Make an Earthworm Hotel

See what difference earthworms make to the soil

**because even earthworms like a holiday!*

GROW OBSERVATORY

Earthworms, also known as soil engineers, are one of the key soil organisms for improving soil structure and fertility. They help to decompose organic material by dragging it down into the soil and unlocking its nutrients through digestion; the nutrients are excreted in earthworm casts (faeces). Not only do earthworms help to make soil more fertile, but their burrowing habits alter the physical structure of the soil – opening up small spaces known as pores. This leads to an increase in water infiltration, bringing water and water-soluble nutrients down to the plant roots. This extra space also allows for the soil to hold more air, which is important for plants and organisms within the soil

Why an earthworm activity?

Earthworms are a great example of how something small and seemingly insignificant can have a huge impact on our soils. We are going to look at this first-hand through a simple and fun activity.

What you need for this activity

For this activity you are going to have two containers – a control container and a treated container. Both containers will be filled with compost, but one of them will have added earthworms (your treatment) and one will not (your control). For example, in this activity the control container will go through all of the same procedures as the treatment container, but it will not have worms added. This will allow you to see the difference that the worms make to the soil by comparing it with the control.

You will need:

1. 2 x 2l plastic bottles
2. Scissors to cut the tops off your bottles and add holes to your cling film
3. Gravel to put in the bottom of your bottles
4. Sand to create layers
5. Compost, you need enough to fill both bottles
6. Food scraps to feed your worms
7. A spray bottle of water to moisten your compost
8. 2-3 earthworms to add to your treatment bottle
9. Food wrap to cover your bottles
10. Dark paper to cover your bottles

TIP

A control is something in an experiment that goes through all the same procedures as a treatment, but does not receive the treatment.

Instructions

1. Prepare your bottles: Cut the tops off two plastic bottles and label them. Label one "control" and the other "earthworms". (Photo 1)
2. Gravel: Add 2 centimetres of gravel to the bottom of your bottles.
3. Compost and sand: You need to fill your bottles with compost. Add several layers of sand of approximately 0.5cm thickness throughout the bottle. You want them to be thin layers, but also visible from the outside of the bottle. As you add the compost, moisten it with water from your spray bottle. You do not want the compost to be dry, or saturated.
4. Find some worms: Find 2 to 3 earthworms by digging around in your garden, or somewhere where you have permission to dig. Add these worms to your designated "treatment" bottle.
5. Add food: Add a layer of vegetable food scraps to the top of your compost in each bottle. This is what the earthworms will eat. (Photo 2)
6. Cover the bottles: Cover the top of your bottles with food wrap. It is crucial that you add holes to it (try using a pencil or scissors) because earthworms need air. Tape dark paper around the sides of your bottles. Earthworms dislike light. You can take this off to observe your worms, but put it back on afterwards. (Photo 3 and 4)
7. Store your worms: Keep your worms away from direct sunlight. A dark cupboard would be perfect.
8. Water your worms: Add two teaspoons of water to your soil each day to keep it damp. If it is looking dry, add a little more.
9. 2 weeks later: After 2 weeks, take the black paper off both of your bottles and observe the difference. There should be a big difference!
10. Return your worms: Return your worms to where you found them so they can continue to improve the soil!

photo 1

photo 2

photo 3

photo 4

TIP

When doing experiments, it's important to record what you discover. This is your data. For this activity, you might take photos of your Earthworm Hotel each day to record what changes you can see. You might also keep track of how much food you give them, and any other interesting observations.

Recording data is an important part of being a citizen scientist!

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