WHAT'S IN YOUR WATER?
THE FARM

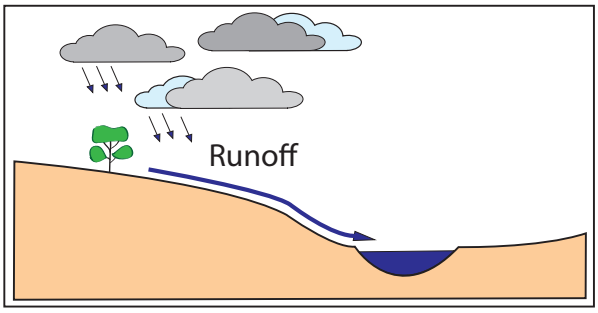
TEACHER'S GUIDE

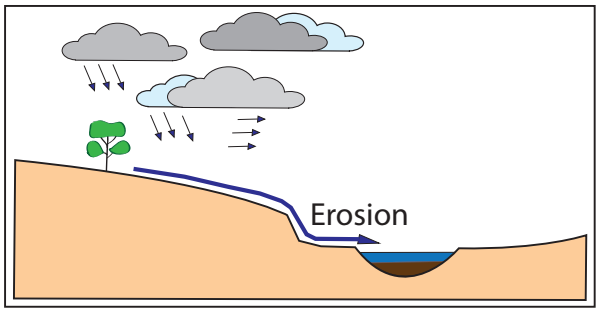
Soil is one of the most valuable resources in Iowa, but erosion can transport this sediment from the land into nearby streams, rivers, and lakes. Nutrients such as nitrogen and phosphorus can also be picked up by rainwater and run into nearby water bodies, stimulating growth of algae here and downstream.

This activity will demonstrate erosion on bare soil, and how residue and plants slow erosion.

MATERIALS NEEDED:

- *3 shallow boxes - aluminum foil roasting pans or shoe boxes lined with garbage bags*
- *soil*
- *small twigs, leaves, or mulch (residue)*
- *piece of sod*
- *watering can*
- *3 measuring cups*
- *a wooden board (2x4 or something similar) to place under one side of the tray to create slope*





DIRECTIONS:

1. Prepare three aluminum foil roasting pans or lined shoe boxes by cutting a 1 inch notch in the end.

2. Add bare soil to all trays. Mound soil underneath so that it slopes toward the middle of the pan. (This will help keep water from pooling on the sides.) Do this with all trays.

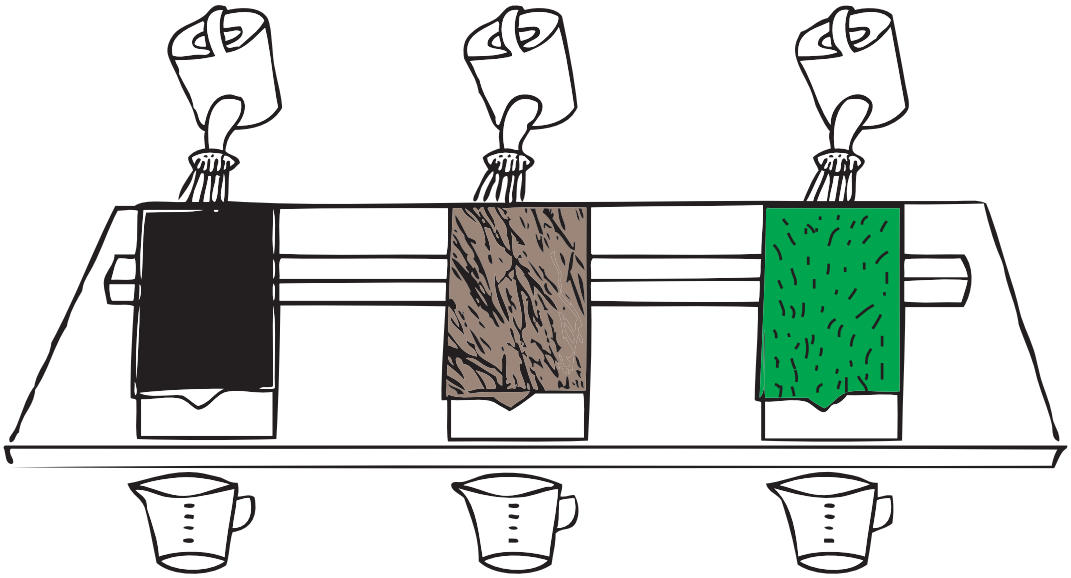
3. Fill one pan with only soil to represent bare surface; put twigs, leaves, and/or mulch atop the soil in the second; and put sod atop the soil in the third. Wood blocks or books can be used to slope the pan. Set up measuring cups at the outlet of each tray to collect runoff water.

   *Make sure that when you are adding the soil, twigs/mulch, and sod that each tray is filled to the lip. Otherwise water will pool before it flows through the notch.

4. Introduce the following terms:

   Runoff – When water from precipitation flows over the surface of the land. Runoff water can pick up and carry pollutants with it.

   Erosion – The movement of soil by wind or water.



5. Pour water downslope on the bare soil. Have students discuss their observations.

6. Pour water on the residue-covered soil. Again, have students discuss their observations.

7. Pour water on the sod-covered soil. Once again, have students discuss their observations.

8. Have students compare and contrast what happened on each land surface. What did the land look like when rain was falling? What did the runoff water look like, and how much was there in each container? It is important for students to understand that when soil is washed away, not only is less soil left in place, but the resulting soil (sediment) in runoff water pollutes our lakes, streams, rivers, and eventually, the ocean. In addition, the runoff may contain excess nutrients applied to lawns, gardens, and crop fields, further polluting the water.