

Soil Searching

I. Objectives

- a. Students will learn the basics about soil through explanation and making independent and group observations.
- b. Students will understand the importance of soils to all life forms.

II. Materials

- a. 3 soil types- One each in a pie pan
- b. Small plastic magnifiers (5x magnification)
- c. Paper towels, Aprons

III. Introduction

- a. What is soil? What is dirt? Is soil important to us? We will answer these questions and discuss each one.

IV. What is soil?

- a. Soil is made from many things such as tiny pieces of broken rock, organic matter (i.e. dead leaves, roots, twigs, dead bugs), water, and air. It takes between 250 and 2500 years for one centimeter of soil to be made! To help you remember what soil is made of, remember the word SWAPA. It represents the first letter of each thing that makes soil.

Soil, Water, Air, Plants, Animals---SWAPA

- b. Dirt is soil that is out of place. So if you have soil on your clothes, it would be called dirt, because dirt doesn't belong on you, it belongs on the ground.

V. SOIL

- a. There are several different types of soils, just like there are several different types of tennis shoes, Barbie dolls, or Hot Wheels. Soil can contain silt, sand, and clay. We will discuss these in a minute.

There are also different colors in soil. Different soils are used for different uses. Some soils are best for crops, some for forests, rivers, and some for your own backyard!

- b. The three main components of soil are clay, silt, and sand. Clay is the smallest particle. Silt is medium sized, and sand is the largest particle. Let's take a look at the different sizes.

Let's pretend that a marble is the size of clay.

A baseball is the size of silt.

A beach ball is the size of sand.

- c. Soils have different names, just like you all have different names. It is easier for Soil Scientists to examine soil. They can tell the name of soils by examining it. To find out what type of soil it is, they take samples of soil, look at the texture, the color, and how it reacts with water. Then they can tell if it is a mixture of sand and silt, or sand and clay, or a clay soil, etc. A soil that has

all three types, sand, silt and clay, is called a loam. Lubbock's soil is called Amarillo. Amarillo soil can have several different colors, depending on the amount of clay, or sand, or silt it has.

VI SOIL TEXTURE

- a.** Clay feels smooth, when it is dry and sticky when wet. Soils high in clay content are called heavy soils. Clay also can hold a lot of nutrients, but doesn't let air and water through it well.
- b.** Silt feels smooth and powdery. When wet it feels smooth but not sticky.
- c.** Sand feels rough when you rub it between your fingers. This is because it has sharp edges. Sand doesn't hold many nutrients.
- d.** Can anyone tell me what Lubbock's soil is made of? Close your eyes and think about windy days in Lubbock. What color does the sky turn, or what color are the fields around Lubbock when there are no plants growing?
Usually the color is a reddish/brown. The reddish color is clay!
Our soil is called Amarillo Loam.

VII SOIL PROFILING

(Show Picture)

- a.** A soil profile is the sequence of natural layers, or horizons, in a soil. Each soil series consists of soils having major horizons that are similar in color, texture, structure, reaction, consistency, mineral and chemical composition, and arrangement in the soil profile. Most soils have three major horizons called the surface horizon, the subsoil, and the substratum.

VIII WHY IS SOIL IMPORTANT ?

- a.** Let me ask you a question. Why is soil important to us?
- b.** One of the most important natural resources is soil. It covers much of the earth's surface. Most life on earth depends upon the soil for food. The food we eat is grown in the soil. Plants are rooted in the soil and get nutrients (nourishing substances) from it. Animals also get nutrients from eating the plants that grow in the soil. We build sidewalks, roadways, and homes on the soil. Your desks are made from trees that were grown in the soil. The clothes we wear are made from plants. Soils also help filter out pollutants that could contaminate our drinking water.

IX LAB

We are going to look at 3 different types of soil. You all will get to play with dirt! Who can tell me why I just called it dirt?

- 1.** Each work area should have dry paper towels, damp paper towels, a magnifier, a spoon, and a pie pan of soil.
- 2.** Demonstrate how to use the magnifiers.
- 3.** Have students put on their aprons, then dump the soil onto a pie pan. Ask students what they see and list each on their papers. By touching the soil, students discover the soil textures.
- 4.** Get the soil wet. Have the kids pinch the soil and rub it between two fingers. Have students write down how it feels.

X Conclusion

- a.** Soil is important to us because it is one of the most important resources for us.
- b.** It's important that you and farmers help take care of our soil.

Lesson designed by the City of Lubbock Water Utilities Conservation Education Department

SOILS LAB WORKSHET

Use descriptive words to answer the following questions.

- Examples of good descriptive words: Sticky, Squishy, Smoth, Rough

- Bad Examples of descriptive words: Gross, Nasty, Good

Station 1

1. What color is it?
2. What does it feel like dry?
3. What does it feel like wet?
4. What else can you tell me about this soil?
5. What type of soil is this? Circle answer.

S and Silt C lay

Station 2

1. What color is it?
2. What does it feel like dry?
3. What does it feel like wet?
4. What else can you tell me about this soil?
5. What type of soil is this? Circle answer.

S and Silt C lay

Station 3

1. What color is it?
2. What does it feel like dry?
3. What does it feel like wet?
4. What else can you tell me about this soil?
5. What type of soil is this? Circle answer.

S and Silt C lay