Richard Carter 10FD

An investigation to find out how the amount of carbon dioxide affects photosynthesis in pondweed

Strand P – Planning your investigation

Photosynthesis is a food-making process that occurs in green plants. It is the main function of leaves. Green plants use energy from light to combine carbon dioxide and water to make food (glucose).

Prediction: I predict that the more carbon dioxide there is in the water the faster the photosynthesis will take place. I predict this because for a plant to possibly photosynthesise it needs both light and carbon dioxide. The photosynthesis formulae is **carbon dioxide + sunlight = glucose**. The plant food product of photosynthesis is glucose.

Apparatus: Pond weed, Pond water Sodium Bicarbonate, Test tube, Stopwatch, Spatula.

Variable change: In my experiment I will change the amount of sodium bicarbonate that I put into the water. I will keep the amount of pond water the same and I will try to keep the water the same temperature but that is room temp so it shouldn't change a lot. I will keep the same test tube and I will keep the same light intensity.

Method: I will collect a test tube and a clamp stand. I will put the test tube in the clamp stand then put the pond weed and the pond water in the test tube, then I will plug in my lamp and put it approximately 8 centimetres away from the test tube (this will stay the same for all trials). When my apparatus is set up correctly and safely I will first do a trial run, this will be to see if I need to change anything to improve my investigation. I will do 1 trial run and 2 main experiments. I will use no sodium bicarbonate for the first trial and go up by 1 teaspoonful of sodium bicarbonate each time until I reach 8. The sodium bicarbonate will add carbon dioxide to the water. Each trial will last 5 minutes. See prediction for more detailed science.

Strand O – Obtaining evidence

I collected my apparatus and carried out my investigation safely, I took my readings.

No. teaspoons of SB	Trial run	1st test	2nd test
0	2	2	1
1	5	6	0
2	9	8	4
3	17	9	17
4	18	21	38
5	19	24	49
6	23	22	55
7	30	25	61
8	39	31	73

SB = Sodium Bicarbonate

Strand A – Analysing the evidence

Trial run: My trial run ran perfectly well, it came out just as I expected it to. There is not a lot to say about it apart from the fact that the more sodium bicarbonate I put in the pond water the more photosynthesis takes place. Since my trial run ran so well, I will not need to change anything to make my main trials better.

1st test & 2nd test: My results show that the more carbon dioxide in water the more photosynthesis will take place in pond weed. My prediction was correct, I said that as you put more sodium bicarbonate in the pond water the more the plant will photosynthesise. My first test went just as I thought it would until it reached its 6th spoon of sodium bicarbonate that's when the photosynthesis decreased but after that it started to increase again. I don't know why that happened, I find it strange as it was the only time it happened. The 2nd test was a little strange to, it ended up giving over 40 bubbles more than test 1. I think it might be because I carried out the two tests on different days with different pond weed. I think it is more the pond weed that had more of an affect on the test rather than room temp etc. Both my experiments were similar because they both photosynthesised better when I added more carbon dioxide to the water and they were different to each other because they photosynthesised at very different speed.

Strand E – Evaluation

There was no really surprising data which I collected apart from 1 reading which showed that the plant had decreased in photosynthesising. I could have been more careful with counting the amount of oxygen bubbles. The apparatus I used were just right for my experiment, I had no problems with them. If I was to do this experiment again I would use

the same pond weed and take all of my readings in one day to make it a completely fair test. I had no major problems with the investigation.