Planting, Care & Protection of Landscape Trees

Presented by:
Eric Muecke
Urban Forestry Specialist
NC Division of Forest Resources
Woo-eeeeee
Or WUI

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Why is this guy here?

Number 1 – Amy works with the Urban and Community Forestry Program to provide grant funds for the workshop

Number 2 – I love to talk and get out of the office

Number 3 – Why not have some fun?
WUI

Wildland
- Trees
- Wildlife
- Water Resources
- Wildfire

Urban
- Roads
- Utilities
- Houses
- People
- Recreation
This is NOT Urban Forestry

Arbor Acres Retirement Community – WS Journal 2010

Journal photos by Bruce Chapman
What am I supposed to get out of this?

The basic understanding of how to live with trees and nature.

Smart and Savvy – know a little about everything; shrewdly informed

Impress your friend and be great at parties!

Know when to Laugh, Cringe, or Cry…
Suburbia is where the developer bulldozes out the trees, then names the streets after them. – Bill Vaughan (1900s American Author and Columnist)
Schedule

• Building Blocks
• Planting and Establishment
• Maintenance
• Risk Management and Tree Protection
• Ordinances
What is a tree?

- Canopy – Power Plant – Energy (Food)
- Trunk and Branches – Storage and Transport
- Roots – Receiving Dept – Raw Materials
How does a tree grow?

- Tips of Branches
- Tips of Roots
- Cambium
Why is this important?

Trees do NOT heal, they can only rebuild!
Lessons Learned

• I know how trees work.
• Altering the canopy, trunk or root system of the tree affects the whole tree!
• Trees only grow at tips and cambial layers.
Young Tree Establishment and Care – You will learn...

- Site Selection
- Choosing Good Stock of Suitable Species
- Planting for Success
- Train and Maintain

If you follow these guidelines, you cannot go wrong! If you don’t, things will go wrong at the worst possible time…
Site Selection

New Plantings are nice and cute, but...
Site Selection

Above Ground
• Utility Lines
• Satellite Dish – South
• Structures
• Lighting
• Traffic Patterns
• Views
• Solar Panels

At or Below Ground
• Infrastructure
  – Walks and Drives
  – Utility Boxes
  – Utilities
  – Foundations
  – Hydrants
  – Septic Fields
• Invisible Fences
• Irrigation systems
• Gutter Systems
Purpose of Planting

- Shade
- Privacy
- Aesthetics
- Windbreak
Purpose of Planting

• Utility Savings
• CO2 Storage
• Air Quality
• Storm Water
CONTACT YOUR LOCAL UTILITY!!!

Plant the right tree in the right place
Plant taller trees away from overhead utility lines

Tall trees, such as: maple, oak, spruce, and pine

Medium trees, such as: washington hawthorn and goldenraintree

Small trees, such as: redbud, dogwood, and crabapple

The National Arbor Day Foundation
arborday.org
Firewise Development

Contact us

www.ncfirewise.org
Lessons Learned

• I can identify the best possible planting sites on my property.
• I know to contact the professionals about potential threats.
Species Selection – The Fun Stuff!

Characteristics to Consider:

• Light & Water requirements
• Salt tolerance
• Pest & Disease resistance
• Pollution tolerance
• Limb strength
• Ornamental features
Cultivars

*Corylus avellana*

Aurea

Red Majestic

Contorta
Nursery Stock

- Balled and Burlapped
- Container Grown
- Bare Root
B and B – no eggs involved...

Watson and Himelick
Principles and Practice of Planting Trees and Shrubs
Container Grown
Cutting circling roots

These roots were cut because they circled the outside edge of the root ball
Bare Root Stock or “How much does dirt cost?”
Lessons Learned

• I am not intimidated by terms like “cultivar.”

• I can name 3 methods of preparing trees for transplant.

• I have a pretty good idea about getting the best roots for my dollar.
Nursery Stock – Find the Dominant Leader

ISA BMP Manual
Lessons Learned

• I can pick out the tree with the best structure in the nursery.

