



### Water-Wise Tips for Your Garden & Home



Wikimedia User Buddy 431

UCCE Stanislaus County Master Gardeners



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### Meet Your Speakers!

Master Gardeners

- Denise Godbout-Avant
- Johnny Mullins



pixabay.com



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### Agenda

- How much water is there, where our water comes from, and how it is distributed
- Climate change impact and drought
- Ways we can conserve water in our garden and home



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### How Much Water Do We Have?

Before we discuss ways to conserve water, it's valuable to know how much freshwater we actually have, where it comes from, and how it is distributed!



Merced River. Photo credit: Richard Avanti



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### Poll Question 1

- How much of Earth is water?
  - 25%
  - 52%
  - 71%
  - 93%



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### Poll Question 1

- How much of Earth is water?
  - 25%
  - 52%
  - 71%
  - 93%



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### Poll Question 2

- How much of Earth’s water is usable freshwater for living things?
  - 21.4%
  - 12.3%
  - 5.2%
  - 0.26%

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### Poll Question 2

- How much of Earth’s water is usable freshwater for living things?
  - 21.4%
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  - 0.26%




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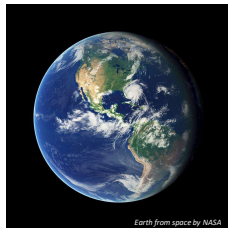
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### Earth is called the Blue Planet

~71% of the planet is water

- 96.5% of that water is ocean salt water
  - With another 0.9% being saline water
- ~0.26% is usable freshwater
  - Most of the freshwater is stored in ice caps/glaciers, leaving little available for human use



Earth from space by NASA




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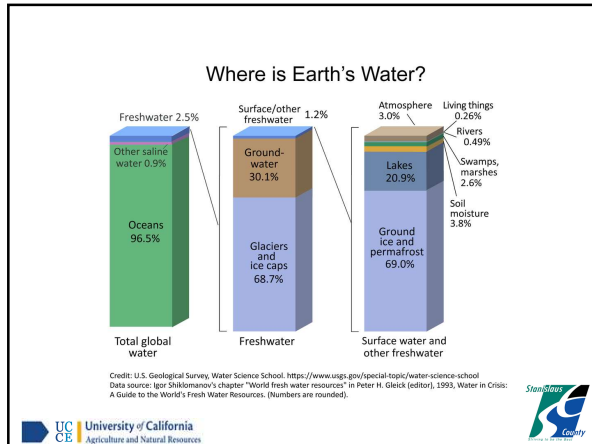
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### This bucket demonstration might help put into perspective how Earth's water is broken down:

This 5 gallon bucket of water represents all the water on Earth

2 cups of water have been removed . . .this represents ALL the freshwater on our planet!

Thus, the rest of the bucket represents the salty ocean water!

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### Bucket Demonstration, continued. . .

The 2 cups of freshwater has been split into 0.5 cups and 1.5 cups. . .

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### Bucket Demonstration, continued. . .



The 1.5 cups represents the freshwater in the polar ice caps and glaciers which are unavailable for our use



The 0.5 cup includes freshwater in underground aquifers, surface water in rivers, lakes, wetlands, canals, etc. and water vapor in the air



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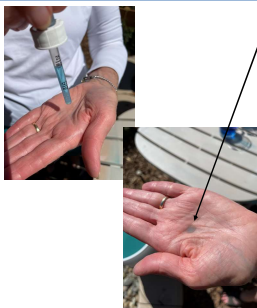
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### Bucket Demonstration, continued. . .



A dropper has taken water out of the 0.5 cup and one drop is put into a hand. This one drop represents all the freshwater that is available to the humans, plants and animals!

This freshwater is recycled via the water cycle:  
Precipitation – Evaporation – Condensation.  
The amount of available freshwater to us will basically not change, just the phases.



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### Questions?



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### Poll Question 3

Where do you think most of California's water come from?

- Snowmelt and precipitation which goes into rivers that flow into the ocean
- Wells from water seeping into underground aquifers
- Stored in reservoirs and moved by rivers and canals
- All of the above

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### Poll Question 3

Where do you think most of California's water come from?

