CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J2008

Project Title
Effect of Soil Type and Fertilizer Amounts on Sunflower Growth

Abstract

Objectives/Goals
The objective is to determine the effects of sand/soil ratios (0, 40, and 80% sand) and fertility (0, 10, and 20% fertilizer solution) on sunflower growth.

Methods/Materials
Plant height was measured daily over 27 days for each of the nine treatments, and plant survival and final weight were recorded at the end of the experiment.

Results
Plants grown in pure potting soil (0% sand) with 20% fertilizer were the tallest and heaviest, whereas the plants grown in 80% sand, regardless of fertilizer level, grew little and did not survive to the end of the experiment.

Conclusions/Discussion
The hypothesis that soil type and fertilization affect plant growth was supported, because plants grew poorly in sandy soil or low fertilizer. The highest level of fertilization (20%) was beneficial when applied to 0 or 40% sand, but deadly when applied to 80% sand. Future experiments could identify how much fertilizer a plant could receive before it dies, and whether there is a way to grow a plant in 80% sand 20% fertilizer to survive after 19 days.

Summary Statement
The experiment tested whether three concentrations of fertilizer and three soil/sand ratios affected sunflower height, weight, and survival over 27 days.

Help Received
Mother (Dr. Elaine Backus) provided advice and performed statistical analysis; Father (Dr. Ned Gruenhagen) helped set up the experiment and took pictures; plants were weighed at CSU-Fresno under the supervision of Dr. Fred Schreiber.