Part 2 **Soil Testing Activities**

Explore the texture, drainage, and particle density of different soils, and observe garden soil fauna.

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OBJECTIVES

- Learn about soil composition and particles which make up soil.
- Explore how you can determine soil types by soil texture tests.
- Examine organisms that live in the soil and learn about their role in the ecosystem.
- Discover that soil particles sediment out into different layers, based on size / density, when mixed with water.

MATERIALS

See each of the four science activities for materials lists.

PREPARATION

1. Prior to the lesson, organize soil samples. For each group of 4 to 6 students, prepare a container (such as a clear salad mix container) with 1 labelled ziploc bag each of mineral soil (eg. from an excavation site), pure sand, pure silt, and pure clay. Also include 2 "mystery" soil samples (labelled "A" and "B") filled with mixed soil.

2. Optional: Prior to the lesson, students can go on a soil hunt around the neighbourhood. Ask students to bring in soil samples from a wide range of areas, including subsoil from a building excavation site (if possible). Compare colours, textures, and smells.

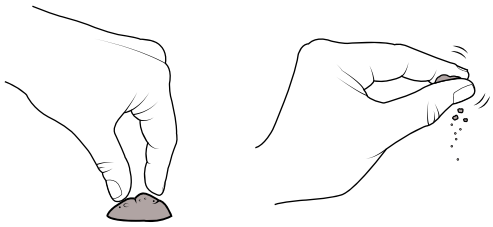
SCIENCE ACTIVITY 1: ***SOIL TEXTURE TEST***

» *determine relative proportions of clay, silt, sand from a given soil sample*

MATERIALS

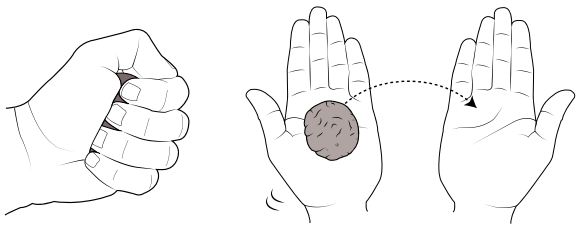
- Various soil samples, including mystery "A" and "B" soil samples, pure sand, silt and clay if possible (beach sand or sand box sand, ceramic clay, silt from stream or river)
- Water

General Characteristics	
sticky	clay soil
gritty	sandy soil
smooth	silty soil
crumbly	loam soil – looks and feels like a crumbly chocolate cake (presence of clay, sand and silt particles)



1. Grit Test

Students can do this test first with known sand sample so that students can get an idea of how pure sand feels, then they will be able to detect smaller percentages of sand in mystery soil samples. Place small amount of soil between thumb and forefinger and rub together. Does the soil sample feel gritty or grainy, like sand? If so, then your soil sample is a sandy soil. If your sample does not feel gritty, you have a soil made up of smaller particles such as silt or clay.

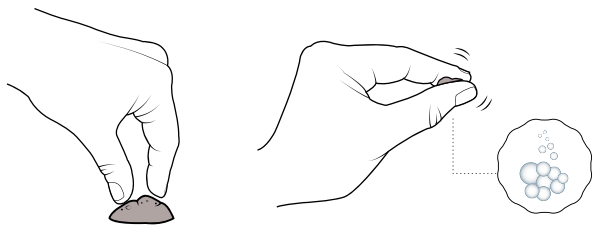


2. Ball Test

This can first be done with a pure clay sample for reference. Squeeze your soil in the palm of your hand. If it forms a ball then you have a soil sample that has silt and clay content, with little sand. If you can gently toss the ball from hand to hand and it stays together, your sample has a high clay content.

3. Ribbon Test

Do this test first with a known clay sample (ceramic clay) so that students can get an idea of how pure clay feels, and then they will be able to detect smaller percentages of clay in soil samples. Place a tbsp or so, of damp soil into the palm of your hand. Add a few drops of water and try to make a long ribbon or rope. The stronger your ribbon is, the higher the clay content. If you can make a long, strong ribbon you have a clay soil. If your ribbon falls apart or you cannot make a ribbon, then your soil sample has very little clay in it.



4. Soap Test

Place a small amount of soil between your thumb and forefinger. Rub together and if your soil sample feels slightly slimy, or soapy, then it has a lot of silt in it. If it does not feel soapy, then it has more clay and/or sand particles.

