



HERE'S A LESSON WORTH TEACHING

Lesson # 5 Soil Separation

Appropriate for All Ages

SUPPLIES NEEDED

Three clear plastic bottles with covers (such as water/juice containers, at least 400 ml)

Water

Potting soil

Sand

Soil from around your yard

OVERVIEW

Soil is made up of different particles that are categorized into three groups – sand, silt, and clay. Sand has the largest particles and clay has the smallest particles. Most soils are a combination of the three groups. The relative percentages of sand, silt, and clay are what give soil its texture.

In this activity students are asked to observe three different soil types (potting soil, local soil and sand) that have been mixed with water and allowed to settle. In the demonstration students will be able to see the different types of particles that make up the soil.

PROCEDURE

Step 1: Mark each bottle with type of soil. Fill each bottle about 1/3 to 2/3 full of soil. Place potting soil, local soil and sand in separate bottles. (A funnel or a paper cone may make it easier to get the soil in the bottles).

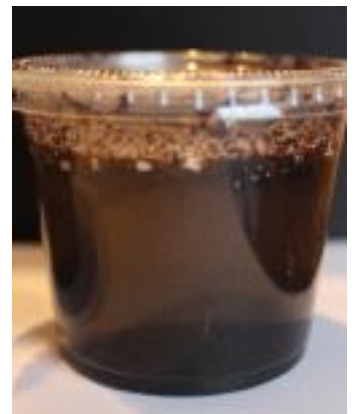
Step 2: Add water to near the top of each bottle. Place caps on the bottles, shake the contents well (for a few minutes), and place the bottles in a location where they will not be disturbed. Leave the bottles settle for at least an hour.

Gather around the bottles and make observations about the different soils.

- Students will observe that the different soils separate differently. At this point, students will not know what is found in each layer.

- Ask the students if they can identify the organic material in the water bottles. Soils contain both organic and inorganic material. Where do they see the organic material? Organic material is less dense than inorganic material and floats to the surface of the water.

- Ask the students what about the difference in the color of the water in each bottle. What could cause the differences? The cloudiness in the water comes from inorganic particles called clay that are so small they can remain suspended in the water. Most of the nutrients in the soil is found in the organic matter and the clay.



Ask students if all soils support the growth of plants equally well. Most students will recognize that since soils differ in their amounts of organic material and clay, they will vary in their ability to support plant growth. It is important to understand the differences in soil to make educated decisions.

SUMMARY

The potting soil will show a thick layer of dark material on the bottom, a thick layer of cloudy water, and a thinner layer of organic material on the top. Local soils may differ, but a typical soil will show layering similar to potting soil, though there may be less organic material floating on the surface. Most of the sand will form a very thick layer on the bottom of the container. There will be a thick layer of clear water and a very thin layer of material on the surface.



MAJOR CONCEPTS

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OUR MISSION

Educating Canadians about the sustainable use of nutrients to increase the health and quality of our soil, improve production of nutritious food, and preserve green spaces.



Nutrients for Life Foundation Canada is a non-profit organization that provides information and resources to educators and individuals like you, to help inform the public about the vital role that plant nutrients play in feeding the world. The information we have compiled is science-based and user-friendly. It has been successfully implemented by educators across the country. Through a grassroots effort, we can spread the word about soil health to students of all ages and to adult organizations that are always looking for programs. Our story is not only important, but it is interesting and serves a vital role in educating consumers and decision-makers in the future.

This lesson is found in NFL's resource, *Nourishing the Planet in the 21st Century*.

All of our resources are free to teachers across Canada.

