

Lesson Title: Target: Splash Erosion

Ohio Standards Connection:

Standard(s):

Benchmark(s): (grades 3-5)B Summarize the processes that shape Earth's surface and describe evidence of those processes.

Indicator(s):

Grade(4) 8 Describe how wind, water and ice shape and reshape Earth's land surface by eroding rock and soil in some areas and depositing them in other areas producing characteristic landforms (e.g., dunes, deltas and glacial moraines).

Lesson Summary: Students will demonstrate splash erosion and determine its impact on bare soil.

Estimated Duration: Class period

Background and Non-Point Source Pollution Connection-In splash erosion, falling raindrops break the bonds that hold soil particles together, and carries them a short distance. These particles, which are no longer bonded to other particles, are then carried away much more easily by water flowing over the soil surface.

Erosion can take several different forms. Eroded soil can be a non-point source pollutant and carry other pollutants along with it. In order to prevent erosion, it is important to identify what kinds of erosion are occurring. Splash erosion dislodges individual soil particles, making them more vulnerable to being carried away by runoff. Thus, splash erosion is often one of the first steps in other kinds of erosion as well.

Instructional Procedures:

Have each group of students do the following:

1. Place the Splash Erosion Target on flat surface
2. Place 1 mL of soil in the center of the target. Flatten out the soil until it fills the center and is even height on the target.
3. Fill the eyedropper with water.
4. Stand ruler or yard stick up vertically, with one end in the center of the Splash Erosion Target.

5. Hold the eyedropper against the ruler or yardstick with the tip pointing down. Make sure that the yardstick is vertical so that drops from the eyedropper will fall on the soil.
6. Drop 10 drops of water directly onto the soil sample. If a drop misses the soil, continue until 10 drops hit the soil.
7. Have the students record in their detective logs the number of water drops containing soil in each zone. Have them draw line graphs to show their results.
8. Using a magnifying glass, count the number of soil particles in two drops of water from each zone. Record the numbers.
9. Discussion Questions:

Question What did you observe? How did the soil particles move from the center of the target?

Answer The soil particles were picked up by the water droplets and carried away with them.

Question Which zone contained the most number of water drops with soil particles? Why?

Question Which zone contained the least number? Why?

Question What would happen if the water drops were larger?

Answer Splashes would travel further.

Question How might you prevent splash erosion?

Answer Plant vegetation to break up the fall of water. Cover the soil with mulch (straw, wood chips, grass clippings).

Extensions:

To adapt this activity to younger grades, omit the graphing chart. Also, you may want to do this activity as a demonstration.

For older students, you may wish to test the effectiveness of the splash erosion controls. How might these controls be implemented on cropland? on construction sites?

Materials and Resources: (per pair of students):

- 1 splash erosion target (laminated or covered with wax paper),
- 1 mL of dry soil
- eyedropper
- water
- magnifying glass
- ruler or yard stick

Vocabulary:

Adapted from Catfish Creek Conservation Authority. "Soil Conservation-Your Decision"