

Experiment

To find out if the intensity (brightness) of light will have an effect on the rate of photosynthesis in green pond weed called ELODEA

Research on photosynthesis

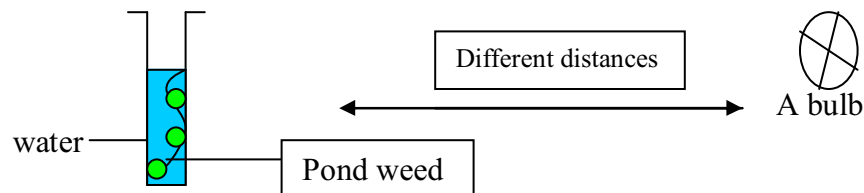
Photosynthesis is processes by chlorophyll (green in the leaf).The three things that is needed in photosynthesis are sunlight from the sun, energy form the roots coming form the soil nitrate and carbon dioxide.

Photosynthesis takes place in the chloroplast cells where it contains chlorophyll and other things. Bacteria comes from the sunlight which then turns into chemical energy. What happens is

Carbon dioxide + water +light energy \longrightarrow glucose + oxygen

Glucose is some kind of sugar. The three things that affect photosynthesis is when the temperature gets lower, amount of carbon dioxide and if the light is kept away from the plant.

Diagram



Apparatus

Pond weed called Elodea
60 watt bulb with a holder
Cold water form the school pond
A ruler
A stop watch
Boiling

Making the experiment a fair test:

The way I'm going to make the experiment a fair test is by using the same pond weed and just altering the distance from the bulb and the test tube, the disadvantage of using the same pond weed is that the weed would start to worn out meaning the colour of the leaf would start to go and that would effect the experiment in some way so the when the leaf is put in water and the advantage is by using a different leaf each time it's not making it a fair test and the results wouldn't be that correct and the leaf might process photosynthesis faster then each experiment. Do the experiment more then once so I would have reliable results. Take the results at reliable times and not at just any time. Do the experiment on one side of the room because of keeping the temperature the same it should give me good results.

Prediction

What I think might happen in the experiment is for the first results they should be low meaning that not many bubbles would be coming out of the leaf because of not using extra light and just use the sun as light. Now I'm going to use a 60 watt bulb for the other four experiments and I'm just going to change the distances for each experiment, see what I think is going to happen is when you put bulb near to the weed the photosynthesis process should go faster. The lower the light is given to the leaf the slower the photosynthesis would go and by giving extra light the process should go faster and more bubble would come out more.

Analysis

By looking at the total averages for each experiment, the first one shows is with no sun then by looking at these results the leaf didn't released to much bubbles and by looking at the graph it tells you the same thing because the whether was changing and so was the temperature. I then calculated the rate of bubbles produced and how long it takes to produce one bubble for each time experiment on the graph. When I did the first experiment without the sun the maximum oxygen being produce was only 7 bubbles of oxygen in five minutes. The further you put the light away from the weed the smaller the bubbles of oxygen comings out.

When I did the experiment again but with a bulb the results rose and at a distance of the 10cm away from the weed the results increase dramatically and the amount of oxygen for five minutes was about 52.5 of bubbles of oxygen got produced and then for the distance of 2cm away from the weed, these results where even higher for five minutes and it was 70 bubble where produced in this distance.

By looking at all these results they are telling me that the longer the distance away from the bulb and the longer it takes to produce bubbles and the shorter the distance is from the weed, the more amount of bubbles of oxygen are produced. The reason for that occur is the more light energy is shined on the leaves the faster the photosynthesis processes and by adjusting the distance it effects the photo process in some way. The closer the light is more carbon dioxide, light energy and food energy is used up in some time and out comes oxygen quicker, the research kind of say the same the thing. Just by using artificial source of light could make the process faster. What the graphs tell me about the experiment is, the steeper slope the slower amount of bubbles are being released and the lower the slope is the more a lot more of bubbles being released.

Evaluation

The experiment went kind of ok. My prediction is right because I said the for the first experiment because I didn't use the bulb and the whether wasn't that hot, the further the bulb is away from the weed the smaller amount of oxygen is being produce and the closer the bulb is to the weed the more oxygen is being produce, the bulb is helping the reaction, a lot.

The results look pretty good to me because I did the experiment accurately, another reason was because I had a used a health leaf which was the reason why the experiment was good and which

The photosynthesis process went well . The way I got the figures for the graphs were by averaging the numbers. The figures were got, weren't so accurate because I did get some anomalous results on the graph because I think that I just counted the big bubbles of air and I should have also counted the small on. I should have also have done the experiment in one day and not in different days that's why the results where not so accurate, I think that the results with no sun don't look like to me meaning the bubbles comes out not so right like in some minutes there aren't any bubbles coming out and that is because of the temperature being so unpredictable, the temperature changing every time, the weather is making the photosynthesis change all the like going off and on. Another reason why the experiment didn't go so well was because was the temperature of the bulb changed the process of photosynthesis when got close, meaning when the bulb was 20 cm way from the weed that temperature of the weed wasn't the same has when its 2 cm way from each other, see at 20cm most of the light is just being wasted and not going to the weed and at 2cm almost all of the light is going to the weed.

The things I would have improve on the experiment is I would place the pond weed in a glass box and a light in there to, this method would have to give me very accurate results, go thing of using glass is that you could see and count the bubbles. Another thing I would change is I would change the weed every time when doing a new distance because the weed would be losing it's wealth, but the disadvantage is that by using a new leaf the bubbles of oxygen wouldn't be the same. Use different watt bulbs and what effects do they make or a light and a power pack to control the brightness of the bulb.