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Soil Particles

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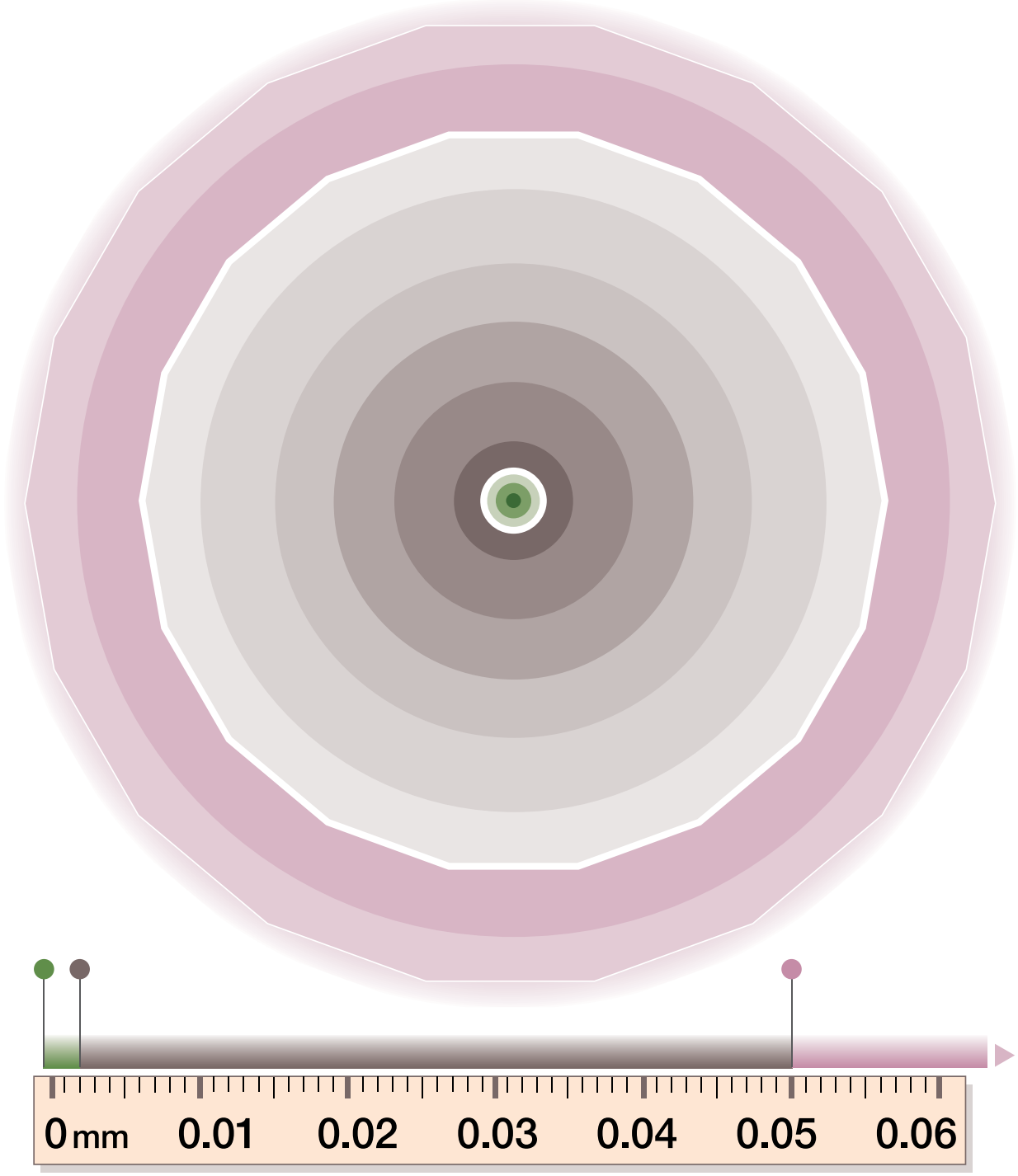

clay <0.002 mm diameter

silt 0.002 to 0.05 mm diameter

sand 0.05 to 2 mm diameter

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Original poster concept credit: Catriona Gordon

Soil Texture Tests

name: _____

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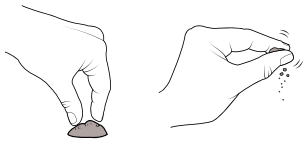
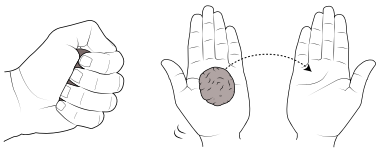
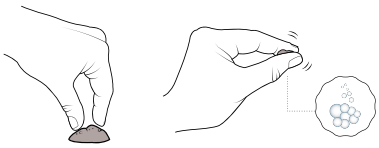
Soil Test	Comments
1. Graininess 	
2. Ball Test 	
3. Ribbon Test 	
4. Soap Test 	
Soil Type:	

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