

## I. Objectives

1. Classify soil based on soil texture determined by feel.

## II. Introduction

Soils are all around us and most of us have some kind of intuitive idea that some soils are clayey while some are sandy. Soil Texture refers to the size of the particles that make up the soil (Figure 1). The terms sand, silt, and clay refer to relative sizes of the soil particles. Sand, being the larger size of particles, feels gritty. Silt, being moderate in size, has a smooth or floury texture. Clay, being the smaller size of particles, feels sticky. This lab will work to further calibrate your intuition of soil texture.

## III. Materials

4-5 different soil samples, paper plates, spray bottles, paper towels

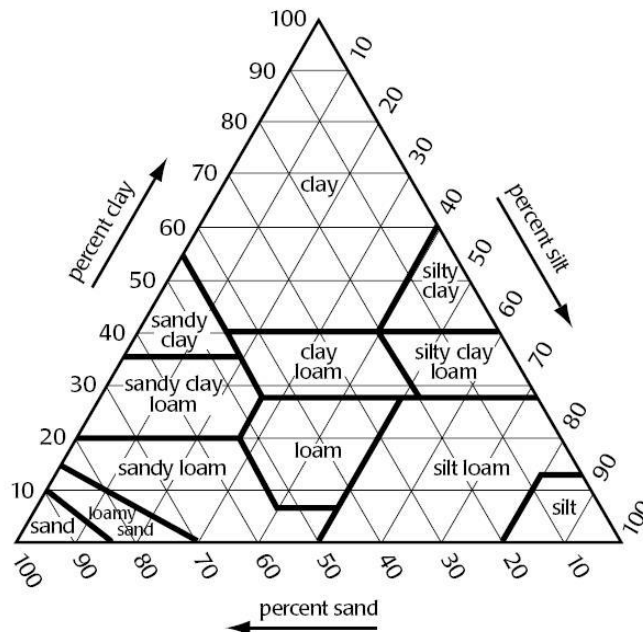


Figure 1: Soil Textural Triangle.

#### **IV. Prelab Definitions**

1. soil
  
2. soil texture
  
3. clay
  
4. silt
  
5. sand
  
6. gravel
  
7. cobble
  
8. viscosity
  
9. settling velocity

## V. Lab Procedure

For each of 3 different samples record your initial best guess of the as soil texture in the data table below. Then complete the following steps:

### Soil Texture, Step 1

1. Place a portion of soil, about the size of a small egg, from a horizon in your hand and use the spray bottle to moisten the soil.
2. Let the water soak into the soil and then work it between your fingers until it is thoroughly moist.
3. Once the soil is moist, try to form a ball.
4. If the soil forms a ball, go on to Soil Texture, Step 2.
5. If the soil does not form a ball, it is **sand**, and soil texture identification is complete; record the texture for this sample in the data table.

### Soil Texture, Step 2

6. Place the ball of soil between your thumb and forefinger and gently push and squeeze it into a ribbon.
7. If you can form a ribbon that is longer than 2.5 cm, go to Soil Texture, Step 3
8. If the ribbon breaks apart before it reaches 2.5 cm, it is **loamy sand**. Soil texture identification is complete; record the texture for this sample in your data table.

### Soil Texture, Step 3

9. If the soil is:
  - very sticky,
  - hard to squeeze,
  - stains your hands,
  - has a shine when rubbed,
  - forms a long ribbon (> 5 cm) without breaking,
  - then it is **clay**; proceed to Soil Texture, Step 4.

10. Otherwise, if the soil is:

- somewhat sticky,
- somewhat hard to squeeze,
- at most slightly sticky,
- forms a medium ribbon (between 2 and 5 cm) before breaking, then it is **clay loam**; proceed to Soil Texture, Step 4.

11. Otherwise, if the soil is:

- smooth,
- easy to squeeze,
- at most slightly sticky,
- forms a short ribbon (< 2 cm) before breaking, then it is **loam**; go to Soil Texture, Step 4.

#### Soil Texture, Step 4

12. Wet a small pinch of the soil in your palm and rub it with a forefinger. If the soil feels:

- very gritty every time you squeeze the soil, go to 12.
- very smooth, with no gritty feeling, go to 13.
- only a little gritty, go to 14.

13. Add the word **sandy** to the initial classification. The soil texture is one of the following:

- **sandy clay**,
- **sandy clay loam**, or
- **sandy loam**.

Soil texture identification is complete; record the texture for this sample in your data table.

14. Add the word **silt** or **silty** to the initial classification. The soil texture is one of the following:

- **silty clay**,
- **silty clay loam**, or
- **silt loam**.

Soil texture identification is complete; record the texture for this sample in your data table.

15. Leave the original classification. The soil texture is one of the following:

- **clay**,
- **clay loam**, or
- **loam**.

Soil texture identification is complete; record the texture for this sample in your data table.

Table 1: Soil Texture Observations				
Sample #	Descriptive name	Color	Initial texture	Final texture

## VI. Lab Discussion

1. Discuss two other characteristics, other than those included above, that can be used to describe soil.
  - a.
  - b.
2. In what kind of environments do you find these major soil types?
  - a. sand
  - b. silt
  - c. clay
3. How accurate was your initial classification? Explain.
4. What factors in Step 3 really helped narrow down the soil sample to the correct classification?

Lab courtesy of Dr. Jim Washburne