- Snowmelt and precipitation which goes into rivers that flow into the ocean
- Wells from water seeping into underground aquifers
- Stored in reservoirs and moved by canals and rivers
- All of the above



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### Poll Question 4

Who is the biggest freshwater user?

- Cities
- Agriculture
- Fish and plants
- Humans in urban areas

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### Poll Question 4

Who is the biggest freshwater user?

- Cities
- **Agriculture**
- Fish and plants
- Humans in urban areas



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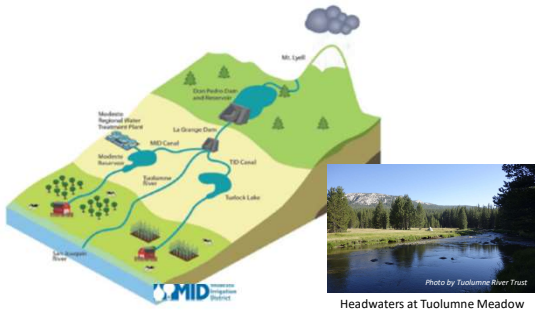
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### Water Sources in Stanislaus County



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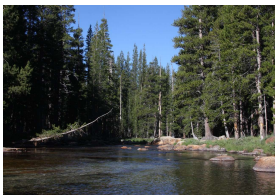
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Tuolumne River. Photo courtesy of the Tuolumne River Trust

- On average, ~50% of our freshwater from rivers stays in the rivers for nature, with the other half for human use
- Of the water that is for human purposes:
  - 80% is for agriculture to put food on our tables
  - 20% is for human use

**That doesn't give much available water for homes and gardens!  
So we must make the most of every drop.**



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### Climate Change

Climate change is impacting California's water sources with extreme water events

Extreme precipitation variability (too much or not enough) will be the norm in the future:

- "Atmospheric river" storms which can cause flooding
- Droughts which will lead to water shortages and wildfires
- Both of these can pollute water supplies, further reducing clean water sources




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### California Drought History

- 5-year drought in 2012-2016
- Other recent droughts: 2007-2009, 1987-1992, 1976-1977
- On-and-off dry conditions during the 1920s and 1930s

Paleoclimate records going back more than 1,000 years show many significantly dry periods




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### Drought is Common in California

California is no stranger to drought. It is a recurring feature of our Mediterranean climate, but it is expected to happen more frequently and with longer, more extreme durations due to climate change.




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**Governor Newsom declared drought in California on April 21<sup>st</sup> this year**

**Map released:** Thurs. April 29, 2021  
**Data valid:** April 21, 2021 at 8 a.m. EDT

**Intensity:**

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

**Author(s):**  
 Richard Heim, NOAA/NCEI

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying [text summary](#) for forecast statements.

<https://www.nbcsantago.com/news/california-news/map-drought-california-water-supply-gov-nwsom/2584619/>

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**Practice Water Sustainability**

- Due to recurring, regular droughts, practicing water sustainability needs to be a part of Californians’ way of life
- There are many water conservation methods we can incorporate into our daily lives in the garden and home. We will explore some. . .

*Note: There will be links at the end of the talk for additional information, which will be emailed to everyone*

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**Questions?**

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### Poll Question 5

What are some of the methods you use to conserve water in your garden? (Mark all that apply)

- Reduced/eliminated lawn
- Replaced sprinklers with drip irrigation
- Have water-wise plants
- Use compost/mulch
- Hydrozones
- Collect rainwater

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### Poll Question 5

What are some of the methods you use to conserve water in your garden? (Mark all that apply)

- Reduced/eliminated lawn
- Replaced sprinklers with drip irrigation
- Have water-wise plants
- Use compost/mulch
- Hydrozones
- Collect rainwater




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### Water-wise Ways Topics

- Lawns
- Irrigation
- Soil types
- Designing your landscape
- Recycling water
- Plants
- In the home




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## Lawn

About 50% of urban water is used for outdoor irrigation

- Lawns are the major source of garden water use
- Reduce the amount of lawn if you can

Warm season and cool season turf grasses are used in California. Whenever possible, using warm-season turf can result in significant water savings, compared with cool-season grasses.



