PHOTOSYNTHESIS · PART 8 OF 9 · AGES 11–16

Photosynthesis Myths

Eight things many people believe about plants, and what the evidence actually shows.

1 ✕ MYTH **Plants get their food from the soil.**

✓ FACT Plants make their own food, glucose, by photosynthesis. Soil supplies water and mineral ions such as nitrate; 'plant food' fertiliser is minerals, not food.

2 ✕ MYTH **Most of a plant's mass comes from the soil.**

✓ FACT Van Helmont's willow gained about 74 kg while its soil lost about 57 g. Most new mass is built from carbon dioxide taken from the air, plus water.

3 ✕ MYTH **The oxygen plants give out comes from carbon dioxide.**

✓ FACT It comes from water. Tracer experiments in 1941 showed the oxygen released is split from water; the oxygen atoms in CO_2 end up in the sugar.

4 ✕ MYTH **Plants photosynthesise and animals respire.**

✓ FACT Plants respire too, in every living cell, day and night. In bright light they photosynthesise faster than they respire, which hides it.

5 ✕ MYTH **Plants breathe in carbon dioxide and breathe out oxygen.**

✓ FACT Plants do not breathe. Gases diffuse in and out through the stomata; photosynthesis uses carbon dioxide while respiration uses oxygen.

6 ✕ MYTH **Leaves are green because chlorophyll absorbs green light.**

✓ FACT The reverse: chlorophyll absorbs mostly red and blue light and reflects much of the green, which is the light that reaches your eyes.

7 ✕ MYTH **Only leaves can photosynthesise.**

✓ FACT Any green part with chloroplasts can, including young stems. Algae and cyanobacteria with no leaves at all make about half of Earth's oxygen, in the ocean.

8 ✕ MYTH **The Amazon rainforest makes 20% of the world's oxygen.**

✓ FACT Estimates are nearer 6–9%, and the forest's plants and decomposers use almost all of it again, so its net effect on the air is close to zero.

Follow the atoms

To test a claim about plants, ask where each atom comes from and goes to, and what happens at night. Most myths fail one of these checks.

NEXT IN THE SERIES
9. Photosynthesis Quiz: 10 Questions with Answers

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