

The Great and Powerful Earthworm

Description

Students conduct a simple earthworm experiment by preparing two boxes with organic materials and adding earthworms to one.

Objective

To illustrate the role of the earthworm as a soil tiller.

Teacher Background

Earthworms are true tillers of the soil. They digest organic matter and excrete it as castings, pellets that are excellent fertilizer high in nitrogen, phosphorous, and potassium. In this activity students will have the unique opportunity to see earthworms at work by setting up a home for them in a clear plastic or root view box. You will find information on constructing an earthworm box for your Life Lab garden in the Equipment Designs section of the Appendix. The box is easy to maintain and will give you an endless supply of castings, as well as serve as a lunch food recycling center.

Materials

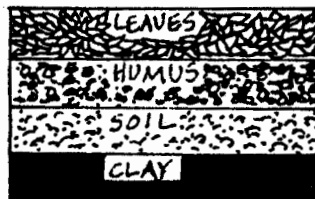
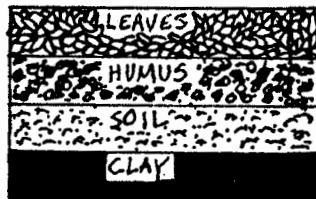
Two clear plastic containers, terrariums, or root view boxes
 One container of red worms from local fish and tackle shop
 Compost, soil, leaves, and straw to layer in each box
 Black cloth or paper to cover one box
 Life Lab journals



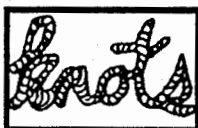
Can you imagine eating your own weight in food every day? That's what the earthworm does! The earthworm improves the soil by eating it. When the food passes through the earthworm's digestive system it is changed into a material that plants especially like. The earthworm deposits this recycled organic matter in the form of soft pellets called *castings*. These castings make good fertilizer for the plants. As scientists, how can we test to find out if worms really are earthmovers and recyclers? (Discuss possible experiment designs.)



1. Have students set up two containers as shown in the drawing.



2. Have students place the worms in only one of the containers and keep the soil in this container slightly moist.
3. Have students describe and draw pictures of the soil in both containers. Ask them to predict what will happen to the soils.
4. Have students cover the worm container with black cloth or paper. Allow air holes for breathing.
5. Have students keep a log in their Life Lab journals, recording and drawing observations.
6. Have students remove the black cloth daily over the course of a few weeks to observe the effect of earthworms on the soil. Point out their tunnels and explain that these let in water and air needed by plants.
7. Have students compare the soil in the two containers. How is the earthworm like a tiller? How is it able to recycle materials in the environment?
8. Have students place the earthworms in the garden. Make sure the earthworms are covered with some soil.



How did you know the earthworms were changing the soil? What was the purpose of the control box? What did you learn about earthworms? How can earthworms help your garden? How are earthworms recyclers?



1. Have students construct an earthworm box for the garden. Have them feed the earthworms vegetable lunch wastes and keep the soil moist. In return, the earthworms will leave their castings on the surface of the soil for you to use as garden fertilizer. Extended activities include weighing the daily waste that gets recycled, comparing beds grown with earthworm castings to beds grown with compost or with no fertilizer, and writing stories about earthworms.
2. Have students hold an earthworm race. Put the earthworms in the center of a circular piece of paper. See which one crawls out of the circle first. What conditions make the earthworm move faster or slower? (light and darkness)