

# Conserve Water for Food

## Animations

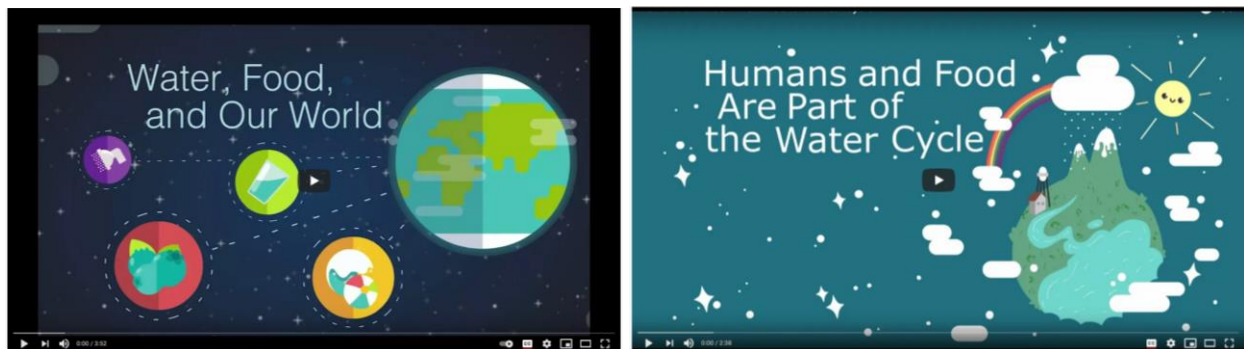
### Background

The availability of fresh water for irrigation of edible food crops is strained due to human demand and climate change. Increases in the human population increase demand for agricultural water as well as water used for other purposes including drinking, hygiene, recreation, and energy. Ground water resources are declining, and surface water (lakes, ponds, streams) contamination from human activity further limits freshwater supplies that can be used for agriculture. Climate change impacts the quality and availability of freshwater due to more frequent and prolonged drought or flooding in different geographical regions as well as rising sea levels that can lead to intrusion of salt water into freshwater resources.

Consequently, the reuse of water from nontraditional irrigation water sources (e.g., recycled water) has become a priority to ensure the security of agricultural water and the sustainable production of food. Because water can serve as a transmission vehicle for disease agents and pollutants, nontraditional irrigation water sources must be evaluated for the presence of biological and chemical contaminants and then treated accordingly to protect public health.

### Animations

Two web-based animations (<https://conserve.nmsu.edu/>) developed by New Mexico State University Innovative Media and Extension provide overviews of sources, use, and safe reuse of water with emphasis on the importance of water for irrigation of food crops.



- **Water, Food, and Our World Animation**  
<https://www.youtube.com/watch?v=ShYjTA-2sVk> (3 minutes, 52 seconds)  
 This animation provides an overview of the sources, types, and uses of water. The animation also addresses the need to conserve and appropriately reuse water for food production due to increases in demand and shortages of clean water. Research efforts underway to address these challenges are presented.
- **Humans and Food are Part of the Water Cycle Animation**  
<https://www.youtube.com/watch?v=-Q0NmSugRVo> (2 minutes, 38 seconds)  
 This animation provides an overview of historical and current water uses for irrigation of food crops. The animation addresses the water cycle, water sources, and water recycling for sustainable agriculture.

## Education Content Standards Supported

- **Science (Next Generation Science Standards)**
  - 3-ESS3-1. Earth and Human Activity, Crosscutting Concepts, Connections to Nature of Science
  - 4-ESS3-1. Earth and Human Activity, Disciplinary Core Ideas
  - 3-5-ETS1-2. Engineering Design, Crosscutting Concepts, Influence of Engineering, Technology, and Science on Society and the Natural World
  - 5-LS2-1. Ecosystems: Interactions, Energy, and Dynamics, Crosscutting Concepts, Systems and System models
- **Social Studies**
  - Geography 4-5a: Students will apply knowledge of topography, climate, soils, and vegetation ... to understand how human society alters, and is affected by, the physical environment.
- **Health**
  - Standard 1.3: Describe ways in which a safe and healthy ... community environment can promote personal health.
  - Standard 1.3: Describe ways to prevent communicable diseases
  - Standard 2.5: Describe ways technology can influence personal health.

## Learning Objectives

The educational resources support cross-curricular instruction on issues surrounding the availability and safety of environmental water needed for food production. The resources will support student understanding of the following:

1. Water resources are limited and must be protected to assure safe supply for food production.
2. Human activity can negatively impact water resources through overuse and contamination.
3. Human activity can positively impact water resources through treatment prior to and after use.
4. Scientific inquiry and policy shape societal practices around obtaining and using water.

## Lesson Essential Concepts

1. Water is essential for human wellbeing and is used for many purposes including drinking, food production, hygiene, energy production, recreation, and transport.
2. Water is obtained from the environment and includes saltwater and freshwater sources. Freshwater is critical for food production.
3. The availability and safety of freshwater supplies for agriculture are strained due to human demand and drought.
4. Environmental water is cleaned prior to and after use to protect human and environmental health.
5. Scientific studies are conducted to inform the needs and strategies to provide for safe water.
6. Actions by scientists, society leaders, and all individuals can impact the safety and availability of water needed for agriculture.

## Recommendations for Use of Educational Materials

It is recommended the students view the animations prior to use of the other CONSERVE educational materials in order to gain a broad understanding of the major concepts surrounding water use and reuse to support societal needs.

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