

CLASS 7

SCIENCE

NCERT SOLUTIONS

NCERT Solutions for Class 7 Science Chapter 10: Life Processes in Plants – Curiosity

Complete NCERT Solutions for Class 7 Science Chapter 10 "Life Processes in Plants" from the Curiosity textbook, covering photosynthesis, respiration, and transportation in plants.

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Complete NCERT Solutions for Class 7 Science Chapter 10 “Life Processes in Plants” from the Curiosity textbook, covering photosynthesis, respiration, and transportation in plants.

In-Text Questions

Q1. How does sunlight contribute to the production of starch in plants?

Answer: Sunlight drives **photosynthesis**, the process by which plants make food. Chlorophyll in the leaves captures sunlight, and using this light energy along with carbon dioxide and water, plants produce glucose, which is then stored as **starch**.

Q2. Which gas from the air is essential for food preparation in plants?

Answer: **Carbon dioxide** is essential for photosynthesis (food preparation) in plants.

Exercise Questions

Q1. Complete the table matching plant parts/processes (based on a textbook diagram/table — diagram-dependent, cannot be reproduced without the figure).

Q2. If all photosynthetic organisms disappeared, what would be the impact on living organisms?

Answer: There would be no production of oxygen or food for other living organisms. The food chain would collapse since plants provide food for herbivores and oxygen for respiration — life on Earth would not be sustainable without them.

Q3. Where does the starch in potatoes come from, and how does it reach the potato?

Answer: The starch comes from glucose produced during photosynthesis in the leaves. This glucose is transported through the plant to the potato (an underground stem), where it is stored as starch.

Q4. Does the broad, flat structure of leaves make photosynthesis more efficient? Justify.

Answer: Yes. The broad, flat shape increases surface area, allowing more sunlight to be absorbed by chlorophyll, and it also aids gas exchange through stomata — both enhancing photosynthesis.

Q5. In “ $X + Y \rightarrow \text{Carbon dioxide} + Z + \text{Energy}$ ”, identify X, Y, and Z (respiration equation).

Answer: X = **Glucose**, Y = **Oxygen**, Z = **Water**. (Glucose + Oxygen $\rightarrow$ Carbon dioxide + Water + Energy)

Q6. Krishna’s experiment: one potted plant in sunlight, one in a dark room.

- (i) **Idea being tested:** whether sunlight is necessary for photosynthesis.
- (ii) **Visible differences:** the plant in sunlight stays healthy and green (actively photosynthesising); the plant in the dark looks weak, pale, and yellowish.
- (iii) **Iodine test:** only the leaves of the plant kept in sunlight will confirm the presence of starch (turn blue-black).

Q7. Vani’s experiment testing whether CO₂ is essential for photosynthesis (sunlight/dark × with/without CO₂).

- (i) **Starch forms** only in the plant kept in sunlight *with* carbon dioxide.
- (ii) **Starch does not form** in any of the other three set-ups.
- (iii) **Oxygen is generated** only in the plant kept in sunlight with carbon dioxide.
- (iv) **Oxygen is not generated** in the other three set-ups.

Q8. Ananya’s 4 test-tube experiment (A: snail, B: water plant, C: snail+plant, D: water only) with a CO₂ indicator.

Answer: She wants to find out how plants and animals affect the amount of dissolved carbon dioxide in water, i.e. the roles of respiration and photosynthesis. Expected colour changes: Tube A (snail only) — indicator shows **increased CO₂** (from the snail's respiration); Tube B (plant only) — indicator shows **decreased CO₂** (used up by photosynthesis); Tube C (snail + plant) — roughly **balanced**, since the plant can use the CO₂ the snail releases; Tube D (water only) — **no change**, since there's no living organism present.

Q9. Design an experiment to test if water transport in plants is faster in warm or cold conditions.

Answer: Take two identical potted plants/cut twigs, place one in a warm spot and one in a cool/shaded spot, and add food colouring to the water of each. After a few hours, compare how far up the stem/leaves the colour has travelled. The plant in warmer conditions should show faster colour movement, since higher temperature increases the rate of evaporation (transpiration) and water transport.

Q10. Discuss how photosynthesis and respiration maintain balance in nature.

Answer: Photosynthesis uses sunlight, water, and carbon dioxide to make food and releases oxygen; respiration uses oxygen to break down food for energy and releases carbon dioxide. Together, these two opposite processes keep atmospheric oxygen and carbon dioxide levels balanced, sustaining life on Earth.

Chapter Activities

Activity 10.1: Role of sunlight and water in plant growth

Pot	Sunlight	Water	Result after 2 weeks
A	Yes	Yes	Tallest, most leaves, green (healthiest)
B	Yes	No	Little growth, fewer leaves, yellowing (dehydration)
C	No	Yes	Limited growth, pale yellow leaves (no light)

Maximum growth: **Pot A**. Least growth: **Pot C**.

Activity 10.2: Starch test in a leaf (iodine test)

If the leaf turns **blue-black** with iodine, starch is present.

Activity 10.3: Starch in green vs non-green parts of a leaf

Only the **green parts** of a leaf (containing chlorophyll) test positive for starch — confirming only chlorophyll-containing tissue can photosynthesise. Sunlight is necessary for this starch production.

Activity 10.4: Role of carbon dioxide in starch formation (leaf partly inside a bottle with caustic soda)

Leaf part	CO ₂ available?	Starch present?
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Inside bottle (with caustic soda, which absorbs CO ₂)	No	No
Outside bottle	Yes	Yes

Conclusion: carbon dioxide is necessary for starch production in plants.

Activity 10.5: Oxygen release during photosynthesis

Set-up A (sunlight) shows gas bubbles collecting in the inverted test tube; set-up B (dark) shows none. A glowing/lit matchstick inserted into the collected gas burns more intensely, confirming the gas is **oxygen**, released during photosynthesis.

Activity 10.6: Stomata on a leaf peel

Tiny pores (**stomata**) are visible on the leaf peel (commonly the lower surface) under a microscope — these allow gas exchange.

Activity 10.7 & 10.8: Water transportation in plants (coloured water experiment)

Plant twigs placed in coloured water show the colour travelling up through the stem into the leaves, demonstrating that water and minerals are transported through the **xylem** — thin tube-like tissue in the stem, branches, and leaves.

Activity 10.9 (respiration in seeds): Lime water test

The lime water turns **milky only** in the test tube connected to the flask containing germinating seeds, because the seeds release carbon dioxide during respiration, and lime water turns milky in the presence of CO₂. **Conclusion:** plants (and their seeds) respire and release carbon dioxide, just like animals.

Practice more: [Extra Questions for Class 7 Science Chapter 10](#)

Quick revision: [Revision Notes for Class 7 Science Chapter 10](#)