



Gardening During a Drought

Tips for Growing Vegetables

UCCE Master Gardener Program of Riverside County

Vetted by Riverside County Office of Education-STEM

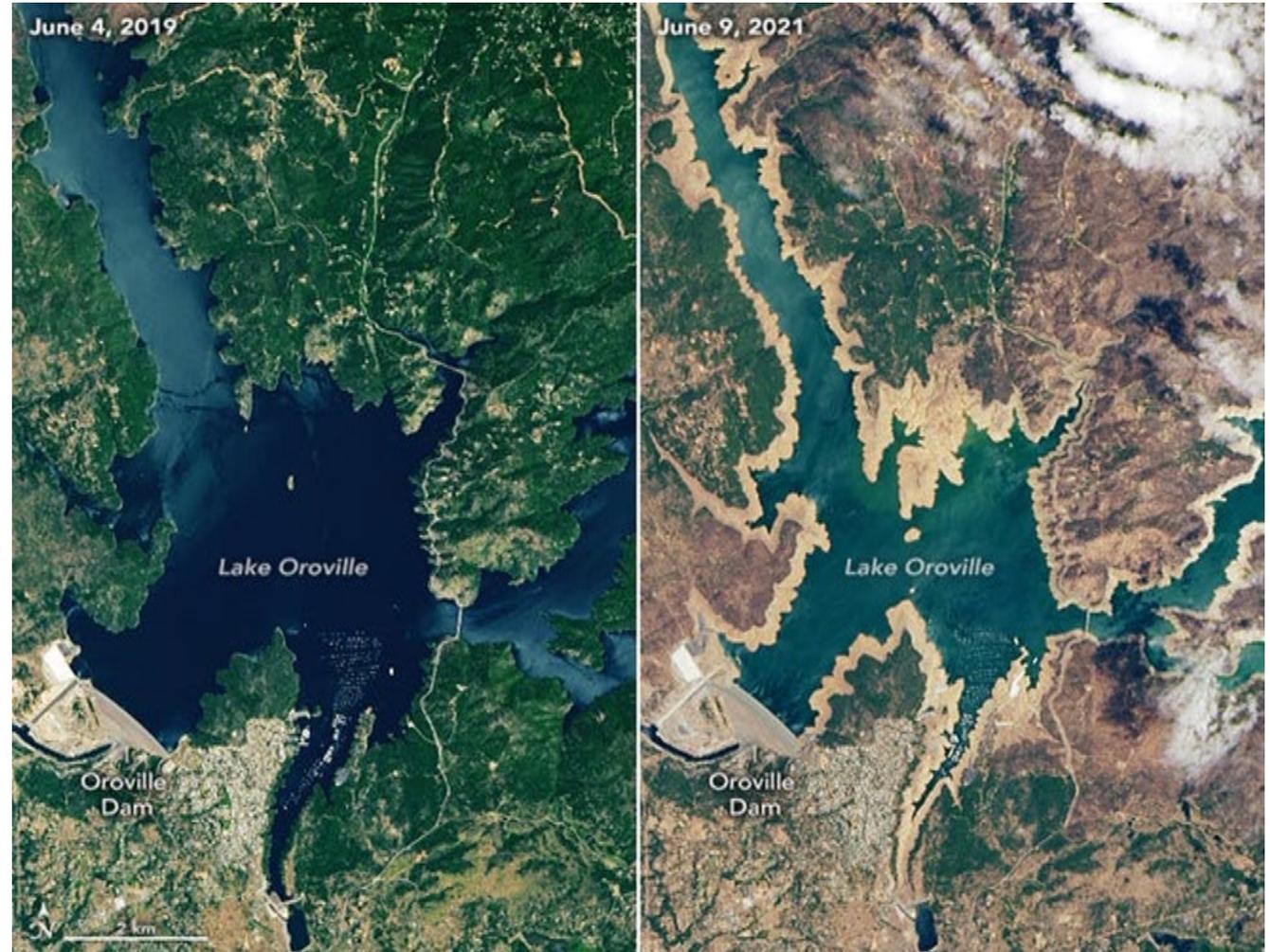
Learning Goal

Educators will learn four research-based strategies for conserving water in an edible garden.



