CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J1614

Project Title
Influence of Various Fertilizers on Onion Cell Mitosis

Abstract

Objectives/Goals
To determine what influence various fertilizers have on the growth rate of a green onion plant. This project focused on the study of mitosis and the study of different chemicals.

Methods/Materials
Phosphate (A), Ammonium Sulfate (B), and a Mix of Phosphate and Ammonium Sulfate Fertilizers (C) were dissolved in distilled water. Ten cups were filled with each fertilizer including an additional 10 cups of just Distilled Water (D). A bunch of green onion bulbs were suspended in each cup. Each plant was monitored for growth by taking photographs, counting new roots and observing cell mitosis.

Results
The phosphate fertilizer had the greatest effect on promoting the rate of green onion growth. Distilled water alone had the second greatest influence followed by ammonium sulfate and lastly, the mix of ammonium sulfate and phosphate fertilizers. Growth rate was determined by observing new root growth, maximum root length, and the number of cells undergoing mitosis.

Conclusions/Discussion
The hypothesis that the phosphate fertilizer would have the greatest influence on green onion growth was correct. Ammonium sulfate actually deterred growth - contrary to what was hypothesized. Unfertilized plants in distilled water grew more than originally anticipated.

Summary Statement
The goal of this project was to determine what influence various chemicals (fertilizers) had on the growth rate of green onion plants undergoing mitosis.

Help Received
My Mom helped with the layout and decoration of the exhibit. My Dad coached me on how to do the experiment, and also bought a microscope and a special camera to photograph specimens