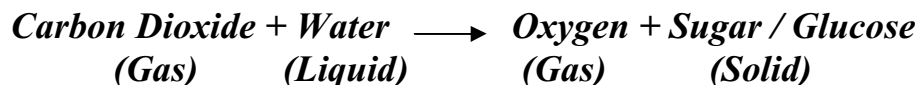


# PHOTOSYNTHESIS

## INVESTIGATION

### HYPOTHESIS

*A plant needs to use photosynthesis to survive just like we need to use respiration to survive. Us mammals inhaling oxygen and exhaling mainly carbon dioxide but for plants it's the opposite way around, they inhale carbon dioxide in their leaves and exhale oxygen. The idea of producing oxygen from the use of sunlight and carbon dioxide may sound strange but it is true. To produce oxygen a plant goes through an ever-lasting cycle, which is shown below:*



*This cycle is ever-lasting until the plant dies, this process may go fast or may go slow it all depends on the size and the age of the plant and also the amount of sunlight in the area.*

*A plant needs the following for good health and to receive the requirements it needs to accomplish PHOTOSYNTHESIS. These are:*

- *Carbon Dioxide*
- *Light*
- *Minerals*
- *Water*
- *Chlorophyll*
- *Heat (some plants)*

*As I've already told you a plant's photosynthesis speed can vary. I would like to have a look at what may speed up the rate of photosynthesis in plants. The items that I think will speed up photosynthesis are as follows:*

- *Increasing the light*
- *Increasing the amount of Carbon dioxide*
- *Increase the amount of minerals in the soil*
- *Increase the amount of water*

- *Increase the amount of chlorophyll*
- *Increasing the heat*

*The reasons why I think these may speed up the rate of photosynthesis are as follows:*

- *Increasing the light may increase the food that the plant is producing making it work faster.*
- *Given the plant more carbon dioxide may also rush the plant so that it outputs more oxygen*
- *Minerals may feed it making it work harder*
- *Water the same again making it work harder*
- *Chlorophyll also may allow the plant to speed up the rate of photosynthesis.*

### PREDICTION

*I think the amount of light will be the most important factor of photosynthesis because the amount of light I think will tell the plant how much work it has to do, and that if the plant had no light it may not grow at all.*

*I think light is the most important because without light plants cannot grow, never mind accomplishing the cycle of photosynthesis.*

*Given a plant an overdose doesn't sound good but I think it will do some good. Given the plant a larger amount of sunlight than it usually receives may shock it but will I think force the plant to inhale more carbon dioxide and exhale a lot more oxygen. This will also I think speed the cycle of photosynthesis quickly and will finally even out at a high output point.*

### FAIR TEST

*To keep this test fair I will be doing the following:*

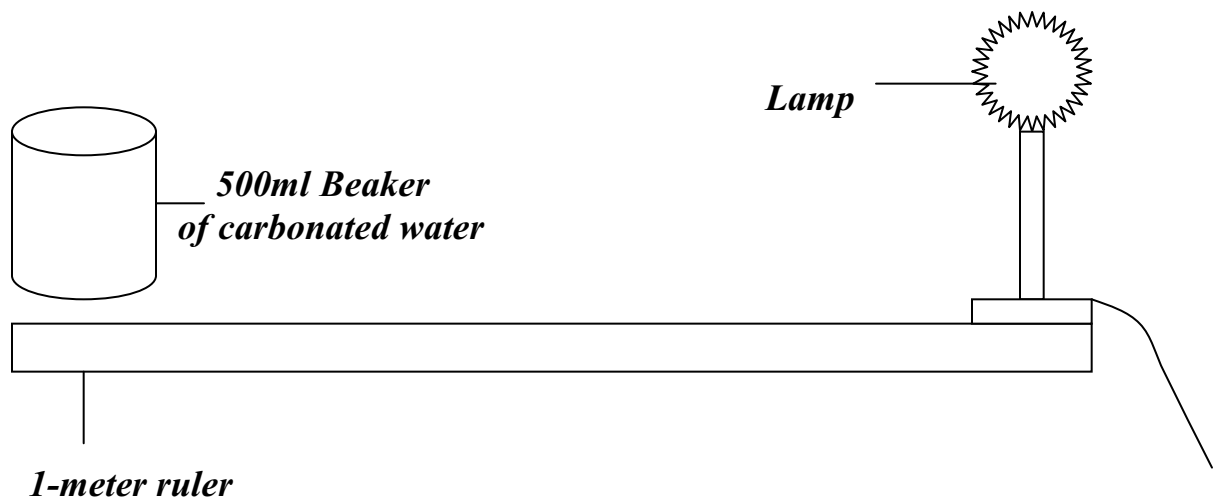
- *Keep the heat of the water the same*
- *Use the same pond weed each time*
- *Use the same amount of water each time*
- *Use the same sized beaker*
- *Use the same light*

