

height of 35 feet or less will just pose a future low-voltage problem or threaten electric service.

6. Deciduous trees planted on the west and southern sides of the house will provide cooling shade in the summer, but in the winter the bare branches will let most of the sunshine through to warm the house.

Which do you prefer? Which is more often recommended?

How to Fit Large Trees Into Landscapes

Dr. Mike Kuhns
Extension Forester
Utah State University

We need a renewed emphasis on planting and maintaining larger trees in our communities





Overview

- Smaller trees often seem best for restrictions of modern life (liability concerns, hurry-up mentality, cost, lack of space, etc.)
- Larger trees often best for community values
- We have the tools to fit large, high quality trees into our communities

Today's Community Forests

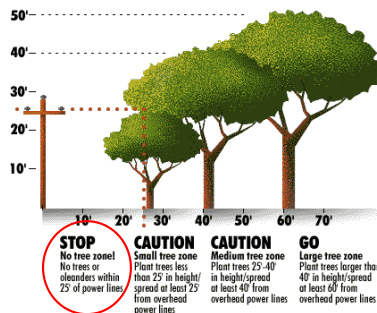
- No large trees...
 - where cars might hit them
 - where they'll interfere with pavement, curbs
 - under overhead utilities
 - over underground utilities
 - where they'll interfere with signs
 - where they'll hang over a building
 - where they might pose a hazard to people
- Only small trees (if you must have trees)

Examples of Actual Tree Placement Advice from Reputable Sources

- Large trees at least 45' from utility lines
- Only small trees (or no trees) under utility lines
- Large trees at least 24' from buildings
- Plant large trees at least 40' apart
- No trees at all if parking strip < 6' wide
- No tree limbs over buildings
- No trees that will hang over neighbor's property

- Who has room for a larger tree?

Right Tree, Right Place Gone Wrong



No Room for Many Trees in Most Landscapes



Overview

- Smaller trees often seem best for restrictions of modern life (liability concerns, hurry-up mentality, cost, lack of space, etc.)
- Larger trees often best for community values

The Ideal Community Forest

- Ideal community forest as expressed by residents includes...
 - Shady streets lined with large trees with wide canopies meeting over the street
 - Large shade trees along with small flowering trees
 - Views of natural features, such as vegetation, rather than unnatural features
 - Hidden utilities
 - Trees providing maximum environmental benefits

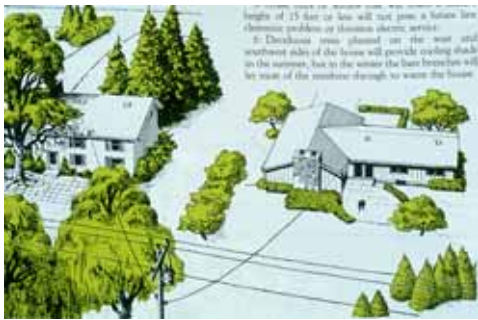


The Case for Larger Trees: People Often Prefer Them

- Ohio street esthetics rating:
 - High—large trees, shady, trees hide houses
 - Low—small trees; buildings, utility poles & wires in plain view (Schroeder & Cannon 1983, JofA 9(9))
- Large street trees preferred over small in Michigan (Buyhoff et al. 1984, Forest Science 30(1))
- Larger street trees desired in Chicago; none felt tree too big (Schroeder 1992, Connections 2(1))
- Tall street trees creating enclosed space preferred (Orland 1987, USDA-FS Report)



Which would people prefer? Which would we recommend?



Larger Trees Also Can Provide Greater Benefits Than Smaller Trees

- Energy savings (shade, wind reduction, evaporative cooling)
- Shade makes pavement last longer
- Pollution mitigation (air and water)
- Storm-water runoff reduction
- Visual impact
- Traffic calming
- Increase in property values
- Carbon absorption

Center for Urban Forest Research – www.fs.fed.us/psw/programs/cufr/

Overview

- Smaller trees often seem best for restrictions of modern life (liability concerns, hurry-up mentality, cost, lack of space, etc.)
- Larger trees often best for community values
- We have the tools to fit large, high quality trees into our communities

What works against larger trees?

- Small planting areas, especially narrow parking strips
- Utilities, especially overhead electric
- Misconceptions
- Poor selection
- Legitimate concerns

What can be done...

