

Photosynthesis

Define photosynthesis.

Photosynthesis

State the word equation for photosynthesis.

Photosynthesis

What is chlorophyll and what does it do?

Photosynthesis **Supplement**

State the balanced chemical equation for photosynthesis.

Photosynthesis

How is starch used in a plant?

Photosynthesis

Which carbohydrate is transported in the phloem?

Photosynthesis

What is cellulose used for, and what is nectar used for?

Photosynthesis

Why do plants need nitrate ions?

Carbon dioxide + water → glucose + oxygen, in the presence of light and chlorophyll.

The process by which plants synthesise carbohydrates from raw materials using energy from light.



A green pigment found in chloroplasts. It transfers energy from light into energy in chemicals, for the synthesis of carbohydrates.

Sucrose.

As an energy store.

For making amino acids (which contain nitrogen).

Cellulose builds cell walls. Nectar attracts insects for pollination.

Photosynthesis

Why do plants need magnesium ions?

Photosynthesis

What are the signs of nitrate and magnesium deficiency?

Photosynthesis

Why is a plant destarched before a starch test investigation?

Photosynthesis

Why is a leaf heated in ethanol before adding iodine?

Photosynthesis

How does soda lime help to show that carbon dioxide is needed?

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What is a limiting factor?

Photosynthesis **Supplement**

Name three limiting factors of photosynthesis.

Photosynthesis **Supplement**

Why does the rate fall at high temperature?

Nitrate: stunted growth. Magnesium: yellow leaves (chlorosis).

For making chlorophyll.

To remove chlorophyll, so the colour change with iodine can be seen.

To remove existing starch, so any starch found was made during the experiment.
Keep it in the dark for 24 to 48 hours.

The factor in shortest supply, which stops the rate of photosynthesis from increasing.

It absorbs carbon dioxide. The leaf without carbon dioxide makes no starch and stays orange-brown.

The enzymes involved in photosynthesis are denatured.

Light intensity, carbon dioxide concentration and temperature.

Photosynthesis

Name three variables you could change to investigate the rate of photosynthesis.

Photosynthesis

How can you measure the rate of photosynthesis in pondweed?

Photosynthesis

What are the colours of hydrogencarbonate indicator?

Photosynthesis

What colour does the indicator turn with a plant in the dark, and why?

Photosynthesis

What colour does the indicator turn with a plant in bright light, and why?

Leaf structure

State two features of most leaves that help photosynthesis.

Leaf structure

Which leaf cells carry out most photosynthesis, and why?

Leaf structure

How do air spaces in the spongy mesophyll help photosynthesis?

Count the bubbles of oxygen from the cut stem per minute, or measure the volume of gas collected.

Light intensity (lamp distance), carbon dioxide concentration (sodium hydrogencarbonate), temperature (water bath).

Yellow. The plant respire, releasing carbon dioxide, and there is no photosynthesis.

Yellow (high CO₂), red (atmospheric CO₂), purple (low CO₂).

They have a large surface area and are thin.

Purple. Photosynthesis takes up carbon dioxide faster than respiration releases it.

Carbon dioxide diffuses through them to the photosynthesising cells, and oxygen diffuses out.

Palisade mesophyll: tall cells near the upper surface with many chloroplasts that absorb the most light.

Leaf structure

What do stomata and guard cells do?

Leaf structure

What do xylem and phloem do in a leaf?

Xylem brings water to the leaf. Phloem carries sucrose away.

Stomata are pores that let gases diffuse in and out. Guard cells open and close them.