





Urban Trees

Developed by
Sheldon Hammond, Northwest District ANR
Program Development Coordinator
In Cooperation with
The University of Georgia
Cooperative Extension Service
Urban Forestry Issue Team

Learning Objectives

- Value of urban trees
- Site factors in tree selection
- Importance of selection
- Identifying trees
- Proper planting & soil amendments
- Tree maintenance: staking, watering, fertilization & pruning
- Tree care professionals

Asking the Right Questions

- What is the purpose of the tree?
- What are the characteristics of the planting site?
- What are the characteristics of the tree?


Why Plant a Tree?

- Provide shade
- Provide aesthetics in the landscape
- Improve air quality
- Reduce storm-water runoff and improve water quality
- Create wildlife habitat
- Reduce noise levels
- Provide screening and privacy




What are the Site Factors?

- Soil characteristics
- Environmental conditions
- Planting space
- Site location
- Maintenance requirements



Site Factors

- Soil characteristics
 - Texture
 - Compaction
 - Moisture & drainage
 - Fertility and pH
 - Temperature
 - Contamination
 - Salt



Site Factors


- Environmental Conditions
 - Light patterns
 - Temperature extremes
 - Precipitation
 - Wind patterns
 - Air quality



The diagram illustrates various environmental factors around a central building. It shows wind patterns (Wester Wind, Easter Wind), water features (Water Water, Existing Ponds), terrain (Slope of Land, GARDEN, TERRACE), and other elements like Power Lines and Close Proximity to Neighbors.

Site Factors

- Planting Space



A photograph showing a large, mature tree with a thick trunk and spreading canopy, situated in a residential area with a brick building in the background.

Site Factors


- Site location
 - Paved areas
 - Structures
 - Utility lines
 - Site activities



An aerial photograph of a residential neighborhood, showing houses, trees, and paved areas.

Site Factors

- Maintenance Requirements




What is the Right Tree?

- Growth factors
- Soil requirements
- Other Environmental requirements
- Maintenance requirements




Right Tree

- Growth Factors
 - Mature size and shape
 - Growth rate
 - Branching pattern
 - Leaves
 - Flowers, fruit, seeds and bark




Right Tree

- Soil requirements




Right Tree

- Other environmental factors
 - Hardiness zone
 - Wind and storm damage
 - Light requirements
 - Pollution tolerance
 - Insect and disease tolerance




Right Tree


- Maintenance requirements




Types of Tree Stock



Bare-Root




Ball and Burlap (B&B)



Container

Selecting a Tree

- Qualities to look for:
 - Healthy, well balanced crown with dark green foliage
 - Straight trunk with evenly distributed branches with wide angles
 - Healthy white roots with good lateral distribution
 - No insect or disease problems




Urban Tree Dendrology (Tree I.D.)





What is a Tree?

- Often reaches 15 feet or more in height at maturity
- Has a single trunk or dominant multiple trunks
- Has no normal branches on the lower trunk
- Has at least a partially defined crown
- Usually larger than other plants and tend to be long-lived




Classes of Trees In the South

- Gymnosperms
 - Softwoods
- Angiosperms
 - Hardwoods
 - Broadleaf
 - Palms and yuccas


Softwoods

- Foliage
 - Needles, scales
- Reproduction
 - cones
- Examples
 - Pines, hemlocks, cedars, cypresses




Hardwoods

- Foliage
 - Broadleaf
- Reproduction
 - Flowers
- Examples
 - maple, oak, pecan, walnut



Tree Identification Features

- Leaves
- Twigs and stems
- Bark
- Flowers
- Fruit and seeds
- Cones



Tree Identification Keys

SUMMER KEY FOR TREES

1. Leaves needle-like, linear or scale-like, not over 3 mm wide or margins except Terminal, sharp, acute, DIV. 3

Gymnosperms

2. Leaves broad, not needle-like, linear and scale-like, over 3 mm wide, seeds covered. **ANGIOSPERMS**

3. Leaves broad, ovate, very large, the petioles long, the blades 4 feet or more in length. **Red palm tree, Coccothrinax MONOCOTYLEDON**

