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Biology Coursework

# Photosynthesis

## Aim: -

I am going to investigate light intensity on a water plant. My aim is to find out whether having light coming from different distances effects the amount of oxygen bubbles produced.

## Hypothesis: -

As the lamp is moved closer to the water plant, more oxygen bubbles will be seen. This is because a faster rate of reaction will be happening. As the lamp is moved further away from the plant, less oxygen bubbles will be seen. This is because a slower rate of reaction will be happening.

## Health and Safety: -

1. Wear safety glasses,
2. Tie back loose hair,
3. Wear a lab coat.

## Fair Testing: -

I will be making sure that my investigation is fair by using the same apparatus each time. I will also repeat each test 3 times so that I get an average number of oxygen bubbles produced. I will make sure the temperature stays the same throughout the investigation. Surface area could effect the investigation so I would count the number of leaves on each plant and make sure that they all have equal amounts. I will do this by removing any extra leaves. Any large leaves will be removed to keep it a fair test.

## Apparatus: -

Large beaker,
Boiling tube,
A water plant,
Stopwatch,
Thermometer,
A metre ruler

## Method: -

Safety glasses and a lab coat would be worn and all hair would be tied back.
All the apparatus needed would be collected at the beginning of the investigation.
3 branches with leaves on them will be cut off of the same plant. The number of leaves on each branch will be recorded; any extra leaves will be cut off.
300ml of water will be measured into a large beaker. A branch from the plant that has already been cut off will be placed inside the boiling tube.
400mm will be measured from the leg of the tripod and the lamp will be placed there.
The lamp will then be switched on.
The large beaker containing the 300ml of water will be placed in the beaker.
The stopwatch will be started. The number of oxygen bubbles seen every 60 seconds will be recorded in a table and this will be done until 300 seconds.

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This procedure will be repeated 3 times in total and then the lamp will be moved closer to the water plant. It will be moved so it is 200mm away from the water plant and this will be repeated 3 times also. It will then be moved 0mm away from the water plant and following the same procedure it will be repeated 3 times.
All the results will be recorded in a table.

Results: -

| Distance away from the lamp. | Time in seconds. | First tests results. | Second tests results. | Third tests results. | Average results. |
|---|---|---|---|---|---|
| 400mm | 0 | 0 | 0 | 0 | 0 |
| | 60 | 0 | 1 | 0 | 0.3 |
| | 120 | 1 | 3 | 2 | 2 |
| | 180 | 3 | 4 | 4 | 3.6 |
| | 240 | 4 | 6 | 6 | 5.3 |
| | 300 | 6 | 8 | 7 | 7 |
| | 360 | 9 | 10 | 9 | 9.3 |
| | 420 | 11 | 11 | 10 | 10.6 |

| Distance away from the lamp. | Time in seconds. | First tests results. | Second tests results. | Third tests results. | Average results. |
|---|---|---|---|---|---|
| 200mm | 0 | 0 | 0 | 0 | 0 |
| | 60 | 1 | 0 | 1 | 0.6 |
| | 120 | 3 | 3 | 3 | 3 |
| | 180 | 6 | 4 | 5 | 5 |
| | 240 | 8 | 6 | 6 | 6.6 |
| | 300 | 11 | 7 | 8 | 8.6 |
| | 360 | 12 | 9 | 9 | 10 |
| | 420 | 14 | 12 | 12 | 12.6 |

| Distance away from the lamp. | Time in seconds. | First tests results. | Second tests results. | Third tests results. | Average results. |
|---|---|---|---|---|---|
| 0mm | 0 | 0 | 0 | 0 | 0 |
| | 60 | 2 | 1 | 1 | 1.3 |
| | 120 | 3 | 4 | 3 | 3.3 |
| | 180 | 5 | 6 | 6 | 5.6 |
| | 240 | 6 | 8 | 7 | 7 |
| | 300 | 9 | 11 | 9 | 9.6 |
| | 360 | 15 | 16 | 14 | 15 |
| | 420 | 18 | 19 | 19 | 18.6 |

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A line graph showing the average results from the photosynthesis experiment.