Why Is This Important?

- It is critical during a drought that water restrictions and conservation be addressed when growing an edible garden.
- Vegetables are difficult to maintain during a drought. Applying sustainable gardening practices that require less water use can ensure a successful vegetable harvest during a drought.



Video: Drought-Resistant Vegetable Gardening

- This video provides an overview of the four basic strategies to successfully growing vegetables during a drought.
- To access the video, click on the picture and then scroll down the Sonoma County page.



Dig Deeper
Into These
Water
Conservation
Strategies

Compost

Drip Irrigation

Right Plant, Right Place

Mulch

Compost Is the Foundation For a Sustainable, Drought-Resistant Vegetable Garden

Compost's capacity to retain and efficiently transfer water through the soil allows surrounding plants to maximize water for growth.

- Comprised of decayed organic matter, compost creates a more porous soil allowing water to soak in more efficiently. This porous soil also allows roots to go deeper and find more water at lower depths.



Compost Provides Plant Nutrition

Compost's organic matter also increases soil nutrition which helps plants produce better yields with the same amount of water.

- This provides an alternative to nitrogen fertilizer which produces more leafy green growth and increases the plant's need for water.



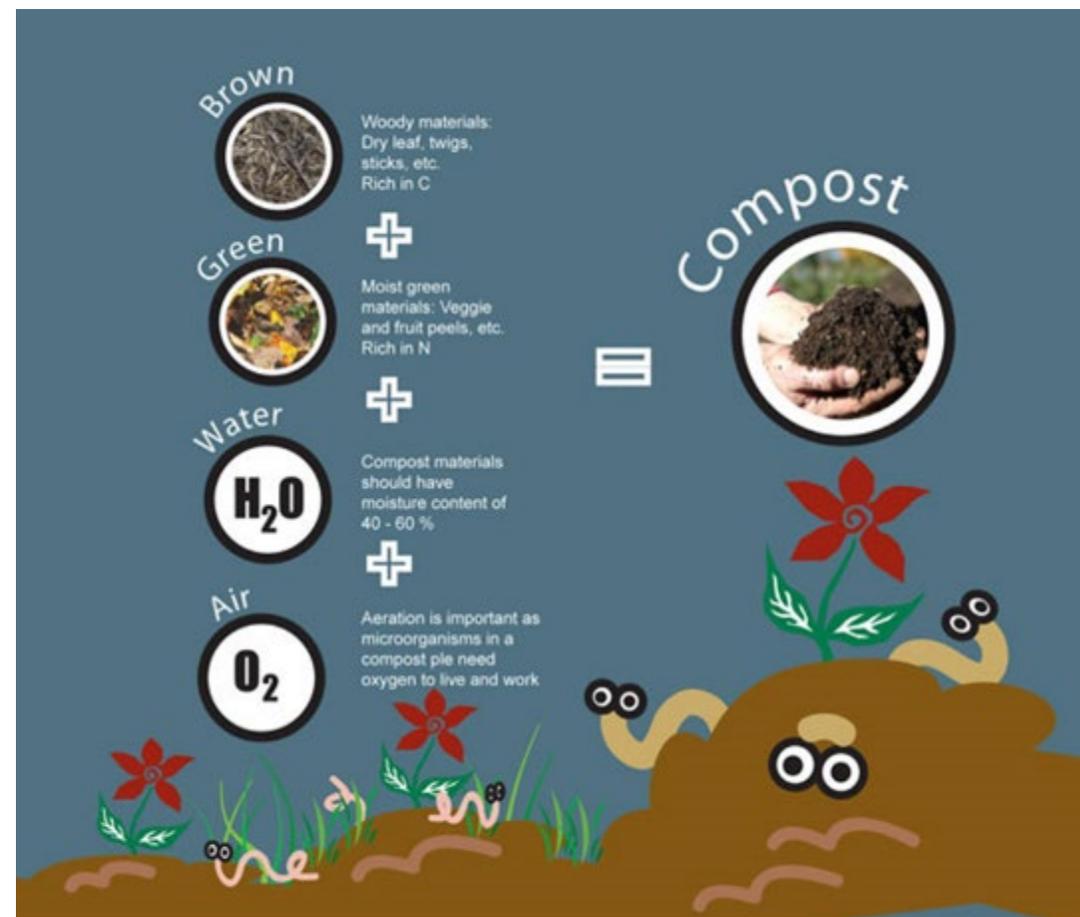
Composting is a Sustainable Gardening Practice

