mystery science

Grades K-5
Mini-Lesson: “How does composting work?”

VIDEO TRANSCRIPT

Hi, it's Danni! When I was growing up, my grandfather had a huge garden. He planted bananas, tomatoes, cucumbers, and ackee. That's a fruit he grew up eating in Jamaica. Everything was delicious. And at the end of each meal, I knew the routine. We'd scrape off our plates, not into the trash, but into a little container. It was an old butter tub, stuffed with fruit rinds, and veggie peels. To my grandfather, it was full of garden gold. Someone named, Callum, has a question about something you can do with food scraps. Let's give Callum a call now.

[Video Call]

- Hi, Danni!

- Hi, Callum!

- I have a question for you. How does composting work?

- Great question.

Maybe you've heard of composting before. Sometimes you'll see bins, like this. One for compost, one for recycling, and one for trash. The compost bin is like a big version of my grandfather's container. You put in your food scraps. Then those food scraps get turned into something called, compost. Looks, kind of, like garden soil, right? People add it to farms and gardens, like my grandfather did, and the compost helps new plants grow. But how does this,

turn into this? What do you think? How do food scraps turn into compost? Now, would be a good time to pause the video, and discuss. Okay, are you ready? I'm not sure how you answered, but maybe you guessed it had something to do with how food can change over time. Have you ever had a piece of fruit go from ripe to rotten, or forgotten to unpack your lunch for days? When you finally found it, that food probably looked and smelled different. It may have been mushy, or covered in fuzzy spots. Could that mushy and fuzzy food turn into compost? You're on the right track. Those changes are an important part of how composting works. So, what's causing those changes? Something's definitely happening with those fuzzy spots and there's even more going on, that you can't see. If you zoomed in, you'd see things like these. They look like beads on a string or footballs from outer space. Some are fungi. They're the ones causing the fuzzy spots. You might be more familiar with a different kind of fungi. Yep, mushrooms. But the fungi we are talking about, are too tiny to see. Others here are bacteria. You may have heard of them too. Some bacteria can make your body sick, but other kinds, don't bother us at all. These fungi and bacteria are microorganisms. You probably know what micro means. It's something very tiny. And organism means an individual living thing. Like, one kid. Put those parts together, and that means a microorganism is a tiny, living thing. These fungi and bacteria, are living things, like you. You might be surprised that a kid, and a fuzzy sandwich, have something in common, but think about the things you need to live. You need food for energy, and to help you grow. You need water to drink, and you need air to breathe. Many microorganisms need the same things. To make compost, you need to make sure that microorganisms have everything they need to live. First, microorganisms need food. Maybe you already guessed that your food scraps become food for the microorganisms. Hey, if you don't eat your lunch, they will. They also need dry options, like, dead leaves, and shredded paper. Check out what the microorganisms need now. It's water. Microorganisms need to be just a bit

damp. And see how this person uses a pitchfork to turn over the pile. That's one way to make sure microorganisms get the air they need. If you take care of the microorganisms, by giving them the right balance of food, water, and air, they take care of the rest. The food scraps, leaves, and bits of paper start to change. The microorganisms break them down into smaller and smaller parts. They take things apart, to get what they need. That's why they're also called decomposers. Eventually, you can't tell what anything used to be. It's all been broken down into compost, which will help new plants grow. This process also happens without help from us, in a forest, fallen leaves, branches, and dead animals, get slowly broken down, and become a part of the soil. You might see some worms and beetles breaking things down, but there are many more microorganisms you can't see that make this change happen. Okay, so there are bacteria and fungi in a forest, but how do they get into the composting pile? Did we miss a step where the microorganisms get added? Well, even though you couldn't see them, microorganisms were already on the food scraps. On the leaves, in the water, and in the air. Microorganisms are all over the place. However, there is a place where microorganisms have a hard time making compost. It's a landfill. In a landfill, those microorganisms don't get the air they need. So any food scraps there, take longer to break down, and they don't become compost that helps new plants to grow. When food scraps become compost, instead of trash, that helps the earth. Find out what composting options are available where you live. So, in summary, composting works, thanks to tiny microorganisms, like, bacteria, and fungi. By giving these microorganisms the things they need to live—food, water, and air—they break down our food scraps and change them into compost, which gets used to help new plants grow. How cool is it that your food scraps can help make more food? That's all for this week's question. Thanks, Callum, for asking it!