

Plants and Erosion

4th Grade

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References:

- CPS Curriculum Guide – 4th Grade Earth Sciences
- United Streaming,
<http://www.unitedstreaming.com/search/assetDetail.cfm?guidAssetID=7BA89C5F-BCDC-4320-8957-8C25E050FAE9> Erosion: Soil Erosion

Benchmarks:

ES-8 Students should be able to describe how wind, water and ice shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas producing characteristic landforms.

Objectives:

Students should see how water causes erosion and observe that plants reduce the rate of erosion that would otherwise occur.

Materials

- Long large trays or disposable foil pans
- potted soil
- potted plants with good root system
- water
- cups
- gloves
- goggles

Initial Observation/Demonstration:

The students have seen a DVD called "Strange Days on Planet Earth" episode 3. In it the annihilation of wolves has caused a chain reaction that has contributed to the erosion of one of the rivers in Yellowstone National Park. The concept that was lacking for the students was how the trees slowed down erosion. This led to the development of this lesson plan to illustrate how plants can prevent (slow down) erosion. As an introduction the students are told that they will be performing an experiment dealing with erosion. They are asked for a definition of erosion. They will be allowed to answer followed by definition of erosion. They will be asked the different causes of erosion. We will discuss how wind, water, and ice can all cause erosion. They will then be asked if plants affect erosion. Whether they say yes or no, they will be asked to defend their answer.

Initial Observations:

Students should observe soil with and without plant. Since the plants and soil will be in containers they will not realize the roots are holding the soil together in the pot with plants. The students may note pot volume, dampness of soil, looseness of topsoil, etc.

Procedure:

1. The students will be shown two pots: one containing a plant, and one containing soil only.
2. They will be asked which soil will erode faster if the same amount of water was poured on at the same rate.
3. Each student should write down the question along with his or her hypothesis in the journal. He or she will also record any observations made before making any changes.
4. The students will then take the plant and soil out of the pot/holder and place the plant and soil in the tray.
5. One cup of water will be poured on the soil. The other cup of water will be poured on the soil containing the plant.
6. Students will write down their observations.

Discussion/Summary:

Students should observe that the roots act net or web, trapping the soil and slowing down the erosion process. They should also notice that a fast pour will cause more drastic erosion. Additionally, students should be able to describe how plants help reduce erosion.