

## Drought Dilemma: Plants Need Water to Grow

 $4^{th}$  and  $5^{th}$  Grade

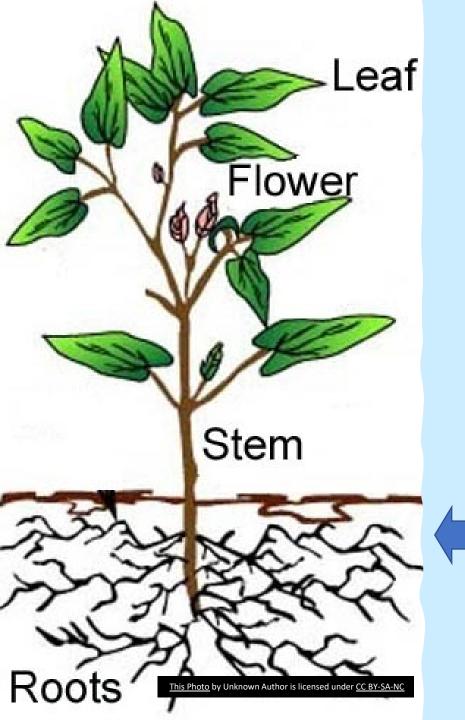
UCCE Master Gardener Program of Riverside County

## What Do Plants Need to Grow?

- Soil
- Air/Oxygen
- Water
- Light/Sun
- Food/Nutrition
- Place/Garden



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# Parts of a Plant

#### What are the parts of a plant?

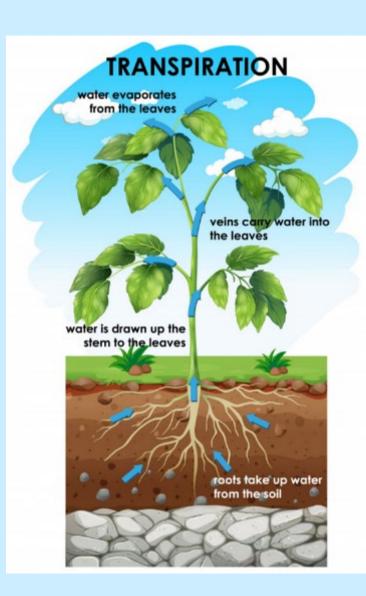
- Roots
- Stem
- Flower
- Leaf

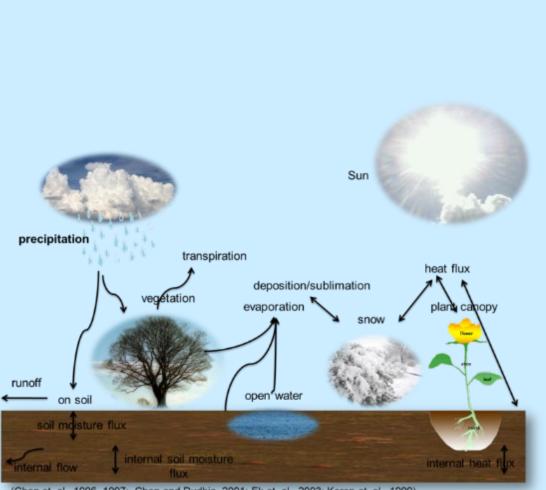
#### Where is the Soil?

- Plants take water from the soil
  - Water enters the plant through the tips of the roots.
  - Water must be available in the soil to the root tips for plants to use it.

## Why do plants need water?

- Plants are about 90% water
- Water makes plants sturdy and strong.
- Plants take in water from the soil.
  - Uptake of water occurs in the roots and root tips.
  - Water moves up the stem and leaves and is lost to evaporation from the plant.
    - Transpiration
  - Water carries sugar and other nutrients to parts of the plant.
  - Plants need light and water to make sugars.





(Chen et. al., 1996, 1997; Chen and Dudhia, 2001; Ek et. al., 2003; Koren et. al., 1995

Water Cycle

- Rainwater, or precipitation, provides water on earth.
- Water is used by plants, it seeps into soil, it runs into bodies of water, and sometimes it freezes.
- Heat from the sun releases water from the plant; water evaporate back to the clouds.
- Plants also release water through transpiration to supply water to clouds.

### Water Cycle Activity

- Water is recycled
  - Every drop of water has already been part of the water cycle.
- Click on the link below:
  - Water Cycle Activity
  - Hover over a topic to learn more about the subject: precipitation, lakes, rivers, runoff and other subjects.



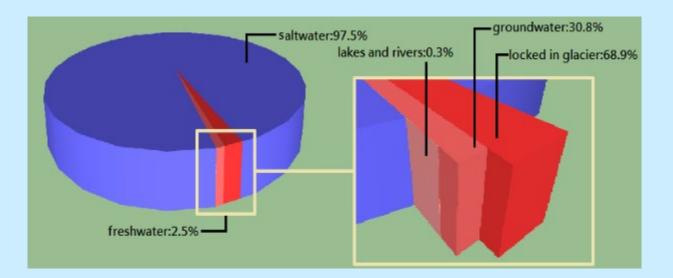
## Water Sources for Plants:

Plants Need Fresh Water

#### About 2.5% of water is fresh

- Plants use fresh water from:
  - Rain
  - Lakes and rivers
  - Snow that melts
  - Water in the ground
- Plants cannot use:
  - Salt water, from oceans and lakes
  - Frozen water
  - Wastewater if it is not treated
  - Polluted water

#### **Fresh water sources**



What is a drought?

# A drought is a shortage of water from rain and snow

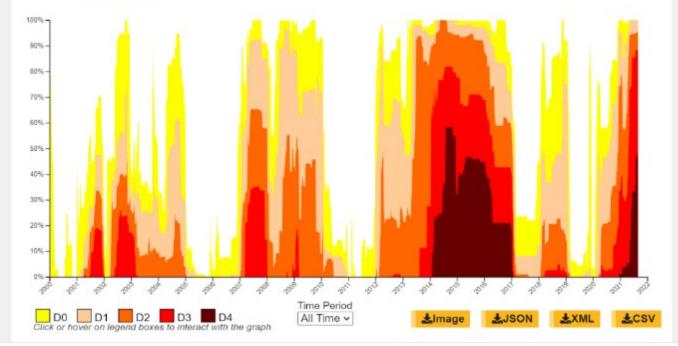
- During a drought we have less water available for people, animals and plants.
- The chart shows changes in California drought conditions from 2000 to 2021.
- Darker areas on chart are times with most extreme drought conditions.

## California areas affected by drought are increasing

2000 - Present (Weekly) 1895 - Present (Monthly) 0 - 2017 (Yearly)

Explore Historical Drought Maps

The U.S. Drought Monitor (USDM) is a national map released every Thursday, showing parts of the U.S. that are currently in drought. The USDM relies on drought experts to synthesize the best available data and work with local observers to interpret the information. The USDM also incorporates ground truthing and information about how drought is affecting people, via a network of more than 450 observers across the country, including state climatologists, National Weather Service staff, Extension agents, and hydrologists. Learn more.



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## Video: Introduction to Drought

- Drought Map: August 2021 (U.S. Drought Monitor)
- Dark Red Areas: Extreme Drought

