CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
Leah M. Ostermann

Project Number
J2026

Project Title
The Germinator

Abstract

Objectives/Goals
The purpose of this experiment is to determine how soil salinity affects seed germination. Soil salinity is the salt content of soil. As soil salinity increases, plants cannot grow, like in playas or dry lakes. Seeds germinate when conditions are right, such as adequate water & nutrients, for growth. The hypothesis of the experiment is that because soil from the China Lake playa contains the most salt (highest pH), seeds will grow the least.

Methods/Materials
Four soils were tested as variables: 1) China Lake playa soil; 2) Mirror Lake playa soil; 3) desert soil; and 4) potting soil. The pH of each soil was first tested. Then 40 grams of each wet soil along with 10 radish seeds were placed on 3 paper towels. The paper towels were folded and placed in a plastic bag. As a control, 10 radish seeds were placed on 3 wetted paper towels without soil. Root length and appearance (health) of the seeds were recorded every 24 hours for a period of five days.

Results
For all 5 days the amount of root growth increased as the pH and salinity of the soils decreased. The health (number of leaves & root hairs) of the seeds did not exactly increase as the salinity and pH of the soils decreased.

Conclusions/Discussion
The hypothesis was proven correct because none of the seeds were germinated in the China Lake soil (highest pH &salinity) over the 5 days. The salts in the China Lake soil held onto the water. As expected, the soil with the most ideal pH and salinity (potting soil) showed the most root growth and health (number of leaves & root hairs) over the 5 days. The control developed better than the other soils in the beginning (Day 2), but then, except for the China Lake soil, stopped developing better over the last 3 days. This is probably because the paper towel gave up water easier than the soils in the beginning. But after 3 days the seeds needed nutrients to grow which the paper towel did not have.

Summary Statement
This experiment determines how soil salinity affects seed germination.

Help Received
Father helped with the idea and experiment setup. Mother helped with the display.