

## SOIL INVESTIGATION WORKSHEET

Name: \_\_\_\_\_

Location of soil test: \_\_\_\_\_

### 1. Soil Ingredients

Dig up a soil sample with your trowel. Put the soil on the white piece of paper and use your hand lens to observe it. Soil is made of many different things. List what you see in your soil.

### 2. Topsoil Depth

Dig into the soil with your trowel until you see the soil change color. The dark top layer is called the topsoil. The lighter layer beneath it is called the subsoil. Use your ruler to measure the depth of the topsoil.

Depth: \_\_\_\_\_ inches

### 3. Soil Texture

Place a small amount of topsoil in your hand. Add a few drops of water until the soil is moist, but not wet. The texture, or feel, of the soil can help determine its ingredients. Use the following information to describe your soil texture in the space below.

#### **Sand**

- feels gritty
- has grains that can be seen
- will not remain in a ball when squeezed

#### **Silt**

- feels smooth like flour
- is not really sticky
- forms a short snake and then breaks apart when rolled between hands

#### **Clay**

- feels really sticky
- forms a long snake when rolled between hands

Our soil sample is mostly \_\_\_\_\_. We know this because:

### 4. Soil Compaction

Perform a soil compaction test. Using your compaction stick, measure how deep you can push it into the soil.

Soil compaction measurement: \_\_\_\_\_ inches

### 5. Soil Percolation

Perform a soil percolation test. Press the can into the soil to a depth of about one inch. Pour one cup of water into the can and time how long it takes to soak into the ground. (Make sure the water is not running out from under the sides of the can.)

Time: \_\_\_\_\_ minutes \_\_\_\_\_ seconds

## 6. Soil pH

Take the pH of the soil. Follow the directions on your test kit. Most plants grow best at a pH between 6 and 7.5.

Soil pH: \_\_\_\_\_

### Cast of Characters and Their Roles

Each child should wear a tag that identifies their character

(Note: If playing with more than 25 students, make more bacteria tags)

Below is the list of characters, the number of students playing them, and props for their role.

#### Plant (2)

- Roots get nutrients and water from soil (Hold string to represent roots)
- Provide carbon and energy for fungi (Hold carbon and energy card to be handed to fungi)
- Gets water and nutrients from symbiotic relationship with fungi (Get water and vitamin bottles from fungi)

#### Earthworm (2)

- Tills and mixes soil (Hold a whisk)
- Creates space for air and water (Hold a trowel)
- Leaves casts (Hold bottle of glue)

#### Nematode (1)

- Eats plants and fungi or predator that eats bacteria (Make chomping sounds)
- Releases nutrients into the soil (Hold vitamin bottle, then hand it to plants)

#### Arthropods and Insects (4)

- (Many eat disease causing pests, help decomposition, and improve root development and aeration)
- Millipede – eats plant matter (Hold plastic millipede, make chomping sounds)
- Spider – predator, eats other arthropods & insects (Hold plastic spider, catch other arthropods and insects)
- Beetle – predator or eats plant matter (Hold plastic beetle, some make chomping sounds and some catch other arthropods and insects)
- Mite – predator, eats plant matter or fungi (Hold “Good Guy” sign, some make chomping sounds and others catch protozoa and bacteria)

#### Fungi (2)

- (Symbiotic relationship with plants)
- Attach to plant roots (Hold onto a plant's string)
- Transfer water and nutrients to plants (Hold water and vitamin bottles, then hand it to plants)
- Plant gives it carbon and energy (Get carbon and energy signs from plants)

#### Bacteria (6-11)

- (Tiniest and most numerous, one cup of soil = billions)
- Decompose dead organic matter and release nutrients for plants (Hold vitamin bottle, then give it to plants)
- Protozoa (3)
- Microscopic plant eaters that release nitrogen (Throw nitrogen signs)