

Irrigating Urban Trees During Drought

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A Common Sight in 2014



Prioritizing Plants to Irrigate

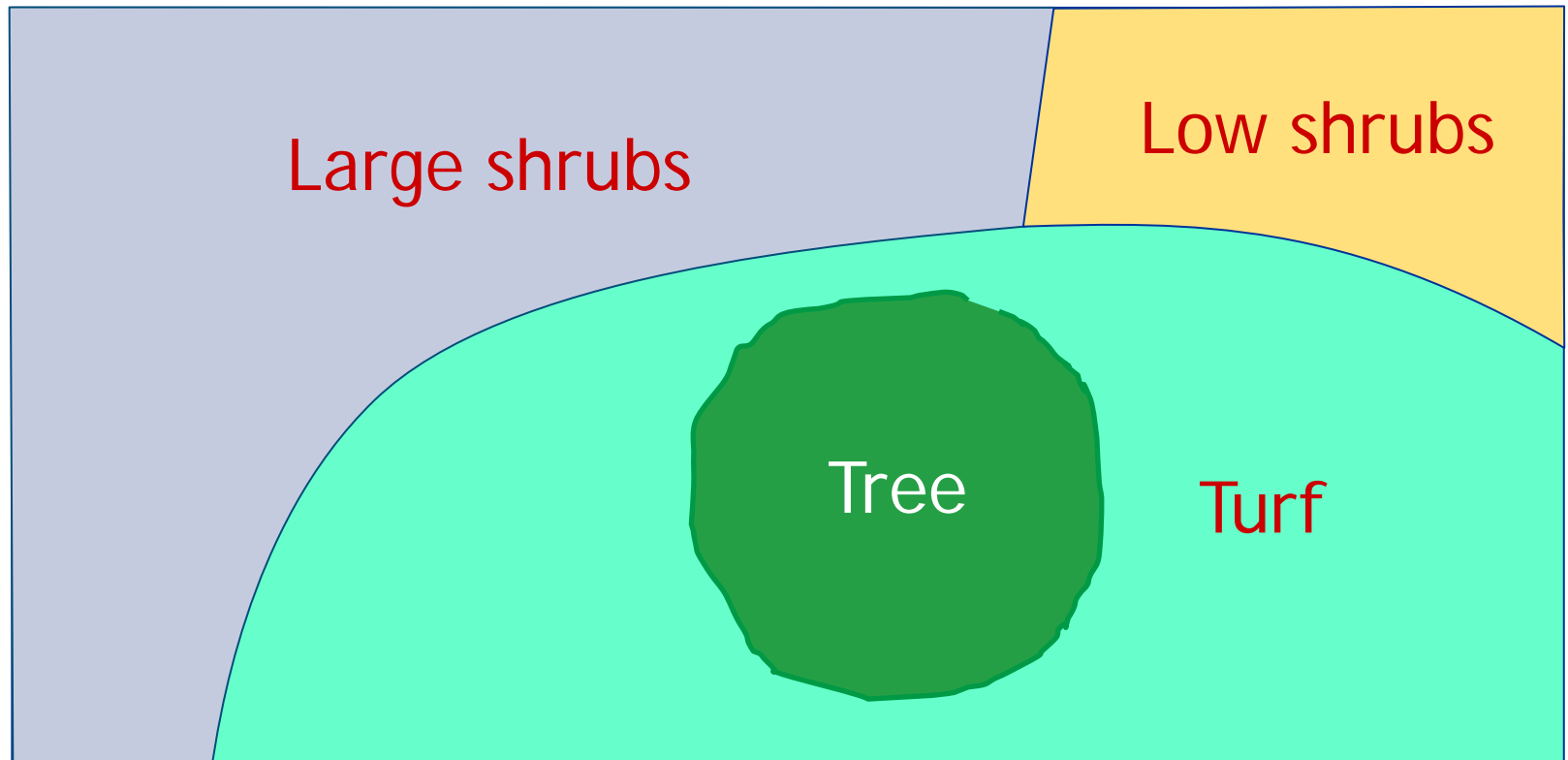
Considerations:

- Cost of replacement
- Beneficial use
 - Example: City of Folsom
 1. Top Priority: Maintain trees
 2. Active sports fields
 3. Ornamental plantings
 4. Non-active or ornamental turfgrass

Trees in lawns

What's the problem?

- Mixed species planting



Trees in lawns

What's the problem?

