Planting and Establishment

Photos Sources: Vince Urbina, Keith Wood, & Donna Davis, CSFS
Other Sources: The Right Tree for the Right Place; the National Arbor Day Foundation, et al
General Recommendations for Southeastern Colorado
Here We Go -

- The Right Tree For the Right Place
- Selecting Trees from the Nursery
- Planting and Establishment
The Right Tree for the Right Place

1. What’s the Tree’s Purpose?

- Shade
- Aesthetics
- Windbreak/Screen
- Define Boundaries

Source: The Right Tree the Right Place
2. Space needs for a **mature** tree?

- Overhead Powerlines?
- Underground utilities?
- Safety – signage, visibility?
- Existing buildings/sidewalks/driveway
- Other plants & their growth needs

*Think about mature height AS WELL AS crown spread, trunk diameter, and root growth*

*Photo: Vince Urbina, CSFS*
Tree Shape – Above...

& Below Ground (roots 2 times height of tree underground)

Source: National Arbor Day Foundation; Vince Urbina
Select the **Right Tree** for the **Right Place**

3. What are the Environmental Conditions?

**Climate**-
- Cold Hardiness
- Heat Tolerance
- Precipitation
- Sunlight/Shady
- Prevailing Winds
- Exposure

**Soil** –
- pH (Alkalinity)
- Sandy/Loam or Clay
- Soil Volume
- Drainage
- Salts

Map courtesy of the National Arbor Day Foundation

Source: Keith Wood, CSFS
4. Specific plant considerations?

• Resistance to insect & disease
• Drought tolerance/salt tolerance
• pH requirements
• Light requirements
• Know problems – pests, poor structure, weak wood, messy flowers/fruits/leave
• Thorns
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What Size of Stock To Plant?

Bigger is not always Better!

1 year to Re-establish for Each Inch of Tree Caliper

Source: “Arboriculture” 3rd Ed. 1999, p. 163 by Harris, Clark & Matheny, photo compliments of Gary Watson, Morton Arboretum

Slide: Keith Wood, CSFS
Selecting Trees from the Nursery

- Tree should have a central, dominant leader

- Appear healthy -
  - Dead wood/branches?
  - Discolored bark/branches?
  - Wilted leaves?
  - Buds are supple/branches slightly flexible
  - Insect/disease concerns?

- No mechanical damage/wounds
  - On trunk
  - Broken branches?

- Should see root flare –
  - Is plant too deep or shallow in the container

Root Flare
Selecting Trees from the Nursery

• Foliage distributed on upper 2/3 of tree

• Branches spaced evenly around the trunk

• Vigor, growth rate

New Growth
Selecting Trees from the Nursery

• Examine roots

Below photos: University of Florida

Girdling Root
Transportation and On Site Storage

- Transport in the early morning in the summer
- Tarp foliage/branches to reduce damage
- Load/unload properly with trunk protection
- Don’t hurry!

- Store plants in the shade whenever possible
- Maintain soil moisture
- Cover roots with mulch

- Water before/after transport

Source: Keith Wood, CSFS
Here We Go -

- The Right Tree For the Right Place
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Prepare the Planting Site

• Dig the planting hole at Least 3-4 times the diameter of the Root Ball

• Identify the Trunk/Root Flare (this may mean taking soil off the top of the Root Ball)

• Measure the root ball from the base of the Trunk/Root Flare to the bottom of the root ball—This is how deep the planting hole should be!!

• Lay out a tarp to place backfill soil onto if planting in a grassy area, or an area where the backfill soil will be hard to clean up

• Have water ready to immediately apply to tree after planting
good hole

bad hole

Source: Virginia Polytechnic Institute and State University
Planting Bare Root Trees

Identify root collar (different color, different texture)

Avoid J-Rooting!

Slide: Keith Wood, CSFS; Photos:NADF and Forestry Images
Planting Bare Root Trees

Fig. 7.1  Planting bare root trees. Spread the roots over the compacted soil mound.

*From ISA Arborists’ Certification Study Guide, Figure 7.1*
Planting Containerized Trees

- dug or rototilled area
- sloping sides
- 2 to 5 times diameter of rootball
- Root Flare
Remove ALL containers from root ball: plastic, peat-pots, burlap/wire/twine

Source: Keith Wood, CSFS
Cut circling roots before planting: new roots will quickly grow out into the backfill soil

Source: Dr. Ed Gilman, University of Florida
Planting Balled and Burlapped Trees

Identify the Root Flare

Watch for Too Much Soil Over the Root System!

