips
- Shoppers spend more for parking
- Shoppers spend 12% more for goods



Trees Mean Better Business.

- Trees have a positive impact on rental rates in commercial sites by increasing them 3-8%
- However they must be good value and quality.
- If they are seen to be a screen that reduces visibility then they reduce rental rates.



Trees Save Tax Dollars

- Serve as mini retention ponds
- In 2002 study by American Forests determined that Jacksonville's urban trees stored 928 million cubic feet of water
- The cost to engineer that much infrastructure 1.86 billion



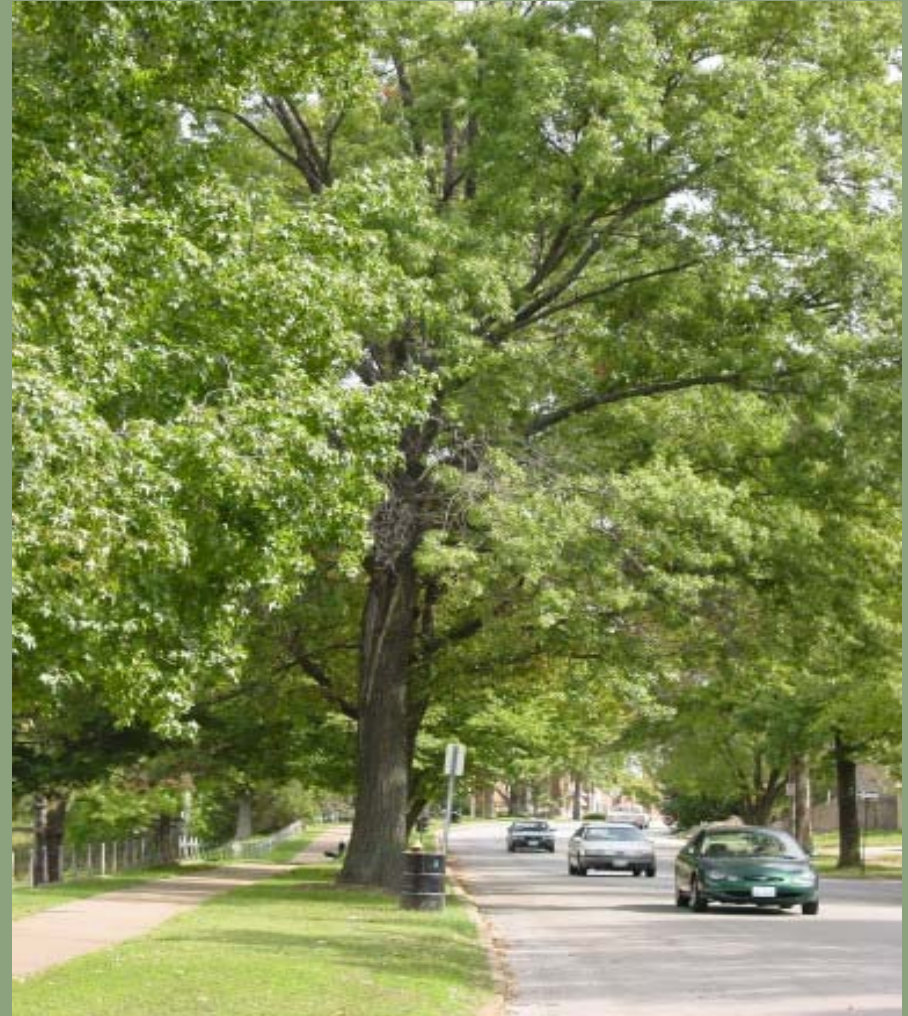
Trees store Carbon

- Storing carbon is called “Carbon Sequestration”.
- A 12 inch diameter maple stores 278 lbs. of carbon
- 329 lbs. for a 12 inch sycamore.



Trees. Important to Air Quality

- Absorbing pollutants like ozone, nitrogen dioxide and sulfur dioxide through leaves.
- Intercepting particulate matter like dust, ash and smoke.
- Releasing oxygen through photosynthesis.
- Lowering air temperatures which reduces the production of ozone.
- Reducing energy use and subsequent pollutant emissions from power plants.