Felix Wong, creative commons license

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## Lawn and Water

Turfgrasses can be irrigated at different levels:

- Optimum – the amount of water needed for best growth and appearance
- Deficit – Provides sufficient water to maintain adequate appearance with less growth; this level can reduce irrigation water by at least 25% for optimum growth
- Survival – Growth and quality are reduced



Bachlandscape.com

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## Watering Lawn

Water only as needed to maintain your grass:

- Walk on your grass: If grass springs up, it is healthy. Try reducing water time by a minute or two to see if it still continues to spring up.
- If have runoff, you are overwatering





www.ucanr.com

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### Cutting Grass to Save Water



www.calrecycle.ca.gov

- Set mower blades to 3" – this encourages deeper roots.
- Grasscycle by leaving some lawn clippings behind when mowing. A layer of ~1/2" of thatch functions as mulch, moderating the temperature of the soil, helping it retain moisture.



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### Water-wise Irrigation

- Change sprayers to drip system whenever possible
- Check water valves, sprinkler heads, sprayers and hoses for leaks on a regular basis, repairing or replacing as needed
- Adjust your watering according to the type of lawn, plants, and soil you have (more on soil types in a moment)
- Water early in the day or late in the evening when temperatures are cooler to reduce evaporation
- Deep water plants, watering less often for longer periods



Drip water irrigation system



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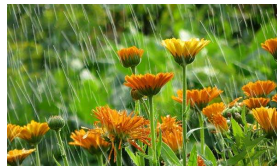
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### Water According to the Season

- Have a water timer with a rain sensor, so garden isn't irrigated when it rains
- Reduce water frequency during the cooler months



www.spring-green.com



green.com

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### Questions?



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### Poll Question 6

What type of soil do you have?

- Sandy soil
- Loamy/silty soil
- Clay soil
- A mixture of two of these
- I'm not sure

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### Know Your Soil Type!

Different soil types have different water-holding capacity affecting how long and how often to water:

- Sandy – Dries out quickly, so requires frequent watering
- Silty/Loamy – Drains fairly well, needs less water
- Clay – Does not drain well, holds water for long periods
- Mixture – A combination of 2 types



www.pinterest.com

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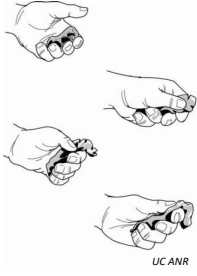
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**Soil Texture by "Feel"**

To determine your soil type, take a handful of soil and wet it. Rub it out between your thumb and finger:

- Is it gritty and crumbly, smooth and slippery, or sticky?
- Does fall apart, or does it hold together forming a thin strip, or forms a strong ribbon?

**Sandy soil:** feels gritty & crumbles in your hand  
**Silty/Loamy soil:** feels smooth and slippery, forms a thin strip  
**Clay soil:** feels sticky and forms a strong ribbon



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**Ways to Conserve Water in the Garden**

Using compost/mulch reduces water loss from evaporation




Instead of sidewalks, put in water permeable paths

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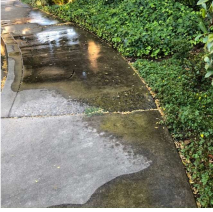
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**Eliminate "Urban Drool" Water Runoff**



- Monitor your water system, adjusting water so it is facing your targeted plants
- Avoid watering when it is raining
- Sidewalks don't need water.

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### Design Your Landscape to Catch Runoff



- Observe where your water goes when watering or during rainstorms
  - Plant in appropriate locations to capture runoff, particularly if on slope
  - Use slopes, basins, swales to direct and capture water

These rocks are at the base of a slope to capture runoff, which helps recharge aquifers and eliminates runoff

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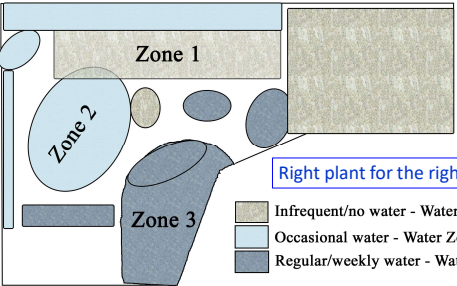
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### Hydrozones: Grouping Plants With Similar Water Needs



Right plant for the right spot!

