



### Objectives

Students will be able to:

- identify variations in soil samples.
- match soil types with the correct soil properties.
- form an analysis of soil properties to determine its quality for a given characteristic.

### Materials

small shovel, zip top sandwich bags

### Time

90 minutes

### Prior to the Activity

Have students read "Soil: We Gotta Have It, But Will We?" in *Agronomy Grow With It!* so students will have been exposed to variations that can be found in soil.

Find a location on your school grounds or in your community where students could collect different soil samples.

- With advanced notice samples could be collected when on vacation and saved year to year. In addition to collecting your own samples, students could bring in samples from their home (or vacation areas).

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## Chapter 6 Soil What's the Difference

### Standards

**MS-ESS3-3.** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.\*

**MS-LS2-1.** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

**MS-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

### Collecting samples:

In either small groups or as individuals, direct students to collect soil samples in the identified areas.

Direct students to not go in the same areas as their classmates to decrease duplicates

Have students look for areas that have different purposes that will potentially have different soils

Instruct students to collect a zip sealed sandwich bag full from each site.

The volume of soil is important for the students to analyze completely without running out

A similar volume should be collected from home as well (if possible).

Allow students 30 minutes to collect their samples at the site.

You will need to evaluate your class and location to determine their ability to complete portion in small groups or whether you need to bring in samples instead.

They should label or name the samples so they are able to identify each sample correctly.

Once you are back in the classroom have students compare the samples.

Students should reference Soil: We Gotta Have It, But Will We? chapter. Here they will find that there are many different characteristics that they can use to compare the soil samples.

#### Examples:

- Color
- Texture
- Structure

As a group select 5 of the samples that seem to provide the most significant differences.

Have students compare the five different soil samples for the traits above using the Soil, What's the Difference activity sheet.

Once the students compare the different samples by ranking them they should answer the questions below the chart. These questions will allow the students to think about the soil characteristics and match them with the properties that we consider when discussing soil quality.

Soil samples are also available for a small fee through the Undergraduate Student Agronomy Club at Purdue University:

[https://ag.purdue.edu/agry/agryclub/Pages/soil\\_textures.aspx](https://ag.purdue.edu/agry/agryclub/Pages/soil_textures.aspx)

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You have just collected samples of soil to analyze. As a class your next job is to select five different soil samples that you will use for the activity below.

- It is important that the entire class uses the same samples.
- Make sure that these five samples are easily identifiable by labeling the bag.

Rank the soil samples 1 – 5 for the color and texture and select which structure most closely represents the sample (each term can be used more than once). Write down other observations you see as well that may give you a clue to the quality of the soil.

Sample Number	Color Lightest (1) - Darkest (5)	Texture Smoothest (1) – Grittiest (5)	Structure Blocky, Columnar, Platy, Mas- sive, Single Grain	Other Observations

Using the chart from above answer the following questions and explain your response.

Which soil sample should contain the highest amount of organic matter?

Which sample will have the largest pore space that will allow water to penetrate the soil?

Which sample has the least amount of sand in the sample?

Which sample seems to have the easiest structure to identify?

The descriptions for the structures are listed in the reading “Soil: We Gotta Have It, But Will We?”

