

RATE OF PHOTOSYNTHESIS

Name: _____

Class period: _____

Introduction: During photosynthesis, carbon dioxide and water are converted in the chloroplasts of plants into the carbohydrate glucose (sugar), and oxygen is released into the atmosphere. The reactions of photosynthesis are complex. When measuring the rate of a reaction in reactions like photosynthesis it is often easiest to measure changes in the gases involved. This virtual experiment will look at the affect of light intensity on the rate of photosynthesis in Elodea plants

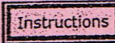

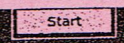
Problem: To what extent does distance from a light source affect the rate of photosynthesis in Elodea water plants?

My Hypothesis: _____

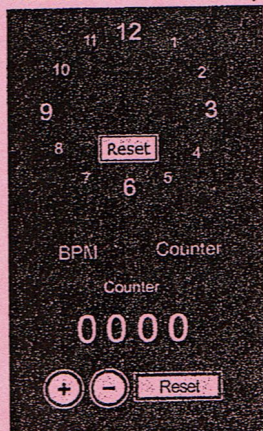
Pre-Lab Questions:

1. What is the equation for photosynthesis?
2. Where do plants get the CO₂ for this process (what organisms release this gas)?
3. Where in plant cells does photosynthesis occur?
4. If a plant were under water and was photosynthesizing, what gas would be visibly bubbling from the plant?


Procedure:

1. Go to <http://www.reading.ac.uk/virtualexperiments/ves/preloader-photosynthesis-full.html>
2. Click on the  button and read about each part of the opening page of the virtual lab.
3. Move the light source by dragging the slider  Drag until the light source is at the 100 mm mark.
4. Press the  button.

On the next screen, you should see bubbles being produce to by the plant. Bubbles are given off by the plant through Photosynthesis. By measuring the rate at which the bubbles are produced it is possible to detect how fast the plant is photosynthesizing. On the right of the screen, you should have a section that looks like Picture A. Click the counter tab and hit the reset button on the clock.



Picture A

5. Count the number of oxygen bubbles that are produced for one minute. You can do this by clicking the plus  button every time you observe a new bubble. Once an entire minute has passed, write the number of bubbles observed with the light source at 100 mm in Table A.

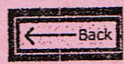
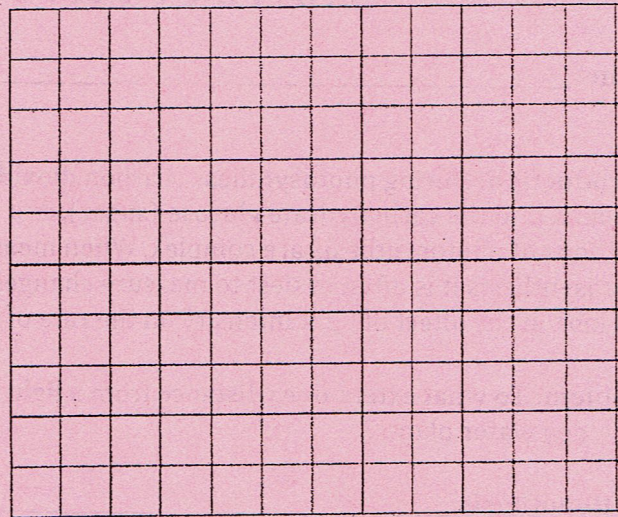
6. Click the  button, set the light source at 120 mm and repeat steps four and five. Repeat for each new distance of the light source as shown in Table A.

Table A

Distance of pond weed from light source	# of Bubbles produced per minute
100 mm	
120 mm	
140 mm	
160 mm	
180 mm	
200 mm	

Results Graph

Bubbles/Minute



Distance from Light

Post-Lab Questions:

1. According to your data, what effect does the amount of light a plant receives have on the rate of photosynthesis?
2. Does your data support your hypothesis? Explain.
3. Do you think it would be possible for a plant to receive too much light? Why or why not?
4. What new problems (questions for study) arose as you did this experiment?
5. What did you learn from this experiment?