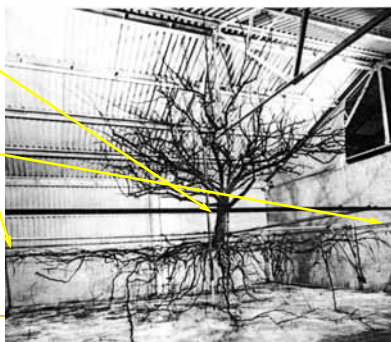
- for small planting areas, especially narrow parking strips? → make more room for roots and trunks
 - Provide adequate soil volume
 - Require wider parking strips, buffer strips, medians
 - Meandering sidewalks, rubber sidewalks
 - Allow public tree planting on private property
 - Parking wells + planting strips
 - Porous pavements, pavers
 - Careful with tree pits
 - Structural soils

Provide Adequate Soil Volume – Room for Roots

- For 20" diameter tree need 40'x40' area (80-120 ft³ soil per inch diameter) (Perry)
- Need 2 ft³ soil per ft² crown area (Bassuk)
- Need 1.5 ft³ soil per ft² crown area; or 60 ft³ per inch diameter (Urban)
- Parking strips at least 4' wide (Urban)

Provide Adequate Soil Volume – Room for Roots

- 6" trunk diameter
- Root system 16' diameter by 2' deep = 400 ft³ or 67 ft³ per inch of trunk diameter



Require Wider Parking Strips, Buffers

- 2-3' common, 8-10' needed
- Mountain View, CA – “a curbside planting strip 10' in width shall be established to create a boulevard appearance, establish adequate planting area for large-scale species of shade trees, and provide additional buffering for residences.”
- Logan, UT 8'; Syracuse, UT 10' minimum
- Eugene, OR encourages “meandering sidewalks”
- Google search “minimum parking strip width”

Wider Parking Strips



Wider Parking Strips



Wider Parking Lot Buffers



Meandering Sidewalks



Rubber Sidewalks

- Make room for roots and trunks
- See www.rubbersidewalks.com



Allow Public Planting on Private Property

- Plant trees *behind* the sidewalk
- Allows larger trees where too narrow or no parking strip
 - Tree planting easements (Sacramento)
 - Give trees to property owners (Logan, UT)



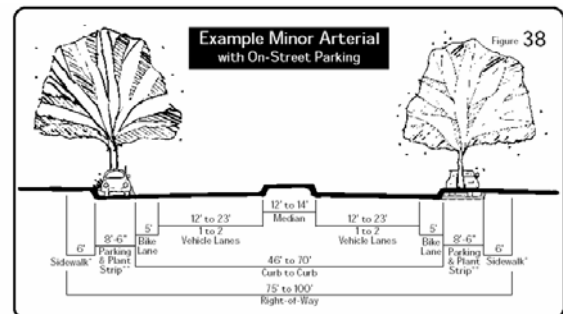
Parking Bays + Planting Strips

- Bump out curb to achieve viable planting areas while allowing for parking
- Especially useful in downtowns and other commercial areas
- Reduces interference with signs & building fronts

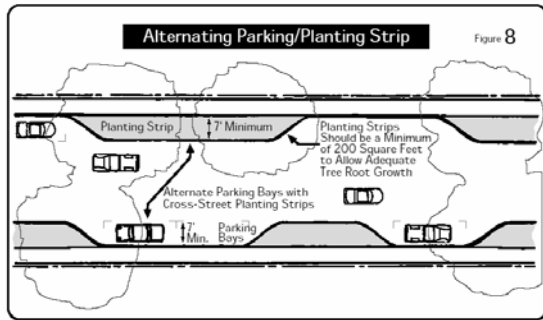
Example: Eugene, Oregon

- Requires minimum 7' strip, up to 8½-9½'
- Also uses parking bays with planting strips and planted medians
- Go to www.eugene-or.gov and search site for "parking bay" for wording, diagrams, etc.
- "Large-scale, deciduous, canopy trees are preferred for street tree plantings" (from Eugene Street Plan)

Example: Eugene, Oregon



Example: Eugene, Oregon



Porous Pavement

- Pavers, gravel, others
- Increases rooting space
- Improves soil aeration
- Improves water infiltration
- Maybe combine with structural soils



Be Cautious with Tree Pits

- In concrete, below grade
- Problems with plowing, salt, irrigation, aeration, growth, pedestrians
- Treats trees like hardscape to be "installed"; ignores needs
- Use simpler pits, raised planters, pavers, berms



Tree Pits Can Work



Tree Pits Can Work

- Grates are expensive, inflexible
- Access to soil volume under pavement
- Need adequate water
- Appropriate species
- Consider tree guards
 - See article at www.treesny.com/trees_pitguards.htm