- *Do this in an area, which will not increase in light, heat or carbon dioxide amount.*

**PLAN**

*The equipment I will be using for this experiment is as follows:*

- *500ml beaker*
- *A lot of warm carbonated water*
- *A lamp*
- *A stop clock*
- *A 1 meter ruler*
- *A piece of pond weed*



**METHOD**

- 1. Place the lamp 1 meter away from the beaker with the pondweed in it.*
- 2. Take the temp of the water*
- 3. Switch the lamp on and start the stop clock*
- 4. Count the number of bubbles which leave the pond weed for two minuets*
- 5. Now record the results on a chart*
- 6. Get 500ml of new carbonated water*
- 7. Move the lamp in 10 cm*
- 8. Take the temp*
- 9. Switch the lamp on and start the stop clock*

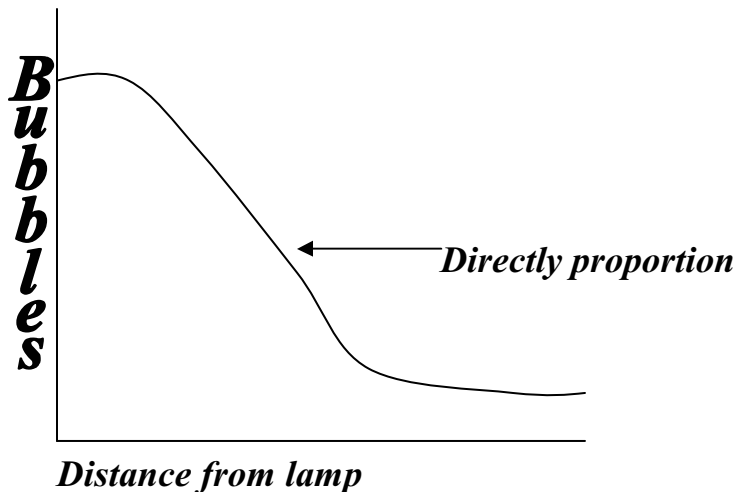
*10. Count the number of bubbles which leave the pond weed for two minutes*

*11. Now record the results on a chart*

*Repeat this process until you are right next to your pondweed.*

### CONCLUSION

*Once draw the graphs and putting in the line of best fit there was clearly a similarity in all graphs. All the graphs start first by a starting line for a few cm's until the plant was further away did its bubble waste decrease. After a steady drop around 80 or 90cm's away the line levelled off. It started to level off because the plant was no longer receiving surfactant light from the 60-watt bulb, but from the surrounding light sources. Most of the graph shows this line of best fit with some anomalous results.*



*In all these experiments the plant was never performing to its full potential. This was because we only used a 60-watt bulb; there is even 200-watt bulb. With a 200-watt bulb I would expect the bubble output to be greater.*

### EVALUATION

*At the end I was pleased to find out nearly everything in my experiments worked out apart for the one or two anomalous results which never fitted in to my line of best fit but I over come that by redoing the experiment. I*

*think I could have done these experiments more reliable if I had more time to do the experiments in and I had better measuring tools. If I redone this experiment I will defiantly do more tests and used more reliable tools.*