CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
J1902

Project Title
Do Plants Get Jet Lag? Or Do Plants Have a Sleep Cycle?

Abstract

Objectives/Goals
We wanted to test if plants can adjust to changes in light and dark cycles and how this affects their leaf sleep movement.

Methods/Materials
We used the plant Oxalis and measured the sleep movement of its leafs using time lapse photography. We filmed the plants in a day and night cycle in a light-tight closet. We'd take a picture every hour using a pre-programmed remote. We would simulate day and night using a UV ray light bulb. We altered the light cycle by 12 hours (day becoming night) to induce "jet lag". After several days, we would hook up the camera to our computer and we would view the pictures of the leaf movement. We then would use a scale consisting of one to six (one being completely closed and down, six being fully open or maximum canopy). The leaf movement was measured from 3 different plants to determine the average leaf movement. We used Excel to analyze our data.

Results
Our results showed that plants can synchronize their leaf movement to the light cycle. We found that when we changed the light cycle it obtained "jet lag", that is, they no longer where able to synchronize their leaf movement to the changes in light. After about 10 days the Oxalis adjusted to the change much like humans. We also found that the plant prepared for the oncoming light by simply opening slightly before the light came on. When the light did come on, the plant was prepared for maximum canopy.

Conclusions/Discussion
These experiments prove that plants have a sleep cycle and use light to synchronize to an alteration in the day and night light changes. They prepare to open before the light turns on so they can have maximum canopy during sunlight hours.

Plants have the amazing ability to keep time in their "minds", meaning they will open without light, but not completely. This proves that plants CAN have jet lag, but adjust to it much like you and me!

Summary Statement
The adaption of plants sleep movement to changes in light and dark cycles

Help Received
Parents helped with text format of report and poster