Understanding This Tool:

The Tree Benefit Calculator allows anyone to make a simple estimation of the benefits individual street-side trees provide. This tool is based on i-Tree's street tree assessment tool called STRATUM. With inputs of location, species and tree size, users will get an understanding of the environmental and economic value trees provide on an annual basis.

The Tree Benefit Calculator is intended to be simple and accessible. As such, this tool should be considered a starting point for understanding trees' value in the community, rather than a scientific accounting of precise values. For more detailed information on urban and community forest assessments, visit the i-Tree website.

National Tree Benefit Calculator

Beta

Thank you for choosing this site to calculate the economic and ecological benefits of your tree.

Find your climate zone to get started:

Enter your zip code below:

Submit

-OR-

Select a zone from the [map](#)



The National Tree Benefit Calculator was conceived and developed by
[Casey Trees](#) and [Davey Tree Expert Co.](#)



<http://www.treebenefits.com/calculator/index.cfm>

Trees: Shaded Parking Lots

- cooler vehicle cabin temperatures and cooler gas tanks.
- fewer volatile organic compounds are being released into the atmosphere.
- In the Central Valley of California, shaded parking lots were 3° cooler, cabin temperatures were 40-50° cooler, and gas tank temperatures were 4-8° cooler.
- Achieving 50% shade resulted in a 1 ton per day reduction in volatile organic compounds.



Trees are good for our health

Tree-filled neighborhoods:

- Lower levels of domestic violence
- Are safer and more sociable
- Tree-filled landscapes reduce stress
- Trees decrease need for medication, and speed hospital recovery times



Trees are good for our health

- Streetscapes with trees improved the performance of participants on attentional tests even without their awareness of the trees.
- Participants who had raised awareness of street trees performed best on the attentional test and rated the streetscapes as being more restorative.



Trees are a good investment

In Jacksonville

- Every dollar invested in tree planting by the City of Jacksonville results in a \$4.51 return in benefits from storm water retention, energy conservation, and increased property values



How do you create a \$ Value for the Urban Forest

- I-Tree - a software suite from the USDA Forest Service that helps communities by measuring the trees and calculating the environmental services that trees provide.

