

Hydrated Hydrogels Make Happy Plants!

Introduction:

Plants need the proper amount of water to grow. Not all soil types are able to hold water as well as others. This investigation is designed to test the ability of a soil to retain water. It is a simple percolation test. Follow the instructions and determine the differences in percolation for each of the samples.

Procedures:

- 1) Obtain 3 different 20 ounce soda bottles. They have been cut for you.
- 2) Place a piece of filter paper over each of the screw tops and attach it with a rubber band.
- 3) Label each bottle, both top and bottom, as Sample #1, Sample #2 and Sample #3.
- 4) Fill each container with soil. Each bucket of soil is labeled with sample #. Be careful to put the correct material in the correct container. (The amount is not extremely important but it must be consistent for all 3 samples.)
- 5) Record the exact amount of soil placed into each container on your data sheet.
- 6) Place the top (funnel section) of the soda bottle onto the bottom /base section
- 7) Using a graduated cylinder pour water into Sample #1. Continue pouring the water into the soil until you see the first drop come out of the bottom of the funnel.
- 8) Record the start time for sample #1
- 9) Record the total amount of water put into the sample.
- 10) Allow the water to flow out of the soil for 15 minutes.
- 11) Measure the amount of water that flowed through the soil.
- 12) Record the volume of water that passed through the soil.
- 13) Repeat steps 7-12 for samples #2 and #3. (To save time, as soon as Sample #1 begins to flow, record the time and start Sample #2. Then do the same for sample #3)

	Sample #1	Sample #2	Sample #3
Mass of Soil (g)			
Volume of Water poured into the soil (ml)			
Volume of water that passes through the soil in 15 minutes (ml)			
% of water that passed through			

Analysis:

- 1) Define percolation and explain why this would be important for plant growth.

- 2) Considering water as an important abiotic factor, which of the three samples would you select to use for your house plants? Support your answer with data from the experiment.

- 3) Look at your procedures. What are at least 2 areas you could identify potential experimental error? Explain what you did, why it could have caused error in your data. Finally, give suggestions on how you could modify your experiment to eliminate error.