Every garden should be recycling brown and green waste into compost.

- There are a variety of easy-to-implement composting options for school gardens to choose from.
- These include everything from a simple pile to wire or plastic cages, barrels, or wooden bins.
- Further guidance on the various options is available at:

➤ [UCCE Master Gardeners Sacramento](#)

➤ [CalRecycle](#)



Drip Irrigation Puts Every Drop of Water To Good Use

Drip irrigation is the most efficient method for irrigating a vegetable garden.

- Water is applied precisely where it is needed.
- Slow delivery of water over an extended length of time prevents runoff and soil erosion.
- Water is dripped directly into soil, not into the air. This prevents evaporation and makes it ideal for windy areas.
- Including a timer to control the length of time and frequency of water delivery will increase a drip system's efficiency.



Irrigation Guidance

To ensure that every drop of water is put to good use:

- Irrigate only as long as it takes to moisten the active root zone. For most crops, the active root zone is 3 to 8 inches.
- Know the critical watering periods for vegetables so you can target the timing and amount of water to add. As a rule of thumb, water is most critical during the first few weeks of development, immediately after transplanting, and during flowering and fruit production.
- Water in the morning or in the cool hours of the evening so that soil stays evenly moist.
- Don't forget the drip system once it is set up! Monitor and adjust as needed.



Planting Smarter: The Right Plant

- **Drought Resistant Crops:** Purchase vegetables that do well in hot and dry climates. Many heirloom varieties from Mediterranean regions and the Southwest are prized for being drought tolerant. Smaller varieties bred for containers often produce a more bountiful yield per plant than standard varieties.
- Reference the [UCANR Drought Resistant Crops List](#)
- **Days to Maturity:** A crop needing fewer days to mature requires fewer irrigations before harvest. Look for early-maturing or short-season varieties.



Planting Smarter: The Right Place

- **Hydrozoning:** Grouping plants with similar water requirements.
- **Intercropping:** A short-season vegetable is *interplanted* between main-crop vegetables that produce later in the season. The main-crop plants are planted on spacing they'll need at maturity. In the spaces between, short-season vegetables are planted and harvested before they start competing with the main-crop plants.
- **Companion Planting:** Grouping crops together for mutual benefit. The Native American “three sisters” is an example of planting corn, beans and squash together. Cornstalks provide support for climbing beans, the beans return nitrogen back into the soil, and the squash spreads acting as a mulch.



Planting Smarter: The Right Time

Plant earlier in spring and later in fall.

- Planting earlier in the spring season takes advantage of the warm weather and reduces exposure to high midsummer temperatures.
- Planting later in the fall minimizes the use of supplemental water and takes advantage of seasonal rains to help establish plants.

Stay ahead of seasonal weeds!

- Weeds compete for valuable water, sunshine and soil nutrients in your garden. Remove weeds before they have an opportunity to flower or spread.



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Shade Your Garden Soil With Mulch

Mulch keeps soil cool, conserves moisture and reduces weeds. Use two to four inches on top of the soil.

