Name: _____ Date: _____

The Fungus Partners Beneath a Forest

Circle group

Under a forest floor, there is a hidden team. Most trees do not drink water through their roots alone. Thin threads of fungi grow around the tips of the roots. This team is called mycorrhiza. The word means fungus root.

The fungus is made of tiny threads. They spread through the soil much farther than roots can. The threads soak up water and minerals, such as phosphorus. They pass some of it to the tree.

The tree gives something back. It makes sugar in its leaves from sunlight. It gives some of that sugar to the fungus. A fungus cannot make food from sunlight, so it needs the sugar.

This team is very old and very common. Fossils suggest that plants and fungi worked together when plants first spread onto land. Today most land plants have fungus partners. A mushroom on the forest floor is just a small part of a fungus. The main body stays hidden in the soil.

Both partners gain, so scientists call this a mutualism. Trees with the right fungi often grow better, most of all in poor soil. So people sometimes add fungi to the soil when they plant young trees.

Questions

1. What does the word mycorrhiza mean?

_____

_____

2. What does the fungus pass to the tree?

_____

_____

3. What does the tree give the fungus?

_____

_____

4. Why does the fungus need sugar from the tree?

_____

_____

5. Why is this team called a mutualism?

_____

_____

6. Why do people add fungi when they plant young trees?

_____

_____

Words to know

mycorrhiza: a partnership between a fungus and the roots of a plant
phosphorus: a mineral that plants need in order to grow
mutualism: a partnership in which both partners gain something

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

The Fungus Partners Beneath a Forest

Triangle group

Beneath a forest floor lies a hidden partnership. Most trees do not take in water and minerals by their roots alone. Instead, threads of fungi wrap around the tips of the roots or grow into them, forming a partnership called mycorrhiza, a word that means fungus root.

The fungus is made of microscopic threads that spread through the soil much farther and more finely than any root could. These threads soak up water and minerals such as phosphorus, and they pass some of it to the tree. In return, the tree gives the fungus sugars that it makes in its leaves through photosynthesis. A fungus cannot make food from sunlight, so this gift matters a great deal to it.

Both partners gain from the exchange, which is why scientists call the relationship a mutualism. Trees that grow with the right fungi often do better, especially in poor soil. For this reason, gardeners and foresters sometimes add fungi to the soil when they plant young trees.

The partnership is ancient and widespread. Fossil evidence suggests that plants and fungi were already working together when plants first spread onto land, and today the great majority of land plants form some kind of partnership with fungi. Many of the mushrooms that pop up on a forest floor are only the fruiting parts of fungi whose main bodies stay hidden underground.

Some researchers also study whether the threads can link neighboring trees and let materials move between them. How much this matters in a real forest is still being debated, and scientists continue to test the idea. What is certain is that the fungi beneath our feet do real work for the plants above.

Questions

1. What does the word mycorrhiza mean?

_____

_____

2. What does the fungus pass to the tree?

_____

_____

3. What does the tree give the fungus in return?

_____

_____

4. Why do fungi need sugars from the tree?

_____

_____

5. Why do scientists call this relationship a mutualism?

_____

_____

6. Why might foresters add fungi to the soil when they plant young trees?

_____

_____

Words to know

mycorrhiza: a partnership between a fungus and the roots of a plant
microscopic: too small to be seen without a microscope
phosphorus: a mineral that plants need in order to grow
photosynthesis: how plants use sunlight to make their own food
mutualism: a partnership in which both partners gain something

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

The Fungus Partners Beneath a Forest

Square group

Beneath every forest floor lies a hidden partnership that most visitors never notice. Many trees do not gather water and minerals by their roots alone. Instead, delicate threads of fungi wrap around the tips of the roots or even grow into them, forming a partnership called mycorrhiza, a word that literally means fungus root.

The fungus consists of microscopic threads that spread through the soil far more widely and finely than any root is able to. These threads soak up water and minerals such as phosphorus, and they deliver a share of them to the tree. In return, the tree supplies the fungus with sugars that it manufactures in its leaves through photosynthesis. Because a fungus cannot make food from sunlight, this gift is extremely important to it.

Since both partners benefit from the exchange, scientists describe the relationship as a mutualism. Trees that grow alongside the right fungi frequently perform better, particularly in poor soil, which is why gardeners and foresters sometimes add fungi to the soil when they plant young trees.

The partnership is both ancient and widespread. Fossil evidence suggests that plants and fungi were already cooperating when plants first spread onto land, and today the great majority of land plants form some kind of partnership with fungi. Many of the mushrooms that pop up on a forest floor are merely the fruiting parts of fungi whose main bodies remain hidden underground, spread throughout the soil.

Some researchers are also investigating whether the threads can link neighboring trees and allow materials to travel between them. How much this matters in a real forest is still being debated, and scientists continue to test the idea. What is certain is that the fungi beneath our feet do genuine work for the plants above them.

Questions

1. What does the word mycorrhiza literally mean?

_____

_____

2. What does the fungus deliver to the tree?

_____

_____

3. What does the tree supply to the fungus in return?

_____

_____

4. Why is the tree's gift so important to the fungus?

_____

_____

5. Why do scientists describe the relationship as a mutualism?

_____

_____

6. Why might gardeners and foresters add fungi to the soil around young trees?

_____

_____

Words to know

mycorrhiza: a partnership between a fungus and the roots of a plant
microscopic: too small to be seen without a microscope
phosphorus: a mineral that plants need in order to grow
photosynthesis: how plants use sunlight to make their own food
mutualism: a partnership in which both partners gain something

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: The Fungus Partners Beneath a Forest

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: The Fungus Partners Beneath a Forest

Easier · 196 words · Flesch-Kincaid grade 3.5

1. It means fungus root.
2. Water and minerals, such as phosphorus.
3. Sugar that it makes in its leaves.
4. A fungus cannot make food from sunlight.
5. Both partners gain.
6. Trees with the right fungi often grow better, most of all in poor soil.

Triangle: The Fungus Partners Beneath a Forest

This passage · 280 words · Flesch-Kincaid grade 8.3

1. It means fungus root.
2. Water and minerals, such as phosphorus.
3. Sugars that it makes in its leaves.
4. A fungus cannot make food from sunlight, so it needs another source.
5. Both partners gain from the exchange.
6. Trees with the right fungi often grow better, especially in poor soil.

Square: The Fungus Partners Beneath a Forest

Harder · 295 words · Flesch-Kincaid grade 10.6

1. It means fungus root.
2. A share of the water and minerals, such as phosphorus, that it soaks up.
3. Sugars that it manufactures in its leaves through photosynthesis.
4. A fungus cannot make food from sunlight, so it needs another source.
5. Both partners benefit from the exchange.
6. Trees with the right fungi frequently perform better, particularly in poor soil.