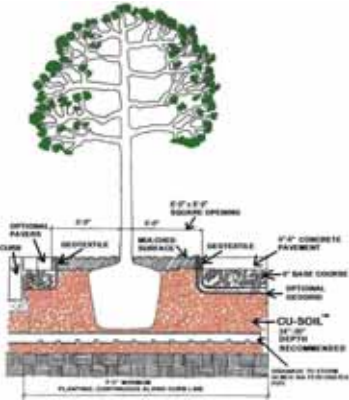




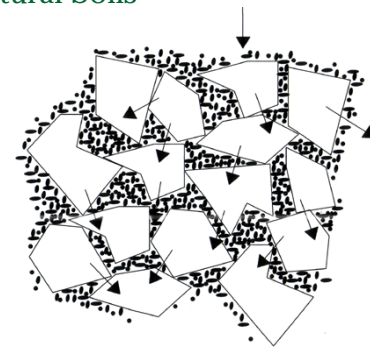


Structural Soils

- Stone lattice with soil in voids; provides rooting space after compaction
- May allow planting in smaller (surface) spaces
- CU-Soil from Cornell University
- www.amereq.com
- \$28-35/yd³ + \$4-6/yd³ freight)



Structural Soils





What can be done...

- for small planting areas, especially narrow parking strips?
- with utilities, especially overhead electric? → make room for crowns
 - Directional pruning
 - Place utilities away from streetscape; takes thought, planning

Directional Pruning

- Crown training system; best to start early
- Remove portion of a tree's crown (usually side or center-top) with thinning cuts
- Leave branches that head away from lines; remove branches heading toward lines
- Alternative to topping
- Results in Vs & Ls; aesthetics are a problem
- Allows option of planting large trees under utility lines

Directional pruning like this...



...can maintain trees and streets like this



Can even plant larger trees under lines...



...and maintain them from an early age with directional pruning



...and maintain them from an early age with directional pruning (12 years after previous slide)



What can be done...

- for small planting areas, especially narrow parking strips?
- with utilities, especially overhead electric?
- about misconceptions? → need to educate and question our own biases, such as...
 - small trees fit better in small planting strips
 - large trees are unacceptably dangerous
 - we can (should) educate people into preferring small trees

Small trees usually aren't better for small areas



Large trees don't have to be unacceptably dangerous if well-selected, cared-for



What can be done...

- for small planting areas, especially narrow parking strips?
- with utilities, especially overhead electric?
- about misconceptions?
- about poor selection? → promote better trees
 - Concern about large, poor quality trees is warranted
 - Recommend medium growth rate trees when people want fast growth

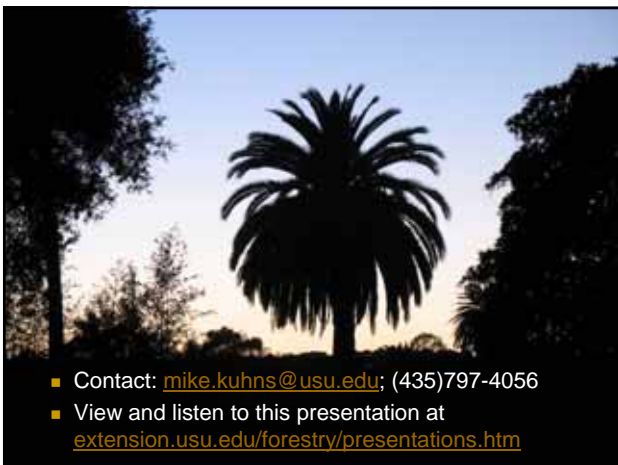
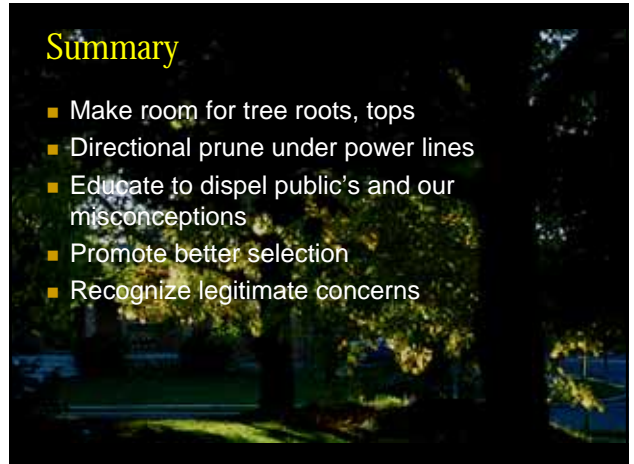


What can be done...

- for small planting areas, especially narrow parking strips?
- with utilities, especially overhead electric?
- about misconceptions?
- about poor selection?
- about legitimate concerns? → trees aren't always the answer
 - Some people prefer smaller trees; don't want mess, shade, visual obstruction, etc.
 - Take time to find out what people want

Summary

- Make room for tree roots, tops
- Directional prune under power lines
- Educate to dispel public's and our misconceptions
- Promote better selection
- Recognize legitimate concerns



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- View and listen to this presentation at extension.usu.edu/forestry/presentations.htm