



# Worm Watching

## Overview

Over a period of a week to ten days, students will have the opportunity to observe the unique role earthworms play in building soils.

## Suggested Grade Level

PreK – 1

## Estimated Time

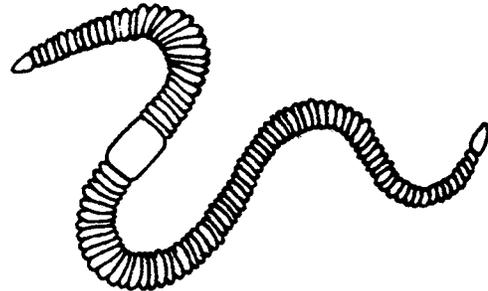
45 minutes plus observation and discussion time after 7-10 days.

## Objectives

Students will learn how earthworms help build good soil.

## Materials

1. One-gallon glass jar with holes in the lid
2. Loose soil (preferably top soil)
3. Handful of earthworms (at least six)
4. Lettuce
5. Grass clippings
6. Decaying leaves
7. Black or dark paper
8. Tape



## Background

Earthworms are very important to agriculture. They improve the topsoil and make it healthier for plant growth. The tunnels earthworms make in the soil help air and water and insects move the soil. Earthworms actually eat the soil and dead organisms in the soil. They digest the parts of the soil their bodies need and excrete what they don't need. The parts they excrete, called castings, are much richer in minerals after they have been through the worm's digestive system. The average earthworm produces its own weight in castings every 24 hours. According to the *USDA Yearbook of Agriculture*, the earthworms in one acre of land can bring to the surface as much as 20 tons of soil in one year (one acre is just about the size of a football field and one ton is 2,000 pounds).

Earthworms are found everywhere on earth, except at the north and south poles. European settlers brought earthworms to North America in the 17<sup>th</sup> and 18<sup>th</sup> centuries. If earthworms existed in North America prior to this, they probably became extinct during the last ice age that ended about 10,000 years ago.

Earthworms can be so tiny you can't see them without a microscope, or they can be several feet long. There are many different types of earthworms. They are called by many names including orchard worms, rain worms, angleworms, red wigglers, night crawlers, and field worms.

The earthworm has no head, no eyes, no teeth and no antennae. Its body is made up of many ring-like segments. There is a swollen band, lighter in color than the rest of the body, at the front of the earthworm's body.

You can usually find earthworms near the surface of the soil after it rains. They will die if they dry out and do not like strong light. Earthworms are very sensitive to chemicals. Some people raise earthworms to sell as fish bait or to help enrich poor soil.

### **Activity**

1. Fill the gallon glass jar loosely with damp topsoil, leaving at least two inches at the top.
2. Share background material, and allow students to examine the worms and draw or describe what they see.
3. Place the worms in the jar, and cover them with lettuce and grass clippings or decaying leaves. Wrap the jar with the dark paper, and tape it in place.
4. Leave jar in a cool, dark place for at least a week. Have students take turns dampening the soil if needed and adding more food as the lettuce and other materials disappear. Do not disturb the jar for at least a week.
5. Have students draw pictures of the earthworms and predict what will happen in the jar.
6. After 10 days, unwrap the jar and have the students observe what the worms have been doing. Have them draw pictures of the tunnels the worms dug.
7. Take the jar outside on a warm day, and carefully dump the contents onto a flower garden or some other spot where the worms can work their way back into the earth. Have students gently probe the soil and look for signs of the food they had placed in the jar over the past 10 days.

### **Extensions**

1. Set up another jar, and feed the worms different kinds of organic materials (shredded paper, bread crumbs, thin apple slices, grated orange peel). Earthworm breeders use a mixture of cornmeal and coffee grounds. Have students keep record of how fast each item disappears and make simple bar graphs to demonstrate their data.

2. Have students brainstorm about how the earthworm got each of its names. (See background). Have each student choose a name and write a story about it.
3. If your class has started a compost pile, wait until it has had time to start decomposing, and then have an earthworm hunt. Students may use sticks, large spoons or garden trowels to dig gently through the compost. Have them look especially for wormlets (tiny thread-like baby worms about one-sixteenth of an inch long – best viewed through a hand lens).

*Adapted from Oklahoma Ag in the Classroom, Department of Agricultural Education, Communications and 4-H Youth Development, Oklahoma State University, Stillwater OK 74078*