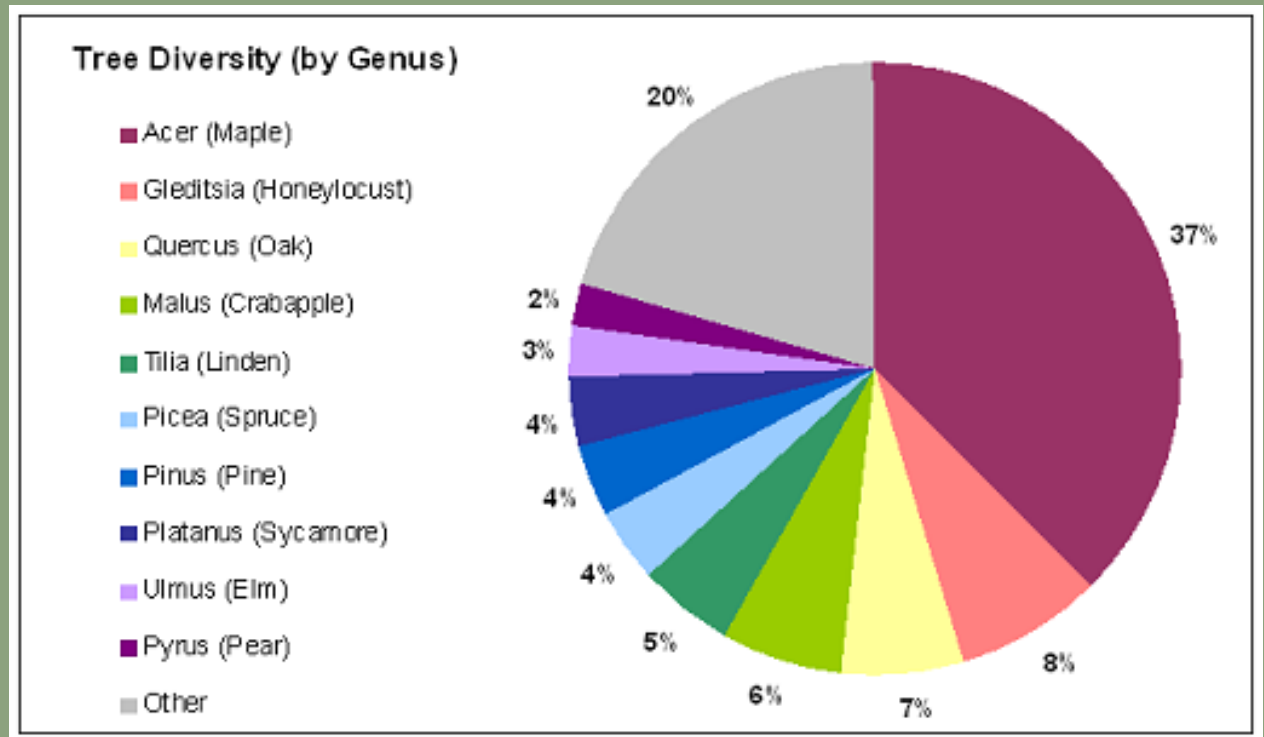


<https://www.itreetools.org/>

Good Urban Forestry Includes

Diversity

- Less than 30% from a single family
- Less than 20% from a single genus
- Less than 10% from a single species



Why do we need to update the trees we are planting

- Diversity
- History Repeated



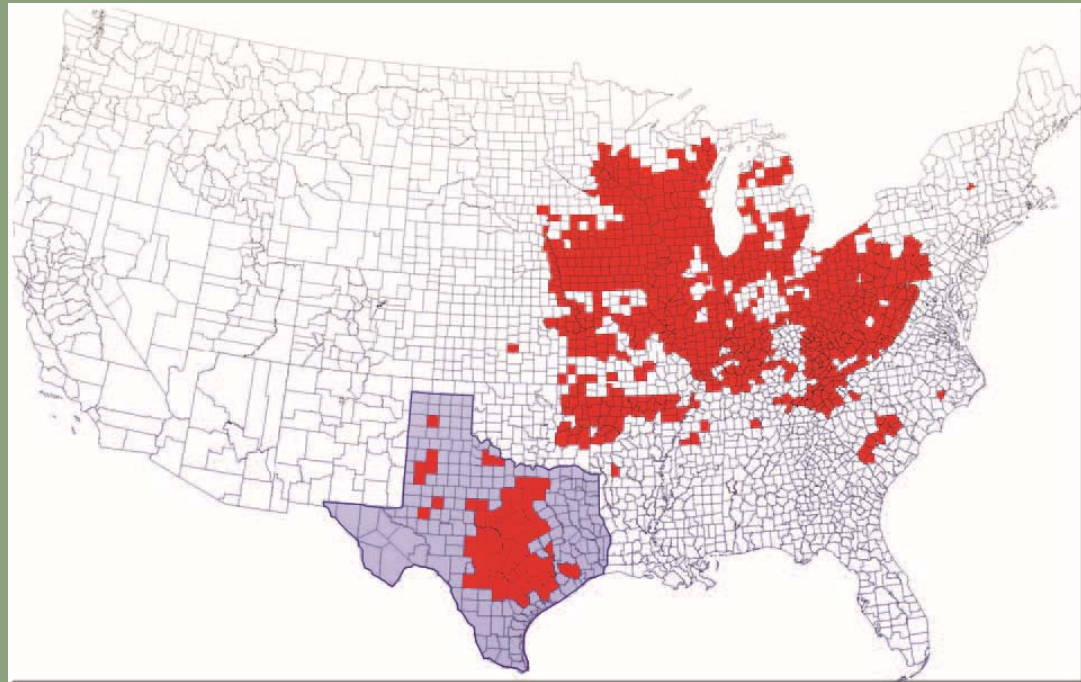
Why do we need to update the trees we are planting

- Diversity
- Problem with planting the same cultivars



Why do we need to update the trees we are planting

- Insect and Disease Issues
- Oak Wilt
- Sphaeropsis on hollies
- Emerald Ash Borer



