CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S1618

Project Title
In the Shade: A Study on Moss

Abstract

Objectives/Goals
To determine the conditions on the north side of trees which are conducive to moss growth and not found on the south side of trees. I predict the north side will have a cooler temperature because it is not exposed to as much direct sunlight as the south side of a tree.

Methods/Materials
Five trees at Irvine Region Park with moss growing on the north side of their trunks and branches were selected for the study.To measure the atmospheric temperature in the sun and shade on the south and north side, four ounces of water sat in a clear plastic bottle and were allowed to acclimate to the air temperature for an hour and a half. A thermometer then measured the temperature of the water, and the difference between the south and north side was determined. Three trials were run, one studyig three trees and the other two studying all five sites.

Results
The average difference in temperature between the south and north side was 5.6 degrees Celsius. The temperature difference ranged as high as 10 to 12 degrees Celsius but also as low as 2 to 4 degrees. Also, when the water exceeded 30 degrees, condesation formed on the inside of the water bottle, indicating evaporation. Condesation only occured on bottles placed on the southern side of the tree.

Conclusions/Discussion
The lower temperatures found on the north side of the tree as a result of little to no direct sunlight create optimal growing conditions. As an indirect result of lower temperatures, water does not evaporate as quickly on the north side of trees. The moss uses and requires this water for reproduction for the sperm to swim to the egg in the archgonium of a female gametophyte. Moss,of course, are not limited to growing on the north side of trees. When shade and water are present on the south side,moss can readily grow there.

Summary Statement
Moss predominantly grows on the north side of trees because of the lower temperatures and presence of water.

Help Received
My parents drove me to the park and acted as an extra set of hands when setting up the experiment.