

GRADE TWO FALL NATURE WALK
Soil

OBJECTIVES:

- Examine, compare and collect soil in different environments, observing color, texture, and smell
- Discover what is in soil
- Learn about the role of living things in making soil
- Learn about the importance of non-living things in soil
- Understand that soil is important to all life
- Understand that blowing wind and flowing water can move soil and sand and change the shape of the land

PREPARATION:

- BBY Coordinator should label sets of clear plastic cups #'s 1-3.
- Walk should last about 45 minutes.
- Classroom coordinators: Remind teachers to notify the school nurse one week ahead of the walk so the nurse can check for allergies in the classroom.
- Decide on the one group responsible for bringing one soil sample set back to the classroom for continued observation.

MATERIALS:

Provided by BBY Coordinator – Materials per student group:

- Trowel
- 3 clear plastic cups labeled #1 through #3
- 1 box for carrying cups, (a shoe box works well), only one group will bring soil samples back to the classroom
- Hand lenses
- Soil Sample Worksheet (1 per student)

Provided by Teacher from the classroom:

- Clipboard, pencil (1 per student)

ACTIVITIES:

- Observe, collect and compare soil in 3 different sites, noting differences (grass, baseball field, woods) and record observations on Soil Sample Worksheet.
- Observe and explore decomposition in the woods.
- Look for signs of potential wind or water erosion at each site.

AFTER THE WALK:

- Leave Soil Sample Worksheets and soil samples, with the teacher.
- If needed, empty soil sample cups outside.
- Return all materials to BBY.

NATURE WALK: To be led by Big Backyard Volunteer

1. Observing different colors of soil in the schoolyard.

- Walk outside. Look around and identify different colors of soil and what that could mean (is it dark brown, light brown, what's around it, are there signs of growth/living things?)
- Walk onto the blacktop. Ask: *What do you see in the cracks?* (Soil, plants, an anthill.) Ask: *Is there soil under the blacktop?* Find an edge of the blacktop and look under it. *Is there some soil scattered on top of the blacktop? What does it feel like? What color is it? Is this soil?*
 - Pick up some soil and feel it. Have the children roll some between their hands. (It will feel gritty).
 - Look at this soil with a hand lens. Ask: *What do the grains look like? Are they all the same?* (The grains may be different colors; these are mostly bits of broken rock called minerals; minerals have uniform properties like color, hardness, and the way they reflect light.)

2. Collect different samples of soil.

The collecting sites are:

- #1 Soil from a hole dug into the grass about three inches deep
- #2 Sand on the ball field or playground
- #3 Soil from the woods
- Each group of children will collect samples in their marked containers. Each group will also help you to fill out the worksheet describing their samples. For each sample, children should:
 - Touch the soil. Describe what the soil feels like. (Dry, moist, wet, sticky, smooth gritty.)
 - Rub some soil between their fingers and smudge it on the worksheet to denote color.
 - Smell the soil.
 - Look at the sample with a hand lens. Note the size and shape of particles.
 - Note anything in the sample (living things, and non-living things, etc.).
 - Dig down a couple of inches using the trowels. Notice if the soil changes as they dig deeper.
 - Fill in their holes and replace any clumps they have removed.



Site #1: Soil in the grassy area

Remove a plug of grass. Look at the soil around the roots. Have a child collect a trowel full of dark soil from the grassy area for cup #1. Give a pinch of this soil to each child. Ask: *Is the soil here the same color as the soil on top of the blacktop?* (This soil will likely be darker in color.)

- o Look at this soil with a hand lens. Ask: *How does it look different from the soil on the blacktop? Do you recognize any of the tiny pieces?* (Has more roots, and pieces of leaves; has fewer mineral bits.) *How does it feel different?* (Softer, less gritty, smaller particles.) Smell the soil. Ask: *What do you notice? Are you finding any living things?* (Living things such as earthworms, insects, and fungi help turn once living things into soil.) *Any non-living things such as pebbles or grains of sand?* Have children help you with descriptions of the soil for #1 on the worksheet.
- o Look for worm castings (worm poop) on top of the soil in the grassy area and notice the color. (Dark brown—matches the soil color.)
- o Be sure children fill in their holes and replace the grass clump.



Site #2: Sand/soil from baseball field/playground

Collect a sample of sand. Ask: *Is sand soil?* (Yes, it just has more minerals and less darker once-living material such as leaves and roots.) Children may notice sparkly grains of mica, a mineral.

- o Dig down a couple of inches. *What color is the sandy soil here? Does the soil change color as you dig deeper?* (The sand and the reddish subsoil is made mostly of minerals--broken up rocks.)
- o Ask children to compare the number of plants growing in the sandy soil with the number of plants growing in the soil from the grassy area. (Fewer plants in sandy soil.)