Oak Wilt in the US

Now lets do it right

Proper Tree Planting

Ten steps to proper tree planting

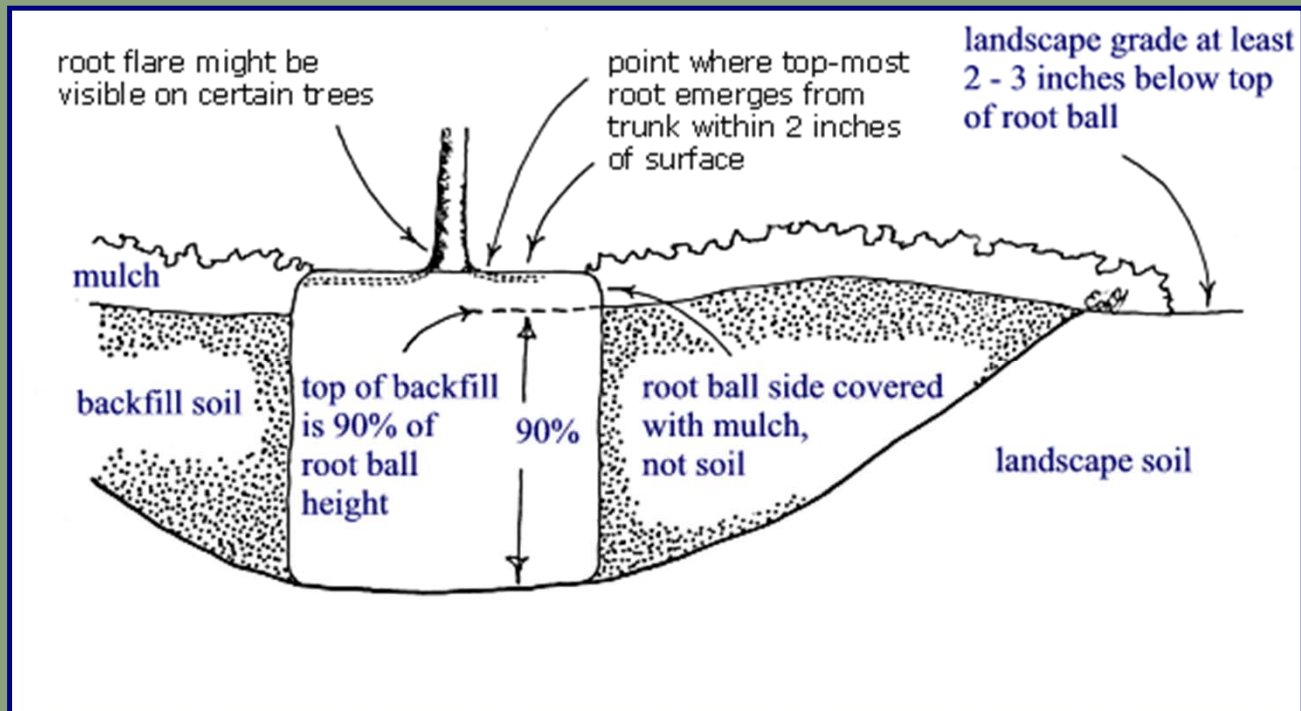
1. Look up for wires and lights
2. Dig shallow and wide hole
3. Find the topmost root and treat root defects
4. Carefully place tree in hole
5. Position top root 1-2 inches above landscape soil
6. Straighten tree
7. Remove synthetic materials
8. Add and firm backfill soil
9. Add mulch
10. Stake and prune if needed



Look up!

- If there is a wire, security light, or building nearby that could interfere with proper development of the tree canopy as it grows, plant elsewhere
- Or plant a small-maturing tree

