CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
Matt C. Moropoulos

Project Number
J2023

Project Title
Electrifying Soil

Abstract

Objectives/Goals
The purpose of my project was to determine whether or not an electric field would affect the growth of a snow pea plant.

Methods/Materials
I chose snow pea plants because they grow quickly, and are easy to monitor. Now, for soil to conduct electricity, it needs to be somewhat moist. To make sure that all the soil had the same amount of water in it, I mixed all the soil and water together in a single bucket before distributing it to my three terrariums. The first terrarium was the control, with no electricity in it. The second bin had A/C current running through it, at 15 volts. The third and final bin had D/C current running through it, also at 15 volts. The electrical setup consisted of copper electrodes, hooked up to a model train transformer. It had a separate A/C output, which I utilized to power the A/C bin, at a constant 15 volts. Every day I would add the same amount of water to the soil to ensure it still conducted electricity, usually about ½ cup, evenly distributed using a spray bottle. Every third day I rotated the bins position and orientation to the sun, so that no plant would get more sun than another. I then measured the plants daily.

Results
Contrary to my original hypothesis, instead of stunting the growth, it was accelerated! While the D/C current did stunt the growth, the A/C accelerated it quite a bit. I got to a fairly conclusive result, but I would like to grow the plants to a mature height this summer, to see if the beans produced would taste normal. I think that I completed my objective because I found that it did in fact effect the growth.

Conclusions/Discussion
My results completely contradicted my hypothesis, which was surprising. While my results were surprising, I think I still managed to achieve my goal, just in an unexpected way. This project left me baffled as to how some of the plants grew faster, as I would have to view the plant on a cellular level to even come close to understanding what happened. I have neither the budget nor the equipment to look at this right now, though I would love to do so. But when I had finished, I thought to myself, #This could really benefit society#we might be able to supply surplus food to countries with not enough of it#and since it takes very little energy#is electricity the next fertilizer?#

Summary Statement
To effectively determine if an electric field has an affect on plant growth.

Help Received
Father taught me how to solder, and helped with electrical equations and setup.