

# Jar Soil Test Activity

In this activity, you will test the structure of your soil to learn more about its composition. You can use this information later to help decide whether or not you need to fertilize and to help you choose the appropriate native plants.

## Time

In class: 5-10 minutes

At home: 2-3 days (to let the particles settle)

## Supplies

Bag of 2 cups of soil from your yard (dried and free of stones, roots, etc.)

Measuring cup or spoon

Mason jar or other see-through container with lid (quart size)

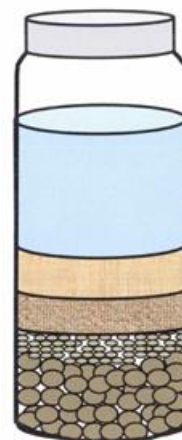
Water

1 tsp of non-foaming liquid dish soap

Permanent marker or masking tape

Blue or red pen or pencil

Paper towels or a rag



Clay layer – water clears

Silt layer – 2 hours

Sand layers – 1 minute

*Photo: Colorado State University Extension, Colorado Master Gardener Program*

## Background

Soil composition is based on how much and what types of minerals are present. Generally, knowing the amount of sand, silt, and clay will give you a good estimate of your soil's texture and type. Sandy soil has large particles that allow plenty of space for air and water to disperse. Consequently, it cannot hold water and valuable nutrients for very long and drains quickly. Plants, like many wildflowers, that have adapted to dry, well-drained soils will work best in this type. Clay is much denser and has tiny particles which allow it to hold water and nutrients well. It releases water very slowly. Plants that like 'wet-feet' or having their roots regularly flooded will prefer this type of soil. Silt falls somewhere in between sand and clay. It holds water better than sand but not as well as clay. Most soils have some mix of all three types; a "loamy" soil has approximately equal amounts of silt, sand, and clay.

## Method

1. Measure out 2 cups of soil from the bag you brought from home. (Don't forget to remove plant material and rocks so you can achieve accurate results!)
2. Put the soil into the quart-size jar.
3. Fill to the top with water and add 1 tsp of the dish soap.
4. Close the lid tightly and shake the jar for about 3 minutes or until everything is mixed.
5. Set the jar in a safe place and leave it for 1-3 days or until the particles have all settled. Do not mix again.



6. After the sediment has settled, you will see three distinct layers in your jar. The top will be clay, the middle will be silt, and the bottom will be sand. Use a permanent marker or masking tape to mark the different levels.
7. Measure the total height of the soil in centimeters (all layers combined) and write it down.

**Total soil height** \_\_\_\_\_

8. Measure the heights of each individual layer in centimeters and write those down.

**Height of sand layer (bottom)** \_\_\_\_\_

**Height of silt layer (middle)** \_\_\_\_\_

**Height of clay layer (top)** \_\_\_\_\_

9. Divide the height of each layer by the total soil height and multiply the result by 100. Note the results below.

**(sand height/total height) x 100 = \_\_\_\_\_ %**

**(silt height/total height) x 100 = \_\_\_\_\_ %**

**(clay height/total height) x 100 = \_\_\_\_\_ %**

10. Find the attached soil texture triangle chart. Start by finding the percentage of clay from your soil on the chart. Draw a line across the triangle at that level.
11. Look for the percentage of sand on the chart. Draw a line across the triangle at that level.
12. Repeat for the silt percentage.
13. Look for the intersection of your three lines. The colored area it falls in will be your soil's texture type.

**Texture type** \_\_\_\_\_

14. Use the resources below to find out more about your soil type.

### **Resources**

*USDA's Natural Resource Conservation Service*

[http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2\\_054167](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_054167)

This website provides in-depth information on soil types, gives access to soil surveys by state and county, and even has its own soil texture calculator.