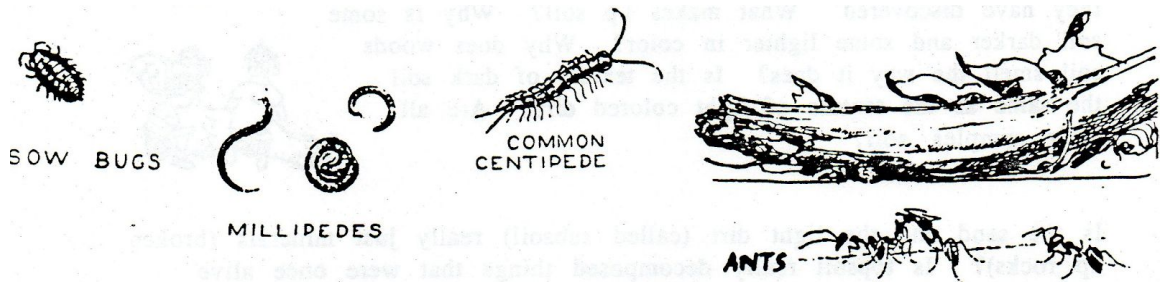


Site #3: Soil from the woods

Enter a wooded area and find a hollow where the leaves have collected. Have children gently pull back the top layer of leaves that fell last year. Underneath are pieces of leaves. As children dig down they will discover smaller and smaller pieces of leaves and roots mixed with dark brown soil. Scientists say they are **decomposing** and helping to make soil. Tiny living plants and animals help dead leaves and logs decompose and become soil. Some tiny living creatures live in the soil. Ask: *How far do you have to dig to find non-living things?*

Ask: *What is the color of this woodland soil?* Invite students to smell a pinch of this soil. *What does it smell like?* (Possibly, potting soil.) *Why is this soil so different from the other samples?* (It has more decomposing once-living things in it.)

- o Compare soil from the woods (Sample #3) to soil they dug in the sand near the baseball field (Sample #2) and soil they dug in the grass (Sample #1). *Why was there dark brown soil where there was grass, and only light colored soil underneath the baseball field where no plants are growing?* (The dark color is from decomposed plants.)
- o *What type of soil seems best for growing plants? What makes you think this?* (Soil with both once-living and minerals in it is best; more plants are growing in dark soil.)
- o Turn over a decomposing log and touch it. Notice any small animals, insects, or plants. (Worms, ants, sowbugs, millipedes, centipedes, fungi, etc.)



3. Wrap-up.

After worksheets are completed, sit down on the grass with the three samples to review what they have discovered.

BIG IDEA: *Soil is made up of living and nonliving things and is important to all life.*

Essential Question: *How is soil alike and different?*

- Ask:
 - o *What makes up soil?* (Soil is made up of things that were once alive, such as dead leaves and sticks—called **humus**; and of non-living things such as broken up rocks, and sand—called **minerals**.)
 - o *Why is some soil darker and some lighter in color?* (Decomposed once-living material is dark brown. Broken rock bits can be lighter in color. The kind of soil depends on the amount and kind of minerals and the amount of once-living material.)
 - o *Can you tell by looking at a sample if it came from the woods or a meadow or a sandbox? How?* (Color, type of material.)
- Walk back to the school.
- Give the Soil Sample Worksheet, and possibly the sample cups, to the teacher.
- Empty cups outside if not returning samples to the classroom.
- Return all BBY materials.

Group: _____

Date: _____

SOIL SAMPLE WORKSHEET

Sample # 1: GRASSY AREA.

<p>How does the soil feel? (circle one)</p> <p>Dry Moist Wet</p> <p>Smooth Gritty Sticky</p>	<p>How does the soil smell? (circle one)</p> <p>No smell Smells dusty</p> <p>Smells woody Smells earthy</p>
<p>Make a smear. What color is it? (Place a check mark in the box)</p> <p><input type="checkbox"/> It leaves a light brown smear</p> <p><input type="checkbox"/> It leaves a dark brown smear</p> <p><input type="checkbox"/> It leaves an orange smear</p> <p><input type="checkbox"/> It leaves no smear</p> <p>Other:</p>	<p>Circle all things found in soil:</p> <p>Sand particles Roots</p> <p>Tiny plant remains Twigs</p> <p>Insects Worms</p> <p>Other:</p>
<p>Any signs of wind or water erosion in this area?</p>	

Sample #2: BALLFIELD.

<p>How does the soil feel? (circle one)</p> <p>Dry Moist Wet</p> <p>Smooth Gritty Sticky</p>	<p>How does the soil smell? (circle one)</p> <p>No smell Smells dusty</p> <p>Smells woody Smells earthy</p>
<p>Make a smear. What color is it? (Place a check mark in the box)</p> <p><input type="checkbox"/> It leaves a light brown smear</p> <p><input type="checkbox"/> It leaves a dark brown smear</p> <p><input type="checkbox"/> It leaves an orange smear</p> <p><input type="checkbox"/> It leaves no smear</p> <p>Other:</p>	<p>Circle all things found in soil:</p> <p>Sand particles Roots</p> <p>Tiny plant remains Twigs</p> <p>Insects Worms</p> <p>Other:</p>
<p>Any signs of wind or water erosion in this area?</p>	

SOIL SAMPLE WORKSHEET

Sample # 3: WOODS

<p>How does the soil feel? (circle one)</p> <p>Dry Moist Wet</p> <p>Smooth Gritty Sticky</p>	<p>How does the soil smell? (circle one)</p> <p>No smell Smells dusty</p> <p>Smells woody Smells earthy</p>
<p>Make a smear. What color is it? (Place a check mark in the box)</p> <p><input type="checkbox"/> It leaves a light brown smear</p> <p><input type="checkbox"/> It leaves a dark brown smear</p> <p><input type="checkbox"/> It leaves an orange smear</p> <p><input type="checkbox"/> It leaves no smear</p> <p>Other:</p>	<p>Circle all things found in soil:</p> <p>Sand particles Roots</p> <p>Tiny plant remains Twigs</p> <p>Insects Worms</p> <p>Other:</p>
<p>Any signs of wind or water erosion in this area?</p>	