

PRELIMINARY ACTIVITY FOR

Managing Garden Soil Moisture

Compost, aerobically decomposed remnants of organic materials, is commonly mixed into soil to improve soil fertility and water holding capacity. Grass clippings, leaves, sawdust, kitchen refuse, wood ashes, garden refuse, and shredded newspapers are just some of the common materials that are composted.

Mulch, in contrast, is placed on the soil surface. Mulch affects soil moisture by slowing evaporation, reducing weed transpiration, and reducing runoff. Grass clippings, leaves, sawdust, wood chips, straw, shredded newspapers, and compost are common materials used as a mulch. Inorganic mulches, such as plastic sheeting, rocks, and gravel are also widely used.

Commercial *water absorbing polymers*, such as Soil Moist[®], Stockosorb[®], and Terra-Sorb[®], are water management tools that purportedly reduce evaporation, water runoff, and soil erosion when mixed into soil.

In the Preliminary Activity, you will gain experience using a Soil Moisture Sensor and learn soil moisture measuring technique as you determine the soil moisture of a soil sample.

After completing the Preliminary Activity, you will first use reference sources to find out more about soil and managing soil moisture before you choose and investigate a researchable question dealing with the management of soil moisture. Some topics to consider in your reference search are:

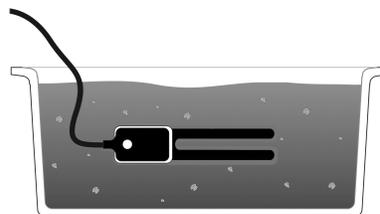
- soil moisture
- compost
- mulch
- managing soil moisture
- soil
- water-absorbing polymers

PROCEDURE

1. Connect a Soil Moisture Sensor and the data-collection interface.
2. Obtain a soil sample.

3. Position the Soil Moisture Sensor. **Note:** The long axis of the sensor should be placed horizontally, with the short axis or “blade” oriented vertically as shown in the figure below.

- a. Use a thin implement such as a flat-bladed trowel to cut a slot in the soil.
- b. Place the sensor into the hole, making sure the entire length of the sensor is covered.
- c. Press down on the soil along either side of the sensor with your fingers. Continue to compact the soil around the sensor by pressing down on the soil with your fingers until you have made at least five passes along the sensor. This step is important, as the soil adjacent to the sensor surface has the strongest influence on the sensor reading.



Experiment 13

4. Collect data.
 - a. Start data collection.
 - b. Stop data collection after the displayed readings have stabilized for 15 seconds.
 - c. Determine the mean soil moisture value for the flat portion of your graph using the Statistics function. Record the value (in %).
5. When removing the sensor from the soil, **do not pull it out of the soil by the cable!** Doing so may break internal connections and make the sensor unusable.

QUESTIONS

1. What was the soil moisture value (in %) for the soil sample you tested in the Preliminary Activity?

2. Some material used for making compost, such as grass clippings, leaves, sawdust, and coffee grounds, are found nearly everywhere. Other desirable composting materials, such as grapevine waste and seaweed, are not available in all locations. List three materials used for making compost in your area that are not available in all locations.

3. Materials used as soil mulch vary from place to place. List three mulching materials commonly used in your area.

4. List at least one researchable question for this experiment.