LEVELED BOOK • M

Why Do Leaves Change Color?

MULTI LEVEL G•J•M

Written by Kira Freed

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A fall forest has many colors.

So Many Colors

One of nature's most beautiful sights is a forest full of bright **fall** colors. Imagine making art with all those colors of paint!

Leaves in their fall colors are beautiful. Did you ever wonder why a tree's leaves **change** color? To answer this question, you need to understand the important job that leaves do.

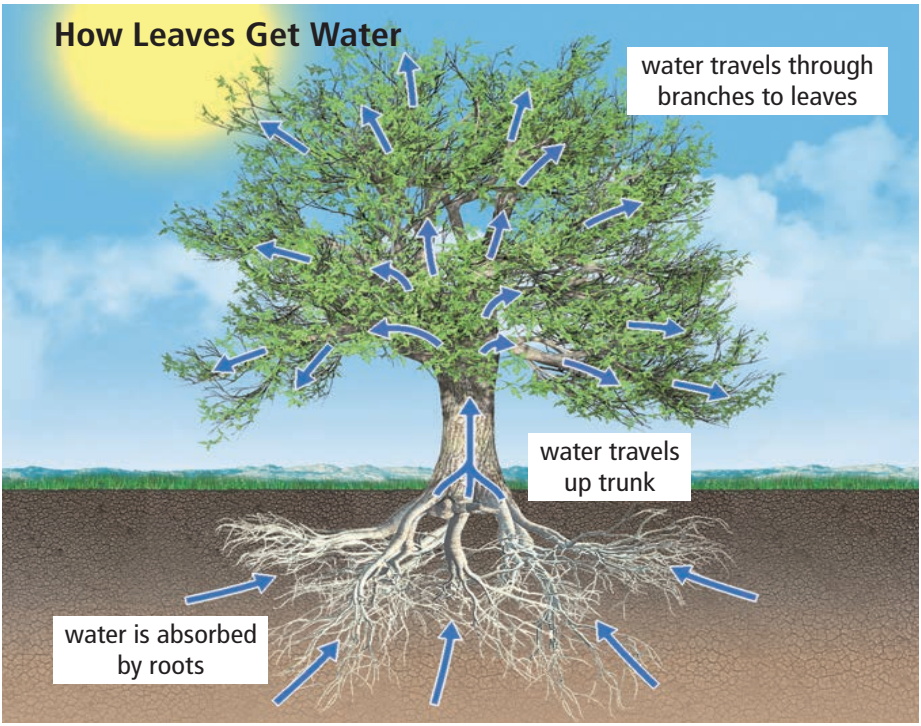
Two Types of Trees

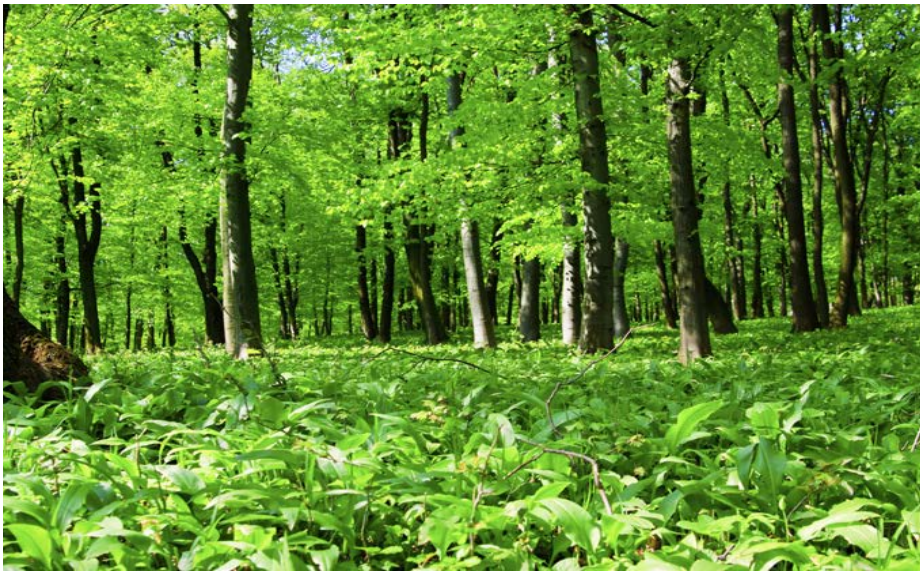
Not all trees lose their leaves in fall. Deciduous (dee-SIJ-oo-us) trees lose their leaves once each year. Evergreen trees lose and grow their leaves throughout the year. This book is about deciduous trees.

Making Food

Leaves make food so the tree can grow and have energy. This process is called **photosynthesis**. Leaves need four things to do their job.

1) Leaves need water, which they get from the tree through their stems.