4. Leaves rounded and not so above, stems **ANGIOSPERMS, DICOTYLEDON**

GYMNOSPERMS

5. Leaves and branches deciduous, leaves in persistent leafy **Taxodium, Baldcypress, Cypress**

6. Leaves evergreen and branches persistent, not leafy

7. Leaves needle-like or strap

8. Leaves broad and in opposite pairs **Juniper**


9. Leaves needle-like, borne in clusters of 25 with **White Pine**

10. Leaves not needle-like and not in clusters

11. Leaves needle-like in **White Pine, Spruce**

12. Leaves flattened

KEYS TO COMMON TREES OF THE SOUTHEAST



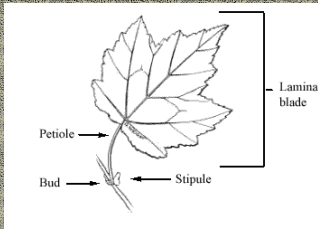
Tree Identification Leaf Characteristics

- Part
- Type
- Shape
- Arrangement on the stem
- Venation
- Shape of apex and base
- Margin
- Surface



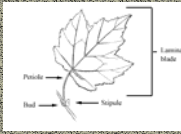
Tree Identification Leaf Characteristics

- Parts

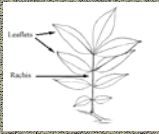


Tree Identification Leaf Characteristics

- Type
 - Hardwood



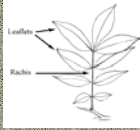
Simple Leaf




Compound Leaf

Tree Identification Leaf Characteristics


- Type
 - Hardwood - Compound



Pinnate




Bipinnate




Palmate

Tree Identification Leaf Characteristics


- Type
 - Softwood



Awl-like




Scale-like




Needle-like

Tree Identification Leaf Characteristics


- Shape




Ovate




Lanceolate




Cordate




Spatulate




Elliptical




Obovate




Oblanceolate




Obcordate




Oblong




Reniform




Linear



Cuneate




Peltate




Hastate

Tree Identification Leaf Characteristics


● Arrangement on the stem



Opposite




Whorled




Alternate

Tree Identification Leaf Characteristics


● Venation




Pinnate



Palmate



Parallel




Dichotomous


Tree Identification Leaf Characteristics

● Shape of apex and base


Apices




Acute




Acuminate




Obtuse



Truncate




Emarginate




Cuspidate


Bases




Obtuse




Acute



Cuneate



Oblique



Cordate

Tree Identification Leaf Characteristics

Margin

Entire Serrate Serrulate Doubly-serrate

Dentate Crenate Incised (lobed) Sinuate

Tree Identification Leaf Characteristics


Surface

Tree Identification Twigs And Stem


Terminal bud
Leaf scar
Lateral bud
Lenticel
Pith

Tree Identification Bark

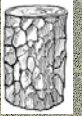
- Shape or general appearance.
- Texture
- Thickness
- Color




Smooth




Furrowed



Scaly



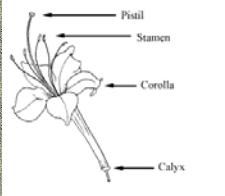
Warty



Shaggy


Tree Identification Flowers

- Complete & Incomplete
- Perfect and Imperfect




Tree Identification Fruits and Seeds


- Simple Fruits
 - Dry Fruit (indehiscent, dehiscent)
 - Fleshy Fruit
- Compound Fruits
 - Aggregate Fruits
- Cones
 - Pollen Cones
 - Female Cones
 - Sertinous Cones




Wickory
Dehiscent husk




Oak Acorn -
Indehiscent




Persimmon
Berry



Cherry
drupe



Apple -
Pome



Strawberry - Multiple base of ovaries

Urban Trees: Selection
The Good, The Bad and the Ugly



The Good
Trees for Moist Shady Sites

Red Maple
Acer rubrum

Attributes:
60' x 40' w
Fall Color
Shade tree

Cultivars:

- Red Sunset
- October Glory
- Autumn Blaze




The Good
Trees for Moist Shady Sites

Flowering Dogwood
Cornus florida

Attributes:
Spring Flowering
Native

Cultivars:

- Cherokee Chief
- Cherokee Princess
- First Lady





Photos Courtesy Ohio Division of Forestry.