- Improper tree selection
- Poor irrigation management
- Shallow roots



Recognize water stress

- Incipient
 - Color change to bluish or grayish green
- Temporary
 - Flagging, wilting
- Permanent wilting
 - Desiccation, drying
 - Nonrecoverable



Secondary effects

- Susceptibility to:
 - Insects
 - e.g., Borers
 - ambrosia beetles
 - longhorned eucalyptus borers
 - Diseases
 - e.g., Root rots
 - *Phytophthora* and Oak root fungus
 - *Armillaria*

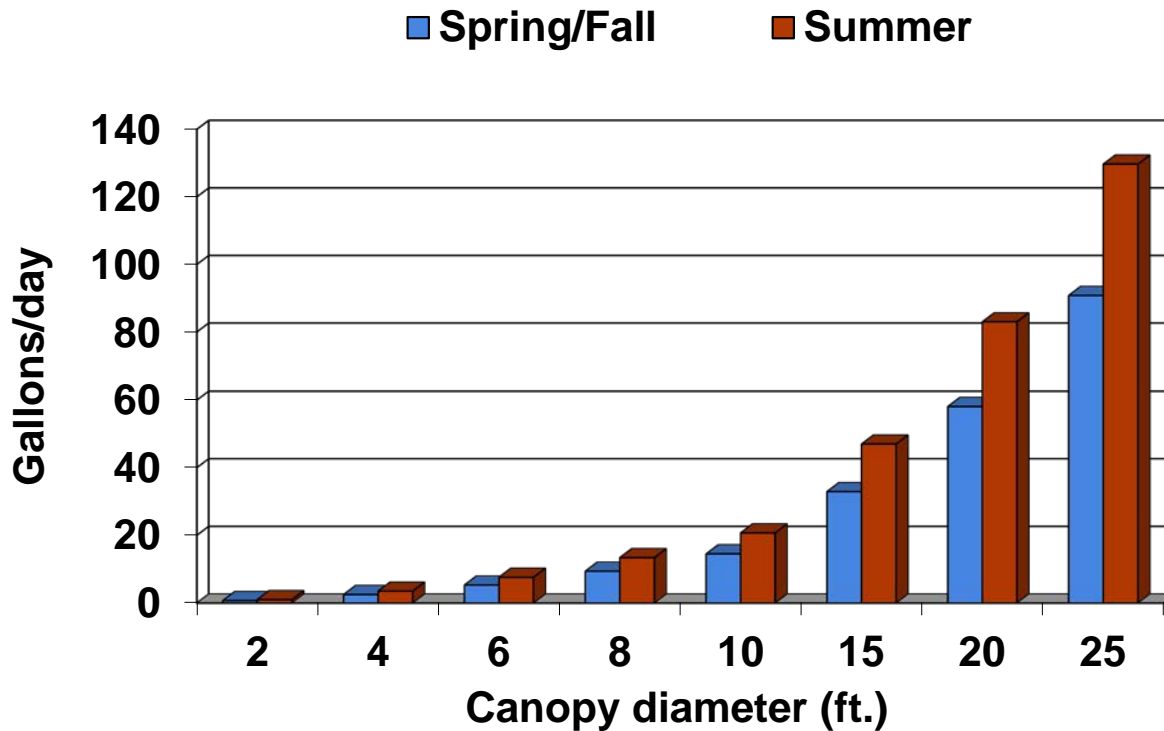


Things that increase water use

- Heat absorbing surfaces nearby
 - Parking lots
 - Large concrete surfaces
 - West and south facing walls



Fruit Tree Water Use Central Valley Relative to Tree Size



Source: The Home Orchard, UC ANR

Fruitless Mulberry

Unheaded
(Uses more water)

