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CASE

Project 2.1.7 Lab Report Template

Problem

I will be investigating so I can make a prediction of the material that the subsoil and topsoil is comprised of before we analyze it. We are going to be determining the amounts of silt, clay and sand in the soil. The texture of the soil and the size of the soil particles will be effected that the amounts sand, silt, and clay. This will in turn affect the porosity and permeability of the soil and its ability to hold water. To support my claim I suspect to find the soil size, structure, and texture to match what I have detailed in my hypothesis.

Hypothesis

From the information that has been given to me from my teacher I suspect the top soil will be a dry medium brown in color and will have a texture that is made of small to medium sized grains with a blocky shape. I also predict the subsoil will also be brown but it will be darker than the top soil. It will probably have larger grains and will feel moister than the topsoil.

Materials

- *Project 2.1.7 Lab Report Template*
- *Project 2.1.7 Soil Evaluation Card*
- *Project 2.1.7 Soil Evaluation Rubric*
- Clipboard
- Pencil
- Computer
- *Agriscience Notebook*
- Soil Pit
- Ruler

Procedures

1. Start with top soil layer and measure the height of the soil layer
2. Feel the texture of soil determine if it is grainy, clay like or loamy
3. Determine the color of the soil
4. Examine the soil closely to search for any coarse fragments or modulating

5. Decide which structure type you believe the layer is
6. Record information
7. Repeat steps 1-6 for the sub soil layer

Data Collection

Table 1. ***Summary of Findings***

Digital Photo of Soil Profile	Written summary of findings for each horizon as determined on the soil evaluation card
	First Horizon: **0-5 inches of soil, color was dark brown with a sandy clay loam texture. Less than 15% coarse fragments, moderate structure, had granular structure type and no modulating.** **Second Horizon:** **5-8 inches of soil, color dark gray and light gray had at least 37% course fragments in soil. Moderate structure and a blocky structure type. Very little modulating in second horizon.**

Table 2. ***Texture Determination of Soil Samples***

Your Findings	Class Average or Official Analysis	Explanation for Potential Differences
First Horizon (0 to 5 inches) Color __1___ Texture __4___ Coarse Fragments __1___ Structure Type __1___ Structure Grade __3___ Horizon Name __A___	**First Horizon** (0 to 5 inches) ___4__ Color ___4__ Texture ___2__ Coarse Fragments ___1__ Structure Type ___3__ Structure Grade ___A__ Horizon Name	The differences for my top soil descriptions and the class averages are mainly in color and coarse fragments. Which I think can be contributed to the fact that we were observing different sections of the top soil and that the lighting was different on my side which could contribute to the class seeing the soil as a more dark gray color were as I see it as more of a dark brown.
Second Horizon (5 to 8 inches) Color __4___ Texture __4___ Coarse Fragments __3___ Structure Type __3___ Structure Grade __3___ Horizon Name __B___	**Second Horizon** (5 to 8 inches) ___4__ Color ___4__ Texture ___3__ Coarse Fragments ___3__ Structure Type ___3__ Structure Grade ___B__ Horizon Name	We both got the same findings for the second horizon because we conversed with each other while we were out by the pit looking at the soil for the second horizon.

Analysis of Results

The results were that the top soil is composed a dark brown silty clay loam with little to no coarse fragments and a structure less blocky structure. The results were not exact when compared to the official results from the USDA Natural Resources Conservation Service report which states the top soil (0 to 8 inches) as fine sandy loam. For the second horizons sub soil I categorized it as a dark and light gray clay loam with 35% coarse fragments and a structure type of blocky and moderate grade. We differed from the official report which categorized the sub soil as clay. Over all we found the top soil to be a layer of dark grayish brown fine sandy loam that had no modulating and the sub soil layer of dark and light gray clay with trace amounts of modulating.

Conclusions

Based on the results I can now say that the soil that surrounds my High School consists of a top soil layer of sandy loam and a sub soil layer of clay. Which is not to remarkable considering the state of Texas is known for its extensive amounts of clay in the soil. My predictions were not entirely right. The texture of the top soil was not dry and platy like I predicted it would be instead it was a fine grainy texture. Soil color was slightly more on the gray end of the spectrum than brown. For the sub soil layer my texture predictions were correct when it came to the moist claylike texture. However instead of a dark brown color it was a light and medium gray shade of color. We had some setbacks that could have caused some errors. First our soil pit which we used to look at the layers got filled up with water so that was a challenge to work around. Also the official soil report we used to let us know the correct characteristics of the soil was done before the school was officially built so the workers may have brought in more soil which would contaminate our original soil layers. Overall we were able to get a good idea of the top 2 soil layers around our school but I am curious if they would be similar or completely different to say the soil layers around my house.