



Air and trees

Curriculum links:

- **Science** Living things
Environmental awareness and care
energy and forces
- **Geography** Human environments
Natural environments
- **SPHE** Myself and the wider world

Lesson objectives:

To explore the concept of photosynthesis and the elements that are needed in order for it to occur.
To be aware that trees on the farm promote biodiversity.

Teacher guidelines

It is suggested that teachers ensure that students are familiar with the vocabulary and concepts introduced in the previous modules before starting this lesson.

Keywords and concepts introduced in previous modules:

oxygen carbon dioxide fossil fuels non-renewable energy source wind turbines

Humans and animals need air rich in oxygen to stay healthy. Plants produce this important gas that we need to survive.

Keywords for this lesson:

graze photosynthesis starch chlorophyll biodiversity

What is photosynthesis?

Plants don't have to **graze**, hunt or shop for food. Instead they create their meals out of sunlight and water. It's enough to make you green with envy! This process is called **photosynthesis** and it takes place in leaves and other green parts of a plant. It is then stored as **starch** or carried to all parts of the plant.

Photosynthesis doesn't just create meals for the plant, as during the process, plants also create oxygen which humans and animals need to breathe.

Plants also take in the carbon dioxide gas that we produce.

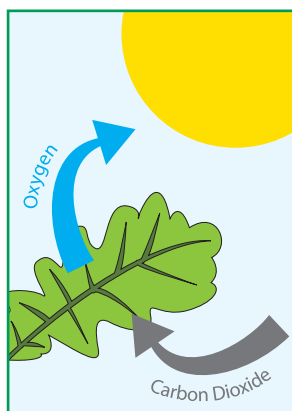
What is required for photosynthesis?

Plants need carbon dioxide, water, light and **chlorophyll** to photosynthesise.

Carbon dioxide comes from the air. Leaves need carbon dioxide to make oxygen.

Water is absorbed from the soil by the roots and it is brought to the leaf through the trunk and the branches.

Light comes from the sun. **Chlorophyll** is a substance in the leaf which traps the light energy and uses this energy to make food.

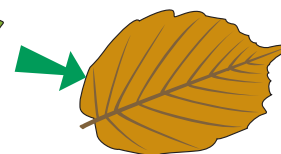


Did you know?

Chlorophyll gives leaves their green colour. However, this green colour actually hides other substances (carotenoids and anthocyanins) in the plant which are yellow. In autumn, when the temperature drops, leaves stop producing chlorophyll which then breaks down to reveal these colours. This is the reason why leaves change colour in the autumn.



Summer



Autumn

Biodiversity on the farm

We have already learned in Hedgerow Module 3 that the farmer encourages **biodiversity** on the farm. Biodiversity is the variety of life from the smallest insect to the biggest animal.

Did you know that the oak tree supports over 280 different types of wildlife species?

So in the same way that the farmer plants new hedgerows, he/she also makes sure that there are lots of trees on the farm so that species can live in harmony within this habitat.



Suggested activities

- Complete the activity sheet on page 54
- Discuss in class why photosynthesis is so important for plants, humans and animals
- Carry out an experiment to show that plants need light to grow. Place one plant on a window sill and the other in a dark area of the classroom. Record the changes over the following days and weeks
- Carry out an experiment to show that plants need water to grow. Water only one plant everyday and use another as a control. Record the changes over the following days and weeks
- Discuss in class different ways that the farmer helps to improve biodiversity in your local area
- Write a poem about how the farmer helps the environment
- There are 280 different wildlife species that are dependent on the oak tree. Do some research and write a list of some of these species
- Recreate the structure of native woodland (the living forest) in your school garden. Note what wildlife it attracts (birds, butterflies, insects). Alternatively, using things found during a nature walk, build a model of the living forest in your classroom. Use leaves, twigs, rocks, moss to recreate each important layer.

Learning outcomes:

At the end of this lesson, students should know what photosynthesis is. They should also understand the term biodiversity.

Additional resources:

- www.agriaware.ie

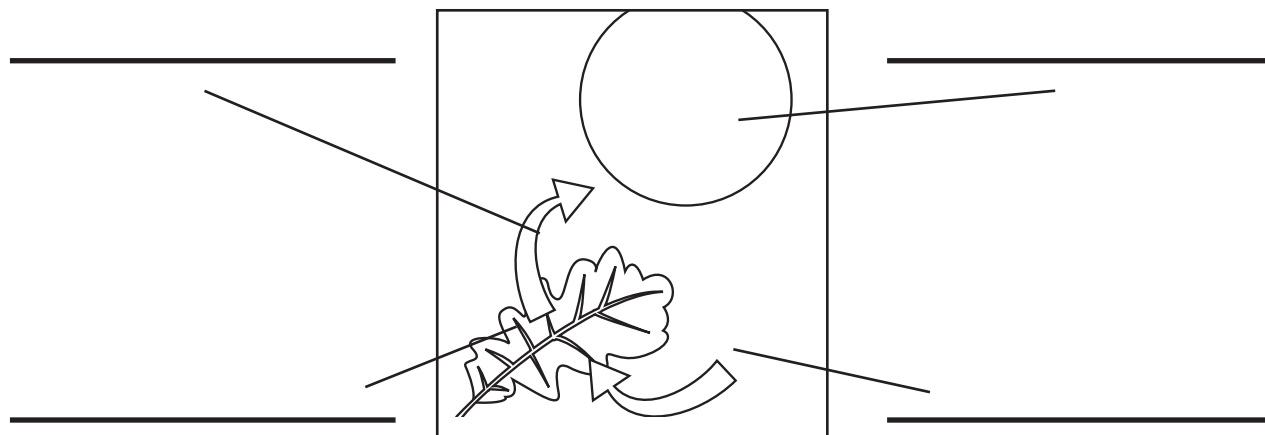


Air and trees

Name: _____

Date: _____

1 Photosynthesis – label the blanks



2 Dictionary Work

Find a definition for

Species _____

Energy _____

Process _____

Biodiversity _____

Habitat _____

3 Name the season when leaves on the tree are

Green _____

Bare _____

Yellow _____

Winter Spring/Summer Autumn

* To be used with teacher guidelines, page 28