

Photosynthesis in higher plants

CHAPTER-13 EXERCISES

1. By looking at a plant externally can you tell whether a plant is C_3 or C_4 ? Why and how?
2. By looking at which internal structure of a plant can you tell whether a plant is C_3 or C_4 ? Explain.
3. Even though a very few cells in a C_4 plant carry out the biosynthetic - Calvin pathway, yet they are highly productive. Can you discuss why?
4. RuBisCO is an enzyme that acts both as a carboxylase and oxygenase. Why do you think RuBisCO carries out more carboxylation in C_4 plants?
5. Suppose there were plants that had a high concentration of Chlorophyll *b*, but lacked chlorophyll *a*, would it carry out photosynthesis? Then why do plants have chlorophyll *b* and other accessory pigments?
6. Why is the colour of a leaf kept in the dark frequently yellow, or pale green? Which pigment do you think is more stable?
7. Look at leaves of the same plant on the shady side and compare it with the leaves on the sunny side. Or, compare the potted plants kept in the sunlight with those in the shade. Which of them has leaves that are darker green? Why?
8. Figure shows the effect of light on the rate of photosynthesis. Based on the graph, answer the following questions:
 - (a) At which point/s (A, B or C) in the curve is light a limiting factor?
 - (b) What could be the limiting factor/s in region A?
 - (c) What do C and D represent on the curve?
9. Give comparison between the following:
 - (a) C_3 and C_4 pathways
 - (b) Cyclic and non-cyclic photophosphorylation
 - (c) Anatomy of leaf in C_3 and C_4 plants