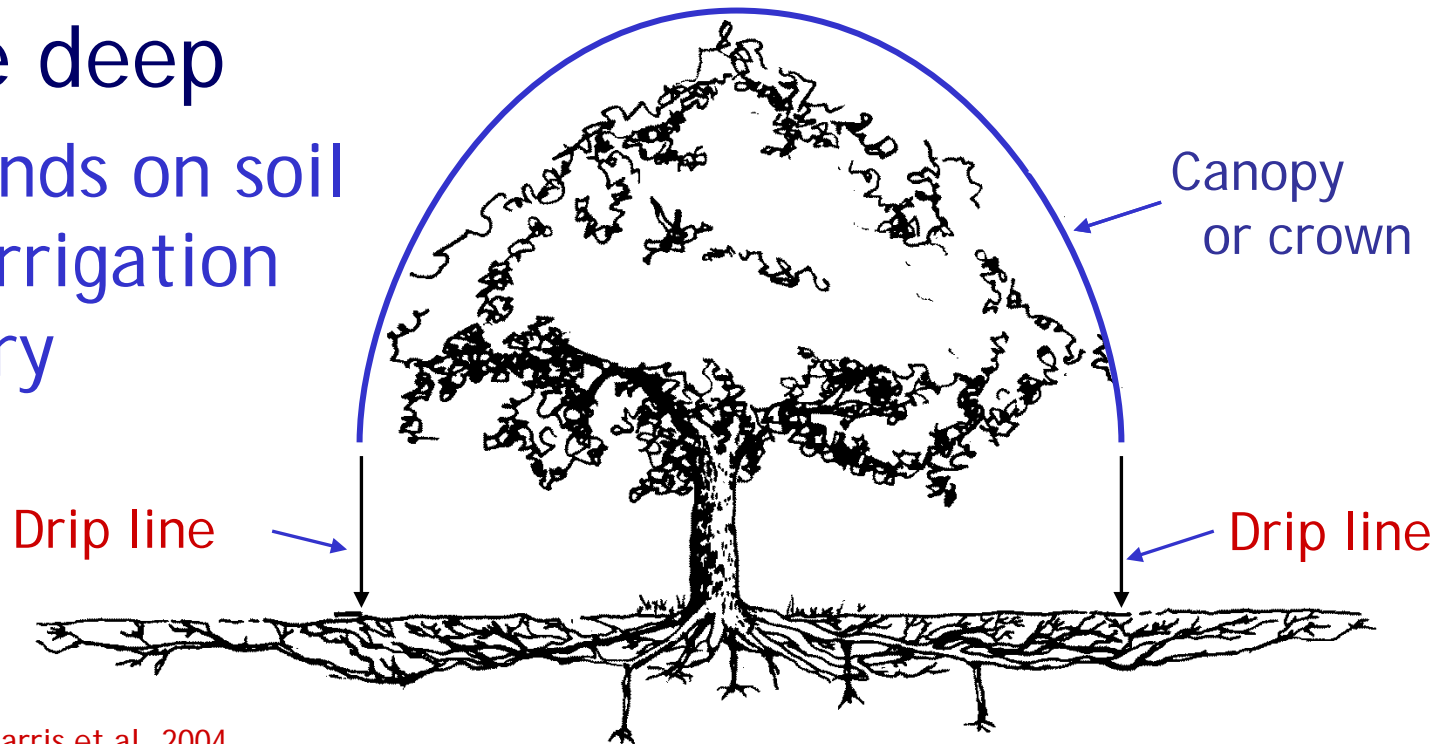


Headed Annually
(Uses less water, initially)