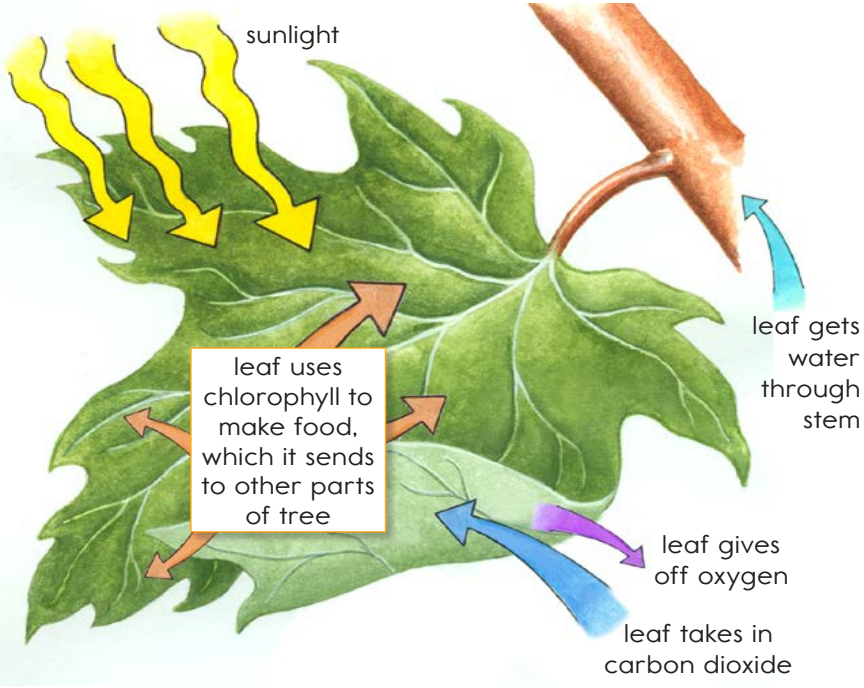
Plants get their green color from chlorophyll.

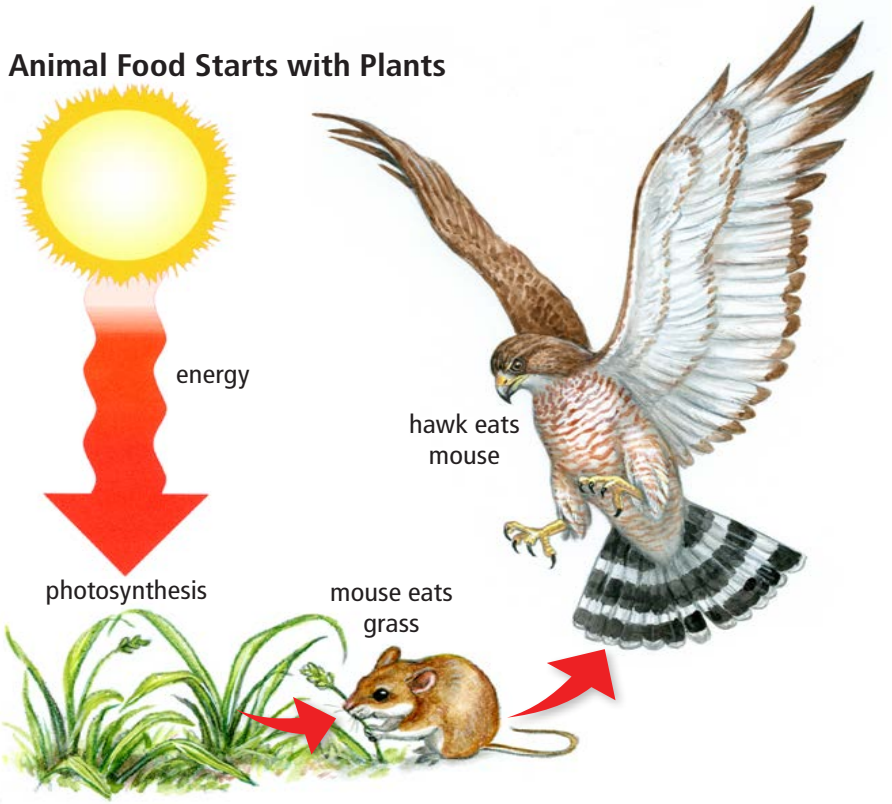
2) Leaves also need a gas called **carbon dioxide**. They take in carbon dioxide from the air around them.

3) All plants use a **chemical** called **chlorophyll** for photosynthesis. Chlorophyll gives leaves their green color. Many parts of green plants have some chlorophyll in them. Leaves have the most chlorophyll of all the parts.

4) Leaves need sunlight for photosynthesis. Sunlight and chlorophyll work together. They turn water and carbon dioxide into a kind of sugar. This sugar is the food that gives plants energy. When they make food, trees also give off a gas called **oxygen**. Animals need oxygen to live.

Photosynthesis





Almost all life on Earth depends on photosynthesis.

Photosynthesis doesn't just help plants stay alive. Photosynthesis makes food for all living things. Some animals, such as mice, eat plants. Other animals, such as hawks, eat the plant eaters. Without plants, what would hawks do for food?

It may not look like it, but this tree is working hard.

