

## UNDERSTANDING CAUSE AND EFFECT

Read the passage and answer the questions.

### Can Trees Talk?

By Leeann Zouras

If someone asked you if trees could talk to each other, you might say no. But scientists are listening to trees in whole new ways. Now, they think the answer to that question is yes.

#### Hidden Helpers

Trees don't whisper to each other in the wind. They talk to each other with the help of fungi (mushrooms) deep underground. Scientists sometimes call this the "wood wide web," because it's a bit like the Internet for trees. How does it work? Imagine following a tree root deep underground. You notice that the roots are covered in fine white fuzz that stretches out into the soil, like a cottony web. Did spiders do this? No, the white threads are hyphae, the underground part of mushrooms.

The hyphae's job is to soak up minerals and water from the soil. The fungi use some themselves and pass some to the trees they stick to. In exchange, they sip some of the sugar the trees make. These thin fungus threads can connect many trees, stretching for miles underground. Trees can use the fungus network to exchange food and chemicals with each other—a tree form of talking. Scientists discovered this when they were studying how carbon travels through a tree. They fed one tree a special kind of carbon dioxide and measured where it went in the roots and leaves. To their surprise, they also found the special carbon in the roots of nearby trees—even of completely different species. The trees were sharing!



## Stand Together

Trees in a forest can use the underground fungus network to help each other. They send extra sugar along to neighbors who are sick or injured or don't get enough sunlight. They can also use the network to warn each other of danger. If a tree is being nibbled by bugs, it makes bugs repellent. Other trees taste this through the fungus network. Then, its neighbors also start making poison before the bugs arrive. That way, all the trees do better.

The biggest trees in a network usually send the most signals. These big, busy trees are called mother trees, although they don't have to be female. Mother trees can be linked to hundreds of other trees. Sometimes, trees link roots directly. Neighbor trees often have connected roots. This helps trees stay upright in high winds and lets them share nutrients more easily.

Trees can also sound the alarm with scents. In Africa, when a giraffe munches on an acacia tree, the leaves release ethylene gas. Leaves on other trees breathe in the ethylene. This triggers them to fill their leaves with poison. Giraffes walk away from them to a tree farther away. Though trees may be quiet giants, they can say plenty if you know how to listen.



**1. Identify the cause and effect.**

**Cause:** The leaves of the acacia tree release ethylene gas.

**Effect:**

Four horizontal lines for writing the effect.

**Effect:** Scientists fed one tree a special kind of carbon dioxide, and measured where it went in the roots and leaves. They also found the special carbon in the roots of nearby trees.

**Cause:**

Four horizontal lines for writing the cause.

**2. Identify the solution for the problem stated below.**

**Problem:** Some trees in the forest do not get enough sunlight.

**Solution:**

Two horizontal lines for writing the solution.

