

5 Photosynthesis and nutrition in plants

1 Select the most appropriate words from the list below to complete the...following paragraph:

A green plant can make all the substances it needs. It builds up carbohydrates by the process of In this process, it combines from the with from the to form The needed for this process comes from, which is absorbed by the in the of leaf cells. The waste product of the process is.....

soil, energy, oxygen, glucose, chloroplasts, mineral salts, cells, photosynthesis, air, respiration, sunlight, water, nitrogen, chlorophyll, carbon dioxide.

2 Complete the following equation which summarises the process of photosynthesis



3 What gases will be taken in and given out by a green plant (a) in darkness, (b) in bright sunlight?

4 Is it possible for a plant to be photosynthesisng and respiring at the same time?

5 (a) What carbohydrates does a plant make from glucose?
(b) Which of these carbohydrates is transported round the plant?
(c) Which carbohydrate is the main storage substance?

6 (a) What additional substances does a plant need to make amino acids and proteins from glucose?
(b) Where do these substances come from?

7 What ions must a plant obtain from the soil in order to make (a) ATP, (b) chlorophyll?

8 Name an artificial fertiliser or fertilisers which farmers can use to increase the supply of nitrate, phosphate and potassium to their crops.

9 (a) How would you destarch the leaves of a potted plant?
(b) How would you check that the destarching had been effective?

10 In a school laboratory, what is usually regarded as evidence that photosynthesis has occurred in a plant?

11 In designing an experiment to find out whether light is needed for photosynthesis
(a) what is the principle of the design
(b) what control would you use?

12 A leaf is detached from a tree and tested with iodine. The leaf turns dark blue.

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- (a) What does this result tell you?
- (b) Why is this result not sufficient evidence to confirm that photosynthesis had taken place in the leaf?