CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J1727

Project Title
Effect of Organic Fertilizer and Traditional Farming Soil on Corn Plants

Abstract

Objectives/Goals
The objective of this experiment is to determine the effect of organic fertilizer (in amounts of 0%, 50%, and 100%) and natural farming soils (clay soil and sandy loam) on corn plants. There were four hypotheses made in this experiment:
1. Plants in clay soil may grow well due to the presence of natural nutrients.
2. Plants in sandy loam with medium fertilizer (50%) would grow the best due to the highest amount of nutrients.
3. Soils with 100% fertilizer may die due to excess fertilizer.
4. Soils with 0% fertilizer may not grow well due to inadequate nutrients.

Methods/Materials
Prior to the experiment, two types of soils, sandy loam and clay soil, were tested for pH levels, EC (Electrical Conductivity) content, and Nitric content. 18 corn plants were planted, 9 in clay soil and 9 in sandy loam. There were three different percentages of organic fertilizer in each soil, 0%, 50%, and 100%. The average heights of the plants were recorded on a time basis spanning 2 months. Each pot had the same amount of soil and the amounts of fertilizer were 0 gram, 2 grams, and 4 grams, respectively. A biomass study was done to observe the absorption of nutrients by the plants. The experiment was conducted in the greenhouse.

Results
It was found that most of the clay soil plants grew well and plants clay soil with 50% fertilizer grew the tallest, surpassing others. All the plants in soils with 100% fertilizer died due to excess fertilizer. Plants in sandy loam with 50% fertilizer died. The average height of the sandy loam was really low, considering its usage in the faring industry. On the other hand, the stats for the clay soil plants were really high.

Conclusions/Discussion
The interpretation of hypothesis was largely based on the growth rate. The differences in growths led to the following analysis. This experiment proved that clay soil is good for corn plants in the Central valley area. The clay soil had high amount of nutrients. Most of the sandy loam plants died due to excess fertilizer. The sandy loam also absorbed too much water and intoxicated the plants. Clay soil is known to be a bad water percolator, but it was able to absorb the right amount of water for the plants. The results might be different in other areas due to different weather, precipitation, and other eco-factors. The biomass test is currently underway and will be produced during the presentation.

Summary Statement
Quantitative and qualitative analysis of the effect of organic fertilizer and traditional farming soils on corn plants to provide the plants¡# growth information to Californian farmers and stakeholders.

Help Received
Used greenhouse and lab equipment at the Graduate Lab of California State University, Fresno under the supervision of Mr. Diganta Adhikari.