

Activities

Chapter 1 Brief History of Agriculture Activity

Have students discover what types of agriculture are grown or raised locally.

Chapter 2 Importance of Soil Activity

Soil/feel texture test

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/?cid=nrcs142p2_054311

Chapter 3 Soil Fertility and Plant Nutrition Activity

Measuring soil pH

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051574.pdf

Chapter 4 Tillage and Cropping Systems Activity

<https://www.agclassroom.org/teacher/matrix/lessonplan.cfm?lpid=82>

Interest Approach – Engagement

Find historical photos or videos from the Dust Bowl. Introduce them to this disaster in our nation's history.

Examples of short videos include Black Blizzard or Dust Bowl- A 1950's Documentary.

<https://www.youtube.com/watch?v=Ep7-7x2sp8Y>

<https://www.youtube.com/watch?v=fJMidfqiNio>

What Caused the Dust Bowl?

<https://www.youtube.com/watch?v=YQXhtjB5M2E>

Prompt students to share their thoughts about the impact that these events had on our natural resources, specifically soil and water. Facilitate a discussion that leads students to discuss their thoughts about how farmers can negatively and positively impact the quality of these resources.

Summarize the discussion and introduce the lesson informing students they will be learning about conservation practices used in agriculture to preserve the soil and allow farmers to continue to provide our food and fiber for years to come.

Chapter 5 Soil Erosion and Conservation Activity

How do farmers reduce the environmental impacts of agriculture?

Divide students into groups and assign each group one of the following conservation practices:

Crop rotation

Filter strip

Cover cropping

Contour farming

Conservation tillage

Habitat preservation

Any other conservation techniques that interest students

Have student groups research their conservation practice to answer the questions on the Conservation Practice Research Guide. The following websites are good resources:

Minnesota Department of Agriculture Conservation Practices

You can also do a search for your own state's conservation practices.

USDA Natural Resources Conservation Service Conservation Practices

Have students develop a poster to illustrate the practice and how it benefits the environment and share this information with the class.

Chapter 6 Introduction to Irrigation Activity

Demonstrate how a Scientific Irrigation Scheduling (SIS) works for the irrigation process.

Visit a local farm to discuss methods of irrigation used.

Chapter 7 Hydroponics Activity

Build a Hydroponic System

As illustrated by Dr. Brian Waters, who is an assistant professor at the University of Nebraska-Lincoln, choosing to build a system to illustrate concepts through hydroponics activities takes a lot of dedication and patience, but is well worth the effort. Assign different sections to groups of students, allowing them to build separate parts of the whole system, eventually connecting the entire project. Student groups should then individually present their parts of the project from the beginning through the final steps.

Chapter 8 Organic Production Activity

Watch a movie such as FARMLAND: GMOs and Organic Agriculture

Chapter 9 Introduction to Plant Science Activity

Weed Identification Lab

Weeds are defined as any plant growing where it is not wanted. Virtually any plant depending on location is considered a weed. Weeds are naturally strong competitors. There are approximately 8,000 species of plants that behave as weeds; of those only 200 to 250 are major problems in cropping systems world wide. Weeds must have a unique biology in order for them to become a major pest. Most agricultural weeds have been found to possess one or more of the following characteristics: abundant seed production, presence of vegetative reproductive structures, and the ability to become spread easily and in large numbers. Weed management in cropping systems is a

constant challenge faced by farmers. Competition between weeds and crops for limited resources causes an overall yield loss of about 12% annually. In the United States this yield loss costs producers over \$15 billion. Proper weed identification is essential for maximum weed control. There are many different forms of weed control from chemical herbicides to tillage and the use of invertebrate weed seed predators. No matter which weed control tactic you choose, correct weed identification is needed. Some chemical herbicides that kill grassy weeds, for example, Poast (sethoxydim) will not control yellow nutsedge which is often mistaken for a grass.

