

This class guide was created by Michelle Taynan and modified by me, Esteli Jimenez-Soto. I have included some links to other resources I use for this class. NOTE: I am not making any profit from this, nor I am publishing it. I am just sharing the love for soils! if you have any questions email me at jimenezsoto@usf.edu

How to prepare your soils class in the field:

1. The instructor needs: one trowel/shovel per team, cups, 1 Soil Munsel table which can be purchased online for \$75. I use one for a class of 28 students.
2. Provide a brief Intro to soils and soil texture, talk about soil nutrients and soil characteristics that are helpful for farmers. I recommend you do a lecture previous to this practicum to go over soils, soil health, etc.

Soil is a living porous system made up of mineral and organic particles that interact with animals, fungi, bacteria, plant residue, water, and gases. Soil health refers to how well the soil is functioning from biological, physical, and chemical perspectives. Soil health impacts the quantity and quality of what we can produce on our farms and in our gardens, and it also affects how much carbon gets stored in the soil versus how much is released into the atmosphere. The amount of organic matter present in a soil (soil organic matter) is the foundation for how healthy a soil is. Soil organic matter is made up of approximately 58 percent carbon.

<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/soils/soil-health#:~:text=Soil%20health%20is%20defined%20as,and%20protection%20for%20archeological%20treasures.>

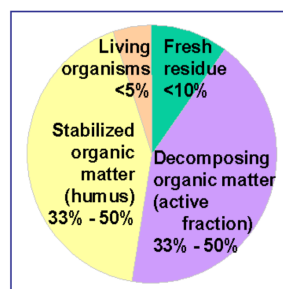


Figure 1. Major soil organic matter components (Source: The Soil Food Web, USDA-NRCS).

3. Ask students to collect soil from their plots/rows/beds, then move to collect soil from two additional places outside of their beds.
4. Ask them to perform: 1) a texture by feel, and 2) a color test. Have them respond to questions in the print outs.
 - a. Print: 16-17 on [Penniman](#) "How alive is my soil" Soul Fire Farm Practical Guide to Soil Health
 - b. Print texture by feel steps here: <https://www.nrcs.usda.gov/sites/default/files/2022-11/texture-by-feel.pdf>
 - c. Print practicum instructions below.

In this test we use color as an indicator for soil organic matter, which is responsible for giving soil its darker color. Organic matter is the portion of the soil that comes from living and once living

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organic material. As described above, soil organic matter is approximately 58 percent carbon. In this test, a sample of soil is held next to a Munsell Soil Color Chart to find a visual match and is assigned a corresponding Munsell notation.

Distribute this worksheet to students:

Name:

Date:

Introduction to soil health practicum:

Soil is a living porous system made up of mineral and organic particles that interact with animals, fungi, bacteria, plant residue, water, and gases. Soil health refers to how well the soil is functioning from biological, physical, and chemical perspectives. Soil health impacts the quantity and quality of what we can produce on our farms and in our gardens, and it also affects how much carbon gets stored in the soil versus how much is released into the atmosphere. The amount of organic matter present in a soil (soil organic matter) is the foundation for how healthy a soil is.

Soils Practicum Description:

In this activity, you will explore and compare soil samples that you will collect with your team. The primary goal of today's practicum is to provide you with hands-on experience in soil collection while reflecting on the characteristics of soil and their significance for agriculture, especially in the context of your own gardening practice.

Objectives:

1. Texture Exploration:

- Gain practical experience in determining soil texture by feel.
- Reflect on the implications of soil texture for agricultural practices.

2. Color Assessment Using Munsell Chart:

- Learn the process of conducting a soil color test with a Munsell chart.
- Reflect on how soil color assessments can inform agricultural and management decisions.

By the end of this session, you'll not only enhance your understanding of soil characteristics but also develop skills crucial for making informed decisions related to agriculture and gardening.

Instructions:

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1. **Collect soil from your gardening bed, approximately 2 cups.**
2. **Choose an additional site or two to collect soil from. Feel free to take the trails in the botanical garden and into the forest and different microhabitats to get the widest range of soil textures and colors as possible.**
3. **Perform the following tests using your soil samples, use your journals to make field notes for each of the tests:**
 - a) Perform a “**texture by feel**” test to determine the texture of the soil you have collected. Use the steps provided in the “texture by feel” handout.
 - b) Perform a color test. Follow the instructions in the *Soul Fire Farm’s* soil color test as an indicator of soil organic matter (pages 16-17 from the guide “how alive is my soil”). Use the Munsell test provided for class use.
 - c) Observe and quantify any living organisms, such as worms, or small arthropods.
4. **Respond the following questions in your field journals:**
 - a) Soil texture has a major influence on agriculture as it **influences aeration, water movement and storage, nutrient holding capacity and erodibility**. How did your soil samples perform in terms of these specific qualities?
 - b) Are there significant differences in the soil texture and color between the two areas? If so, how are they different? What do you think is driving those differences?
 - c) What other quantitative and qualitative assessments would you need to consider determining the health of these particular soil samples?

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d) What have you learned about the soils your worked with and what did they tell you about their health? What other tests/research would you do to make your assessment more robust?