Biology Coursework

Pleurococcus Investigation

Aim: Investigating The Distribution Of Pleurococcus On Trees

Intro:

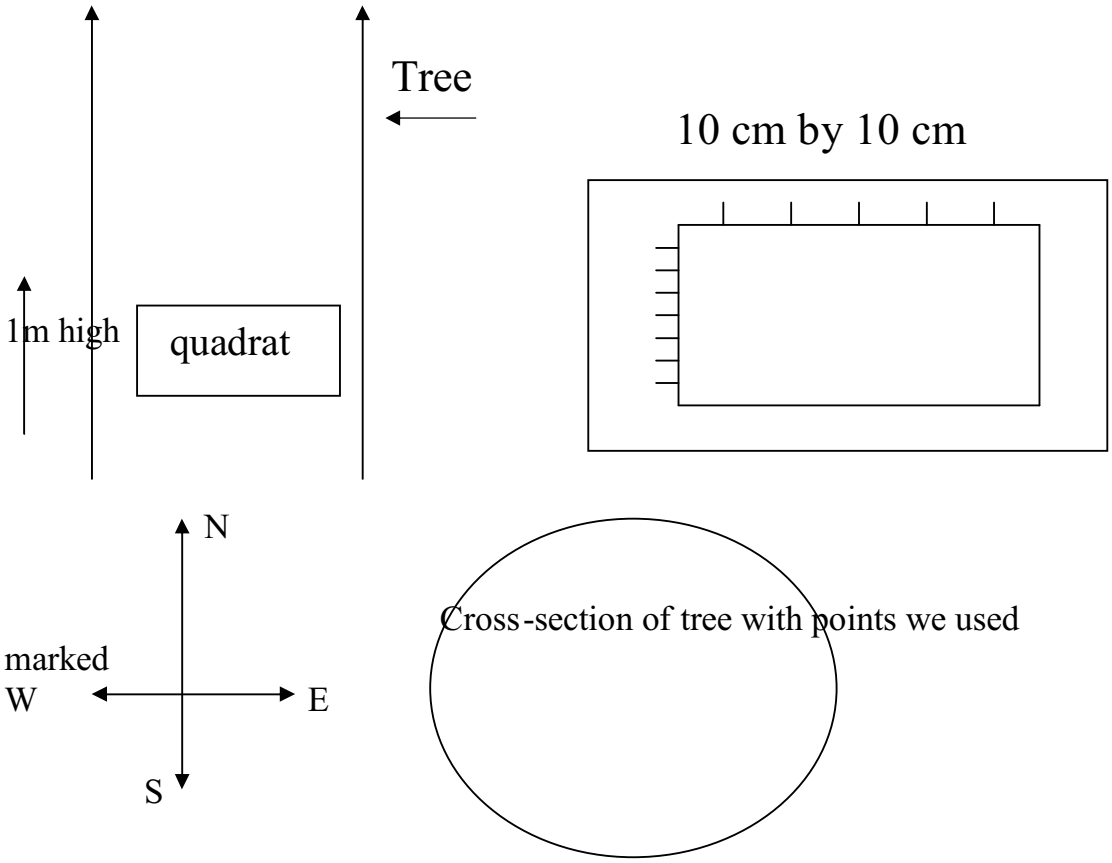
Pleurococcus is a single celled organism, and is also a type of algae. It can be found growing on outdoor surfaces such as trees, stones and fences. Pleurococcus utilizes photosynthesis to obtain the energy it needs and it reproduces asexually. This means a pleurococcus cell will grow bigger and bigger until finally it splits into two identical cells. This process is called mitosis.

Hypothesis:

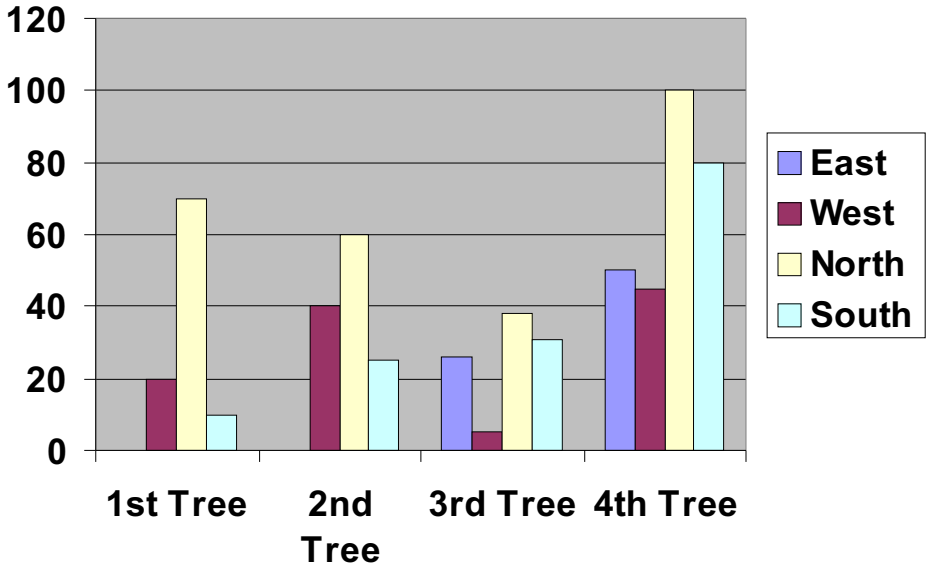
I believe that the largest distribution of pleurococcus will be found on the south side of trees we study. I think this because more sunlight will come from the south, that can be used in photosynthesis by the algae.

