CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1638

Project Title
Bean Plants and the Amount of Chlorophyll They Have with Different Types of Soils

Abstract

Objectives/Goals
My project was to determine if different types of soils have an effect on the amount of chlorophyll in pinto bean plant.

Methods/Materials
First, I planted nine plants,three tests in each type of soil. After fifty-nine days, I took a nine centimeter square piece leaf and crushed it. I added 20 milliliters of rubbing alcohol and boiled each solution in a test tube to obtain a chlorophyll solution. I filtered each solution to get rid of any leaf fragments and poured it into a small bottle to allow the solution to cool. I placed each sample in the spectrophotometer, which gave me a transmittance reading equal to the amount of chlorophyll in the solution. I measured the amount of chlorophyll at both a 660-nanometer and 440-nanometer wavelengths. I graphed and charted all of my results and compared to make my final conclusion. My materials were: nine pinto bean seeds, spectrophotometer, seventeen test tubes, three ring stands, heat plate, glass pot, 4 test tube clamps, rubbing alcohol, Whitney Farms Potting Soil, Whitney Farms Seed Starting Mix, and my Backyard Soil.

Results
The bean plants planted in Whitney Farms Potting Soil had the most chlorophyll, the beans plants planted in My Backyard Soil (mostly moist sand) had the second greatest amount of chlorophyll, and the bean plants planted in Whitney Farms Seed-Starting Mix had the least amount of chlorophyll. On average the bean plants planted in Premium Potting Soil had 36.7 at a 440 wavelength and at a 660 wavelength it had 98.03. On average, the amount of chlorophyll that the bean plants planted in Seed-Starting Mix had is 29.5 at a 440 wavelength and had 49.13 at a 660 wavelength. On average, the amount of chlorophyll and the bean plants planted in Backyard soil (mostly moist sand) had are 33.7 at a 440 wavelength and had 98.03 at a 660 wavelength.

Conclusions/Discussion
My conclusion is that the bean plants planted in Whitney Farms Potting Soil had the most chlorophyll, the beans plants planted in My Backyard Soil (mostly moist sand) had the second greatest amount of chlorophyll, and the bean plants planted in Whitney Farms Seed-Starting Mix had the least amount of chlorophyll. So, my hypothesis was incorrect; although these results were not significantly different.

Summary Statement
My Project was to see if different types of soils have an effect on the amount of chlorophyll in the leaf of a pinto bean plant.

Help Received
I received help from my science teacher, Mrs. Kathy Blakemore, my overall supervisor. I also used a spectrophotometer from Temescal Canyon High School under the guidance of Ricardo Gutierrez, a teacher at Temescal Canyon High School. My mom helped me glue my papers on my board and Tom