

# Plant Culture/Sustainable Landscape Practices

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Program  
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# Tonight's Class

- Review the seven Sustainable Landscape Principles
- Arboretum All-Stars
- Group project: Create your own sustainable landscape w/ Arboretum All-Stars

# WHAT IS SUSTAINABLE?

- To sustain means to keep going or continue. Sustainable is the ability to carry on an activity indefinitely with minimal impact on the environment.

From: <http://caqardenweb.ucdavis.edu>

# WHAT ARE SUSTAINABLE LANDSCAPE PRACTICES?

## SEVEN PRINCIPLES

- Green waste reduction
- Landscape for the local climate
- Nurture the soil
- Conserve water
- Conserve energy
- Protect water and air quality
- Create and protect wildlife habitat



**RIVER-FRIENDLY  
LANDSCAPING**

SACRAMENTO, CALIFORNIA

# Sustainable Landscape Practices: Proactive approach to water conservation and green waste reduction, resulting in a cost saving landscape.



The screenshot shows the City of Chico, CA website. The header includes the city name and "INC. 1872". A navigation bar contains links for Home, About Chico, City Government, Doing Business, and Community. Below the navigation bar is a section titled "Jump to Departments & Services" with dropdown menus for "Departments: Select A Department or Division..." and "Services: How Do I...". The main content area features a sidebar with links for "General Services Home", "Solid Waste and Recycling", "Operations & Maintenance", "Parks & Street Trees", and "Contact Us". The main content is titled "Solid Waste & Recycling" and includes a welcome message, a "Why Recycle?" section with three paragraphs, and a red arrow pointing to a paragraph about Assembly Bill 939.

City of Chico, CA  
INC. 1872

Home About Chico City Government Doing Business Community

*Jump to Departments & Services*

Departments:  Services:

**Solid Waste & Recycling**

General Services Home  
Solid Waste and Recycling  
Operations & Maintenance  
Parks & Street Trees  
Contact Us

Welcome to the Recycling Homepage for the City of Chico. Learn first hand what you can do to make a difference at home and support your community in its recycling efforts.

**Why Recycle?**

Recycling saves natural resources. The earth's resources are finite and recycling helps reduce the need for raw materials, such as trees, valuable minerals and fossil fuels.

Recycling saves energy. It takes less energy to manufacture products from recycled material. For example, one ton of recycled paper uses only 60% of the energy that is required to make one ton from raw materials.

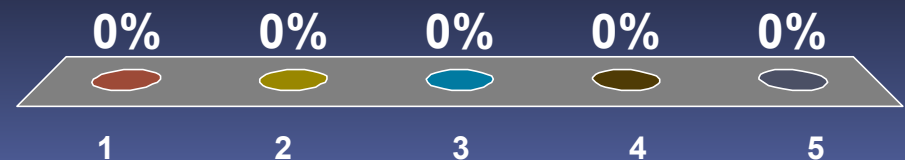
Recycling preserves landfill space. California landfills are filling up fast and it is very expensive to build new ones.

In 1989, Assembly Bill 939 was enacted to reduce the amount of waste dumped into landfills by fifty percent by the year 2000. In addition, California legislature requires cities and counties to remain diligent and resourceful in their efforts to maintain a 50% recycling rate and to further waste reduction efforts for the coming decade and century.

# 1. GREEN WASTE REDUCTION

## Italian Cypress – what's wrong with this picture?

1. Mature size was not considered for location
2. Planted too close to structure
3. Planted underneath power lines
4. Choices 1, 2 and 3
5. Nothing is wrong with this plant and its location, I like giant dust pillars!



# Plant to Match the Space

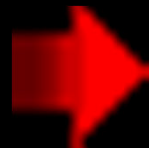
XYLOSMAS DON'T STAY SMALL  
FOR LONG!



CAROLINA CHERRIES CAN GROW UP  
TO 30'+ SURFACE ROOTS + FRUIT =  
DISASTER



## Xylosma congestum



Rhamnus californica 'Mound San Bruno'  
or Ceanothus maritimus 'Valley Violet'



# Delta Landscape Management Outreach Partnership (LMOP)

- ***Grass Cycling***

Grass cycling lawn clippings (leaving them on the lawn), saves time (no more bagging), saves money (grass cycling reduces the amount of fertilizer needed by 15-20%), encourages a healthier lawn (clippings contain valuable nitrogen), saves valuable landfill space, and saves energy.



# COMPOST ON SITE OR MULCH WASTE

- Mulch conserves water, prevents soil erosion, cools the soil, and suppresses weeds.