The Good
Trees for Moist Shady Sites

Carolina Silverbell
Halesia carolina

Attributes:
Native
Clusters of Bell-shaped Flowers in Spring

Cultivars:

- Meehanii
- Rosea

The Good
Trees for Shady Sites

Japanese Stewartia
Stewartia pseudocamellia

Attributes:
30' x 25' w
Fall color
Great winter form
Camellia-like flowers-July

The Good
Trees for Partly Sunny Sites

Kousa Dogwood
Cornus kousa

Attributes:
Later flowering
Sun tolerant

Cultivars:
'Milky Way' series



The Good
Trees for Partly Sunny Sites

Red Buckeye
Aesculus pavia

Attributes:
20' x 25' w
Bright red upright
flowers in spring
Dark green leaves



The Good
Trees for Partly Sunny Sites

Japanese Snowbell
Styrax japonicus

Attributes:
25' x 25' w
Graceful shape
Bell flowers May-June

Cultivars:
Emerald Pagoda



The Good
Trees for Partly Sunny Sites

Apple Serviceberry
Amelanchier x grandiflora

Attributes:
20' x 20' W
White Flowers
Edible fruit
Fall Color

Cultivars:
'Autumn Brilliance'



The Good
Trees for Moist Sunny Sites

Eastern Redbud
Cercis canadensis

Attributes:
Native
20' x 25' w
Early spring bloomer
Interesting gray bark

Cultivars:
• Forest Pansy
• Alba



Photo: Courtesy Ohio Division of Forestry




Photo: Ohio Division of Forestry

The Good
Trees for Moist Sunny Sites

White Fringetree
Chionanthus virginicus

Attributes:
Native
a.k.a. Grancy
Graybeard
Small tree 20' T.
Fuzzy white blooms
spring
Pollution tolerant



The Good
Trees for Moist Sunny Sites

Southern magnolia
Magnolia grandiflora

Attributes:
Stately large tree
Evergreen
Creamy summer flower


Cultivars:
'Little Gem'
'Bracken's Brown Beau'
'Alta'



The Good
Trees for Moist Sunny Sites

Willow Oak
Quercus phellos

Attributes:
Best overall oak
Great street tree
Fine texture
50' x 40' w




The Good
Trees for Moist Sunny Sites

Baldcypress
Taxodium distichum

Attributes:
Perfect Form
Red-bronze Fall Color
Tolerant of wet or dry sites

Cultivars:

- Pendens
- Monarch of Illinois
- Shawnee Brave





The Good
Trees for Sunny Sites

Persian Parrotia
Parrotia persica


Attributes:
Foliage opens reddish
turns deep green
and turns 3 brilliant
colors in fall
Interesting winter form



The Good
Trees for Sunny Sites

Lacebark Pine
Pinus bungeana

Attributes:
30' x 30' w
Beautiful bark



The Good
Trees for Sunny Sites

Chinese Pistache
Pistacia chinensis

Attributes:
30 x 30' w
Drought resistant
Beautiful bark
Excellent fall color



The Good
Trees for Sunny Sites

American Yellowwood
Cladastris kentuckea

Attributes:
50' x 55' W
Nice shade tree
Floral show every 2-3 years
Yellow-copper fall color

Cultivars:
Rosea



Paul Gray, Iowa State University, www.insectshyges.com

The Good
Trees for Sunny Sites

Japanese Zelkova
Zelkova serrata

Attributes:
Vase shape
Fall Color
Exfoliating bark


Cultivars:
'Green Vase'
'Village Green'
'Spring Grove'



The Good
Trees for Sunny Sites

American Smoketree
Cotinus obovatus

Attributes:
Shrubby small tree
Wonderful gray bark
Smoky-fuzzy
Fantastic fall color



The Good
Trees for Dry Sunny Sites

Ginkgo
Ginkgo biloba

Attributes:
Upright form
Brilliant Yellow Fall Color
Beautiful Green-Blue-green Foliage

Cultivars:
● Princeton Sentry
● Saratoga





The Good
Trees for Dry Sunny Sites

Chalkbark Maple
Acer leucoderme

Attributes:
30' x 30' w
Drought tolerant
Nice bark
Wonderful fall color




The Good
Trees for Dry Sunny Sites

Lacebark Elm
Ulmus parvifolia

Attributes:
Dutch Elm Disease-Resistant
Ornamental bark
Good Street-tree

Cultivars:
Athena



The Good
Trees for Sunny Sites

Sourwood
Oxydendron arboreum

Attributes:

