



SOIL POUR-THROUGH

Time needed: 40 minutes

Water moves differently through different soil types. This can affect how plants grow in different soils; whether they can get enough water or too much water. How does water move through your soil?

SUPPLIES

2 or 3, 20 oz. clear soda bottles or tennis ball containers (top cut off and holes drilled in the bottom) - *Make certain a parent, 4-H volunteer, or teacher helps you with the holes.*

2 or 3 Clear cups marked with a sharpie with 1/4, 1/2, 3/4 and 1-cup measurements

2-3 Different soils, enough to partly fill each soda bottle container or tennis ball container

2-3 Plastic cups or measuring cups marked with a 1-cup line

1 clock or stopwatch

2-3 funnels - If you use soda bottles, cut them in half for a funnel. *Ask an adult for help with cutting.*

LET'S DO IT!

- To test the differences in water moving into the soil and moving through the soil, begin with clear soda bottles (or similar plastic containers) with holes drilled into the bottoms.
- Use soils collected from your backyard, park, woods, swamp, etc.
- Soil samples should be dry. To dry soil, lay them out on a tray on a sunny windowsill for a week or two.
- Put the same amount of soil (about 1-2 cups) into your bottles or tennis ball containers.
- Sit your containers on top of the cups with the measurements that show 1/4, 1/2, 3/4, and 1-cup.
- Add a funnel at the top of your soil filled containers.
- Fill your cup with water to the one-cup mark.
- Using the soil and water drainage sheet, write down a hypothesis about what you think will happen.
- Make a hypothesis about which soil water will travel through the fastest.
- Using a clock or stopwatch, pour water into your soil samples and observe how fast the water moves through the soil.
- After 30 seconds, observe how much water drained into the cup. Record your measurement on your work sheet.
- Continue observing the water drain through the soil. Measure at 30-second intervals until most of the water has drained.

TALK IT OVER

- Which soil drained the fastest? Which drained the slowest?
- What does the water look like from the drained soils?
- What happens if we use compacted soil?
- What if the soil is already wet? Can we change the structure of the soil? How?
- What is the relationship of water drainage in soil to plant growth?
- Compare the total water quantity that drained with the amount of water added.
- Which soil retained the most water after drainage stopped? Why?
- Which soil has the most total porosity?



FIGURE 1. Find 2-3 different soils. Pour water through them. What differences and similarities do you observe?

Soil and Water Drainage

Group Names: _____

Date: _____

Question: How does water drain through different soils?

Hypothesis: Which soil do you think water will drain through the fastest?

Collect Data:

Time	Type of Soil	Amount of Added Water	Amount of Drained Water	Difference (Amount of water held in the soil)
30 Seconds				
60 Seconds				
90 Seconds				
120 Seconds				
150 Seconds				
180 Seconds				
210 Seconds				

What if the soil was already wet? Would water drain faster or slower?

What does the drained water look like? Is it clear, murky? Why?

How will water drain through compacted soil? How can you compact soil?

What other questions do you have about soil and water drainage?