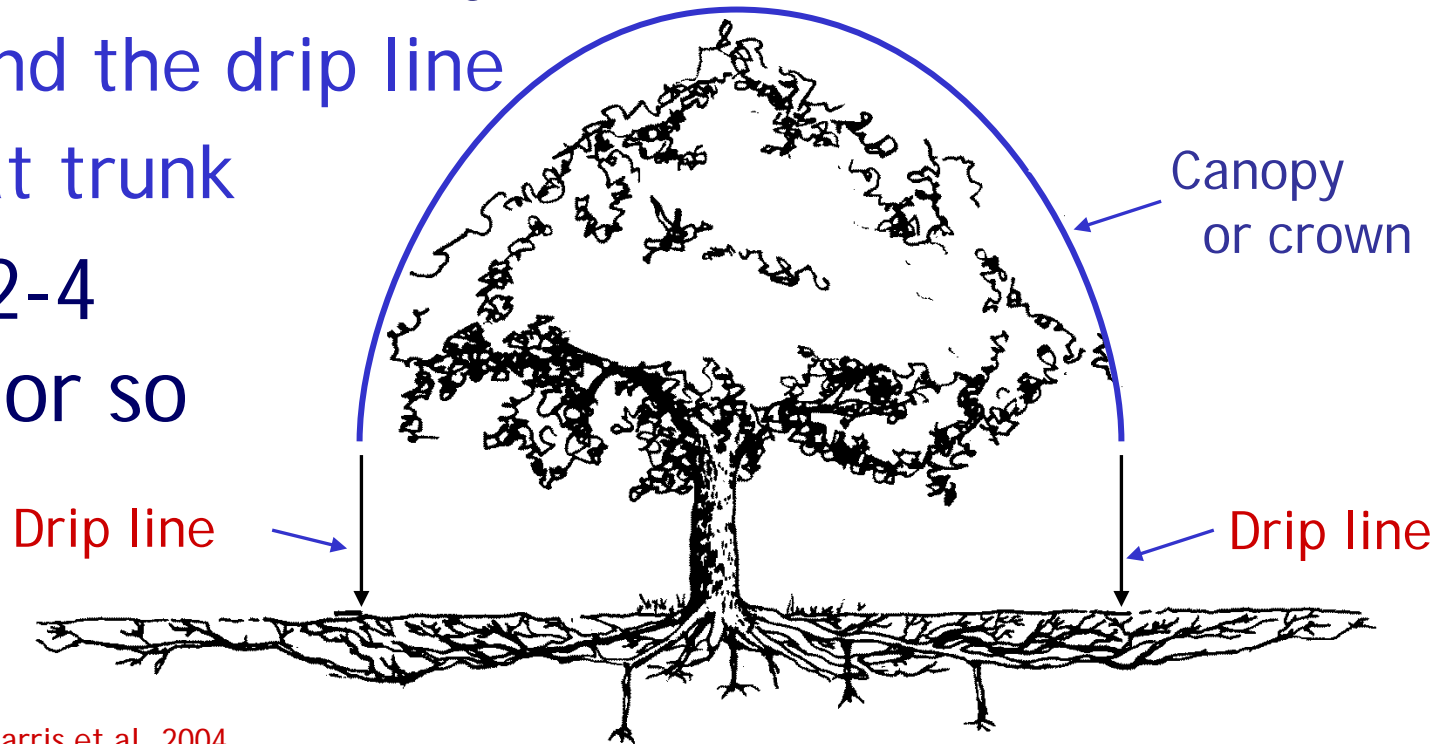
Tree roots

- Relationship to canopy
- May be deep
 - Depends on soil and irrigation history



Where to Irrigate

- Deep to 2 -3 feet
- Beneath the canopy
 - Beyond the drip line
 - Not at trunk
- Every 2-4 weeks or so



