

GARDENING CAMP

DAY THREE: DIGGIN' IN THE DIRT



Oklahoma State University, as an equal opportunity employer, complies with all applicable federal and state laws regarding non-discrimination and affirmative action. Oklahoma State University is committed to a policy of equal opportunity for all individuals and does not discriminate based on race, religion, age, sex, color, national origin, marital status, sexual orientation, gender identity/ expression, disability, or veteran status with regard to employment, educational programs and activities, and/or admissions. For more information, visit <https://eeo.okstate.edu>.



DIGGIN' IN THE DIRT

Welcome to Gardening Camp Day Three!

Soil is one of the most important natural resources known to man and it is the foundation of agriculture. Farmers know that certain soils are more suitable for specific crops, but how do they identify what type of soil they have? Texture is an easily recognizable property that informs farmers about how to manage their soils. Soil texture effects the movement of water and nutrients to the root zone of plants and it cannot be changed. There are three basic types of soil textures: Sand, Silt and Clay.

Sand:

Sand is made up of coarse-grains of soil, like what you would find on a beach. A sandy loam is best for gardens that require fast-draining environments. That's why sand is so useful; it's larger granular size enables quick soil drainage.

Silt:

Silt is a medium-grain soil that functions like a mixture of sand and clay. Silt is fertile soil that is beneficial to many different types of plant growth.

Clay:

Clay is a fine-grain texture and the smallest type of soil. Clay soil has a very small particle structure and it is very hard for large quantities of water to pass through the narrowed soil structure. Because of this tight structure, clay soils are often likely to experience severe compaction when wet.

The soil at your home can be a mixture of the three. Today, you are going to collect a soil sample and determine the textures of your soil. To collect a soil sample from home, go outside and dig about 6 inches into the surface. From there, collect a strip of soil and place it into a bucket or bag. Remove rocks, large roots and any matter that is not soil and break up large clumps of soil. Now shake the contents of your bucket/bag and you'll be ready to start the activity!



DIGGIN' IN THE DIRT

Supplies

- Quart jar (use peanut butter or pickle jar will work)
- Soil sample collected at home
- Teaspoon of Alum (optional)
- Ruler



Instructions:

- Place 2' to 4' of soil into the jar, measure the level of soil and record the measurement as "total amount of soil." It's important to measure and record the beginning depth so that you can accurately estimate the sand, silt and clay fractions (layers).
- Add water until the jar is two-thirds to three-fourths full. Add one teaspoon of alum (found on the spice aisle of most grocery stores; it will help the soil settle faster, but is not required). Be sure the lid is secured tightly.
- Shake the jar vigorously until all the particles have been separated by the water, it should take about two minutes. Set the jar down, and allow the soil to settle.
- After one minute, measure the depth of soil in the bottom of the jar. Record this measurement and label it as the 'sand portion.'
- Allow the sample to settle for 3-4 hours, then measure the depth again. Record this measurement and label it as the 'silt portion.'
- The remaining clay particles may take 3-7 days to settle depending on the soil composition of your sample. However, you can use the measurements you already have to determine the amount of clay in the soil. Simply subtract the combined sand and silt measurements from the total soil amount measurement.



Example:

Total Soil = 2"

Sand Fraction (1st layer) = 1"

Silt Fraction (2nd layer) = 1/2"

Clay Fraction (total soil - sand + silt) = 2" - 1" + 1/2" = 1/2"

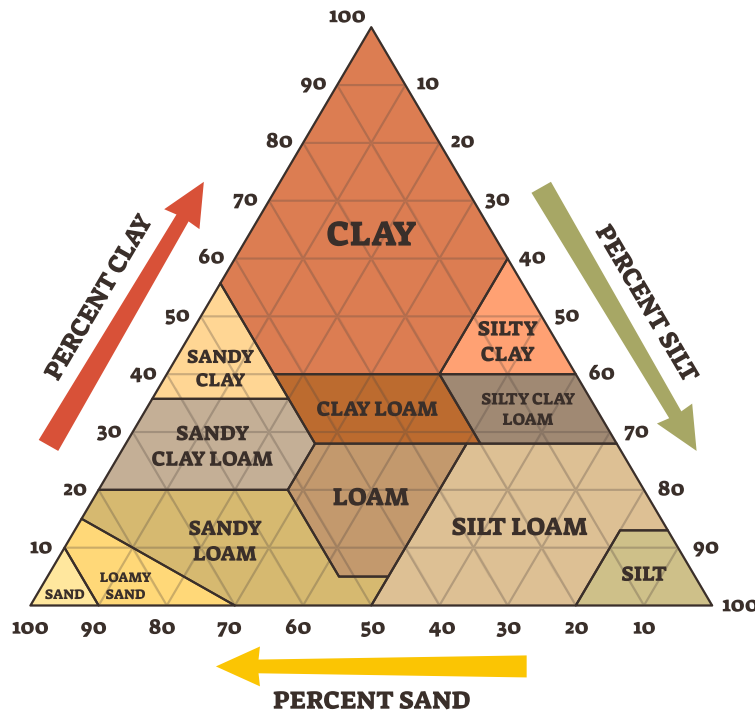
Now convert the measurements into percentages like shown here:

Sand Percentage (sand ÷ total soil x 100) = 1 ÷ 2 x 100 = 50%

Silt Percentage (silt ÷ total soil x 100) = 1/2 ÷ 2 x 100 = 25%

Clay Percentage (clay ÷ total soil x 100) = 1/2 ÷ 2 x 100 = 25%

DIGGIN' IN THE DIRT



Once you know your percentages, use the Soil Texture Triangle to the right to determine your soil type.

Knowing soil texture is crucial to managing the land properly and understanding what you can grow on the land!

After you complete the activity and determine your soil type, share your project with us on FlipGrid.Com and let us know what you learned on the Microsoft Form linked at the bottom of this handout! For more information or to learn more, visit:

<https://tinyurl.com/osusoilfertility>

Additional Snack Activity:

Materials:

- Small jar or clear plastic cup
- Dry granola or oats
- Almonds or blueberries
- Strawberries or grapes
- Yougurt

Instructions:

- In your jar/cup, add granola (represents clay), blueberries (represents silt), and strawberries (sand)
- Gently shake your jar/cup and observe how the particles separate by size.
- Following the experiment, add in your favority yogurt for a sweet, tasty treat!

Each ingredient represents the different sizes of each particle shape. The granola will sink to the bottom because of the small particle size, the almonds will remain in the middle because of the medium particle size, and the strawberries will prevail on top because of the large particle shape.

Imagine if your soil was composed entirely of oats? Would water be able to pass through? What if the soil was composed of only almonds? Too much water would pass through!



Resources:
National Ag in the Classroom Types By Texture
California Ag in the Classroom What do Plants Need to Grow?