**But don't make it too much of a good thing!**



## Topped Trees



## Green Waste Reduction

- Vigorous and weak limbs, require more pruning and thus more green waste
- Unnatural appearance of tree
- Prone to limb failure



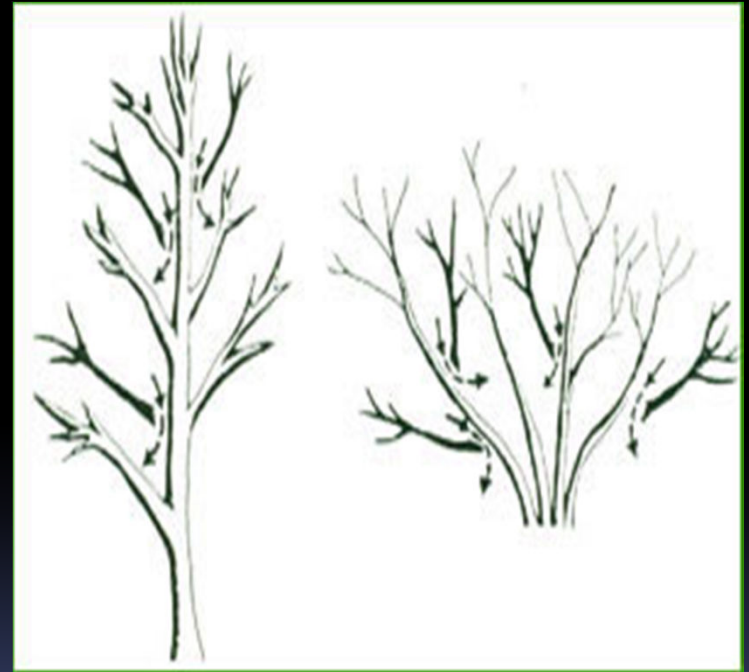
## Function of lower branches

- Protects trunk from sunburn
- There is less to landscape!
- Is visibility a concern?
- Fire danger?



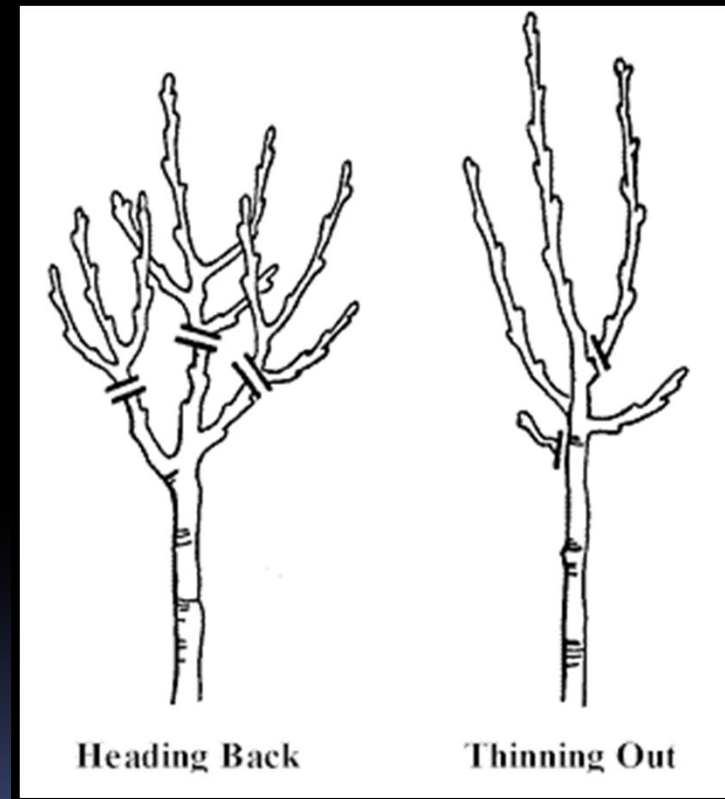
## Two types of pruning cuts:

- Thinning Cut: removes a branch at its point of origin, or to a lateral branch strong enough to assume the terminal role. Trees pruned w/ thinning cuts are more open, retain natural shape and allow more light penetration into the canopy.



## Second type of pruning cut:

- Heading Cut: Removes a growing branch back to a bud or a lateral back to a stub. Heading cuts result in vigorous, upright shoots from one or more latent buds just below the cut. These new shoots however can be weakly attached.



The branch collar resists the spread of decay organisms into the parent branch or trunk during the time it takes for the callus, to seal over the wound.

## Location of Pruning Cuts



- **“Natural Target Pruning”** appears to be most satisfactory with cuts made only up to the branch bark collar.
- **Avoid flush cuts or “Conventional Pruning”**
- Decay of pruning cuts is less likely the higher in the canopy the cuts are made.

# Topiaries, funny shapes Green Waste Reduction



## 2. LANDSCAPE FOR THE LOCAL CLIMATE

- Use landscape adapted natives, or climate appropriate plant materials.
- Avoid using invasive species
- Select trees that have known resistance to key local pests.