Method

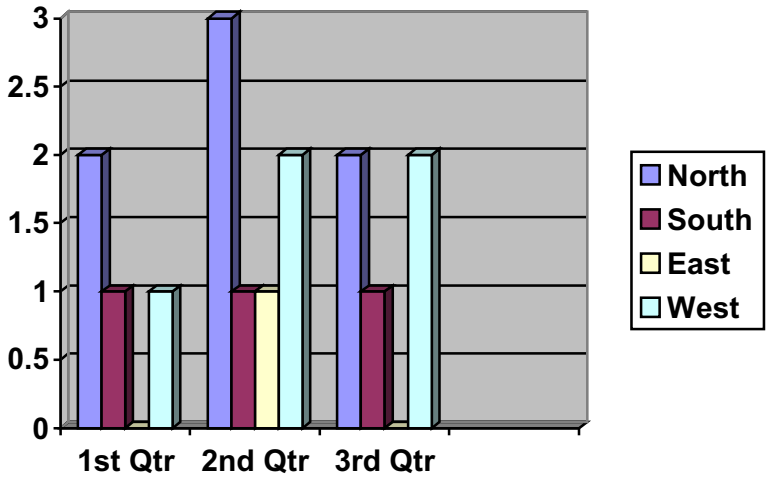
First of all a quadrat of around 100 cm_2 (10 cm by 10 cm) was made by us. After that a tree directly in sunlight was chosen. One metre was marked up the tree and then, a compass bearing having been given to us, we marked out North, South, East and West. Then the distribution of pleurococcus was measured in each direction. Both a qualitative and quantative result would be taken for each direction if practical e.g. lack of time. We used our quadrats by marking every cm along the edge. We would then calculate approximately the percentage of area covered by the pleurococcus. Also we took a reading showing the density of pleurococcus in the area being looked at. There was a scale of 1 to 5, 1 being the least dense and five the most.



Our Quantative Results Showing Percentage Of The Distribution Of Pleurococcus On The 4 Sides Of 4 Trees



Qualitative Results Showing Thickness Of Cover Of eurococcus On The 4 Sides Of 3 Trees



Results Table

Distribution of pleurococcus

	North	South	East	West
Tree 1	70 %	10 %	0 %	20 %
Tree 2	60 %	25 %	0 %	40 %
Tree 3	38%	31 %	26 %	5 %
Tree 4	100 %	80 %	50 %	45 %

How thickly spread the algae was out of 5

	North	South	East	West
Tree 1	2	1	0	1
Tree 2	3	1	1	2
Tree 3	2	1	0	2

Conclusion

Our results show that pleurococcus prefers to grow more on the North sides of trees than on any other side and with a greater density. From the North side, pleurococcus would obtain more moisture than on any other side but would receive less sunlight than if it were on the South side. This indicates that in the trade-off between sunlight and water for photosynthesis, water takes precedence. On the South side it would be too dry for algae to grow in large quantities proving that water is the most important factor in photosynthesis. To reproduce by cloning water must be an important factor as well, because the algae patches were generally denser than patches on the other sides of the tree.

As my results show that there is a larger distribution of pleurococcus on the North side of trees, my hypothesis that suggested that there would be a larger distribution of algae on the South was incorrect.

Evaluation

I got one anomalous result which looked completely wrong. There is a 100% covering of North, and around 50% on the East and West sides. However, seemingly strangely, there was a 1 % distribution on the South side! It took me a bit of time to realise that the tree had been in the shade and so the test wasn't fair on that particular tree.

One thing that could have been improved was my quadrat. It had a 100cm2 (10 cm by 10 cm) area with cms marked at the side of the quadrat. However to get a more accurate reading, I could have strips of paper marking each sq cm out. Then each filled square would be 1 %.

Also to measure 1m up the tree I used a piece of string measured to around 1m. A more accurate method, bypassing this aspect of possible human error, would be to use a laser measurer or light meter. Another experiment relevant to pleurococcus is to investigate what type of tree the algae prefer to grow on – hardwood or softwood. Seeing our sample trees I

think that the algae grows on hardwood like oak but to be proved it would have to be fully investigated.