Materials:

- 36 pots (three plants per weed species)
- Potting soil
- Water
- Print out fact sheets for 10 weed species
- Seeds from each of the 10 weed species
 - o Yellow nutsedge
 - o Giant foxtail
 - o Large crabgrass
 - o Velvetleaf
 - o Common lambsquarters
 - o Common cocklebur
 - o Common ragweed
 - o Wild carrot
 - o Common burdock
 - o Sheperd's-purse

Procedure:

1. Show the students the two example weed species provided. Point out unique characteristics of each that students should use to identify these weeds.
2. One station will be setup for each of the weed species. Students will be able to examine vegetative, reproduction and flowering plant parts. Each station will also have a basic biology information card that will assist the students in answering the Weed Identification Activity Sheet.
3. Students will move from station to station examining each weed species identifying unique characteristics and making drawings of important characteristics.

Analyzing Results:

Students should complete the Weed Identification Activity Sheet

Chapter 10 Cereal Grains Activity

Engage students by:

- Discussing the cereal crops grown locally
- How many cereal grains are grown in your state?
- Once a farmer produces the grain, where does it go next?
- I saw a suggestion to play "Pit" to demonstrate how agricultural commodities are traded

Chapter 11 Oilseeds Activity
Kentucky Soybean Board
<http://www.kysoy.org/education/>

Chapter 12 Forage Crops Activity
Make Your Own Silage
<https://www.sciencelearn.org.nz/resources/2005-make-your-own-silage>

Chapter 13 Fiber Crops Activity
You Tube Video: The Story of Cotton
https://www.youtube.com/watch?v=AAUQNMldp_Y

Chapter 14 Vegetable Crops Activity
University of Minnesota Extension- Commercial Fruit and Vegetable Production
<https://www.extension.umn.edu/garden/fruit-vegetable/>

Chapter 15 Fruits and Nuts Activity
University of California – Fruit & Nut Research & Information Center
<http://fruitsandnuts.ucdavis.edu/datastore/>

Chapter 16 Sugar Crops Activity
Amalgamated Sugar Company – How Sugar is made from Sugarbeets
<https://www.youtube.com/watch?v=TDSe-1pdwhY>

Chapter 17 Specialty Crops Activity
Review the tables within the chapter and discuss specialty crops grown locally. Visit a farm where specialty crops are grown. Visit a farmers market.

Chapter 18 Introduction to Animal Science Activity
<https://communities.naae.org/thread/2415>

Chapter 19 External Anatomy of Farm Animals Activity

Have students use blank diagrams of each animal to copy down the different anatomy parts as they learn about them. Visit a local farm so students can see and identify the different parts on live animals.

Chapter 20 Beef Cattle Industry Activity

Visit a local beef operation; Talk with a rancher; Discuss forage resources and pasture management.

Chapter 21 Dairy Cattle Industry Activity

Virtual field trip to a Dairy farm <https://www.discoverundeniablydairy.com/virtual-field-trip>

Discuss environmental concerns

Chapter 22 Milk Activity

Visit a local dairy, dry milk processors facility, cheese production

Discuss variety of milk sources worldwide

Make cheese

Chapter 23 Swine Industry Activity

Visit a local swine operation

Visit a local university and observe a carcass grading class

Local grocery stores carry a variety of retail meat cuts

Chapter 24 Sheep and Wool Industry Activity

Research different breeds of sheep.

Shearing demonstration through county extension or 4-H or local producer

Chapter 25 Poultry Industry Activity

<http://www.uspoultry.org/>

Chapter 26 Eggs Industry Activity

Hatch chicks in the classroom

Chapter 27 Goat Industry Activity

Invite a veterinarian or sheep producer into your classroom. Have him or her bring in equipment used to treat, handle, or breed goats. Lay the equipment on tables and have students try to guess what each piece is and its use.

Chapter 28 Horses Activity

Have a farrier visit with tools and demonstrate.

Chapter 29 Aquaculture Activity

Visit a local fish hatchery

https://idahoptv.pbslearningmedia.org/resource/pbs_org14_mfisha_sci_2/marine-fisheries-aquaculture-for-educators-activities/#.W18z_tJKjb0

Chapter 30 Issues in Agriculture Activity

Engage students in a round table discussion about the most current agricultural issues

<http://www.gracelinks.org/blog/8417/looking-forward-top-10-issues-for-2018-in-food-and-farming>

Chapter 31 Career in Agriculture Activity

Discuss the variety of careers available in agriculture. Schedule speakers from the industry to discuss possible career paths with students