# Climate Appropriate Plant Material Guides

- Mediterranean Plant Collections at Arboretums: UC Davis & UC Berkeley, Cal Poly, San Luis Obispo.
- *My Senior Project at Cal Poly, SLO, was researching Chilean Mediterranean plants.*



TREES **NOT** SELECTED FOR  
LOCAL CLIMATE AND SITE...

COASTAL REDWOOD GROVE  
IN FRESNO?



# Landscaping for the local Climate cont...

## Avoid using invasive species



California Invasive Plant Council  
Cal-IPC  
Protecting California's wildlands through research, restoration, and education

Cal-IPC > Invasive Plants > California Invasive Plant Inventory >

### Invasive Plant Inventory

Jump to section below:

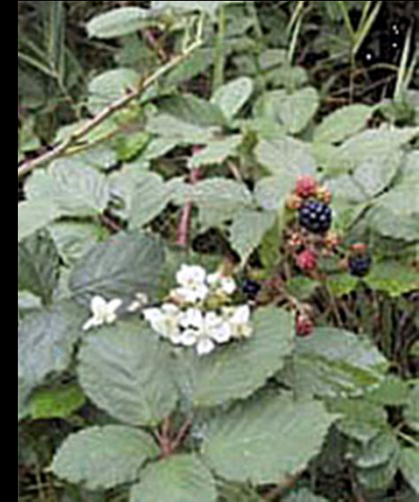
- The Inventory
- Definitions
- Criteria for Listing
- Inventory Categories
- Uses and Limitations
- Providing Input for Future Revisions
- Summary of the Criteria
- References
- Inventory Review Committee

**Quick Links**

- Go directly to interactive Inventory database
- 2006 Inventory (pdf)
- 2007 Inventory update (pdf)
- Printable version of this page
- Submit information for Inventory revisions

Navigation menu:

- About Us
- Invasive Plants
  - Definitions & Impacts
  - California Inventory
  - Management
  - Research
  - Mapping
- Symposium
- Field Courses



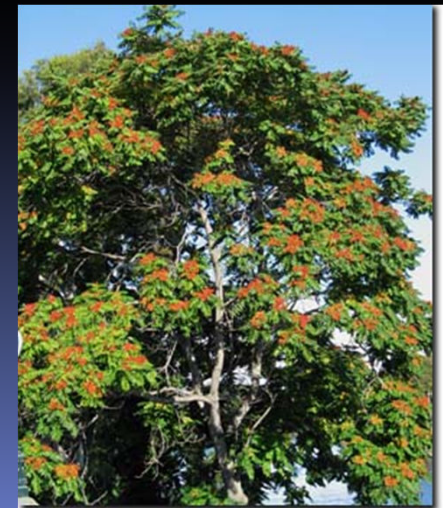
USDA United States Department of Agriculture  
Natural Resources Conservation Service

PLANTS Database

You are here: Home / Invasive and Noxious Weeds

## Invasive and Noxious Weeds

NRCS Invasive Species Policy  
Invasive Species Executive Order 13112



Glenn County's favorite plant – *Arundo donax*, Giant Reed



### 3. NURTURE THE SOIL

- Mulch, Compost, Grass cycling
- Avoid synthetic, quick release fertilizers
- Minimize the use of chemical pesticides
- Protect soil from compaction
- Prevent erosion



# Benefits of Composting

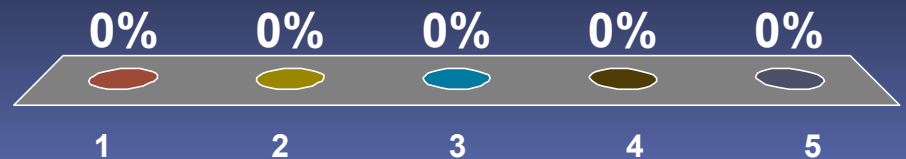


- On-site composting reduces pollution associated with transporting waste.
- Erosion control, promotes soil fertility by adding organic content.
- Composting also increases the water-holding capacity of soil.

On average what is the percentage of trash from San Joaquin County residents that is compostable?



- 1. 5%
- 2. 10%
- 3. 15%
- 4. 25%
- 5. 50%

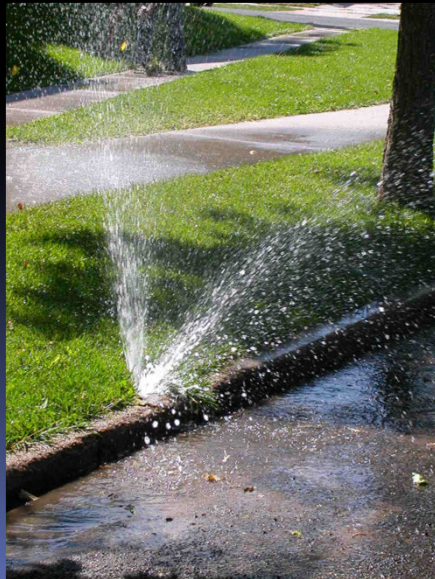


# Answer

- About 25% of trash is compostable
- San Joaquin County  
Delta Landscape  
Management  
Outreach  
Partnership - LMOP

