

DO THE SOIL

Shake

Shake it up to find out what makes it up!



clay
silt
sand
gravel

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Soil is made up of different particles like *gravel*, *sand*, *silt*, and *clay*. Each of the particles is a different size and affects the way a soil will function. Soil that has roughly equal parts of sand, silt, and clay is called *loam* and makes good soil for growing most plants. In this experiment you can do a test to see how much gravel, sand, silt, and clay is in your soil and whether it'll support all those spring veggies!

WHAT YOU NEED

A litre/quart-sized glass jar with a lid, permanent marker pen, water, and a trowel or small shovel.

WHAT TO DO

- Using your trowel, dig a 10-15 cm deep hole in the area where you want to test the soil.
- Remove the top layer of organic matter (it will look fluffy and dark and may have bits of plant material in it) to reach the mineral soil below.
- Scoop out a handful of the mineral soil and place inside the jar. Fill the jar about $\frac{1}{3}$ to $\frac{1}{2}$ full of soil.
- Add water to the jar, filling about an inch or so from the top and secure the lid.
- Hold the jar on the top and bottom and shake it up for three minutes.
- Set the jar down on a flat surface and look to see what layers have formed. The large particles of gravel and sand are heavier than the silt and clay particles and will settle out at the bottom of your jar quite quickly. Draw a line with your marker to show these layers.

Does your sample have two layers or one? What does this tell you?

- Now wait for about an hour and then come back to check your jar. Draw a line with your marker to show the next layer which is made of silt.
- Wait for 24 hours and then check your jar again. Look for the last layer made up of the smallest particles, clay, which will have settled above the layer of silt. Mark it with your pen. Is the water cloudy or clear? What does that tell you?
- Now look at how thick each of your layers is compared to the others. What does this tell you about your soil?

WHAT'S GOING ON?

Gravel and sand are heaviest so they settle first—they have the largest particle sizes and thus also have the largest-sized spaces between the particles. When soil has a lot of gravel and sand, water can pass quickly through those spaces and the soil is considered to have good drainage, but it will also dry out quickly after a rain.

Silt particles are smaller and lighter than gravel or sand, and silt settles next. Silty soils tend to be very *fertile* (have lots of nutrients for plants to grow) but the silt particles can pack down tightly, forming a hard crust that can make it difficult for water to pass through or for seeds to push up through the soil.

Clay particles are the smallest and lightest particles found in soil. They stay suspended in the water longest. Clay helps hold moisture in the soil, but too much clay makes the soil heavy and water-logged: not good for growing plants.

A more-or-less equal mix of all three—sand, silt, and clay—is just right for growing plants!

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