- The larger the material size, the deeper layer you need to provide. Choose from compost, straw, fallen leaves, hulls, shredded bark, grass clippings and newspaper.
- Do not use plastic sheeting as or with mulch because it deprives the soil of much-needed oxygen.
- Keep mulch **two inches** away from the stem of the plant to avoid the possibility of rot.
- Cover your irrigation line with mulch to protect it from UV rays.

Basic Mulching Guidance

Fine mulch (less than half inch particle size)	Apply no more than 2 inches; thin layers are less likely to impede air and water.
Coarse mulch	Use 4-6 inches or more to control weeds in open spaces.
Grass clippings or shredded leaves	These should never be deeper than 2 inches; they tend to mat together, restricting the water and air supply to plant roots.
On poorly drained soils	Use lesser amounts

How Frequently Should Mulch Be Applied?

Reapply or refresh organic mulches after they have begun to break down.

- Grass clippings and leaves decompose very fast and need to be replenished frequently.
- Pine needles and bark mulches typically last for around 2 to 4 years.



Photo Credit: Landscape for Life

What About Fruit and Nut Trees?

Keeping fruit and nut trees alive during severe water shortages is also possible, although crop production will probably be greatly reduced or stop.

- To produce a good crop, deciduous fruit and nut trees need adequate water in their root zones continuously from bloom until harvest.
- Citrus trees need adequate soil moisture during spring to set fruit and steady water in summer and fall to produce acceptable size, numbers, and quality of fruit.
- However, during a drought, fruit and nut trees can be kept alive with a few early-season water applications, but they may not set much fruit.



Resources

- [Applying Mulch: Where, When and How](#); UC Marin Master Gardeners
- [Backyard Orchard](#); University of California, Master Gardener Program
- [California Garden Web](#); Drought Gardening Tips
- [Five Tips For a Bountiful, Water-Saving Vegetable Garden In A Time of Drought](#); Treehugger Sustainability for All
- [Food Gardening With Less Water](#); E. de Peyster, S. Wrightson and C. Cary with input from other Food Gardening Specialists, Master Gardeners of Sonoma County; April 2006
- [How Much Water Does My Garden Need?](#) E.de Peyster, Food Gardening Specialist, Master Gardeners of Sonoma County; March 2014

Resources

- [Keeping Plants Alive Under Drought or Water Restrictions](#); Janet Hartin and Ben Farber; UC Cooperative Extension, ANR
- [Ten tips for vegetable gardening during a drought](#); Nancy Grove; UCCE Master Gardener, San Mateo and San Francisco Counties
- Photos: Creative Commons, Landscape for Life, NASA Satellite, Stock Images, UCANR
- Video: UCCE Master Gardeners of Sonoma County

California Standards For the Teaching Professions

Standard 1: Engaging and Supporting All Students in Learning

- 1.3 Connecting subject matter to meaningful, real-life context

Standard 2: Creating and Maintaining Effective Environments for Student Learning

- 2.2 Creating physical or virtual learning environments that promote student learning, reflect diversity, and encourage constructive and productive interactions among students

Standard 3: Understanding and Organizing Subject Matter for Student Learning

- 3.4 Utilizing instructional strategies that are appropriate to the subject matter
- 3.5 Using and adapting resources, technologies, and standards-aligned instructional materials, including adopted materials, to make subject matter accessible to all students

Master Gardeners

The University of California Cooperative Extension (UCCE) Master Gardener Program (MGP) is an educational program designed to teach and effectively extend information to address home gardening and non-commercial horticulture needs in California.

UCCE is the outreach arm of UC's division of Agriculture and Natural Resources (ANR). Master Gardener volunteers (MG volunteers) promote the application of basic environmentally appropriate horticultural practices through UCCE-organized educational programs that transfer research-based knowledge and information.



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Gardening Questions?

Email the UCCE Master Gardeners of Riverside County

- Email Helpline: anrmgriverside@ucanr.edu
- School Gardens: mgschoolgardens@gmail.com

Website Resources

- [Riverside Master Gardeners Website](#)



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