Introduction

In this series of 3 videos, Emerson Worthington interviews her father, Woody Worthington, who is the operations manager for Bently Ranch in Minden, Nevada.

View or download videos [online](https://www.youtube.com/playlist?list=PLGdlCTs4dQTdFThAVQn_yZYcp_8ZMbTLf) at: <https://www.youtube.com/playlist?list=PLGdlCTs4dQTdFThAVQn_yZYcp_8ZMbTLf>

Video 1: Using and conserving water in agriculture (2:25)

Video 2: Irrigation tools in production agriculture (2:26)

Video 3: What is a ranch manager? (1:43)

These videos support the following lesson plans in this unit:

* Relationship of Snowpack and Water Supply
* Importance of Water to Agriculture
* Irrigating Desert Land
* Conservation Aware

Grade Level(s)

3 - 5

Estimated Time

10 minutes per video

Purpose

Students will be able to understand the challenges of growing food in different ecosystems, how advancements in technology and engineering allow farms to conserve water, methods of large scale farming, and careers in food and agriculture.

**Materials**

* Videos 1-3
* Student worksheets to accompany each video

Instructions

In this document you will find a set of comprehension questions for each of the videos and an accompanying answer sheet. It is suggested that the teacher reviews the questions with the class before watching a video, so they can be active listeners during the video clip. Students may write answers to the questions and then watch the video again to go over the answers. You may also need to stop at various points throughout the clip to allow time for students to process what they are hearing and complete the worksheet.

Educational Standards Addressed

**Nevada Academic Content Science Standards/Next Generation Science Standards**

5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

Nevada Academic Content Standards for Social Studies

SS.4.24. Examine how and why Nevada’s landscape has been impacted by humans.

SS.4.25. Analyze how technological changes have impacted the environment and economy of Nevada.

**National Agricultural Literacy Outcomes**

T1.3-5b Explain how the interaction of the sun, soil, water, and weather in plant and animal growth impacts agricultural production.

T1.3-5e Recognize the natural resources used in agricultural practices to produce food, feed, clothing, landscaping plants and fuel.

T4.3-5b Describe how technology helps farmers/ranchers increase their outputs (yields) with fewer inputs (less water) while using the same amount of space.

T4.3-5d Provide examples of science being applied in farming for food, clothing, and shelter products.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bently Ranch video series: *Using and Conserving Water in Agriculture*

1. What does Bently Ranch do?

2. Why is water so important to Bently Ranch?

3. What four tools does the ranch use to conserve water? Provide a short description of what
 those tools do or how they help.

 a.

 b.

 c.

 d.

Bently Ranch video series: *Using and Conserving Water in Agriculture*

ANSWERS

1. What does Bently Ranch do?

 The Bently Ranch raises grass fed cattle, grows grain for animals that then

 feed humans, and they have a composting operation that provides fertilizer

 for the crops.

1. Why is water so important to Bently Ranch?

 Water is important to the Bently Ranch, so they can raise their crops and

 animals and because they live in the high desert it is important that they use

 their water efficiently.

What four tools does the ranch use to conserve water? Provide a short description of what

 those tools do or how they help.

 a. Soil Management: Soil holds water and nutrients for crops and the compost

 fertilizer that brings nutrients to the plants.

 b. Efficient Irrigation Equipment: to get water to the crops in the most useful

 and efficient way.

 c. Technology: Used to test samples and the crops, and by using a phone to

 turn the water on and off and to regulate the amount.

 d. Water Quality: Making sure the water is clean when it gets to the crops.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bently Ranch video series: *Irrigation tools in production agriculture*

1. Where does the water come from that Bently Ranch uses for the animals and crops?
2. What determines the method of irrigation that the ranch uses?
3. Explain the three methods of irrigation that the video showed.

	1.
	2.

1. How has science and technology improved the center pivot irrigation method?
2. How did the invention of the wheel line irrigation system improve from the pipe or hand line system?

Bently Ranch video series: *Irrigation tools in production agriculture*

ANSWERS

1. Where does the water come from that Bently Ranch uses for the animals and crops?
The water comes down from the Sierra Nevada Mountains and flows into streams and rivers. From there, canals and ditches transport the water across the valley. The ranch diverts their portion of this water to various parts of their property for use.
2. What determines the method of irrigation that the ranch uses?

The method of irrigation is determined by cost of the system, what crops will

be irrigated, and the type of soil.

1. Explain the three methods of irrigation that the video showed.
	1. The first method shown was center pivot irrigation where there are long tubes with sprinklers on the ends of the tubes that then spray water onto the crops.
	2. The second method was wheel line irrigation where pipes with sprinkler heads are moved across a field which are attached to wheels with a motor that turns the wheels.
	3. The third method of irrigation that is used on the ranch is flood irrigation. This where water is moved across a field with water coming out of a ditch or canal using a gate system to regulate the amount.
2. How has science and technology improved the center pivot irrigation method?

Engineers have found that by dropping the pivot spray nozzles closer to the ground it helps to reduce water lost through evaporation.

1. How did the invention of the wheel line irrigation system improve from the pipe or hand line system?

The invention of the wheel line system of irrigation allowed farmers to reduce the manual labor needed to move pipes by hand every few hours across a field.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bently Ranch video series: *What is a ranch manager?*

1. What jobs does Mr. Woody perform as a ranch manager?

2. What were the school subjects that help Mr. Woody most in his current job?

3. What is Mr. Woody’s favorite part of his job?

Bently Ranch video series: ***What is a ranch manager?***

ANSWERS

1. What jobs does Mr. Woody perform as a ranch manager?

Mr. Woody helps provide safety protocols for the ranch. He is involved in marketing and sales, and he does the purchasing of the irrigation equipment.

1. What were the school subjects that help Mr. Woody most in his current job?

The school subjects that helped Mr. Woody the most were science with learning about soil, math when it comes to the purchasing of irrigation equipment, and English and Español when it comes to communicating with other people.

1. What is Mr. Woody’s favorite part of his job?

Mr. Woody’s favorite part of his job is working with so many different people in the different industries and working on a ranch that cares so much about helping the environment.

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