

Garbology Student Fact Sheet C-2

K-12 Standards

Composting with the FBI

Vitamins for the Earth

Every human being on the planet needs food to survive. From pickles to pizza, all food comes from the earth! In order to grow food, we need topsoil, which is the top six inches of the earth's soil. One way to keep topsoil healthy is to add compost. It looks like dirt and is dark like chocolate. Compost also smells fresh like rain and contains many nutrients, or vitamins, that help plants grow. Nature creates compost with help from the FBI!

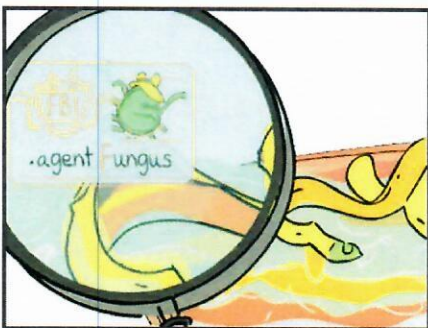
The FBI Hard at Work

The FBI or Fungus, Bacteria, and Invertebrates are also called decomposers. Decomposers break things down. They help turn organic matter like decaying plants and animals, into vitamin rich compost. Compost is created when the FBI eat and digest items such as old bread, dried leaves, and banana peels.

The FBI decompose food in different ways:

F is for Fungus

When bread sits around for too long, it starts to grow a fuzzy white or green mold. This is the work of fungus, a group of organisms or living things that include mold and mushrooms. Like our bodies, mushrooms produce powerful chemicals that break down food. These chemicals



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are called enzymes. As mushrooms release enzymes, they are able to dissolve organic matter around them.



B is for Bacteria

Zillions of bacteria are all around us! Bacteria are living things so small that we cannot see them without the help of a microscope. While some bacteria make us sick, other bacteria are used in medicine to keep us healthy. Bacteria keep our eyelashes clean and give yogurt its sour flavor.

Bacteria also help make compost. For instance, one type of bacteria warms the compost pile so that the other bacteria can survive. As bacteria break down organic matter, nutrients are released into the compost.

I is for Invertebrates

Invertebrates are animals that do not have backbones. They wriggle, crawl, and slide their way through the compost pile. Invertebrates break down organic matter by chewing and grinding. Slugs, snails, spiders, worms, beetles, mites, ants, and sow bugs are some members of the invertebrate work force!

Each invertebrate plays a different role in the compost pile. For example, not only do sow bugs eat decaying leaves, they also carry bacteria and fungi around the pile on their rounded backs. They're sort of like taxi drivers! Snails and slugs chew rotting material into pieces small enough for other decomposers to eat, and millipedes and beetles feed directly on decaying plants and animals. Worms have a different role to play. As worms wriggle and dig through the compost pile, they aerate, or add air to the pile. This air helps keep the FBI alive.



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Let's Help Nature!

Nature is constantly filled with things that die, decay and get born anew. For instance, a dead redwood tree decaying on the forest floor provides a perfect home for a new redwood sapling to grow. This shows nature's ability to recycle organic matter. We can help nature recycle our own organic waste by composting at home or at school. Instead of throwing leftover food into the trashcan, we can compost it! The rich compost we create can then be used for houseplants, gardens and farms.

There are several ways to compost:

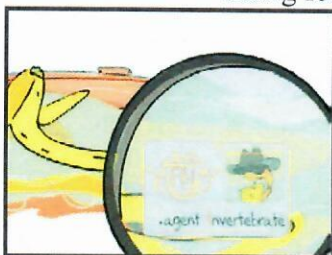
Outdoor Pile

Many people create compost piles in their backyards that look like compost cake! That's because outdoor piles have layers of different materials like kitchen scraps and yard waste. Piles are stirred with a shovel to bring air to the decomposers. As organic matter breaks down and decomposers move around, the pile can become hot. Some compost piles get so hot that steam comes out when they are stirred! Keeping the pile as moist as a wrung-out sponge helps decomposers survive and do their job well. It can take anywhere from about one month to a couple years to create finished compost, depending on what is put in the pile and how often it is stirred. Animal products like meat, cheese and eggs should not be put in outdoor piles because they can attract rodents like rats. They can, however, be put into the green bin.

Composting with Worms

Worms are composting champions! One way to compost is to create a worm bin that can be kept

in your classroom. Worms scoop up food with their shovel-like mouths and pass it through their bodies. What goes into a worm as a banana peel comes out the other end as crumbly compost called castings. Castings look like coffee grounds and are full of vitamins. Since worms don't like eating foods like meat and cheese feed them only fruits and vegetables instead.



Using the Green Bin

Residents of many cities can now put yard waste and leftover food—including all animal products—into a big green bin and place it on the curb to be picked up along with other items to be recycled. The contents of the green bin are taken to a composting facility and after three months the organic waste is transformed into compost and is ready for use. Farmers in the area then buy the compost to use on their organic farms, which grow food to feed people. By placing pizza crusts, apple cores, and banana peels in



the green bins, the people of San Francisco help create new food from old food!

The FBI Needs You!

The FBI are amazing creatures that turn waste into compost. This natural fertilizer builds healthy topsoil and helps protect our planet's food supply. You can assist the FBI by building a compost pile or a worm bin, and by using the green bin at home or school if you live in San Francisco. Let's help the FBI. Let's compost!

National Science Standards Addressed

- Grades 9-12: Interdependence of organisms (12CLS4)
- Grades 5-8: Energy transfer, food webs (8CLS4.3)
Soils (8DESS1.5)
- Grades K-4: Organisms and environments (4CLS3)

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