Plant it high and it wont die

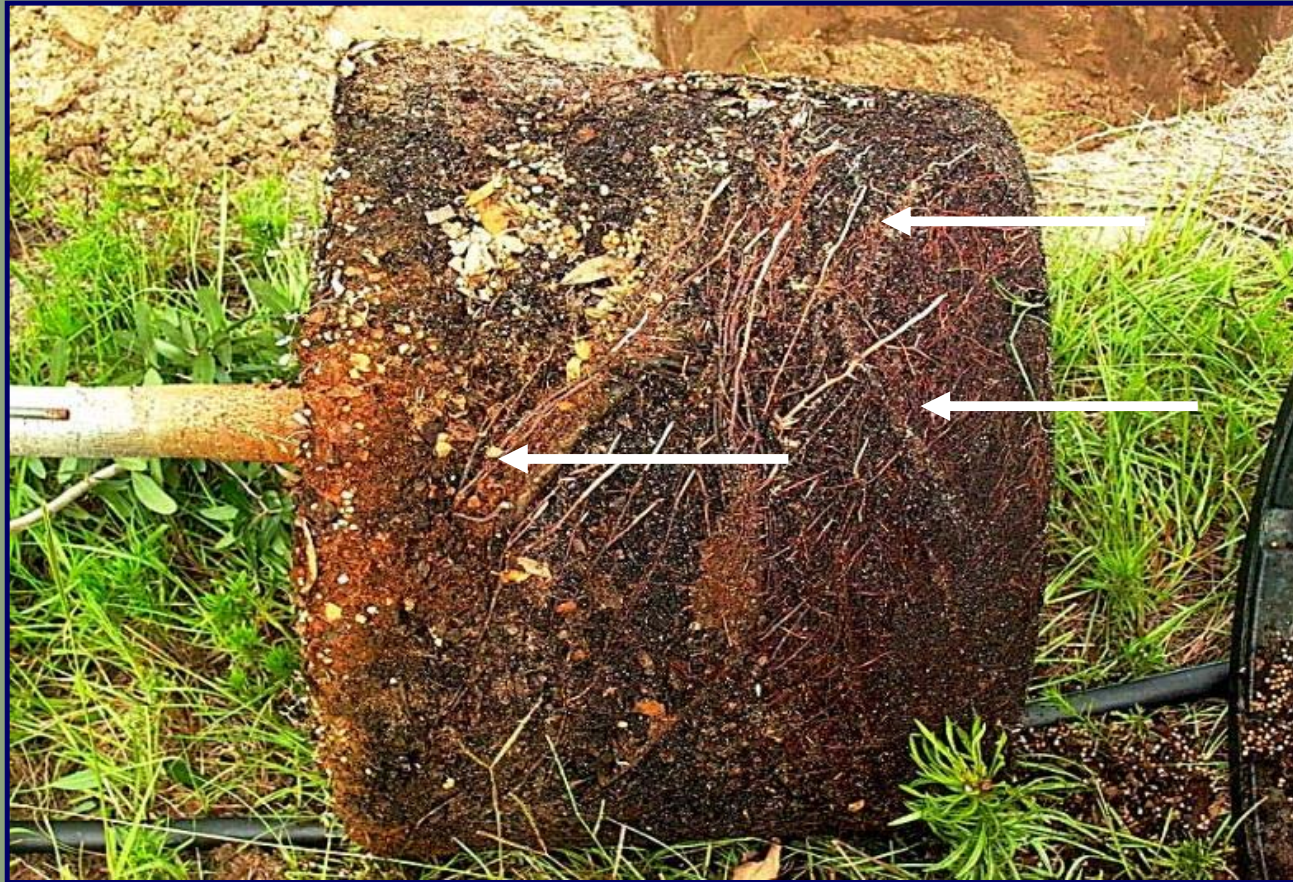


- Dig the planting hole as wide as possible
- The depth of the hole should be less than the height of the root ball

Pull the tree out gently



Circling roots – cut them



This is What we are trying to avoid!!



- This tree was in the ground for 2 years
- The roots that were circling around the outside of the container are still circling.

Example: A tree before planting... Looks good right!!



Same tree 2 ½ years later

- This tree was in the ground for 2 ½ years. Notice where the roots are. More specifically, where they aren't.



