Tips on Plant Selection and Landscape Design

Bob Perry
GOAL: To design a HOA community landscape upon:

1. Plant and Water Basics
   a. Plants need water to grow

2. Proper Plant Selection - Climate Appropriate
   a. Mediterranean
   b. Regional California Native

3. Plant Horticulture
   a. Roots and Soil
   b. Design & Manage with Seasonal Water Budgets

4. Health and safety needs
   a. Visibility, Erosion, Roots
   b. Fire Risk
Plants need water to grow

Water is essential to all plant growth; no water no photosynthesis
   (Growth stops; dessication begins, damage accrues)

All Plants require 50-100 gallons of water to grow 1 pound of biomass
   (Oaks, Magnolias, Bougainvillea, Turf Grass, Acacia)

Plants transpire 97-99% of the water they use for cooling

All plants will use water as long as its available

Larger trees transpire more water than smaller trees
   (Water budgets can increase over time)

An appropriate water budget ranges between 2.5-3.5 acre feet
   (810,000 - 1,134,300 Gallons or 8,100 - 11,340 pounds of Plants)
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1. Plant and Water Basics

Plants can grow with a Range of Water - No absolute amount

MORE WATER = LONGER GROWING SEASON AND LARGER SIZES

LESS WATER = SHORTER GROWING SEASON AND SMALLER SIZES

BOTH LANDSCAPES ARE HEALTHY; ONE HAS RECEIVED MORE WATER AND GROWS LARGER
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2. Proper Plant Selection - Climate Appropriate

Quercus agrifolia - Coast Live Oak
50-100 Gallons of Water per 1 Pound Biomass

Magnolia grandiflora - Southern Magnolia
50-100 Gallons of Water per 1 Pound Biomass

2,000 # Oak = 100,000 - 200,000 Gallons

2,000 # Magnolia = 100,000 - 200,000 Gallons

Plants Need Water - 50-100 Gallons
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2. Proper Plant Selection - Climate Appropriate

Quercus agrifolia - Coast Live Oak
Small, leathery, sun adapted, drought enduring

Magnolia grandiflora - Southern Magnolia
Large, leathery, sun Adapted, Regular Moisture

Southern California Growing Season: 300-330 Days

2,000 # Oak = 100,000 - 200,000 Gallons

2,000 # Magnolia = 100,000 - 200,000 Gallons
2. Proper Plant Selection - Climate Appropriate

Quercus agrifolia - Coast Live Oak
Mediterranean Climate - Drought Adapted

Magnolia grandiflora - Southern Magnolia
Temperate Climate - Non Drought Adapted

Oaks endure drought stress longer
Magnolias die back under drought stress
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2. Proper Plant Selection - Climate Appropriate

Platanus racemosa - Western Sycamore
Large, thin leaves, poor drought endurance

Liquidambar styraciflua - Sweet Gum
Large, thin leaves, poor drought endurance

Southern California Growing Season: 300-330 Days

Adapted to regular moisture year around

Adapted to regular moisture year around
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2. Proper Plant Selection - Climate Appropriate

Liquidambar styraciflua - Sweet Gum
Temperate Climate - Non Drought Adapted

Platanus racemosa - Western Sycamore
Mediterranean Climate - Riparian Plant
Plants without sufficient water will dry out and suffer leaf and stem damage and eventually die.
Tree Roots need:

- Oxygen
- Moisture
- Nutrients
- Soil Volume

Most tree roots occur in the top 12-18” of soil due to oxygen and moisture availability.
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3. Plant Horticulture

Ficus microcarpa - Surface roots for oxygen, moisture, nutrients, space
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3. Plant Horticulture

Ficus microcarpa, Los Angeles
Design & Manage with Seasonal Water Budgets
Climate/Microclimate Weather Data
Dedicated Landscape Water Meters/Central Control Flow Meters

Mediterranean, S. California Native, Arid Climate Plants
1 Acre of Landscape = 24 inches Annual Supplemental Water
  18 inches Fall/Winter/Spring + Rain
  6 inches Summer

652,000 Gallons per Acre per year

Temperate, Subtropical Plants
1 Acre of Landscape = 36 inches Annual Supplemental Water
  18 inches Fall/Winter/Spring + Rain
  18 inches Summer

977,500 Gallons per Acre per year
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4. Health and safety needs

Green Belt and Erosion Control Planting
Large scale slopes requiring compaction, jute netting, trees, shrubs, and ground covers

Design for long term water budgets and Fire Safety among tree plantings
Green Belt and Erosion Control Planting
Large scale slopes requiring compaction, jute netting, trees, shrubs, and ground covers

Pinus canariensis

Design for long term water budgets and Fire Safety among tree plantings
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4. Health and safety needs

Pinus canariensis - Canary Island Pine

Eucalyptus camaldulensis

Biomass, Foliage oils, dessication, heat and wind
4. Health and safety needs

Green Belt and Erosion Control Planting
Large scale slopes requiring compaction, jute netting, trees, shrubs, and ground covers

Pinus canariensis
Claraboya, Claremont

Design for long term Fire Safety among tree plantings
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4. Health and safety needs

Green Belt and Erosion Control Planting
Large scale slopes requiring compaction, jute netting, trees, shrubs, and ground covers

Baccharis pilularis native ground cover
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4. Health and safety needs

Green Belt and Erosion Control Planting
Large scale slopes requiring compaction, jute netting, trees, shrubs, and ground covers

Baccharis pilularis native ground cover
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4. Health and safety needs

Succulents and Woody Shrubs following fire
Each pound of biomass contains:
1,930 Kilocalories of food energy (enough energy to sustain one person for one day)

Every pound of biomass produced stores .4-.5 pounds of Carbon.

Every pound of biomass produced releases .9-1.0 pounds of oxygen into the atmosphere.

9,650 Pounds of Biomass

Food energy & oxygen for 1 Person for 9,650 Days (26 Years)

4,825 Pounds of Carbon Sequestered

Consumed 482,500 - 965,000 Gallons of Water (1 1/2 AF - 3 AF)