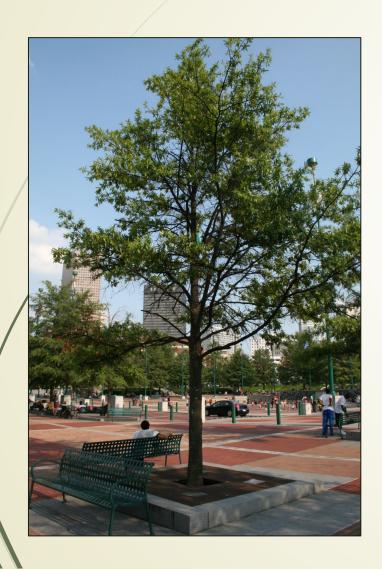
Watering and Mulching

Tree Keeper Training
Barbara Fair, Associate Professor, PhD

Properly planted and Placed trees = longterm benefits



- Trees perform significantly better with more rooting space
- Trees planted correctly are healthier and produce larger canopies
- Want more bang for you tree buck? Plant large-maturing trees
 - Provide more stormwater benefits
 - Provide higher levels of carbon sequestration
 - Can help mitigate urban temperatures better

Longevity



- Even after 5-10 years trees can still die from improper planting
 - Consider this when diagnosing tree problems
- Larger tree at plantinglonger to establish and longer to tolerate potentially challenging conditions
 - Trees may be dying from the moment installed

Planting Stock



- Bare root
- Container-grown
- **■** B&B





Ball & Burlap and Container-grown Stock



- Machine or hand dug
- 80-85% of roots lost
- Typically in basket
- Transportation issues
- Common for large material

- Maintain 100% of roots
- Often root bound; girdling roots
- Transportation easy
- Easy planting-quick to dry out

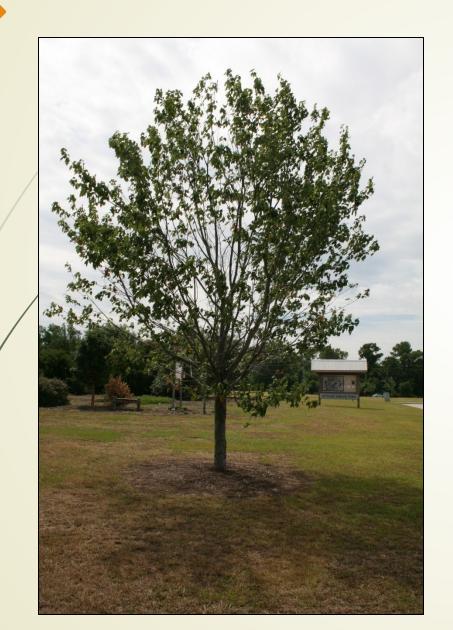




Water

- Lack of proper irrigation postinstallation leads to:
 - Poor root establishment
 - Gradual decline of health
 - Nutrient deficiencies
 - Root rot issues
 - Weak or stunted growth

Amazing what a little water can do...





Plant Establishment- How long?

- For a 2" caliper tree:
- 6 months in zones 9-11
- 1 year in zones 7-8
- 2 years in zone 2-6

What does established mean?

Most roots have grown a distance equal to 3X the distance from the trunk to branch tips



Factors that limit growth

- 1. Compacted soil
- 2. Little or no irrigation
- 3. Grass or weeds growing too close to trunk
- 4. Planting too deep or too high
- 5. EXCESSIVE Pruning at planting- pruning to correct form is good!



Not mulch!!!

Procedures that encourage establishment



- 1. Loose soil
- 2. Proper irrigation Management!
- 3. Mulch ring of about 8' around planting hole
- 4. Root flare slightly above grade
- 5. Leaving top mostly unpruned

Information on tree establishment from Ed Gilman, U of Florida

Factors that have little or no impact



- Peat/organic matter added to backfill (single hole)
- 2. Root stimulant products
- 3. Fertilizer at planting
- 4. Adding mycorrhizae spores
- 5. Water absorbing gels