- Native
- Columnar form
- Great fall color
- Bell-flowers



Wendy VanDyk Evanson www.stockimages.com DGA1334090

The Bad & Ugly
Trees Not to Recommend

Bradford Pear
Pyrus calleryana
'Bradford'

Reasons:

- Weak limb structure
- Fire Blight
- Better varieties
- Odor




Pat Mason, U.S. Fish and Wildlife Service, www.insectimages.org DGA1237069

The Bad & Ugly
Trees Not to Recommend

Silver Maple
Acer saccharinum

Reasons:

- Weak limb structure
- Root Sprouts
- Better varieties



Pat Mason, U.S. Fish and Wildlife Service, www.insectimages.org DGA1237069

The Bad & Ugly
Trees Not to Recommend

Box Elder
Acer negundo

Reasons:

- Insects
- Poor Limbing
- Weak Structure





Clemson University - USDA Cooperative Extension Office Series
www.insectimages.org

The Bad & Ugly
Trees Not to Recommend

Northern Catalpa
Catalpa speciosa

Reasons:

- Insects
- Poor Structure
- Weak Limbing



Paul Wray, Iowa State University, www.insectimages.org

The Bad & Ugly
Trees Not to Recommend

Empress Tree
Paulownia tomentosa

Reasons:

- Root Sprouts
- Prolific seeder
- Weak



Chuck Boppre, The University of Georgia, www.insectimages.org

The Bad & Ugly
Trees Not to Recommend

Siberian Elm
Ulmus pumila

Reasons:

- Disease
- Poor form




Photo: Elmer, Oregon State University, www.oregonstate.edu

Urban Trees
Installation and Maintenance

Installation Guidelines

- Choose a planting season
- Prepare the site
- Prepare the tree stock
- Plant the tree



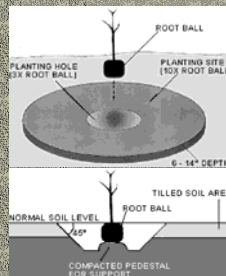
Choose a Planting Season

- Bare root – fall/spring
- B&B – fall/winter/spring
- Fabric Bag – fall/winter/spring
- Container – all year (water in summer)



Preparing the site

- Determine size of planting area
 - 10 X the root ball
- Determine the planting hole size
 - 3 X the root ball
- Hole shape/depth




Prepare the Tree Stock

- Inspection
- Handling
- Storage
- Removal of wrapping, cords, ties and labels




Plant the tree

- Place root ball at ground level
- Spread out roots
- Soil amendments
- Backfilling




Post-Planting Guidelines

- Watering
- Mulching
- Pruning
- Fertilizing
- Staking and Guying




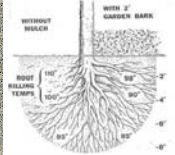
After Planting Maintenance

- Mulching
- Watering
- Pruning
- Fertilizing
- Disease and Pest Control
- Removal




Mulching

- Benefits
 - Improves appearance
 - stimulates root growth
 - weed control
 - reduces soil erosion
 - conserves soil moisture
 - insulates soil
 - protects from mechanical damage
- Types
- Guidelines - Area, depth, method


Watering

- How : soaker hoses
- How much: 1-3 in./wk
- Where: Dripline
- When: night
10 p.m. – 8 a.m.



Pruning

- When?
 - Winter – best time to prune
 - Spring – to maximize flowering
 - Summer – corrective pruning to remove hazards and diseases
 - Fall – no pruning



Pruning

- Pruning cuts
 - Prune branches leaving branch collar intact
 - Three Step Method



B. Cutting a small branch





C. Cutting a larger branch



Pruning

- Improper pruning techniques
 - Topping
 - Flush cuts
 - Pruning more than 25% of crown
 - Wound dressings





Fertilizing

- Soil test
- Application:
 - Surface
 - Soil injection
 - Trunk injection
- Other Guidelines
 - Use slow release
 - Fertilize at dripline
 - Fertilize early and late spring, mid summer, avoid bud break









Disease and Pest Control


- Pruning – Sanitation
- Biological Controls
- Chemicals



Removal


Reasons for removal:

- Poor condition and in decline
- Is a hazard or in a hazard location
- Diseased or the host to a pest that may spread



Selecting a Tree Care Professional

- Professional reputation
- Customers
- Liability insurance
- Worker's Comp. Insurance
- Review contracts
- Education and experience
- Get several bids




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Questions?