## 4. CONSERVE WATER

- Efficient irrigation systems
- Audit your irrigation system



## Water Conservation cont...

- Minimize turf to areas for practical function, such as for play or recreation
- Select climate appropriate turf varieties



## 5. CONSERVE ENERGY

Plant trees to minimize energy use

- shade paved areas
- shade west and south side with deciduous trees
- design outdoor lighting carefully



# Shaded Parking Lots

**“By increasing shade to 50% in all parking lots in Sacramento, the annual benefits will increase to \$4 million from reduced fuel evaporation.”**

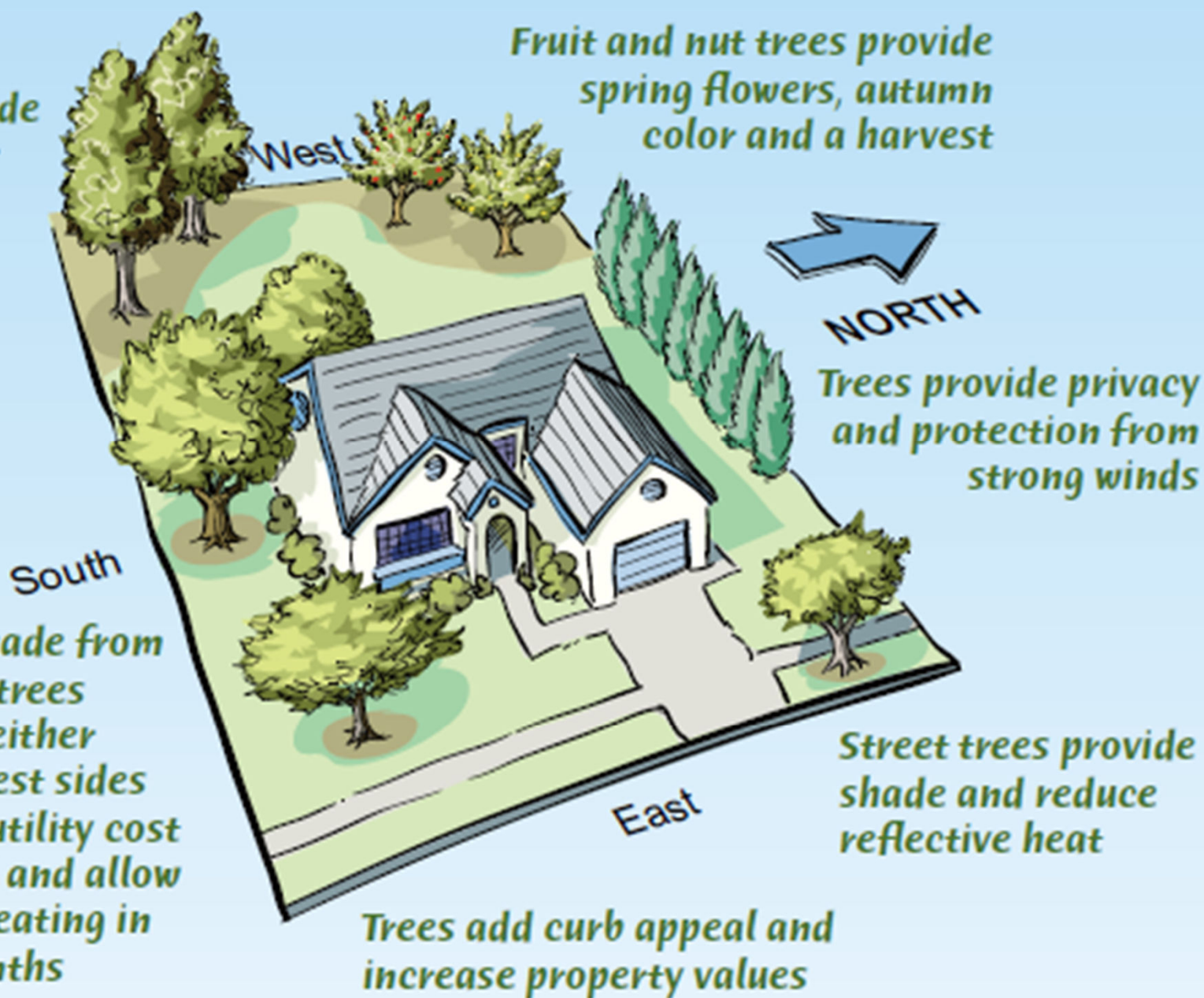
*Greg McPherson-Center for Urban Forestry Research*



