

Experiment:

Which soil type drains water faster: sand, clay, humus?

Problem:

Rain Gardens are built so storm water flows from a parking lot (or other impervious surface) directly into the garden. Because of this, Rain Gardens will receive more water than a regular flower garden. The storm water in a Rain Garden should drain fairly quickly through the soil and not “pond”. Water drains more quickly through one type of soil compared to another. When selecting soil for a Rain Garden, which type of soil would be the best for fast drainage?

Question:

Which soil type drains water faster: sand, clay or humus?

Hypothesis: If we record the amount of time it takes for 1 dropper of water to drain through 1 test tube of each of the three different types of soils, then we can decide which soil type would allow water to drain quickly through the Rain Garden.

Materials:

- 1 sheet of newspaper
- 3 test tubes (same size)
- 1 test tube holder
- 1 plastic spoon
- 3 soils: clay, humus, sand
- 1 water dropper
- 1 container of water

Procedure:

Work in teams of two. (However, each student will turn in their own results, analysis and conclusion.)

1. Put 1 sheet of newspaper on the desk
2. Place 3 test tubes (same size) in test tube hold.
3. Put several spoonfuls of each soil on newspaper.
4. Fill one test tube halfway with sand.
5. Fill one test tube halfway with clay.
6. Fill one test tube halfway with humus
7. Adjust soil levels so all test tubes are equal.

Continued...

8. **Fill** water dropper with water.
9. One person looks at the clock (second hand) while other person empties one full dropper of water into the test tube of clay.
10. Time how long it takes the water to first reach the bottom of the test tube.
11. Record time on data table.
12. Do the same with test tube of humus. Record the time it takes one full dropper of water.
13. Do the same with the test tube of sand. Record the results.
14. Clean up:
 - Empty dirt into garbage
 - Place empty test tubes and spoons into container of soapy water provided.
 - Recycle newspaper
 - Wash hands and desk
15. Write the analysis and conclusion of your experiment below your Data Table.

Data Table

Soil Type	Time for water to drain through soil (seconds)
Clay	
Humus	
Sand	

Analysis: Using whole sentences, write a summary of your results below.

Conclusion: Write a sentence that states which type of soil allows water to drain through the fastest?