Mature Ginkgo Tree

Considered Deep Rooted





Tree Ring Irrigation Contraption

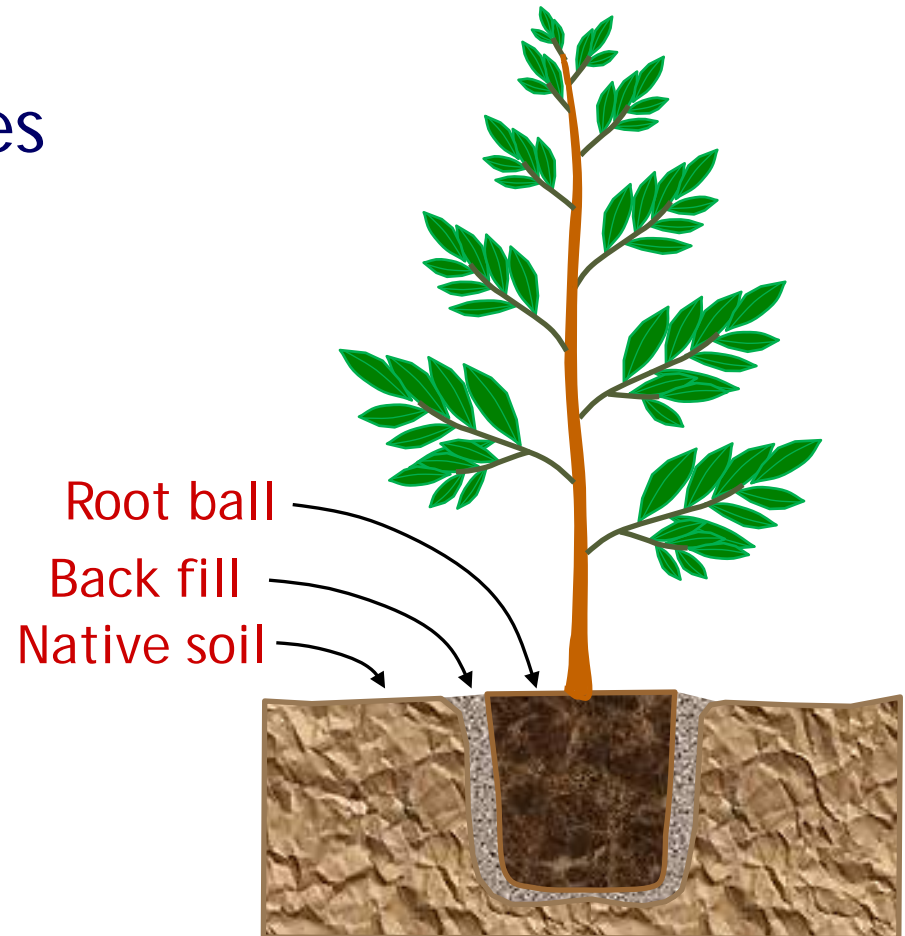
Loren Oki and Dave Fujino

- Calculates irrig. run time to wet soil to 36" deep
- Input info for 1' spacing:
 - Canopy radius, soil type, no. of 100' drip lengths (Netafim)
- <http://ccuh.ucdavis.edu/>
 - Search: CCUH TRIC

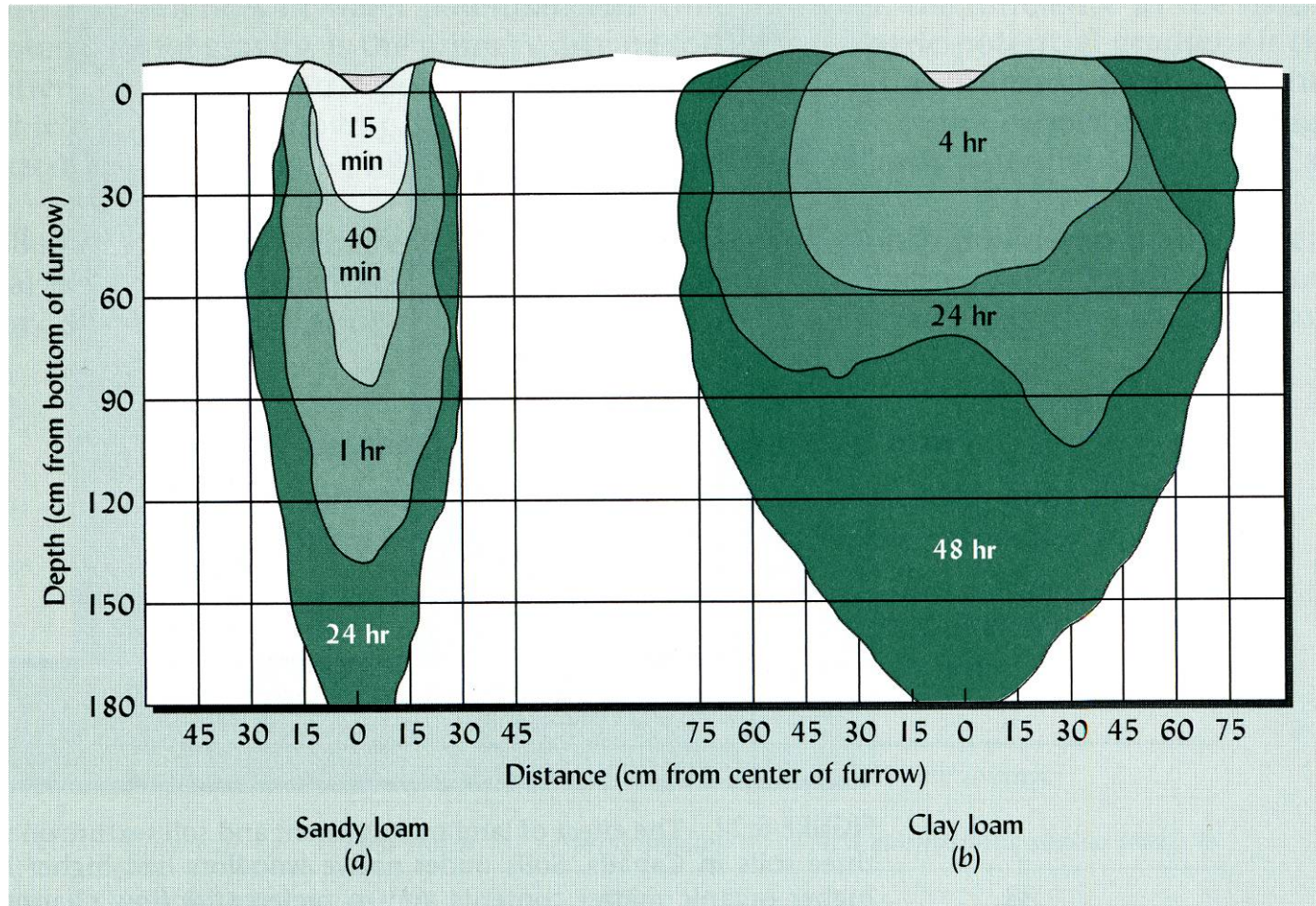


Tree roots

- Recently planted trees
 - Roots are mostly within the container soil ball
 - Roots may be just entering the native soil
 - Will take several years to fully establish