## Tree placement:

Trees provide habitat for wildlife

Fruit and nut trees provide spring flowers, autumn color and a harvest



South

Summer shade from deciduous trees placed on either south or west sides can lower utility cost by 10- 15% and allow for solar heating in winter months

Trees provide privacy and protection from strong winds

Street trees provide shade and reduce reflective heat

Trees add curb appeal and increase property values

## 6. PROTECT WATER AND AIR QUALITY

- Choose pest-resistant plant varieties
- Keep organic matter on site
- Install permeable surfaces
- Maintain irrigation systems properly
- Use proper equipment



- Woolly Aphids and Hackberry trees

# Reduce Pesticide Use Integrated Pest Management (IPM)

- IPM Pest Cards
- IPM Interactive Kiosk

<http://www.ipm.ucdavis.edu>

The screenshot shows the UC IPM Online website. At the top, it features the University of California logo and the text 'University of California • Agriculture and Natural Resources'. Below this is the main title 'UC IPM Online' and the subtitle 'STATEWIDE INTEGRATED PEST MANAGEMENT PROGRAM'. The website is organized into several sections:

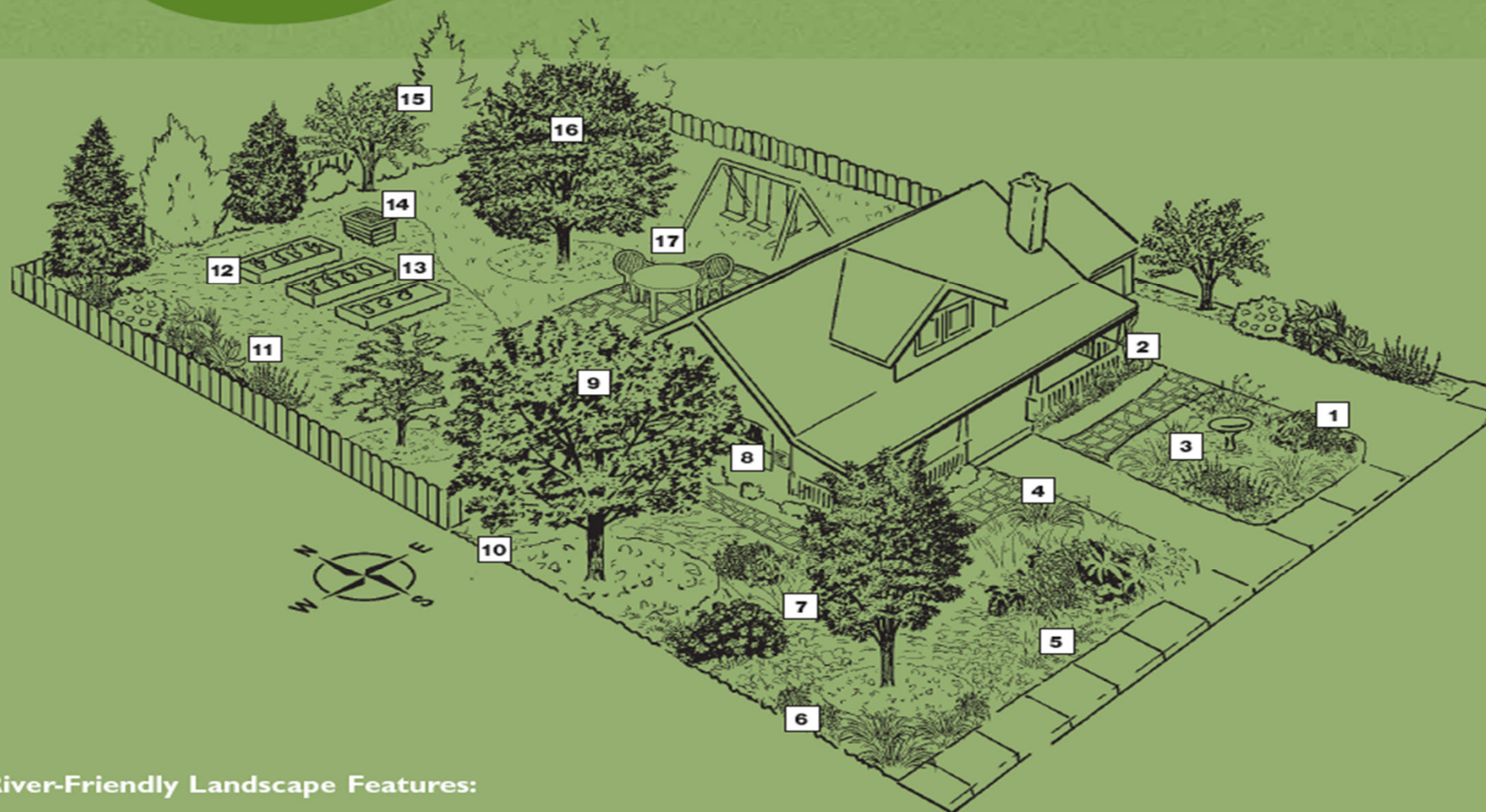
- Search**: A search bar is located at the top left.
- Announcing...**: A section with a blue header containing a list of links: 'Status of Exotics Request for Proposals', '2007 Fungicide Efficacy Tables for fruit crops', and '2006 Highlights annual report'.
- How to manage pests**: A section with a yellow header. It includes sub-sections: 'Manage and identify insects, mites, diseases, nematodes, weeds, and vertebrates' (with images of a ladybug and a flower) and 'Use tools to help make decisions' (with links to 'Weather data and products', 'Degree-days', and 'Interactive tools and models').
- Educational resources**: A section with a yellow header. It includes a sub-section 'Publications and other materials' with links to 'Workshops and events', 'Educational programs', and 'Pesticide use, safety, and training'.
- Research and IPM**: A section with a yellow header. It includes a sub-section 'Grants programs' with links to 'Results of funded projects' and 'Research tools and databases: California pesticide use summaries'.