- Infrequent/no water - Water Zone 1
- Occasional water - Water Zone 2
- Regular/weekly water - Water Zone 3

Courtesy of Michael Rosenblum

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### Collecting Water for the Garden

Harvest rainwater from gutters during the wet winter season to use for later watering of your garden: This can be a simple barrel or garbage can with rain chain, or something more technical with a pump

Catch shower water in bucket while water is warming up to use for watering garden

Note: Be sure to keep it covered to prevent mosquitoes from laying eggs

Credit: Johnny Mullins

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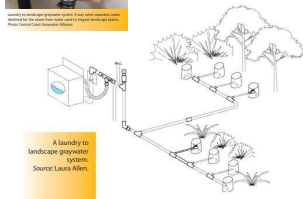
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### Recycle Graywater to Water Garden

Graywater is gently used water from bathroom sinks, showers, tubs and washing machines which has been diverted and captured to irrigate garden plants including vegetable gardens, as long as it doesn't touch edible parts of the plants, which includes root vegetables. Systems can be simple or complicated.



A handy-to-landscape graywater system. Source: Laura Allen.

Local jurisdictions may have stricter guidelines than the state. Homeowners should contact their local jurisdiction for specific regulations.

Some California cities like Encinitas are requiring new homes be built with graywater systems.



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### Questions?



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### Water-wise Garden

Choose water-wise plants and trees that need little water when established

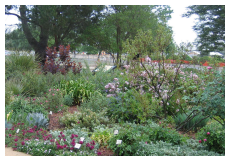


Photo credit: Ellen Zagory



There are many to choose from. Here are a few of our favorites. . .



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### Water-wise Shrubs



*Ceanothus 'Concha'*  
*Ceanothus 'Marie Simon'*  
*Salvia clevelandii* – Blue sage  
*Rotebommetes arbutifolia* – Toyon

Photo credits: ANR or UC Davis Arboretum All-Stars




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### Water-wise Flowering Plants



*Salvia spathacea* – Hummingbird sage  
*Achillea millefolium* – Island Pink Yarrow  
*Salvia x 'Bee's Bliss'*  
*Penstemon 'Margarita BOP'*

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### Water-wise Ornamental Grasses



*Muhlenbergia capillaris* – Pink Muhly Grass  
*Nassella pulchra* – Purple Needle Grass  
*Muhlenbergia rigens* – Deer Grass

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### Water-wise Trees

*Lagerstroemia* - Crape Myrtle  
*Olea europaea* - Fruitless Olive  
*Pistacia chinensis* - Chinese Pistache  
*Chilopsis linearis* - Desert Willow  
*Quercus lobata* - Valley Oak

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### Water-wise Vines

*Aristolochia californica* - CA Pipevine  
*Cyrtostoma canislegiodes* - Violet trumpetvine  
*Hardenbergia violacea* - Lilac vine

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### Water-wise Ground Covers

*Lantana species*  
*Teucrium cossonii* - Creeping Germander  
*Cotoneaster species*

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## Cactus & Succulents Johnny's Garden

Cactus and succulents are the ultimate low-water plants. They aren't for everyone, but they have their own kind of dramatic beauty and can be tucked into sunny spots of your garden.

Aloe arborescens - Soap Aloe

Crassula tetragona - succulents with several varieties of cactus including Opuntia phaeacantha - Prickly pear, and Echinopsis varieties (also known as Hedgehog cacti)

Aloe arborescens - Soap Aloe

Sedum album - White in flower

Photo credits: Johnny Mullins

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## Questions?



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## Poll Question 7

What are some of the methods you use to conserve water outside and in your home? (Mark all that apply)

- Wash vehicles at car wash rather than in driveway
- Have water-efficient dishwasher and/or washing machine
- Have water-efficient shower and/or toilet
- Take 5-minute showers
- Turn faucet on and off as needed while shaving/brushing teeth

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### Other Ways to Save Water Outdoors

Use a broom or blower to clean driveways, patios, and sidewalks



Wash your car at car washing facilities (which are efficient water recyclers) rather than your driveway



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### Ways to Save Water Indoors

Doing laundry and showering uses an average of 196 gallons per day.

Some simple ways to reduce water in the home. . .



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### Toilets

- Fix all leaks, including water leaks
- Install high-efficiency toilets. This can save 19 gallons/person/day

Denise's motto: "If it's yellow, let it mellow. . . If it's brown, flush it down."



