

## CARBON DIOXIDE AND THE RATE OF PHOTOSYNTHESIS

An experiment was carried out to find the rate of photosynthesis of a group of plants at different concentrations of carbon dioxide. This was repeated at 2 different light intensities. The results are given in the table below:

CO <sub>2</sub> concentration / % of air	Rate of photosynthesis / arbitrary units	
	Low light intensity	High light intensity
0.00	0	0
0.02	20	20
0.04	29	35
0.06	35	47
0.08	39	68
0.10	42	84
0.12	45	89
0.14	46	90
0.16	46	90
0.18	46	90

Read pages 152 to 153 of your textbook, then answer the following questions in your red exercise book; where appropriate use full sentences.

1. Plot the results on a graph with two labelled lines  
(X-axis - CO<sub>2</sub> concentration; Y-axis - Rate of photosynthesis)
2. Describe the patterns shown by the two graphs. Refer to numbers on the graph for this answer.
3. Label your graph to show the region where carbon dioxide is the limiting factor.
4. Explain how you identified this.
5. Label your graph to show where light intensity becomes the limiting factor.
6. Explain how you identified this.
7. What other factors may limit the rate of photosynthesis?
8. In agriculture, farmers may sometimes add carbon dioxide to the air inside their greenhouses.
  - a. What is the advantage of doing this?
  - b. How else can market gardeners use information about limiting factors to produce vegetable such as lettuces throughout the year? This answer should be written as a long paragraph.