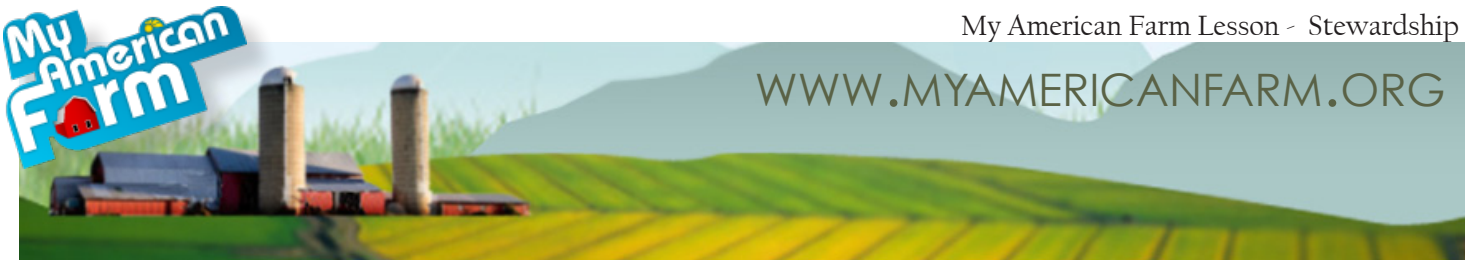

Educator Led Erosion Demonstration

Lesson Snapshot

Related "My American Farm" Game

Keys to Stewardship
Available at www.myamericanfarm.org

Grade Levels

- Third - Fifth

Content Areas

- Science, Social Science

Standards

NS.K-4.1, NS.5-8.1 Science as Inquiry

NS.5-8.3 Life Science (Populations and ecosystems) *Hit on ecosystems with processing questions.

National Science Education Standards, National Academies of Science

NSS-USH.K-4.1 Living and Working Together in Families and Communities, Now and Long Ago

NSS-USH.5-12.8 Era 8: The Great Depression and World War II (1929-1945)

National Social Studies and History Standards, National Council for the Social Studies

Objectives

By the end of this activity, the students will be able to:

- Explain how ground-cover can prevent erosion and loss of valuable top-soil.

Materials

- PVC Pipe – 4' long, minimum 4" diameter, cut in half length-wise to create 2 concave trays. As an alternative, you may choose to use seed trays or similar item.
- Soil
- Grass/ground cover – Seed can be used if you have time to grow your cover.
- Bucket – 1 for collecting runoff
- Watering can or hose – 1
- Blank note paper and pencil – 1 per student
- (optional) Computers and internet access – 1 per student or pair. This is only necessary if you wish to do the My American Farm game in class.

Preparation

- Prepare erosion demonstration models. Take each ½ of PVC pipe, or seed trays, and fill with soil. One tray should include only soil and the other should include soil with established ground cover, such as grass or clover. You may start this from seed, or use a section of groundcover from your yard. Just make sure the roots are fully extended through the soil. Fill a watering can with water. Set a bucket at the base of your 2 erosion trays to catch runoff when water is poured. You may set the trays on a table and hold at an angle, or have student volunteers hold the trays in front of class.
- Visit the My American Farm online game (www.myamericanfarm.org) to preview the "Keys to Stewardship" game.
- Review the lesson. There are a couple of places where you will see an asterisk (*). These are areas where you can choose to modify the lesson. To determine if you need to make these modifications, ask:
  - » How much time would you like to allocate for the activity?
  - » How would you like students to demonstrate what they've learned?

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Introduction

Set Context for the Activity

Step 1: Introduce "Agriculture"

- A-Z Agriculture: Have students find a working partner. Instruct each pair to pull out 1 sheet of blank paper and a pencil. Students are to list the letters of the alphabet down the left side of the paper, omitting q and x.
- Write the word "agriculture" on the board. Students are to quickly race to generate as many words as they can think of tied to agriculture using their A-Z list. They should try to find one word which starts with each letter. For example, they may write, "Apples, Bananas, Carrots, Donkeys, etc." Ask students to share after pairs have completed task.
- Share with students the following definition of agriculture:
  - » Agriculture refers to all of the industries and process involved in the production and delivery of food, fiber and fuel that humans need to survive and thrive.