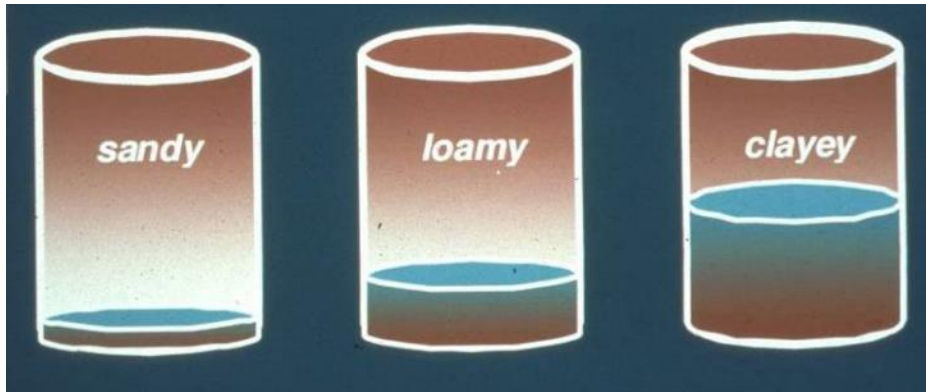


Soil Texture and Irrigation

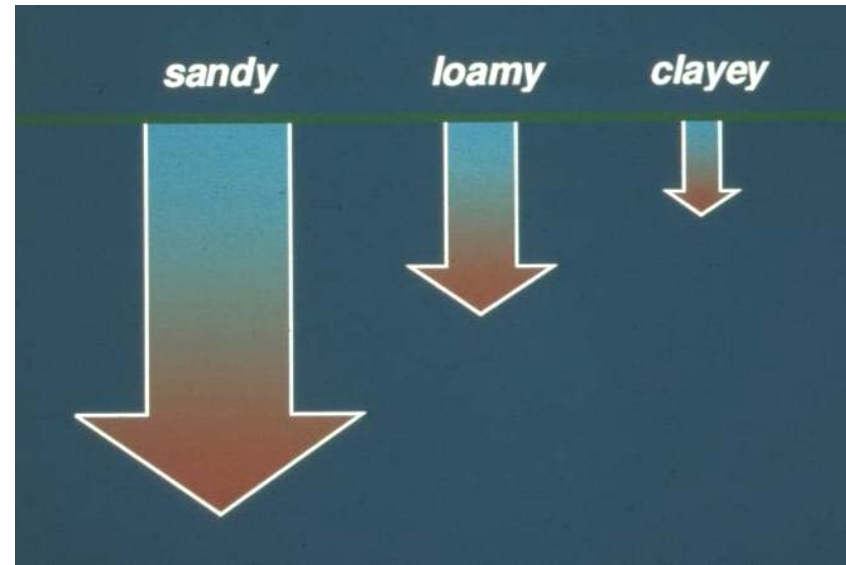


Soil Texture Affects Soil Moisture

Water Holding Capacity



Permeability



Sandy: Apply small amounts frequently

Clay: Apply larger amounts slowly, less often

Adjust Tree Water Irrigation

- Light pruning to reduce leaf area
 - DO NOT prune heavily
- Change irrigation schedule SLOWLY
EXAMPLE:
 - 3x per week- original schedule
 - 2x per week for 2 weeks
 - 1x per week for 2 weeks
 - 1x per 2 weeks
- Watch for water stress symptoms
 - Adjust accordingly

Adjust Program Seasonally

- Adjust irrigation to seasonal weather
- Interval vs. duration
 - Increase interval between irrigations
 - 3 days per week to 2 days = 33% reduction
 - DO NOT reduce run times (duration)
 - Affects wetting depth

Mulching

- Reduces
 - Direct evaporation
 - Soil temperatures
- Acts like a blanket over the soil
- 2-4 inch layer




Use Compost

- Adds organic matter
- Improves
 - Water infiltration
 - Texture and structure
 - Soil water holding capacity
 - Biological activity



Irrigating with Limited Water

- Irrigate deep & not too often
- Use water conservation practices
- Prioritize plants that receive water
- Know water stress symptoms
- Precondition to enhance survival
- Manage salinity



Thank you
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