Marion County Soil & Water Conservation District

<http://marionswcd.org/soil/>



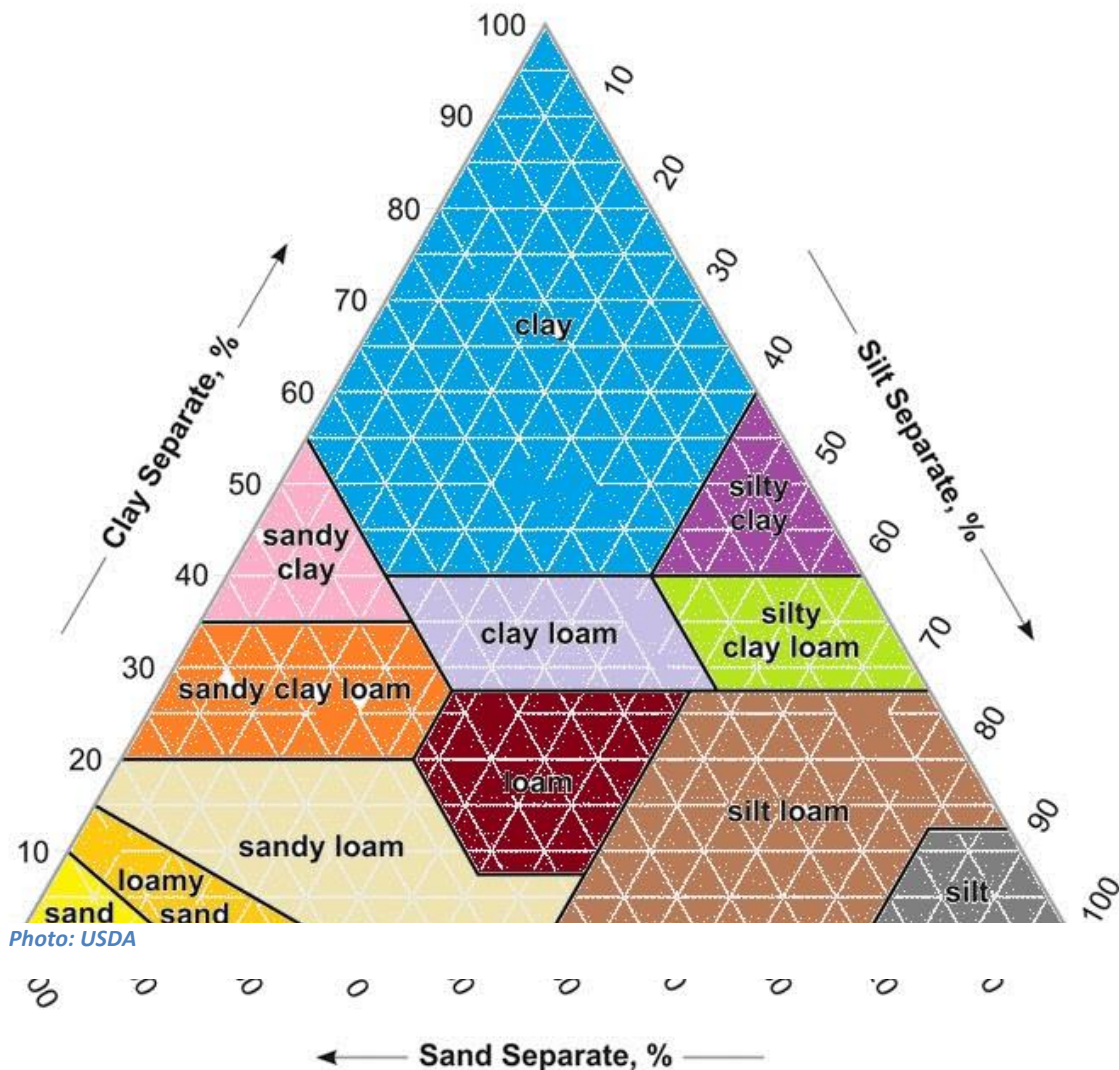
[www.indianawildlife.org](http://www.indianawildlife.org)

If you live in Marion County, this is a great resource for information on soil, drainage, erosion control, and much more. It has printable guides, a smart phone app, and recommendations for where to submit a soil sample for pH testing on the Nutrient Management & Soil Testing page. Click on the Soil Types and Drainage page to find detailed descriptions of local soil types.

Hamilton County Soil & Water Conservation District  
[http://www.hamiltonswcd.org/Soil\\_maps\\_and\\_survey.html](http://www.hamiltonswcd.org/Soil_maps_and_survey.html)

For Hamilton County residents, this is another excellent resource for soil-related information. Get details on your soil type, find local soil surveys, and information about advanced nutrient tests.

Source: Activity has been adapted from Colorado State University Extension.  
<http://www.ext.colostate.edu/mg/gardennotes/214.html>





[www.indianawildlife.org](http://www.indianawildlife.org)