CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J0807

Project Title
How Does the Soil's Gradient, the Type of Soil, the Flow of Water, and the Presence of Plants Affect Erosion?

Abstract

Objectives/Goals
The purpose of this experiment is to find out how the soil's gradient, the type of soil, the flow rate of water, and the presence of plants affect erosion.

Methods/Materials
Experiment #1 involved 3 different angles of the soil's tilt and measured erosion with constant soil type and drip rate. Experiment #2 involved 3 different soil types with constant angle and drip rate. Experiment #3 involved 3 different drip rates with constant soil type and angle. Experiment #4 was the same as #3 but with plants replacing the soil. All experiments were done in duplicate using gallon water jugs with IV tubing and pans filled with soil placed on angled wooden supports.

Results
Experiment #1 demonstrated that soil erosion as measured by observer visual assessment, volume of erosion channel and amount of eroded material collected increased with increasing angle. Experiment #2 demonstrated that there was greater erosion with sand and potting soil than yard dirt. Experiment #3 demonstrated by all measures that erosion increased with increasing flow rate. Experiment #4 demonstated that when plants were present no erosion took place at any of the 3 different drip rates.

Conclusions/Discussion
We found that soil erosion increases with angle, water flow and varies with the type of soil. Plants were very effective in preventing erosion as a result of their root system. These considerations should be studied any time slopes or hillsides are close to roads or buildings.

Summary Statement
This project examines how varous factors affect the amount of soil erosion.

Help Received
Father helped build wooden angles. Mother helped design water jugs.