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CASE

Project 2.1.7 Lab Report Template

Problem

What question are you investigating?

-I am investigating the properties of the top soil and the sub soil. I am going to try and predict the structural grade, textural classification, and structure type. Clay has a low permeability and high water holding capacity while sand has a high permeability and low water holding capacity. In the Brazos Valley I would expect a happy medium in the soil. We have lots of nearby farm land meaning the soil has a good permeability and water holding capacity to support plant growth. Soil Structure is how soil sticks together to form peds. Soil structure is important to allow plant roots to grow deep where soil nutrients and water can be found. Some soils do not retain water very well because of their coarse texture. Others, such as clay soils, can hold a lot of water, sometimes too much water for certain kinds of plants. Soils used for agriculture are not usually comprised of just one component, such as sand. Almost all natural soils contain organic matter, such as decaying plant roots

And stems.

Hypothesis

What are your predictions? What do you expect the results to be?

-In the Brazos Valley I would expect a happy medium in the soil. We have lots of nearby farm land meaning the soil has a good permeability and water holding capacity to support plant growth. I believe the soil will have a sandy loam top soil being darkish grey. I think the sub soil will contain a lot of clay being a yellow brown color.

Materials

- List the supplies needed to conduct the experiment.

~Lab Template ~Knife ~Digital Camera

~Soil evaluation card ~Pencil

~Rubric ~Soil Pit

~Clipboard ~Agriscience Notebook

~Water bottle ~Soil Pit

Procedures

1. State the problem of the lab and what you are testing in paragraph form.

2. Write a detailed hypothesis based off of your previous knowledge.
3. Analysis the soil to determine its makeup.
4. Measure the soil thickness of the top and sub soil.
5. Feel the soil and look at it to determine color, coarseness, texture, etc,.
6. Copy down your findings into the lab template.
7. Compare your results to others in the class.
8. Write your conclusion over your findings.

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
	First Horizon: **The first horizon was sandy, granular, having a small amount of coarse fragments, with a moderate structure grade and having a horizon name of A.** **Second Horizon:** **The second horizon is a yellowish brown, it feels like sandy, clay loam, with a higher percentage of coarse fragments, and has a strong structure grade.**

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 4 Texture 2 Coarse Fragments 1 Structure Type 1 Structure Grade 3 Horizon Name 2	**First Horizon** (0 to 5 inches) 4 Color 1 Texture 1 Coarse Fragments 1 Structure Type 4 Structure Grade 2 Horizon Name	I had similar findings but when it came to texture we could have felt different parts and determined different soil texture grades. The structure grade could vary off of the certain area we looked at since the hole filled with water.
Second Horizon (5 to 13 inches) Color 2 Texture 4 Coarse Fragments 3 Structure Type 1 Structure Grade 4 Horizon Name 2	**Second Horizon** (5 to 13 inches) 4 Color 4 Texture 3 Coarse Fragments 3 Structure Type 3 Structure Grade 4 Horizon Name	When comparing to the class results we found different colors. This could happen because we were standing in differently lighting or viewed different sections of the soil.

Analysis of Results

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

When analyzing the results of this lab my hypothesis was proven to be true. The top layer is a sandy texture with a light grey color. The sub soil contains a lot of clay and holds water really well. Due to our findings we can prove that the soil is good for farming. The soil is a dark grey on top with a sandy texture, the further you went down in the soil the more clay was present. Soil color provides clues for quality as well. Color is affected by both water movement, porosity, and organic matter. Soil horizons with different colors indicate differences in soil properties, such as structure or permeability. Soil structure is the

arrangement of primary soil particles into compound particles or aggregates that are separate from adjoining aggregates. It is important to note that organic matter has a positive relationship with soil structure grade. In areas of high organic matter production, soils can be found with very well defined structure. Soil texture and structure define how the soil functions as a whole system. Different soil layers have a different composition and organization of soil particles. Knowledge of how soil particles and structure interact is important to understand whole soil properties, such as water holding capacity and drainage. By using knowledge of properties of the whole soil, I could reasonably predict such features as soil textures, soil structure type, and soil structure grades.

Conclusions

Based on the results, what inferences can you make? Describe how your predictions were proven or disproven. What were possible sources of error? What questions do you have based on your results?

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In areas of high organic matter production, soils can be found with very well defined structure. Soil texture and structure define how the soil functions as a whole system. Different soil layers have a different composition and organization of soil particles. Knowledge of how soil particles and structure interact is important to understand whole soil properties, such as water holding capacity and drainage. By using knowledge of properties of the whole soil, I could reasonably predict such features as soil textures, soil structure type, and soil structure grades.

Based on our findings we can conclude that College Station has good farm land. It is able to drain water through to the sub soil and hold it there in case of a drought. My predictions were proven to be true. Making errors in your predictions can greatly vary your findings. This means you found incorrect results which vary your type, color, structure, etc. greatly.