

Colours in Leaves Experiment

Introduction

A plant needs light to grow. Plants also need water and carbon dioxide. Light is most available during the summer months. Plants collect energy from sunlight using a large molecule called chlorophyll. Chlorophyll is green, and this is why the leaves of most plants and trees are green.



Chlorophyll appears green because it absorbs all the colours of the spectrum except green light. It is this reflected green light that our eyes see. Chlorophyll is a pigment. Leaves also contain two other pigments, carotene and anthocyanin. Carotene is bright yellow and anthocyanin is red.

The shortening days and cool nights of autumn trigger a change in the plant. The plant requires less food in winter, so the amount of chlorophyll required decreases, the green colour fades and the leaves change colour.

In this experiment you will extract chlorophyll from the leaves of trees, along with other pigments.

Practical

You will need leaves from two different deciduous (colour changing) trees.

1. Tear 2-4 different leaves into small pieces and place in a labelled container
2. Pour warm ethanol into each container until you can cover the leaves
3. Stretch parafilm/clingfilm over the opening of each of the containers. Pierce a small hole in the parafilm/clingfilm using a pencil.
4. Leave the containers to cool for 5-10 minutes.
5. With a pencil, label the tree name at the top of the filter paper.
6. Remove the parafilm/clingfilm and place the correct filter paper into each container.
7. Leave for at least 10 minutes. Then remove the filter paper and observe what has happened.

Questions

What colours can you see on the filter paper?

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Why do leaves change colour in the autumn/winter time?

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What is chlorophyll?

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Where do the colours in leaves come from?

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What colours of light do carotene and anthocyanin absorb?

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