CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
J0606

Project Title
Holding Their Own, Soil Texture and Water Capacity

Abstract

Objectives/Goals
My project was to test the soil water holding capacity of three soil types. After meeting with a soil conservationist and learning how to read soil maps I selected three distinct locations to sample. I sampled in a pasture for loam soil, a redwood forest for clay soil and the banks of the Mad River for a silty loam soil.

Methods/Materials
At each sample site after clearing the organic material (O horizon)I dug a 30-60 cm hole and filled 4 tin sample cans. Each can had a lid and each sample was placed in a lableled plastic bag and stored in a cool dry place. Soils were weighed, baked in an oven at 110 degrees C (230 degrees F) for 6 hours, then weighed again to determine the weight loss from the water evaporation. The formula used to derive the various percentage of water holding capacity was as follows:the ratio of wet soil weight with can minus dry soil weight with can divided by the dry soil weight without the can multiplied by 100.

Results
The loam soil had the highest percentage of water holding capacity followed by the silt and then the clay.

Conclusions/Discussion
The result for the clay soil was not as I predicted. Environmental factors may have contributed to the difference in results. The sample hole dug for the clay soil was made up of organic material in the O horizon. This organic material may not have allowed rainwater to access lower horizons in the soil. Also nearby redwood trees may have been actively transporting the available water through their roots.

Summary Statement
Estimates of water holding capacity , which is the amount of water a soil can store, vary depending on soil texture.

Help Received
I met with Mr. Mark Meissner and Mr. Ricardo Velarde who are Soil Conservationist with the Natural Resource Conservation Service, US Dept. of Agriculture.