mystery science

Grades K-5
Mini-Lesson: “How does an acorn become an oak tree?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Esther. In my hand, I'm holding dozens of future plants. See that? They're seeds. To give my seeds the best chance to grow, I put some dirt in a planter, make a hole, then drop a seed in and cover it up. With some water and patience, my seeds eventually start to sprout. And once they're big enough, I add them to my garden where they bloom into flowers. Someone named Matthias has a question about seeds. Let's give Matthias a call now.

[Video Call]

- Hi, Esther.
- Hi, Mattias.
- I have a question for you. How does an acorn become an oak tree?
- Oh, that's a great question.

Acorns come in lots of shapes and sizes. Some of them are even as big as golf balls, but all acorns are seeds just like the seeds from my garden. If you crack open an acorn's hard outside layer, you'll find the seed inside. It seems incredible that a small seed like this can become a huge tree like this. It's a process that takes a long time, and it's dangerous. Being an acorn is rough. Think about it. Maybe you've seen acorns covering the ground before. An oak tree can

drop hundreds or even thousands in one year. Imagine if all these acorns grew into big trees—except that doesn't really happen. We don't get hundreds of oak trees like this. Out of all these acorns, only a few will grow into trees. But why is that? What could happen to an acorn that would stop it from becoming a tree? I'm curious what ideas you have.

VIDEO 2

You probably had lots of ideas. Like, what if all these acorns are too crowded to grow? They can't get up and move, and they can't choose where they fall. An acorn that lands on hard cement is not in a good place to grow. And maybe you guessed that some acorns get eaten. Like I said, it's dangerous being an acorn. They're food for many different animals like chipmunks, blue jays, and raccoons. When there are lots of acorns, animals have plenty to eat now, plus extra acorns they can save for later. You've probably seen a squirrel do this. It carries off an acorn, then finds a hiding spot, like here, buried underground. Being carried off might seem like a bad thing, but actually, that might be one lucky acorn. Watching this squirrel hide its food reminds me of planting seeds from my garden. It's kind of like the squirrel is planting the acorn. And if it doesn't get eaten later, that acorn is in a great place to grow. It's protected by soil, the mixture of materials underground. There's also water in the soil. And you know plants need water to survive. This sped-up video shows what happens next to an acorn underground. See that thing starting to poke out? It's growing down deeper into the soil. That might give you a clue about what part of a tree this will be. This is a tap root. It's the first of what will someday be a network of roots. Roots help an oak tree take in water and anchor into the soil. Now that there's a tap root, another part of the seed is ready to grow. It's growing up, all the way out of the ground. Maybe you can guess what part of the tree this will be. Right now, it's called a shoot, but someday it will be part of the tree's trunk, the part that branches and leaves grow out from. A

little oak plant like this is called a seedling. It's on its way to becoming an oak tree. But watch out. Being a seedling is dangerous, too. Many will get eaten or damaged, but the ones that do survive slowly grow bigger. This oak is about five years old. It's starting to look more like a tree, but for now, it's called a sapling. An oak sapling grows more quickly. Its trunk gets thicker around and it forms more bark, the tough outer layer that protects a tree. An oak sapling grows and grows into a bigger and bigger tree until finally, up in its branches, these start to form: tiny acorns! Once acorns appear, it's officially considered an adult oak tree. Growing from acorn to oak tree can take about twenty to forty years. If an acorn was planted on the day you were born, you could have your first gray hairs by the time it made its first acorn. And the story doesn't end there. Once it starts making acorns, an oak tree can keep growing, sometimes for many, many years. Today, this massive oak tree is still growing. It's been growing since before there were computers or light bulbs or even eyeglasses. More than one thousand years ago, it started as a little acorn, one of the lucky few that survived. So, in summary, it takes years for an acorn to become an oak tree. From a seed, it grows into a seedling with roots and a shoot. From a seedling, it grows into a sapling, getting bigger and growing bark. From a sapling, it finally grows into an oak tree, which can make more acorns. Then the long process can repeat again: seed, seedling, sapling, tree. But only a few acorns will avoid landing in a bad spot or being eaten as a seed or eaten as a seedling. When you see a big oak tree like this, remember that out of hundreds of acorns that fell together, this is one of the lucky few that got a chance to grow. That's all for this week's question. Thanks, Matthias, for asking it.