

Soil profiling

Can you discover what's in my spade?



INTRODUCTION

Farmers and horticulturalists use soil profiles to help them work out the best crops to grow in various locations and to improve soil quality. In this activity, children will be looking closely at soil structure and its texture. Soil is a mixture of tiny particles of rock, dead plants and animals, air and water. Soil also has many microorganisms living in it, which cannot be seen.

Different soils have different properties depending on their composition. Investigating soil texture allows us to understand how soil is made up: the amount of sand, clay, chalk and silt within it. A glass jar provides an ideal container in which children can explore soil composition.

LEARNING INTENTIONS



- ☑ To explain that soils are made from rocks and also contain living matter
- ☑ To classify soils
- ☑ To observe how soil can be separated through sedimentation

RESOURCES (PER GROUP)



- Jam jar
- Soil sample
- Sieve
- Spoon
- Beaker of water
- Washing up liquid

WHAT TO DO:

Today we are going to be soil scientists

1. Encourage children to look at their soil samples, describing and discussing what they can see in the soil. They can rub the soil between their fingers and describe how this feels.
2. Ask the children to prepare their soil sample – sieve out any stones and plant material. Break the soil up so that it is as fine as possible.
3. Half fill the jam jar with soil.
4. Fill the jam jar up to about three quarters full with water and add a few drops of washing up liquid.
5. Place the lid securely on the jar and shake it for about a minute until the soil is well combined with the water.
6. Leave the contents of the jam jar to settle for 48 hours, making sure it is left undisturbed during this time.
7. Without disturbing the contents, ask the children to look carefully at the contents of their jar. They will see that the soil has settled into layers.
8. Descriptions of sandy, clay and silty soils are provided in the glossary for reference. Share these with the children. The layers will settle with the largest particles at the bottom (sand) and the smallest at the top (clay), with silt in between.

KEY QUESTIONS

1. What do you find/see in the soil as you sieve it?
2. What does each layer look like? How are the layers different?
3. Can you suggest ways to make the glass opaque or translucent? How do you think this will affect germination?
4. Broccoli grows well in damp soil. Which soil is best for growing broccoli? (Clay soil)
5. Celery needs fertile, moisture-retentive soil that is wet but still drains. Which soil is best for growing celery? (Silty soil)

KEY VOCABULARY



Soil
Separate
Soil profile
Particles
Layers
Settle

EXTENSION / FOLLOW UP ACTIVITIES

Make a 'Jar-arium'

Create a miniature terrarium in a jam jar. This is a small ecosystem containing everything the plant needs to survive.

1. Cover the bottom of the jar with 2cm layer pebbles. On top place a 1cm layer of charcoal. This is the drainage layer.
2. Place a coffee filter on top to stop the soil mixing with the drainage layer.
3. Cover the coffee filter with approx. 5cm of soil. The jam jar will now be half full.
4. Moisten the soil.
5. Plant your plant. Screw on the lid.



Other questions to investigate:

Which soil type absorbs the most water? Which soil type drains most easily? How can soil be improved so that it is better for growing plants?

ADDITIONAL RESOURCES (IF REQUIRED):

- Other seed types
- Insulating materials
- Additional glass jars with lids

ANTICIPATED ACTIVITY TIME: **60 MINS**: Set up session: approx **40 MINS**.
Leave for two days. Review time **20 MINS**