

Estimating Porosity



Essential Questions: What is porosity? How does porosity affect the ability of soil to hold water?

Overview

Plants need three resources from the soil in order to grow. The first one is nutrients, which you learned about earlier in this chapter. Two other things that plants need from the soil are air and water. The tiny spaces between soil particles are very important for plant growth. They provide a space where soil can hold air and water that plants and other organisms can use.

Porosity is the term scientists use to describe the amount of open space in a sample of soil. The amount of open space in a soil is influenced by soil texture, ped size, ped shape, and compaction. A soil's porosity determines the total amount of water it can hold. The larger the volume of pore spaces in a soil, the higher its porosity and the more water it can hold. In this activity, you will investigate the porosity of several soil samples.

Safety

Follow standard safety rules and school safety rules for laboratory activities.

Materials

6 sets of soil samples
Plastic spoon
2 16-oz. glass jars
250-mL graduated cylinder
Access to water

Procedure

1. Fill a glass jar to 1 inch below the top with one type of soil. Do not pack down the soil.
2. Fill a 250-mL graduated cylinder with water. Slowly pour water into the soil, pausing frequently to let the water soak in and settle. Continue pouring until the soil can hold no more water. The soil can hold no more when the water begins to collect on the surface.
3. Make a data table and record the amount of water added to the soil type.
4. Repeat with the other soil samples.