

# How Does The Amount Of Carbon Dioxide Available Affect Photosynthesis?

## Aim:

In doing this experiment I aim to see how varying the amount of Carbon Dioxide available changes the rate of photosynthesis.

## Prediction:

I predict that the higher the Carbon Dioxide levels the higher the rate of photosynthesis will be.

This is because Carbon Dioxide is needed for photosynthesis; therefore if more CO<sub>2</sub> is available more photosynthesis can take place.

## Diagram:

## Equipment:

1 beaker  
1 funnel  
1 lamp  
1 stop clock  
1 ruler  
1 syringe  
Pondweed  
Bicarbonate of soda

## Method:

First we collected the equipment. We filled the beaker with water, placed the funnel upside-down inside the beaker with the pondweed underneath. We linked up the syringe as shown in the diagram; this is to collect the oxygen. We put the lamp 30cm from the beaker.

We are going to do the experiment 11 times, timing it 10 mins each time. The first time we will add no bicarbonate of soda, then increase the levels by 0.5% each time until we reach 5%.

We are going to collect the oxygen produced, as oxygen is a by-product of photosynthesis. Therefore the more oxygen produced, the greater the rate of photosynthesis.

### **Fair Test:**

To make this experiment fair we kept every variable the same each time, except for the one we were changing as part of the experiment, which is the amount of Carbon Dioxide used. We used all the equipment, the same amount of water. We kept the lamp the same distance from the beaker each time and made sure the water was always the same temperature.

### **Results:**

| <b>Carbon Dioxide levels (%)</b> | <b>Amount of Oxygen Produced (mm)</b> |
|----------------------------------|---------------------------------------|
| 0                                | 0                                     |
| 0.5                              | 5                                     |
| 1                                | 13                                    |
| 1.5                              | 18.5                                  |
| 2                                | 20.5                                  |
| 2.5                              | 21                                    |
| 3                                | 21.5                                  |
| 3.5                              | 21                                    |
| 4                                | 21                                    |
| 4.5                              | 21                                    |
| 5                                | 21                                    |

### **Conclusion:**

From this information you can see that as the Carbon Dioxide levels increase so does the rate of photosynthesis. Until 2.5% Carbon Dioxide, when it reaches the fastest photosynthesis it can do.

### **Evaluation:**

I think that the result we have for 3% is wrong as every other result around it is 21mm and it goes away from the pattern. This may have been from inaccurate measuring as we were measuring to a very small scale (mm) and 0.5 of a millimetre is a very small length.

Apart from this I think that the rest of our results were accurate, this is because our method was thorough.

A possibility for furthering this experiment, if there had have been sufficient time and resources, would have been to compare these results with the same factors on different pond plants. In doing this we could have discovered if different pond plants react differently to the same amounts of Carbon Dioxide.