PHOTO CREDIT CHUCK LIPPI

The key is to correct the defects at planting

Shave the roots prior to planting



Before and after shaving





When circling
roots are not
managed



Find the top root



Remove excess soil - containers



- If the top-most root is too deep, remove soil from the top of the root-ball so the top-most root is within the top 2" of soil

Three inches of soil and media were removed from the top of this ball

Top root at
surface



Set tree in
the hole



Set too deep - add soil to bottom of hole



Finished with loose soil



Soil over ball is not good



Water the backfill to settle



Prune to finish the job

- Remove broken branches
- Perform structural pruning if needed
- Do not prune to compensate for root loss



Ready for mulch

- Two or three 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" thick layer of mulch to at least an eight-foot diameter circle
- Apply a thinner layer of mulch over the root ball, but keep it at least 10" from the trunk



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



Improper mulching

- Never pile mulch in a volcano-like manner against the trunk. This cuts off oxygen to roots, can rot the trunk, can keep vital irrigation and rain water out and can keep roots too wet in poorly drained soils



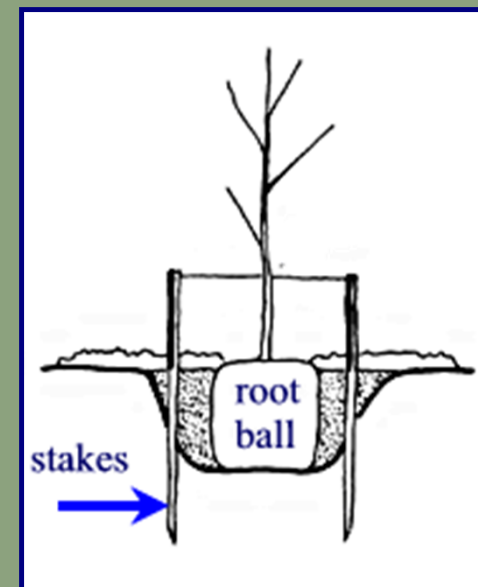
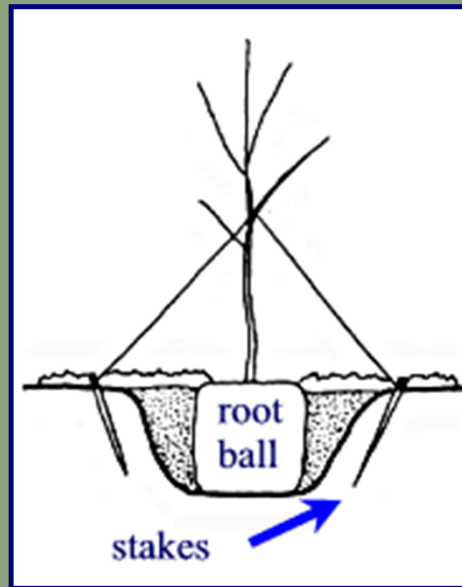
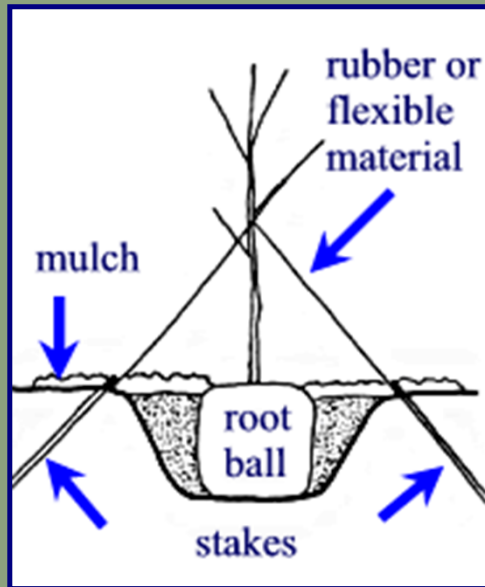
Add a berm?

- When using a hose for irrigation, a 3" to 4" berm could be constructed at the edge of the root ball to prevent water from running off as seen here.