• I will not fall for the “Big Head” tree.
Planting Guidelines

- Mark the planting site
- Call NC One Call Center at 811
Planting Guidelines

• Dig shallow/wide hole

• Find the top-most root

• Place tree in hole

• Position top root 1-2” above landscape soil
Planting Guidelines

• Straighten tree

• Remove materials

• Add backfill soil and water in (firm the root ball?)
Planting Guidelines

• Add mulch

• Stake if needed
All these systems require removal within one year of planting
Proper Planting Technique

- Keep Mulch 2” From Trunk
- Root flare at/above grade
- Root ball
- 2-4” Mulch
- Backfill Soil
Root Defects Caused by Deep Planting

Surface Roots

Girdling Roots
Lessons Learned

• I can properly plant a tree.
• I am not intimidated by tree stakes.
• I know what happens to trees that are planted too deep.
Post-planting Tree Care

- Watering
- Mulching
- Pruning
Watering New Plantings

ISA Certified Arborist Study Guide – “Although adequate water is critical to survival and new root growth, excess water accumulation in the planting hole is a leading cause of transplant death. Watering must be appropriate for soil type and drainage.”
Benefits of Mulch

• Reduces soil water loss from evaporation
• Suppresses weed growth
• Insulates soil from temperature extremes
• Increase water infiltration into the soil
• Increases oxygen exchange of the soil
• Decomposes, provides nutrients and increases soil activities
Mulch Wide, not Deep
Tree Establishment

• What is it? It is the Goal!!!
• Soil Amendments
• Fertilizing New Plantings
• What is the best mulch?
Tree Establishment

Watson and Himelick
Principles and Practice of Planting Trees and Shrubs

“If the plant is to survive and thrive at its new site, rapid root proliferation into the backfill and then the site soil is imperative.”
Soil Amendments

Watson and Himelick

Principles and Practice of Planting Trees and Shrubs

“On poor quality sites, backfill soil amendments may be important, but probably not as important as a large planting hole…. Well decomposed organic material is best.”
Fertilizing

Watson and Himelick

Principles and Practice of Planting Trees and Shrubs

“Drought stress limits the growth of newly planted trees immediately after planting more than any other factor. Until the root system can grow and absorb more water, adding nutrients to the soil is likely to be ineffective.”
What is the best Mulch?

Watson and Himelick
Principles and Practice of Planting Trees and Shrubs

“Composted organic materials are best for mulch.”

Eric – “Cheap, Easy, Abundant and Used”
What is Compost?

Hint – It IS NOT decomposed Organic Material…

Dr. Elaine Ingham – www.soilfoodweb.com

Compost is mainly bacteria, fungi, protozoa, nematodes and microarthropods.
What is the worst mulch? (as far as Eric and the tree are concerned)

1. Non-organics
   1. Stone
   2. Rubber
   3. Plastics
2. Slow Breakdown
3. Water limiting/nutrient robbing

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Lessons Learned

I know enough about watering, soil amendments and mulch that I can tell good from bad.
Pruning Young Trees

Improve Structure or Health

Accommodate Human Needs
Pruning & Tree Form

Can’t make a tulip tree out of an ash tree.
Structural Pruning of Young Trees or “I was a Teenage Open-Grown Beech!”

- Broken, Dead, Dying and Damaged
- Select and Establish a dominant leader
  - Subordinating
  - Codominant
- Select and Establish Lowest Permanent Branch
- Select and Establish Scaffold Branches
- Select and Subordinate Temporary Branches
Dominant Leader

Before pruning

After pruning

ISA BMP Manual
Lowest Permanent Branch, Scaffold Spacing and Temporary Subordination

 ISA BMP Manual
Lesson Learned

Proper pruning while the tree is young encourages good structure.
Proper Pruning Cuts

• Targets
• Branch Bark Ridge and Branch Collar
Removing Large Branches With 3 Cuts

1. Under Cut
2. Remove Limb
3. Cut Stub Outside of Collar
Do Not Flush Cut Limbs

Branch collar is removed

Trunk is exposed to decay and future structural problems.
When to Prune Trees

Avoid pruning during bud break & development.
Lesson Learned

I know good pruning when I see it!
If you follow these guidelines, you cannot go wrong! If you don’t, things will go wrong at the worst possible time…

- Site Selection
- Choosing Good Stock of Suitable Species
- Planting for Success
- Train and Maintain
Now, what do you think of this?

A tree which has lost its head will never recover it again, and will survive only as a monument of the ignorance and folly of its Tormentor. – George William Curtis (1800s American Writer and Public Speaker)
Results of Topping Cuts
Results of Topping Cuts
What is a tree?

- Canopy – Power Plant – Energy
  - Trunk and Branches – Storage and Transport
  - Roots – Reveiving Dept – Raw Materials
Lessons Learned

• Topping is not an acceptable practice.
• Topping has long-term effects that promote decay, increase potential for failure and shorten the life of the tree.
Risk Management and Tree Preservation
Is it a risk?