At the bottom left, there are links for 'What's new', 'In the news', 'Forms', 'Site index', and 'Acknowledgments'. The website also features a navigation menu with 'About UC IPM' and '2006 Annual Report'.

## 7. CREATE AND PROTECT WILDLIFE HABITAT

- Create landscapes with diverse plantings
- Avoid extensive pesticide use...In some settings, beneficial insects can keep pests under control.
- Conserve or restore natural areas and wildlife corridors





### River-Friendly Landscape Features:

- |   |   |   |
|---|---|---|
| <p><b>1</b> Permeable paving on driveway and walkway to front door</p> <p><b>2</b> Water from roof channeled to cistern</p> <p><b>3</b> Water for wildlife habitat</p> <p><b>4</b> Pavers with spaces and low water use plants between</p> <p><b>5</b> Front lawn replaced by diverse plantings with many California native groundcovers, shrubs and trees, but no invasive species</p> | <p><b>6</b> All plants given the space to grow to their natural size</p> <p><b>7</b> Plants selected to match the microclimates</p> <p><b>8</b> Irrigation controller waters hydrozones according to plant needs, soil moisture and weather</p> <p><b>9</b> Deciduous trees placed to the west &amp; southwest of the house &amp; patio for summer cooling</p> <p><b>10</b> Repository for leaves to collect under trees as mulch</p> | <p><b>11</b> Mulched paths keep soil covered</p> <p><b>12</b> Drip irrigation for vegetable beds, shrubs, trees and elsewhere where feasible</p> <p><b>13</b> Raised beds are constructed from plastic or composite lumber</p> <p><b>14</b> Compost bin recycles plant and kitchen debris</p> <p><b>15</b> Evergreen windbreak blocks north winter winds</p> <p><b>16</b> Trees not topped but pruned properly</p> <p><b>17</b> Small lawn in backyard where family will use it</p> |
|---|---|---|

For more information on sustainable  
landscape practices go to:

[http://www.sacramentostormwater.org/SSQP/Riverfriendly/ Documents/RiverFriendly\\_Guidelines.pdf](http://www.sacramentostormwater.org/SSQP/Riverfriendly/Documents/RiverFriendly_Guidelines.pdf)

Special thanks to the Sacramento Storm Water Quality Partnership (SSQP), used with permission and assistance from the StopWaste.org in Alameda County. The River Friendly Landscape Guidelines are a Sacramento revision of the Bay-Friendly Landscape Guidelines originally published by StopWaste.org in 2003

# UC Davis Arboretum All-Stars

(click on the link above to play the video that we watched on class)



