

Project 2.1.7 Lab Report Template

Problem

I am investigating the properties of the top soil and the subsoil. I am going to try to determine the structural grade, textural classification, and structure type of the top and subsoil. It is important to know these soil properties so you can determine depth, water holding capacity, surface and subsoil permeability, water and wind erosion, and internal drainage. Using my knowledge I know that soil porosity, water holding capacity, and permeability depend on each other and how to classify soil type (loam, silt, clay, sand). I would expect to see in the soil; very shallow to shallow effective depth, low water holding capacity, moderate surface soil permeability, slow subsoil permeability, moderate to high water erosion hazard, low wind erosion hazard, and well internal drainage. I know that Brazos County has Sandy Clay loam for the top soil and Clay loam for the subsoil. I believe the structure grade is moderate, and the type is granular. Also the textural classification has moderate permeability, moderate pore space, and has the capability for a high water holding capacity.

Hypothesis

I expect the top soil at College Station High School is Sandy Clay Loam, the structure type is granular, the structure grade is moderate, there is no presence of mottles, and the soil color is dark brown. Moving on to the Sub soil, I predict it will have a silty clay texture, prismatic structure, a strong structure grade, a presence of mottles, and a red reddish brown soil color.

Materials

Per student

- Project 2.1.7 Lab Report Template
- Project 2.1.7 Soil Evaluation Card
- Project 2.1.7 Evaluation Rubric
- Clipboard
- Water bottle
- Knife or screwdriver
- Pencil

Computer with word processing
and spreadsheet software

Agriscience notebook

Per class:

Soil Pit
Digital camera

Procedures

1. Wrote down predictions of the soil before I went outside.
2. Hypothesized what the top soil and sub soil consisted of.
3. Went outside and collected data, filled in the soil evaluation card.

4. I felt the top soil and it felt grainy
5. I recorded the soil color, presence of mottles, structure grade, structure type, and texture.
6. I felt second layer of soil and it felt like clay so I did a ribbon test.
7. Moved on to the sub soil, I recorded the , soil color , presence of mottles, structure grade, structure type, and texture.
8. I recorded in the soil pit and horizon sample analysis, I collected data for the first and second horizon which included Color, texture, coarse fragments, structure type, structure grade, and horizon name.

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 Use a line to indicate horizon transitions
	<p>First Horizon:</p> <p>The color was a dark gray, light gray, White and the texture was a sandy loam. It was 15-35% coarse fragments, granular structure type, and the grade is moderate.</p> <p>Second Horizon:</p> <p>The color was light brown, brown, yellowish brown, and the texture was clay. It was 35-60% coarse fragments, moderate structure grade, and blocky structure type.</p>

Table 2. Texture Determination of Soil Samples

Your Findings	Class Average or Official Analysis	Explanation for Potential Differences

<p>First Horizon (_0_ to _5_ inches)</p> <p>Color _4_____</p> <p>Texture _4_____</p> <p>Coarse Fragments _2_____</p> <p>Structure Type _1_____</p> <p>Structure Grade _3_____</p> <p>Horizon Name _2(A)_____</p>	<p>First Horizon (_0_ to _5_ inches)</p> <p>___1___ Color</p> <p>___4___ Texture</p> <p>___1___ Coarse Fragments</p> <p>___1___ Structure Type</p> <p>___3___ Structure Grade</p> <p>___A Horizon Name</p>	<p>An explanation for the potential differences between students is we may have different opinions for different colors and what a red or a different shade of brown may look like.</p>
<p>Second Horizon (_5_ to _13_ inches)</p> <p>Color __4__</p> <p>Texture __4__</p> <p>Coarse Fragments __3__</p> <p>Structure Type __3__</p> <p>Structure Grade __3__</p> <p>Horizon Name __4 (B)_____</p>	<p>Second Horizon (_5_ to __8_ inches)</p> <p>___4___ Color</p> <p>___4___ Texture</p> <p>___3___ Coarse Fragments</p> <p>___3___ Structure Type</p> <p>___3___ Structure Grade</p> <p>___(4)B Horizon Name</p>	<p>An explanation for why students have differences is because we may have looked at or tested different parts of the second horizon that was dug up. Also we all see things differently so the grade and type would be different.</p>

Analysis of Results

Explain the results and data collected. Be descriptive and complete in your discussion.

The final accurate results from Brazos County are; typical profile is A 0-8 inches and is a fine sandy loam in the first horizon. And in the second horizon the soil consists of 8-28 inches and the texture is clay. This differs from my conclusions shown in my data tables because I didn't have specific equipment and I'm not a professional soil grader.

Conclusions

Throughout this project of soil grading between horizons I learned many new lessons about soil, what it's made of, and what it contains. In this investigation I used these skills in determining grade, structure and color. Certain skills I used was feeling the soil and using the ribbon test to determine if the soil texture

was clay. I put the soil between my fingers and made a ribbon using the clay. With this procedure I identified the subsoil as clay.

My description supports the claim because it goes strictly with the project and the problem. However; through this project I found some errors and limitations including; limited resources and materials (ex. Digital camera, soil evaluation card, knife and screw drivers and a correct soil pit.

Additionally, I used scientific method throughout this project and scientific knowledge I have learned in this class and my teacher. Finally, this investigation can be strengthened in further years by having an actual correct dug soil pit without water in it from sprinklers and also have pictures of the soil horizons for further reference. I thoroughly enjoyed this project and strengthening my knowledge in soil science.