



1. Fill the jar 2/3 full with water.
2. Add soil until jar is full. (Be sure to get some soil from all layers down to about 10 cm. deep).
3. Cap and shake the jar. Let sit for 10 minutes or more.
4. Observe the soil layers in the jar. Draw and label the layers you see (e.g., gravel, sand, silt, organic matter).

Activity 1 - Size of Soil Particles

Activity 2 - Life in the Soil

1. Spread a few trowels full of soil onto the plastic white sheet.
2. Look for living things. Use a hand lens.
3. Describe, count, and record everything found.

Activity 3 - Soil Profile

1. Describe the area and its use (flat, sloped, open field, wooded, cropland, pasture, etc.):
2. Within your study site, insert the soil auger straight into the soil all the way up to the marking. Gently pull the auger back out and carefully view your soil profile.
3. In the table below, list and describe each different layer according to its thickness and color (sandy, sticky, loose, hard, or rocky):

Thickness	Description	Color
(example 0 - 3 cm thick)	(decayed matter, loose, sandy)	(dark brown, blackish)

4. After you have shared your profile (while still in the auger) with the rest of the larger class, you may pull out the soil profile and examine each layer by feel. Is it sticky, hard or sandy/gritty? Describe the texture.

Hard Bargain Farm Environmental Center

Soils - form and function

School _____

Date _____

Group Number _____

Site Description _____



Soil Percolation

Begin, as a group, predict or hypothesize how much water will percolate into the soil.
Which site will allow the fastest percolation?

(b) Which will be slowest?

(c) Will any sites be impermeable? Why?

2. Perform the percolation test.

- Choose a flat, level spot & Clear away leaves, etc.
- Twist the can into the soil to sink it in the soil up to the 2 inch (5 cm) line. (If the ground is hard, do not bend the can. Just sink it as far as you can & hold it down firmly).
- HOLD a ruler inside the can along one edge. The **TIMER** and the **Measurer** should get ready. Begin timing as the pourer pours the water into the can. The measurer should measure the total amount of water that was poured into the can. **RECORD** this in the table column marked **BEGINNING WATER LEVEL**.
- Check the water level **AT LEAST** once a minute.
- If the water in the can has not drained within 10 minutes, stop timing. Measure the remaining water & **RECORD ENDING WATER LEVEL** with a **FINISH TIME** of 10 minutes.

Percolation Table

Time	Height of Water
0 min.	cm.
1 min.	cm.
2 min.	cm.
3 min.	cm.
4 min.	cm.
5 min.	cm.
6 min.	cm.
7 min.	cm.
8 min.	cm.
9 min.	cm.
10 min.	cm.

3. Conclusions:

a). How do your predictions compare with your results?

b). Do you think that your results are accurate? Why or why not? (think about the condition of the ground).

c). What do you think influenced the rate at which your water percolated through your site? (Recent rain, drought, etc.)

Activity 5 - Erosion

1. Make sure that each of the bins are at the same slope.
2. Ask a student volunteer to measure 1 liter of water into each of the three watering cans.
3. Assign a "rainer," and a "catcher." Make sure that each of the "Rainers" sprinkle their water from the same height over the bin and with the same velocity (angle of can).
4. **BEFORE YOU RAIN:** Students should make hypotheses or predictions about the following:
 - a. Which ground will have the most rain **RUNOFF**?
 - b. Which ground will have the most **SOIL EROSION**?
 - c. Which ground will have the least **RUNOFF**?
 - d. Which ground will have the least **SOIL EROSION**?
5. Begin raining.

6. Make observations about:

- a. Which ground did the rain begin pouring into the jar first?
- b. Which ground did the rain begin pouring into the jar last?

7. Were your hypotheses or predictions supported?

8. What were the reasons for the differences in the runoff & erosion?

9. If you were a farmer or a gardener, which ground would you prefer to have? Why?