

Worms Vermi-Composting In The Classroom

Maine Learning Results: Science:F2, F4, M4, M6

Purpose: To give students a better understanding of composting in general and introduce a vermi-composting project to the classroom. Students will learn both the anatomy and amazing abilities of the worm, and worm care.

Key Concepts:

- Composting is a way to recycle food
- Using red wiggler worms is a way to compost food scraps
- Worms require weekly care to be healthy and make compost

Activity: Begin by introducing the concept of composting as recycling. Most students are familiar with recycling paper, metal, plastic etc. but the idea of recycling food may be new. Composting can be linked back to the lesson on soil health. A quick explanation that there are different types of compost may also be appropriate, for example, the most common way of composting is to keep a food scraps in a pile outside, but what they will be focusing on today is composting with worms: vermi-composting.

Next move the discussion to the subject of the worms themselves. A good way to begin it is to explain the fallacy that when you cut a worm in half, you get two worms. That is not true, and cruelty to worms should not be permitted, of course. Explain that worms have something like a brain, a heart, a nervous system, and a digestive system. Ask students what they think a worm needs to live and stay healthy. Food, shelter and air are all fairly standard for living things, but water is where worms differ from us. Worms breathe through their skin so water is important not for drinking but for keeping their skin moist so that gas exchange can occur. One can draw the comparison to human lungs, which are also moist to allow oxygen to be exchanged across the membrane.

Then, as a class you can assemble the worm bin. Shred the newspaper and place it in the bin. Add food scraps. Evenly moisten the newspaper by sprinkling water over the bin. Then add the worms. The bin will need a lid with holes poked in it, so that the worms can stay moist and dim and still get oxygen. It can also be helpful to have drain holes in the bottom of the bin and a tray beneath it, because worms create a nutrient rich moisture as they process the food that can be captured and fed to plants in the classroom. Worms need to be fed regularly but not overfed, because food that they don't eat will rot in the bin. They also need to be checked regularly to make sure that they are not dry. Every few days should be sufficient, and depending upon the number of worms, the health of the worms and their environment, their ability to process food will vary.

Materials:

- 1 pound of red worms
- wooden or plastic bin
- newspaper

- food scraps
- a picture of worm anatomy is helpful, or a projection for the overhead

Guiding Questions and Information: Compost as Recycling

Q. What is recycling? A. To extract and reuse useful substances found in waste.

Q. What are some things that we usually recycle? A. Paper, glass, metal, plastic.

Q. What about recycling food, how can we do that? A. Compost!

Q. Why do we want to make compost for soil? A. Soil health, refer back to lesson.

Types of Composting Pile or Heap Composting: What people who have compost bins outside do. Bacteria are what break down the materials.

Vermi-Composting: Uses red wiggler worms to break down the materials. (Red wiggler worms can be obtained from anyone that you know who already has a worm bin. You only need a few to start and soon you'll have some to give away as well! They can also be bought over the internet from various farm and garden supply companies.) As the food rots, the worms eat the rotten parts and produce "castings". Castings are really just a fancy word for worm poop, and they are excellent fertilizer for plants.

How to care for the bins: Once a week check for bedding moisture, food, and when you feed them put the food in different places around the bin.

What they like: fruit, vegetables, small amounts of bread, dried and ground up eggshells

Things not to feed worms: citrus peel, onions, broccoli and it's relatives, meat, dairy, oily foods

For further reading and lesson plans we suggest Elizabeth Patten's book *Healthy Foods from Healthy Soils*, and the worm composting curriculum guide *The Worm Cafe*.