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### Bathrooms

- Put aerators on bathroom faucets and shower heads - this can reduce water usage by 1.2 gallons/day
- Take 5-minute showers; shower on alternate days
- If taking bath, fill tub halfway or less - this can save 12 gallons/day
- Don't let water run from faucet; turn on and off as needed, particularly when washing hands, brushing teeth, and shaving



www.shutterstock.com

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### Kitchen & Laundry

<p><u>Kitchen</u></p> <ul style="list-style-type: none"> <li>• Run dishwasher only when full</li> <li>• Use water-efficient dishwasher</li> <li>• Scrape dishes whenever possible, rather than rinsing</li> <li>• Don't run water from faucet if rinsing dishes; turn on and off as needed</li> </ul>	<p><u>Laundry</u></p> <ul style="list-style-type: none"> <li>• Run washing machine with full loads</li> <li>• Front loading washing machines are more water-efficient</li> </ul>
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www.designerappliances.com

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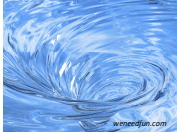
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### City of Modesto Rebates

If reside in the City of Modesto, the city offers water conservation rebates for those who qualify:

- **Drip Irrigation:** Convert existing overhead spray system drip irrigation or install a drip irrigation system in an existing garden bed
- **High-Efficiency Clothes Washer:** Replace old clothes washer with a new high efficiency clothes washer
- **High-Efficiency Toilet:** Replace old high water use toilets
- **Smart Irrigation Controller:** Upgrade or purchase a new smart irrigation controller
- **Turf Replacement Program:** Replace their grass with polyethylene/nylon artificial turf products or any qualifying drought tolerant landscape products

*For those who live in other communities, check with your city or county*



www.eefun.com

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**So there are a lot of ways we can incorporate water conservation to become normal practice in our daily lives in our garden and home. Every drop counts!**



www.dbastribunc.com

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### Resources

- Stanislaus County MG Gardening Publication: Waterwise Landscaping – A Guide to Reducing Water Usage <https://ucanr.edu/sites/CEStanislausCo/files/348681.pdf>
- Sustainable Landscaping class Power Point <https://ucanr.edu/sites/stancountymg/files/340288.pdf>
- Water-wise Plants info: UC Davis Arboretum All-Stars <https://arboretum.ucdavis.edu/arboretum-all-stars>
- California Native Plant Society <https://www.cnps.org/gardening/choosing-your-plants>
- Managing Turf Grasses During Drought <https://anrcatalog.ucanr.edu/pdf/8395.pdf>
- Drought Tip: Use of Graywater in Urban Landscapes in California – UCANR <https://anrcatalog.ucanr.edu/pdf/8536.pdf>
- City of Modesto Water Rebate Program: <https://www.modestogov.com/1659/Water-Rebates>
- Research Revealing the Best Low Water Plants from UC Landscape Plant Irrigation Research Trials. Results from the 2018-2020 trials and previous years' reports: [https://ucanr.edu/sites/UCLPIT/FULL\\_REPORTS/](https://ucanr.edu/sites/UCLPIT/FULL_REPORTS/)



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### Thanking the following resources. . .

- Modesto Irrigation District
- Tuolumne River Trust
- United States Geology Service
- State of California Department of Water Resources
- And, of course, UC ANR and Stanislaus County Master Gardener publications

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### Questions?



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### Keep in Touch!

- Sign up for *The Stanislaus Sprout* blog post
  - Gardening & Pest management posts
  - UCCE Master Gardener Classes & Activities
- Find us on Facebook, twitter & Instagram
  - @ucmgstanislaus

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### Help Us Grow!

Our follow-up survey provides us the tools we need to grow and improve the quality of our program.



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**Stanislaus County Library**  
Vicki Salinas, Reference Librarian



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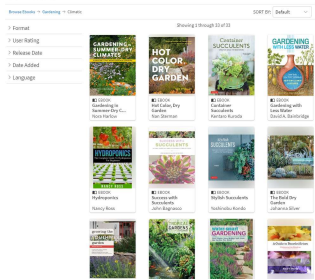
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Climatic



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Take the Summer Reading Challenge  
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For All Ages**

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## Questions?



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