CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
J1915

Project Title
Phototropism vs. Gravitropism

Abstract

Objectives/Goals
The objective of this experiment is to find which tropism will exhibit a more dominant effect on plants: Phototropism or Gravitropism. This information can be useful in developing more efficient methods of growing crops, which can be used to meet the rising demand on food and oxygen resources due to increasing world populations.

Methods/Materials
To set up the experiment, six basil plants were placed on their sides, with the stem perpendicular to and hanging off a shelf. The control group, three plants, had a light source above, (Group A), and the other three, (Group B), had the light source below. The plants' needs were tended to daily. Every day, recordings were taken of: the height of the plant, the length from base to bend, the length from bend to tip, the angle of the plant from the vertical plane, and the angle of the bend.

Results
The results show that Group A (light source above) had a percent change in growth of 4.496%, while Group B (light source below) had a percent change of 3.056%. Group A had an average angle from the vertical plane of 95.361º and an angle after the bend of 128.833º. Group B had an average of 134.722º from the vertical plane and 151.611º after the bend.

Conclusions/Discussion
Based upon the data, phototropism has a more dominant effect on plants than gravitropism because the plants grew both with and against gravity in order to grow towards the light.

Summary Statement
Phototropism exhibits a more dominant effect on plants than gravitropism.

Help Received
None