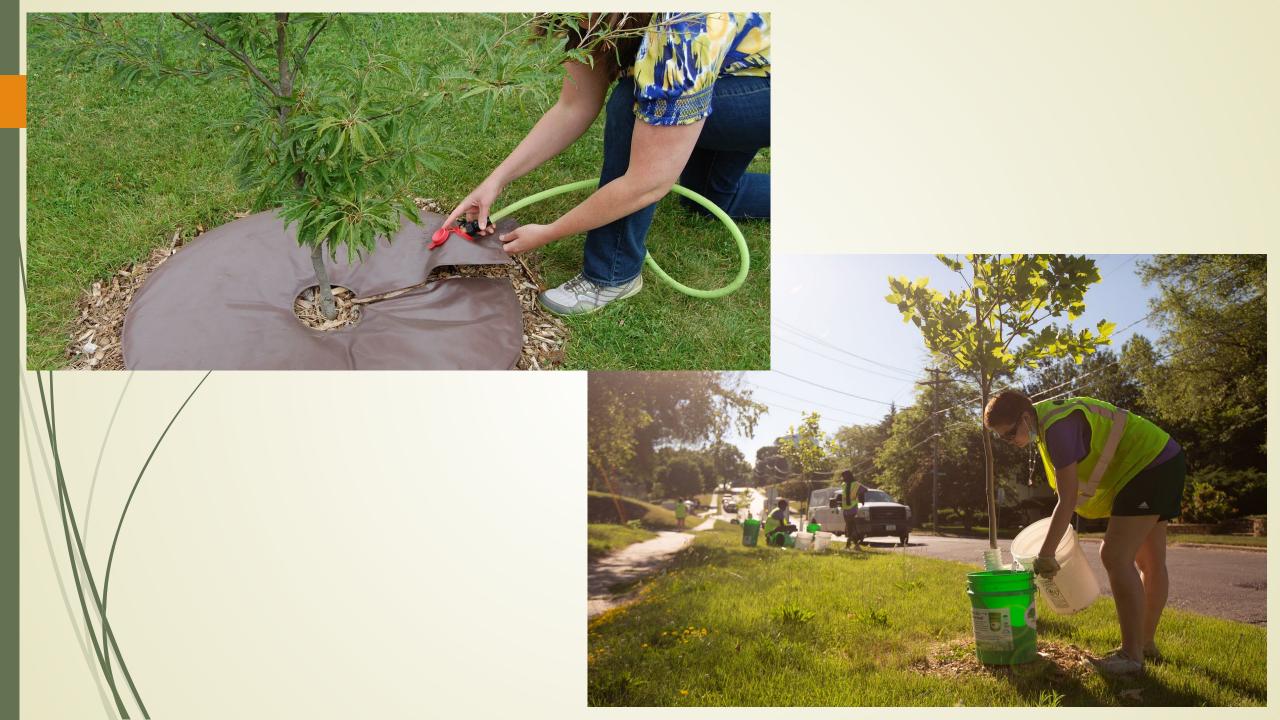
Watering Recommendations

Size of tree	Watering amount*	Watering duration	Watering frequency
<2" caliper (15 gallon container-grown tree)	5 – 10 gallons	2 – 5 minutes	2X per week during 1st growing season, then once a week as needed
2 – 4" caliper (15 – 25 gallon container grown tree)	10 – 25 gallons	5 – 10 minutes	2X per week during 1st and 2nd growing seasons, then once a week as needed
>4" caliper (>25 gallon container grown tree, or tree that has been in the landscape more than one year)	25 – 60 gallons	10+ minutes	2X per week during 1st - 3rd growing seasons, then once a week as needed



How to apply water?

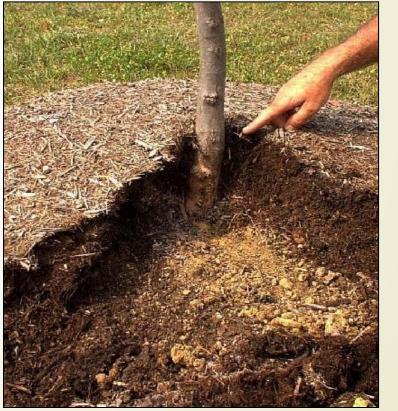




The "Mis-mulching of America"

- Finish off with proper mulching
 - No more than _____ hardwood on woody beds
 - No more than _____ pine straw on beds
 - No more than _____ in herbaceous/flower beds
 - Use good products





- Conserves soil moisture
 - -Water lost by 21% in summer
- Reduces fluctuations of soil temperature
 - ■By 10° F in summer



Proper Mulching







The Bottom line...



- Species and soil texture dependent
- 2 to 3x diameter hole
- Plant trees in amended beds where possible
- DO NOT HEAVILY COMPACT FILL SOIL
- Stake where necessary and do it correctly
 - Lots more options available
- Plants are quite resilient!
- No one size fits all...

Resources

- Contact Barbara Fair, at bfair@ncsu.edu
- For free, downloadable PDFs and Specifications for Planting (CADD compatiable) check out www.hort.ifas.ufl.edu/woody
- Thank you!