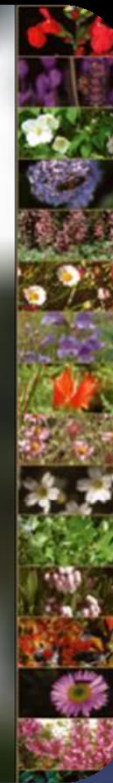
## Criteria for Selecting an All-Star

### Every All-Star plant must:

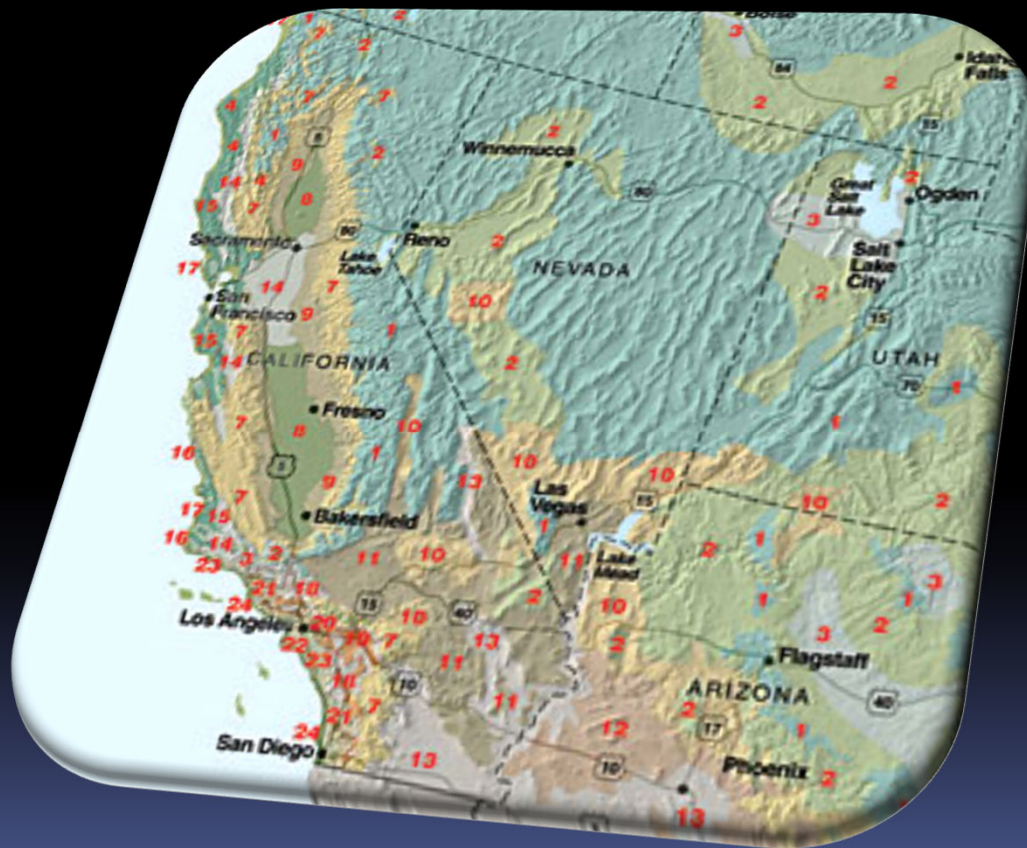
- Be attractive for most of the year
- Thrive in Central Valley conditions
- Be tested in the UC Davis Arboretum
- Be available at Plant Sales

### All-Stars were also selected for:

- Low maintenance
- Drought tolerance
- Attracting beneficial wildlife
- Year-round interest



# Sunset Zones: 8, 9 or 7 Orland, Chico & Paradise




- *Carpenteria californica*
- Bush Anemone
- Native to a very restricted area in foothills of southern Sierra Nevada in California's Central Valley (Fresno county). Attractive, formal-looking shrub grows slowly to 4–6 ft. tall and wide; many stems rise from base. Older bark light colored and peeling; new shoots, purplish. Thick, narrow, 2 to 4 1/2-in.-long leaves, dark green above, whitish beneath. In late spring and summer, clusters of scented, 1 1/2 to 3-in., yellow-centered white flowers like anemones appear at branch ends.

- Sunset zones 5-9, 14-24, 31
- Full, Partial 
- Shrub 4-6 ft. tall




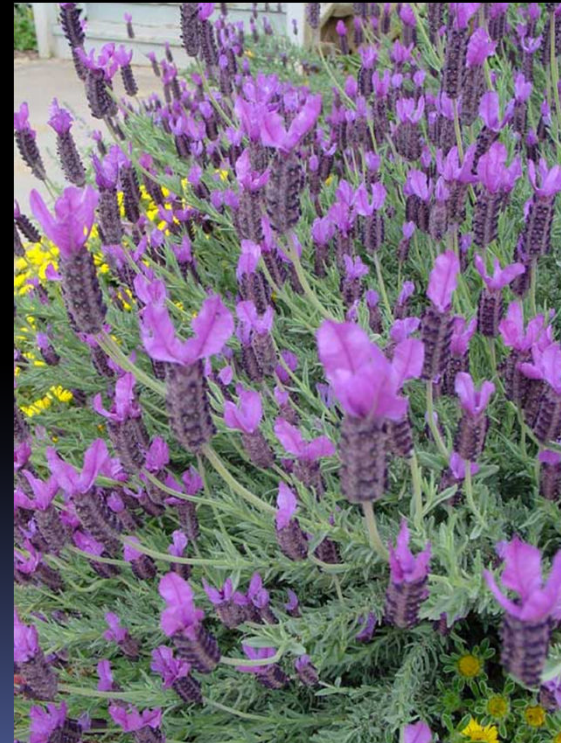
## *Ceanothus maritimus*

### ‘Valley Violet’

- Grows well in the central valley. Has clusters of dark-violet flowers that bloom in the spring; attracts beneficial insects.
- Sunset zones 5-9, 19-24
- Full 
- Small shrub 2-3 feet tall/wide



- *Lavandula stoechas*
- Spanish Lavender
- Includes several subspecies, all stocky plants 1 –3 ft. tall and wide, with narrow gray or gray-green, 1/2–1-in.-long leaves. Small flowers are typically blackish maroon, borne on short, fat, 2-in. spikes topped by two to four flag like bracts resembling rabbit ears; the bracts come in shades of pink and purple. Blossoms open first in four vertical rows around the spike; then rest of spike fills in with flowers. Blooms spring into summer; often repeats if sheared.
  