Photos: ISA ‘Trees Are Good’ and University of Florida
Balled and Burlapped Trees

Figure 7.5  Cut away the upper one-third to one-half of the wire basket to avoid future problems.
Balled and Burlapped Trees

Photo Courtesy of the University of Florida
Planting Techniques

• Handle root ball with extreme care—avoid knocking soil away from the root ball

• Avoid handling the tree by the trunk—try to handle by the root ball when moving tree

• Orient plant in same direction it grew when it was dug (this will help avoid sun scald on the bark)

• Make sure tree is straight in the planting hole

• Use existing soil as backfill when feasible; if using topsoil, try to use topsoil that matches existing soil texture as closely as possible

Source: Keith Wood, CSFS
Planting Techniques

Create a dyke around tree to hold water

Water thoroughly to remove air pockets and reduce shock

Note all the removed container material

Photo Courtesy of ISA “Trees Are Good”
Planting Techniques

Remove all tags/twine—these will damage the tree as it grows!!

Source: Keith Wood, CSFS
Establishment Mulch

- Improves root development & tree vigor – reduces weed/grass competition for water/nutrients/actual root space
- Reduces moisture evaporation
- Moderates extreme surface soil temperatures
- Protects tree trunk from lawnmowers and weed whip injury
- 3-4 inches depth, 2-3 inches away from trunk

Source: Rocky Mtn Arborist Volume 44, Number 4
Establishment Mulch

Photo: Vince Urbina, CSFS

Courtesy of ISA “Trees Are Good”
Establishment

Staking and Guying

Staking trees not always necessary
- less trunk taper
- smaller root system
- more subject to breaking, tipping
- may injure the tree

Staking needed in some situations
- bare root trees
- large conifers
- windy sites
- sandy soils
- tall trees
- reduce vandalism
- remove after 1 year!

Source: Keith Wood, CSFS
Tree wrap

- May be useful November-April to prevent sunscald - Remove during growing season
- Can harbor insect and disease concerns

Photo Source: www.plantsandgardening.com

Source: Keith Wood, CSFS
Establishment
Fertilizing & Pruning Questions

Should I ...

- Fertilize immediately after planting?
  - Not recommended for initial establishment

- Prune immediately after planting?
  - Only remove dead, broken branches, & some structural
  - (I leave some initial smaller suckers if significant percentage of foliage on young transplant)

Source: Keith Wood, CSFS
Establishment

Watering After Planting

- Watering (April-September)
  - 10 gallons/inch diameter
    - 1”-3” diameter-water weekly
    - 4”-8” diameter-water 3 times/month
  - 15 gallons/inch diameter
    - 10”+ diameter-water 2 times/month

- Watering (October-March)
  - 10 gallons/inch diameter, 1 to 2 times/month

Source: http://saver.denverwater.org
# Establishment Rate

<table>
<thead>
<tr>
<th>Encourages growth</th>
<th>Limits growth</th>
<th>Little or no effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose soil</td>
<td>Compacted soil</td>
<td>Peat or organic matter added</td>
</tr>
<tr>
<td>Proper irrigation</td>
<td>Little or no irrigation</td>
<td>Water absorbing gels</td>
</tr>
<tr>
<td>Mulch 8’ around planting hole</td>
<td>Grass and weeds close to trunk</td>
<td>Root stimulant products</td>
</tr>
<tr>
<td>Root flare above soil surface</td>
<td>Planting too deeply</td>
<td>Adding spores of mycorrhizae *</td>
</tr>
<tr>
<td>Leaving shoots intact</td>
<td>Pruning at planting</td>
<td>Fertilizing at planting</td>
</tr>
</tbody>
</table>

*Source: Keith Wood, CSFS*
Establishment

Should I ...

- Check tree regularly & at least yearly for tree care needs? **YES**
Planting and Establishment

Use 2 opposing flexible ties when staking is necessary.

Gently pack back-fill using water to settle soil.

Keep mulch 6" back from trunk.

3-4" layer of mulch.

Cut burlap and rope away from top half of root ball.

Set ball on firmly packed soil to prevent settling.

International Society of Arboriculture Planting Standard
Resource Links

- National Arbor Day Foundation  www.arborday.org
- The Right Tree in the Right Place  www.righttreerightplace.com/planting
- Tree Link  www.treelink.org
- Dr. Ed Gilman, University of Florida  http://hort.ifas.ufl.edu/woody/planting
- International Society of Arboriculture  www.isa-arbor.com
- Colorado Tree Coalition  www.coloradotrees.org
- Shigo and Associates  www.shigoandtrees.com
- CSU Extension  www.ext.colostate.edu/pubs/pub.html
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