Make sure it is removed after

Traditional staking methods

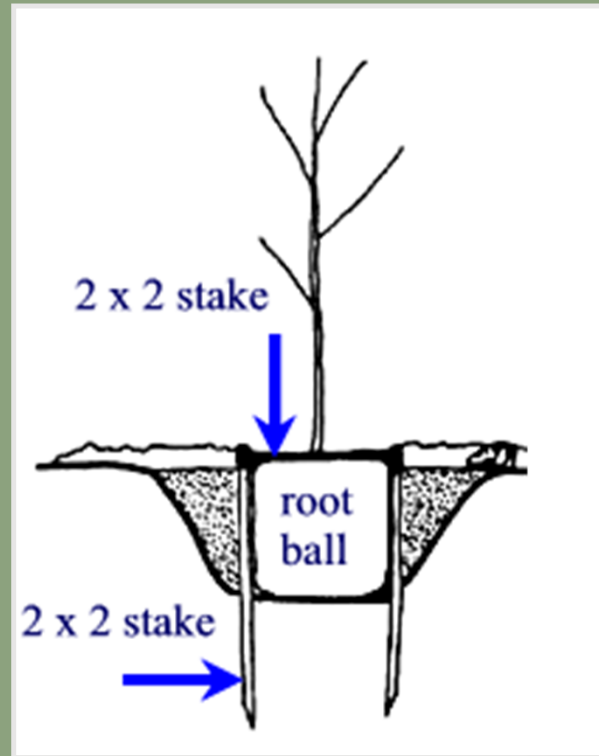
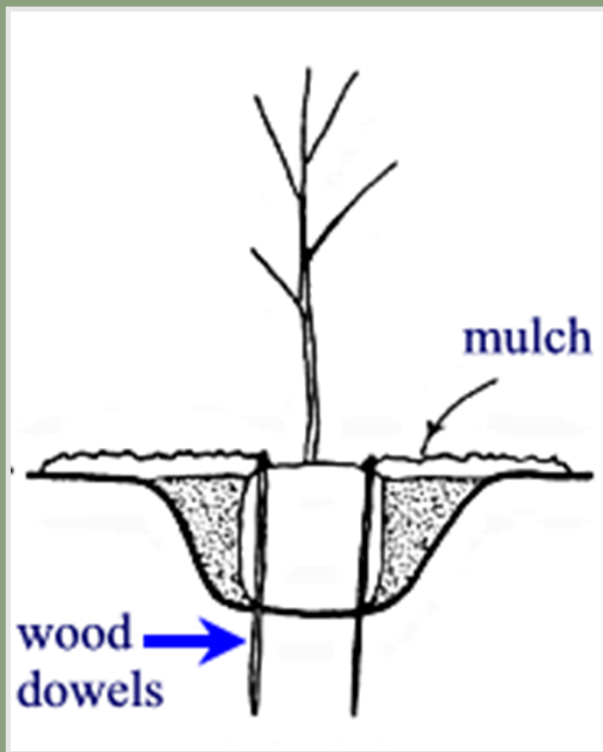


- All these systems require removal within one year of planting



- Don't forget to remove it.

Alternative staking methods



- These inexpensive alternative staking systems do not need to be removed because they simply decay in a few years



Fertilize with H₂O

Table 1. Irrigation Scheduling for Recently Planted Trees

Size of nursery stock	Irrigation Schedule for Vigor ^{1,3}	Irrigation Schedule for Survival ^{2,3,4}
< 2 inch caliper	Daily for 2 weeks; every other day for 2 months; weekly until established.	Twice weekly for 2-3 months
2-4 inch caliper	Daily for 1 month; every other day for 3 months; weekly until established.	Twice weekly for 3-4 months
> 4 inch caliper	Daily for 6 weeks; every other day for 5 months; weekly until established.	Twice weekly for 4-5 months

¹ Delete daily irrigation when planting in winter. Irrigation frequency can be reduced slightly (e.g. two to three times each week instead of every other day) when planting hardened-off, field-grown trees that were root-pruned during production. Establishment takes three (hardiness zones 10-11) to four (hardiness zones 8-9) months per inch trunk caliper.

² Irrigation frequency can be reduced slightly (e.g. to once or twice each week) when planting hardened-off, field-grown trees that were root-pruned during production.

³ At each irrigation, apply two to three gallons per inch trunk caliper to the root ball. Apply it in a manner so that all water soaks into the root ball. Do not water if root ball is wet/saturated on the irrigation day.

⁴ Trees take much longer to establish than three to four months per inch trunk caliper when under-irrigated. Be prepared to irrigate the following summer.

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Any Questions??

Thank You!!!