CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J1127

Project Title
The Effect of Native Plant Matter on the pH of Water

Abstract

Objectives/Goals
My project was to determine if native plants could be used to alter the pH of rainwater. My ultimate goal is to set up a rainwater collection system using native plants as filters here in Westhaven where there is an extremely acidic rainwater.

Methods/Materials
I collected, identified and composted native plant matter from the Westhaven watershed. During this time period I also collected rainwater in sterile glass jars. I collected the rainwater away from any contamination. Next, I percolated the rainwater through the composted plant matter using ceramic trays with drainage holes. I tested the pH of the original rainwater, after percolation, and then, finally, sitting overnight with the plant matter. I recorded the results and then attempted to mix "recipes" to adjust the rainwater pH to a drinkable level. I then repeated this process a second time.

Results
My results clearly show that plants can be used to adjust the pH of rainwater. Some plants, like sorrel, raised the pH significantly. Other plants, like douglas fir, lowered the pH. The recipes of combined matter were not as successful in altering the pH. The mixed plants seem to counterbalance one another. Hedge-nettle worked the best to produce a pH between 6.5 and 8.5.

Conclusions/Discussion
Rainwater pH can be successfully manipulated with native plant matter to produce a desirable drinking water.

Summary Statement
My project is to determine if it is possible to alter the pH of rainwater using native plant matter.

Help Received
Mom helped type report and oversee backboard. Bob Stewart at North Coast Labs helped me calibrate my pH checker as well as supervision and insight into testing water. Carol Ralph from the Native Plant Society helped me correctly identify the native plants as well as suggesting methodology of the testing.