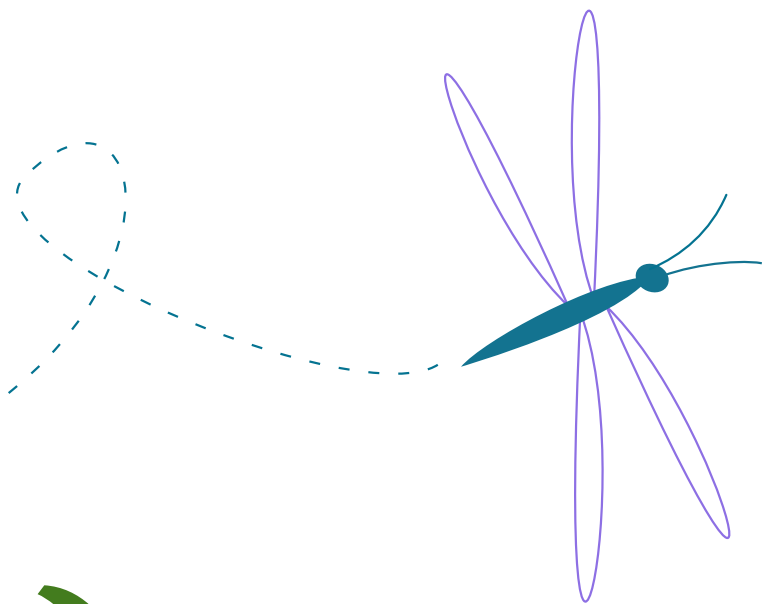


SOIL and WATER SCIENCE





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* Words that are defined in the glossary are in bold the first time they appear in the text.



YOUTH MANUALS: SUGGESTIONS AND ANSWERS

ACTIVITY: SPLASH EROSION

BIG PICTURE

Splash erosion starts the erosion process. Splash erosion is caused by the impact of a raindrop dislodging soil particles and creating a small crater in the soil. The detached soil particles are vulnerable, and water easily moves them. Splash erosion refers to the impact of one drop of water. Many water droplets collectively moving through a watershed cause runoff. Erosion is the process of soil being transported by water.

Surface runoff occurs when the rate of rainfall is faster than the rate that water soaks into the soil (infiltration). Surface runoff often carries loosened soil particles down a slope. Rainfall can cause soil particles to splash up to 2 feet high (vertically) and 5 feet away (horizontally) from their original position on level ground. When splash erosion occurs on a hill, more soil moves downhill due to gravity. Other factors such as slope and wind affect the direction and amount of erosion that occurs after particles have been displaced.

The impact of a raindrop begins the erosion process. When surface runoff occurs, detached particles are transported from their original place. So the goal of soil conservation is to stop detachment and transport. Soil residue slows these processes and helps hold soil in place.

FACILITATING THE ACTIVITY

Youth might find the picture helpful as they set up this experiment.

ESSENTIAL QUESTIONS

Apply: How might soil erosion be reduced?

- Youth might suggest cover crops, grassed waterways, or not farming highly erodible lands.

Generalize to Your Life: Why is it important to prevent soil loss?

- Healthy soil is required to produce the food and fiber that people need. A lack of adequate food can cause hunger and political instability.

NGSS: ESS2.A, 5-ESS2-1, 4-ESS2-1

Success Indicator: Youth can describe how splash erosion occurs.

ACTIVITY: WATER EROSION

BIG PICTURE

Erosion is the wearing away of land surface by rain or irrigation water, wind, ice, or other agents that abrade, detach, and remove soil from one point on the earth's surface and deposit it elsewhere. In the United States the cost of water and wind erosion each year is estimated in billions of dollars, because loss of the upper soil layer causes reduced productivity and soil pollution of water and air. Soil erosion is a global problem. It can contribute to instability in regions that are unable to produce adequate food and fiber.

Agricultural fields and gardens need healthy soil to be productive. The loss of topsoil reduces productivity. Soil that is left uncovered is more susceptible to erosion than soil that is covered. Therefore no-till practices and cover crops are recommended to retain soil. Youth in the 4-H Soil and Water Science project learn about conservation practices in other activities. In this activity, we focus on understanding how erosion occurs.