Body

Main Content

Step 2: Introduce Stewardship and Set Historical Context

- Add the word "stewardship" to the board and share with students that stewardship means to care for something. Ask students, *"If we know the meaning of stewardship, what does 'stewardship of the land' mean?"* Students should respond that this means to care for the land.
- Share that agriculturists, farmers and ranchers, are good stewards of the land because they work hard to take care of soil, plants, and other natural resources.
- Make historical connection: Ask students, "*Who can share what was going on in the United States in 1929 and the 1930's?*" (The Great Depression) You can provide clues to students if they are unsure. *There were many things that caused this tough time for our country, and one of them was poor stewardship practices which left the soil dry and very loose. The wind began to blow and it blew away all of the good top soil. Farmers couldn't grow crops anymore and lost their jobs and land. Many of them left the Great Plains and moved west.*
- Stewardship today: *Now agriculturists are great stewards of the land, and they work hard to take care of our natural resources. Today we'll look at one way how!*

Step 3: Soil Erosion Demonstration

- Direct students' attention to the soil erosion models you have prepared.
- Clarify the definition of erosion, which in this case is the breakdown and runoff of soil.
- Ask students to predict (hypothesize) which tray will have the most erosion when water is poured on top.
- Have student volunteers hold tray 1, with no cover, at approximately a 30° angle.
- Place the collection bucket at the bottom to collect runoff.
- Have another student pour water from the watering can, starting at the top of the tray.
- Evaluate the amount of soil in the bucket after water has been poured.
- Repeat steps for tray 2, the soil with ground-cover. Remember to dump your bucket first, and use the same amount of water to keep the variables consistent.
- Process activity: Ask students, *"What happened? What did you notice? Should we accept or reject your hypothesis? Why did tray 2 have less erosion? How do you think farmers use this information to help steward the land?"*

Step 4: "Keys to Stewardship" Game

- At this point you may elect to have students play "Keys to Stewardship", available at www.myamericanfarm.org. Students can work individually or in pairs.
- Inform students that they will be jumping into a fun game, in which they will learn more about how

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farmers take care of the land, animals, and natural resources.

* You may choose to have students play this game before you arrive, after you have left, or at home with adult permission.

Wrap Up

Review, Assess, Challenge

Step 5: Review Relevant Concepts

- Direct students to turn to a partner and brainstorm ways that they can also be good stewards of the land at their home, school and community. Have pairs share ideas.

Step 6: Assess Learning

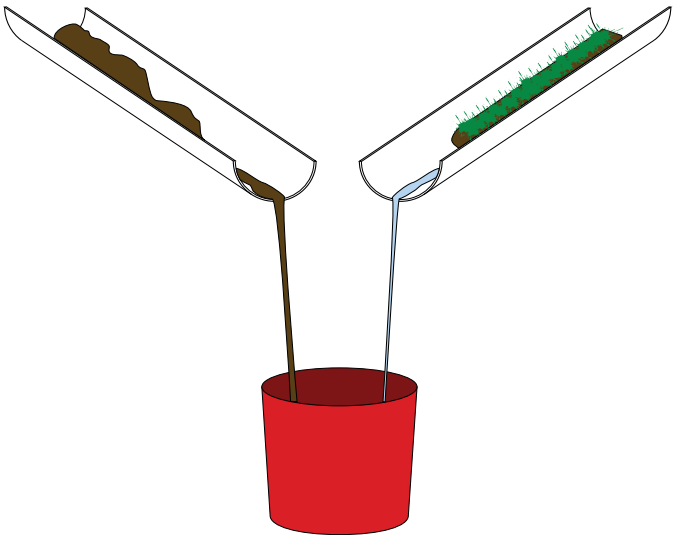
- Have students capture down a summary statement about the experiment in their notes. Students should state whether they accepted or rejected their hypothesis, what happened, and why they think it happened.

Step 7: Challenge

- Challenge students to become stewards of the land, just like good farmers and ranchers. Encourage students to look around for was that others are being stewards of the land, and develop new ideas from these examples.

Take-Home Enrichment

- Invite students to try this experiment at home with the help of an adult. Use a section of bare ground, and a section of grass-covered ground to evaluate erosion!



Teaching Notes

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