

/ Holding It All Together

/ You will need

- 3 x large plastic bottles (for soil containers)
- 3 x plastic bottle bases (for capturing run-off)
- Scissors
- String
- Water
- Soil
- Mulch
- Plant with existing root system
- Hot glue gun (optional)
- Plywood plank (optional)

/ Instructions

Step 1:

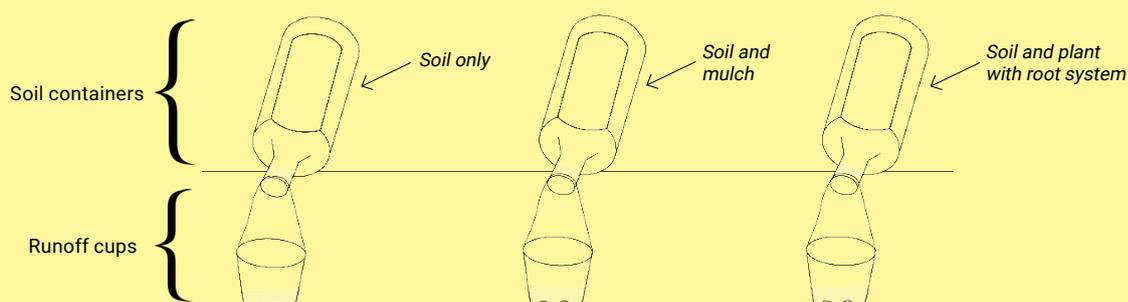
To make the soil containers, cut rectangular openings in the side of 3 x large plastic bottles. This opening should measure approx. 20 cm x 10 cm. Lay the bottles down with the cut out openings facing upwards. You may choose to hot glue gun or attach these bottles to a piece of plywood to keep them steady during the activity.

Step 2:

Each bottle will be filled with three different soil compositions. Fill the first with **soil only**. Fill the second with **soil and mulch**. Fill the third with a **plant that has an established root system mixed with soil**. These roots should be holding the soil together.

Step 3:

To create the runoff cups, cut the bases off the 3 x plastic bottles (*refer to experiment diagram below for guidance*). Poke two holes in opposite top corners. Thread a piece of string through the holes and tie it off. This string will allow you to hang them over the mouth of the large bottles to capture the runoff. This runoff will be the results you will compare at the end of the activity.



A diagram of the experiment setup

Step 4:

Begin pouring water into the opening of each large soil bottle, one at a time. As you do this, ask your students to discuss what they think will happen.

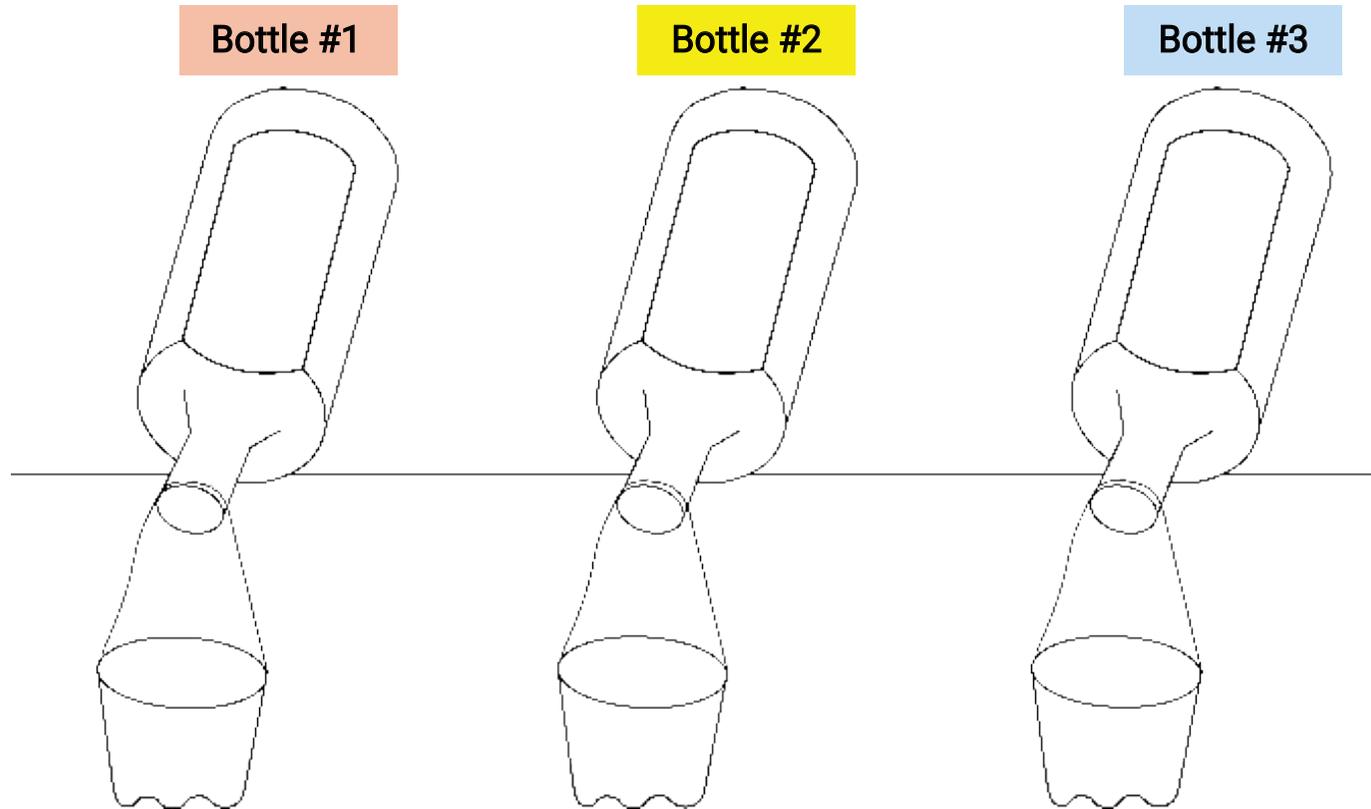
Step 5:

Compare and contrast the contents of each runoff container. Which has the water with the most dirt and particles? Which has the cleanest water? Why do you think this is? What does this tell you about preventing erosion and weathering?

Discuss the importance of soil, vegetation, and root systems in protecting soil from erosion and weathering.

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What did you observe at the end of the activity? Illustrate and label the contents of each bottle and their run-off containers.



Can you think of a reason why the run-off was different for each bottle? Explain why.

Bottle #1

Empty rectangular box for drawing and labeling the contents of Bottle #1.

Bottle #2

Empty rectangular box for drawing and labeling the contents of Bottle #2.

Bottle #3

Empty rectangular box for drawing and labeling the contents of Bottle #3.