- What is the failure potential?
  - Low → Severe

- What is the size of the defective part?
  - <6”, 6-18”, 18-30”, >30”

- What is the target?
  - Occasional → constant use

- Owner’s Attitude
Owner’s Attitude
Risk Takers

- Sky Divers
- Fire Fighter
- White Water Rafter
- Stock Car Racer
- Tornado Chaser
- Chainsaw Juggler
- Alligator Wrestler
- Motorcyclist
- Rock Climber
- Run with Scissors
- Flip Flop Grass Cutter
- Poker Player
- Fork in the Toaster
- Lottery Player

Eat raw oysters, rare hamburgers, over easy eggs?
People in suburbia see trees differently than foresters do. They cherish every one. It is useless to speak of the probability that a certain tree will die when the tree is in someone’s backyard… You are talking about a personal asset, a friend, a monument, not about board feet of lumber. - Roger Swain

(1900s Writer and Science Editor, The Victory Garden)
Lessons Learned

Risk Assessment is based on professional observations and Risk Management is based on the owner’s attitude.
Tree Preservation and Roots
What is a tree?

• Canopy – Power Plant – Energy

• Trunk and Branches – Storage and Transport

• Roots – Receiving Dept – Raw Materials
Simply Put, Tree Preservation includes:

• Identifying the best trees
• Identifying “preserve-able” trees
• Protection and Preservation

• Everything else is just “left”
Construction Activities

- Tree Damage
- Grade Changes
- Topsoil Removal
- Rubble Incorporation
- Contamination
- Erosion
What is a tree?

- Canopy – Power Plant – Energy
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Willow Oak
nine months
after
parking lot
installation
God has cared for these trees, saved them from drought, disease, avalanches and a thousand tempests and floods. But, He cannot save them from fools. - John Muir (1800-1900 American Naturalist and Author)
TREE PRESERVATION BY THE NUMBERS

Diameter X Preservation Factor = TPZ

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<th>DBH (Inches)</th>
<th>Tolerance</th>
<th>P Factor</th>
<th>TPZ Radius (Feet)</th>
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<td>Poor</td>
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Resources - Planning

• Trees and Development
• Matheny and Clark
Bartlett Tree Laboratory
Lessons Learned

• Tree Preservation starts with Risk Assessment.
• Activities that impact the root system are the most damaging.
• When you consider the cost to purchase land, design a house and build it, the cost of hiring and arborist is minimal.
Types of Tree Ordinances:

- Street Tree
- Landscaping
- Tree Protection
- View Protection
- Timber Harvesting
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- Street Tree
- Landscaping
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- Often incorporated into zoning ordinances
Legal Issues in Tree Protection

• No taking of private property use w/o just compensation

• Exemptions:
  – 1 and 2-family residential lots
  – Agricultural & forestry operations
  – Dangerous, diseased trees
Session Law 2005-447

Municipalities and counties shall not adopt or enforce any ordinance, rule, regulation or resolution that regulates:

• Forestry activities on forestland taxed on the basis of its present-use value as forestland

• Forestry activity that is conducted in accordance with a forest management plan
This law shall not be construed to limit, expand or otherwise alter the authority of a municipality or county to:

• Regulate activities associated with development

• Regulate trees pursuant to any local act of the General Assembly (Enabling Legislation)
This law shall not be construed to limit, expand or otherwise alter the authority of a municipality or county to:

- Adopt ordinances that are necessary to comply with any federal or state law, regulation or rule
- Exercise its planning or zoning authority
This act does allow counties and cities to wait for 3 years before approving a building permit or a site or subdivision plan if trees are removed that should have otherwise been preserved under county or municipal development regulations.
Winner of “That’s not my Job”
2009
Lessons Learned

• Oh man, I knew all this already!
• I learned some new stuff…
• Hey, that loudmouth neighbor of mine is wrong! Yahoo!!!
• My “Honey-Do” list just got longer…
• Huh? What? Is it time for a break yet?
By means of trees, wildlife could be conserved, pollution decreased, and the beauty of our landscapes enhanced. This is the way, or at least one of the ways, to spiritual, moral and cultural regeneration. - E.F. Schumacher (1900s Economist)
The best friend on Earth of man is the tree. When we use the tree respectfully and economically, we have one of the greatest resources of the Earth. – Frank Lloyd Wright (1800-1900 Architect)
Thank You!!!

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