



KNOWLEDGE ORGANISER

SCIENCE: OUR CHANGING WORLD-PLANTS

YEAR ONE

KEY KNOWLEDGE:

QUESTION 1: How do leaves change through the year?

ANSWER

A deciduous tree is a tree that loses its leaves every autumn and grows new leaves each spring. Each year deciduous trees go through a process in which their green leaves become bright yellow, gold, orange and red for a few weeks before turning brown and falling to the ground.

The purpose of a leaf

During the months of September, October, and November, the changing colours of a tree's leaves is something we all enjoy. But believe it or not, the trees don't change their colours just so we will have something pretty to look at. There is actually a reason for the many colours of autumn. Photosynthesis is the process trees (and plants) use to make their food. Taking energy from the sun, water from the ground, and carbon dioxide from the air, they make glucose (sugar) to 'eat' so they can grow into strong, healthy trees. The leaves of a tree (or plant) are where photosynthesis happens because the chlorophyll in the leaves is what makes photosynthesis possible. Chlorophyll also has another job...it is what makes leaves green. So, as long as the leaves are able to soak up enough heat and energy from the sun to make food, the leaves on the tree stay green. But when the seasons begin to change and the weather turns colder...



Why leaves change colours...or do they

When the seasons change in places where deciduous trees grow, the days get shorter (there is less sunshine) and the weather gets colder. When this happens it is harder for the chlorophyll in the leaves to make the food needed to stay green. So instead of making more food, the leaves start using food they have stored away for this time of year. As the leaves use the food (glucose) that has been stored away, a layer of cells forms at the bottom of each leaf. These cells are spongy like a cork. Their job is to act like a door between the leaf and the rest of the tree—a door that closes very slowly and doesn't 'shut' until all the leaf's food is gone. While this is happening the colours in the leaves of the trees are able to show through. That's right...the red, yellow, gold and orange colours are hiding in the leaves all summer long. The colours just can't be seen in the summer because of all the chlorophyll in the leaves that makes plants and leaves green. Once all the food is used up, the leaves turn brown, die and fall to the ground.



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QUESTION 2: Do all trees lose their leaves?

ANSWER

There are two main types of trees: deciduous and evergreen. Deciduous trees lose all of their leaves for part of the year. In cold climates, this happens during the autumn so that the trees are bare throughout the winter. In hot and dry climates, deciduous trees usually lose their leaves during the dry season.

Evergreen trees don't lose all of their leaves at the same time -- they always have some foliage. They do lose their leaves a little at a time with new ones growing in to replace the old but a healthy evergreen tree is never completely without leaves.

QUESTION 3: How to flowering plants grow and change over time?

ANSWER