- Sunset zones 4-24, 26, 28-31
- Full 
- Perennial, 1-3 ft. tall and wide




- *Bouteloua gracilis*
- Blue Grama Grass
- This native bunch grass grows up to 1 1/2 to 2 ft. high, 1 ft. wide. Flowering stems have unique inflorescences springing out at right angles and said to resemble hovering mosquitoes. Reddish in summer, they bleach to white. Tolerates sunny, arid, alkaline conditions in the High Plains and Rocky Mountain areas. Makes a fair low-water-use lawn if mowed to 1 1/2 in. high. Irrigate to a depth of 1 ft. until established; thereafter, it needs virtually no water.

- Sunset zones 1-3, 7-11, 14-24
- Full 
- Monocot
- Low-water lawn substitute



- *Arbutus unedo* 'Marina'

- Strawberry tree

- Slow to moderate growth to 8–35 ft. with equal spread.
- Trunk and branches have rich red-brown, shredding bark; tend to become twisted and gnarled in age.
- Dark green, handsome, red-stemmed leaves are oblong and 2–3 in. long. Clusters of small white or greenish white, urn-shaped flowers and round, 3/4 in. fruit, yellow (young) and red (mature), like strawberries in texture, appear at the same time in fall and winter; fruit is edible but usually mealy and bland in flavor. Tolerant of heat and alkaline soils.
- Sunset zones 4-24
- Full 
- Small single or multi-trunked tree

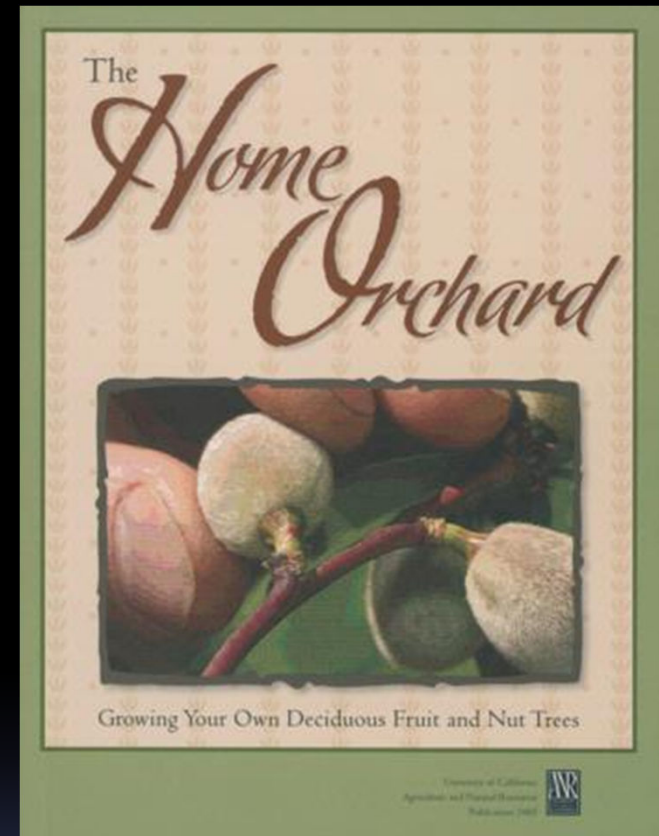


# Edible Landscapes

- Grow food in your garden for yourself, your family and your neighborhood
  - Edible landscapes
  - Trees with edible fruit
  - Backyard orchards or container fruit trees



- <http://homeorchard.ucdavis.edu/>



# Ornamental Trees w/ Edible Fruit



- Persimmon 'Hachiya' or 'Fuyu' fall color, disease/pest resistance
- Citrus, Kumquats, Mandarins, Meyer Lemon, Plums, etc...

# Considerations for your group design:

- Include **TWELVE** plants: shrubs, trees, perennials, lawn substitutes, etc... from the UC Davis Arboretum All-Star guide.
- Incorporate at least **FIVE** sustainable landscape practices in your landscape design.
- If you include a lawn, use a drought tolerant substitute.
- Tree placement – consider shading, utility lines, plant at least 15 ft. from structures, etc...
- Each group will give a 5 minute talk, presenting their landscape design to the class, describing the sustainable landscape practices included in their landscape design.

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