Summer

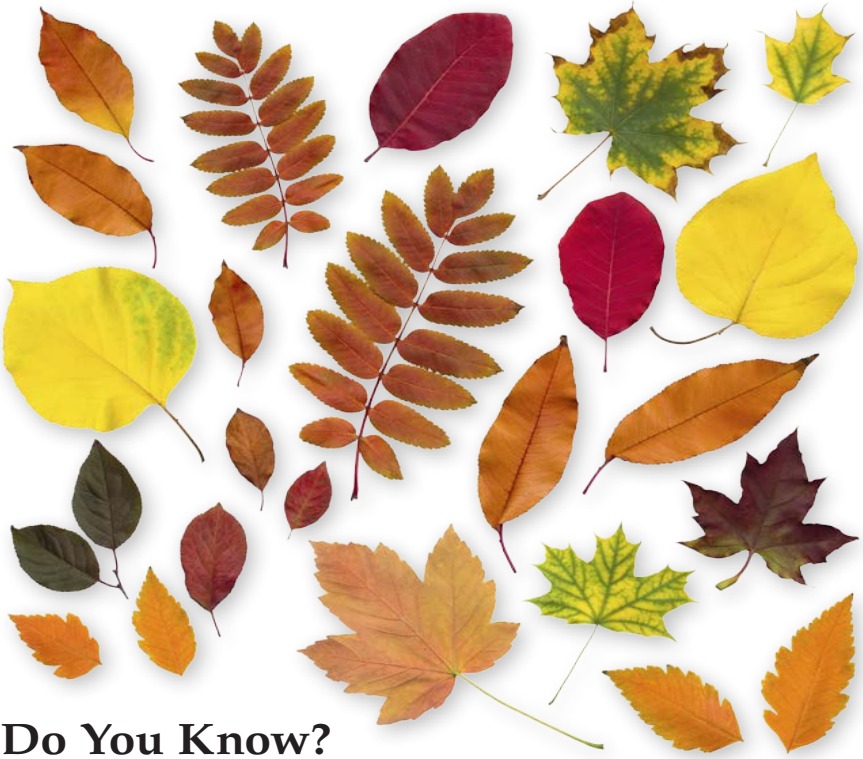
Summer is playtime. For the leaves of many trees, however, it's work, work, work! The Sun is shining. The leaves are making sugar from water, carbon dioxide, and sunlight.

What do the leaves do with the sugar? They send it to the tree's roots, branches, and buds. Those parts **store** sugar so the tree will have food during the cold months.

Wowser!

Most trees that drop their leaves lose them over days, weeks, or even months. However, a ginkgo tree can lose all its leaves in a single day.

Leaves are green in summer because they are full of chlorophyll. Leaves also have orange, yellow, or brown chemicals inside them. Those chemicals are there in summer, but the green chlorophyll hides them.



Do You Know?

The chemical that makes leaves orange is also found in carrots, tomatoes, and sweet potatoes. The chemical that makes leaves red is also found in berries, cherries, plums, and red cabbage.

Fall

In places far from Earth's equator, the temperature gets cooler in fall. The days get shorter, and the nights get longer. Trees get less sunlight, so photosynthesis slows down. Over time, leaves stop making chlorophyll, so they lose their green color. The hidden orange, yellow, and brown colors start to show. Leaves also start making a red chemical at this time.

maple leaves

Bright Red Leaves

The red color in leaves comes from sugar that gets trapped in the leaves. Some trees, such as red maples, make more red color than other trees. How red the leaves turn also depends on the weather. Some years have a lot more red leaves than other years.

When the weather gets cold enough in fall, the temperature drops below freezing. Since tree sap contains a lot of water, it can freeze. A tree's roots, trunk, and branches protect the sap from freezing. However, leaves are very thin. If they freeze, the tree will be hurt.

An early freeze can harm a tree.

Trees drop their leaves to keep themselves safe. They close off the opening at the bottom of each leaf's stem. Soon afterward, the leaves fall off.

(Left) A deciduous tree in winter. (Right) New leaves appear in spring.

Winter and Spring

Trees that drop their leaves are bare in winter. They use the stored food to get through the cold days and colder nights.

Spring comes before long. Ice and snow melt, and the rains come. The Sun shines, and tiny leaves sprout from branches. Once again, the leaves use water, chlorophyll, carbon dioxide, and sunlight to make food. The cycle begins again.

Glossary

carbon dioxide *(n.)*	an invisible gas that is absorbed by plants during photosynthesis (p. 7)
change *(v.)*	to become different (p. 5)
chemical *(n.)*	something made by a chemical process (p. 7)
chlorophyll *(n.)*	a substance in plants that can turn water, air, and sunlight into food (p. 7)
fall *(n.)*	the season between summer and winter (p. 4)
leaves *(n.)*	the parts of plants that grow on stems or branches and use light to make food for the plants (p. 5)
oxygen *(n.)*	a gas that has no color, taste, or smell and that most animals need to live (p. 8)
photosynthesis *(n.)*	the process by which chlorophyll in plant cells transforms sunlight, water, air, and nutrients into food (p. 6)
store *(v.)*	to keep or collect something to use later (p. 11)

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