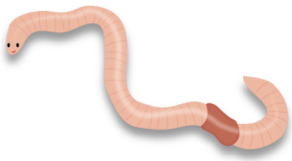
Decomposers Help Our Planet



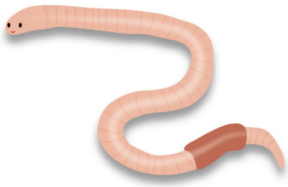
What do millipedes, banana slugs, worms, bacteria, and mushrooms have in common? They are all **decomposers** or living things that eat organic matter. **Organic matter** includes pieces of plants and animals that were once alive and are now in a state of rotting or decay. This includes leftover food like orange peels, half-eaten sandwiches, and apple cores. When decomposers eat organic matter, they pass it through their bodies and break it down into compost.

Compost looks like dirt or soil and is the color of dark chocolate. It is crumbly and smells clean and fresh like the earth after it rains. Compost acts like a vitamin pill—it adds important vitamins or nutrients to the soil. Just like people need vitamins to stay strong and healthy, so do plants. When the soil is full of nutrients, more plants are able to grow. Compost can help produce more food for people in a natural and earth friendly way.

Nature's Way of Recycling

Out in nature, decomposers live under logs, rocks, and leaves. They feast on organic matter and leave behind nutrient rich compost for meadows, forests, and mountains. This is nature's way of recycling! Decomposers can live in many different places, including our backyards. Since decomposers help in a process called **composting**—where the natural process of decay is sped up—some people create homes for decomposers by layering leftover food and yard clippings in piles outside. These are called compost piles and with all the different layers, they can look like backyard lasagna!

Earth Builders



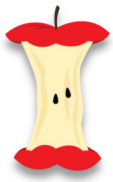
Decomposers living in the compost pile—such as worms and pill bugs—have important jobs. They help keep the pile warm, they dig, they chew, and they digest our leftover food into compost. For instance, earthworms pass food through their bodies and leave behind **castings** or nutrient rich pieces of crumbly compost that provide plants with vitamins. These castings or compost can be added to houseplants, gardens and even to farmland where farmers grow our food. As the decomposers feast on the rotting organic material, they break down the organic material even further, which gives off heat. You may notice your composter increasing in temperature as time passes. When a compost pile cools, that means that the breakdown of materials is complete and bacterial activity has slowed considerably.

Food Comes from the Earth

Although the earth is large, only a fraction of our land can be used for growing food. This land is called **topsoil**. Topsoil is the top 6 inches of soil that contains nutrients that plants need to grow. Most topsoil is covered by roads, buildings, houses, and parks. Some topsoil is unusable in areas like mountains that are too rocky or steep to grow food crops. Other times, topsoil is blown away by the wind or washed away by rain. In other situations, too much farming in one area, or **over-farming**, has drained or depleted important nutrients from the soil. Because of this, only a small amount of topsoil is left for growing food to feed the six billion people on Earth.

Happy Topsoil

Compost keeps our topsoil healthy in different ways. By making the soil moist, compost adds form or structure to the topsoil so it doesn't blow away with the wind or wash away with water. Compost also **aerates** or adds air to the soil, which allows water to sink in and reach plant roots. By providing moisture, air and nutrients to the soil, compost makes topsoil **arable**, or able to grow food. If you have ever dug in the dirt, you know it is difficult to do when the dirt is dry and hard. Since most plants can't grow in dry, hard dirt, compost adds air and water to topsoil making it soft and moist. It is much easier for plants to grow in this arable soil.



Garbage Graveyards

Composting leftover food not only adds nutrients and structure to the soil, it also saves space in the landfill. A landfill is a big hole in the ground that is filled up with trash. Landfills don't have room for air or water, because all the trash is crushed down to make space for more trash. Without air and water, decomposers can't survive, so they can't break down the food that ends up there. Landfills are like graveyards for garbage, once garbage goes there, it stays there for a very long time. In fact, scientists estimate that it takes about eighteen years for one corn cob to decompose in a landfill instead of only a couple of months in a compost pile! When food is composted, it breaks down much faster and recycles itself into new life instead of sitting trapped in the landfill for many, many years.

Trash Gas

Landfills are more than just garbage dumps; they also leak harmful gases into the air that are changing the temperature of the planet! When leftover food is trapped with no air, a gas called methane is created. Methane is a powerful greenhouse gas that traps heat from the sun. This is important because it keeps our planet warm enough so we can survive. However, if too many greenhouse gases are created, then too much heat gets trapped in the atmosphere or layer of air surrounding the earth. Over time, this raises the average temperature of the planet and creates serious changes in our weather. This is called global warming or climate change. Most scientists agree that global warming is already happening due to human activities like burning oil and gasoline.

Dumping garbage in landfills—especially food waste—is another human activity that is leading to global warming. Since landfills don't have much room for air, a lot of methane is created and released from them. In fact, landfills are the largest source of methane in the country! Fortunately, we can reduce the amount of methane produced just by composting our food instead of tossing it in the trashcan.

Let's Help Nature!

All of Earth's creatures depend on healthy topsoil to survive. Composting is nature's way of recycling leftover food into valuable compost. By composting whenever possible, we can add nutrients to the topsoil, save space in landfills, and help prevent global warming. Let's help nature, let's compost!

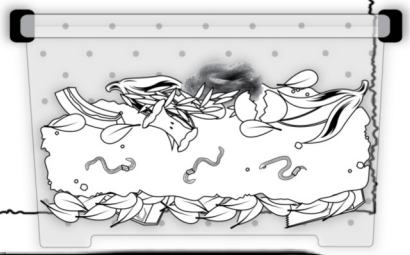
COMPOSTING *is* FUN!

Name _____ Date _____

Decomposers and Composting Reading Guide

List 6 different decomposers that are discussed in the reading passage.

Describe what compost looks like and smells like.



Define the following terms:

Composting:

Decomposers:

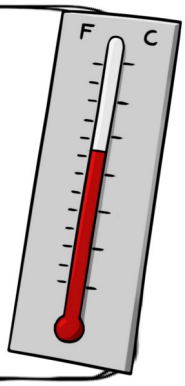
Organic matter:

Castings:

Topsoil:

Aerate:

Why do compost piles get warmer (increase in temperature)?

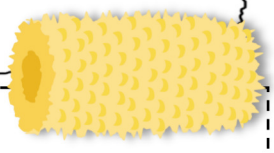


In paragraph 5, what is the meaning of "depleted"?

In order for topsoil to be arable (able to grow food), it needs what 3 things?

Decomposers can't survive in landfills because they don't receive enough _____ or _____.

A corn cob takes _____ to break down in a landfill and _____ to break down in a compost pile.



When food is trapped in a landfill without air, it creates a harmful gas called _____. This gas is classified as a _____ gas. When too many of these gases get trapped in the atmosphere, it can cause 2 major changes to our planet. What are they?