CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
J1126

Project Title
Weeding Out Erosion

Abstract

Objectives/Goals
How do different types of weeds affect soil erosion by water? Which holds more dirt in place: soap root, milk thistle, or narrowleaf plantain?

Methods/Materials
For each trial, I used cardboard boxes with a volume of 1206.5 cubic centimeters as controlled environments for my experiment, and gave the plants a period of seven days to grow, watering them every three days. I put a different species of weed in three of the four boxes, and left one empty as a control.

Results
My hypothesis was that the soap root would protect the soil the most against water erosion, then the narrowleaf plantain, and finally, the milk thistle. However, the soil eroded the least with the narrowleaf plantain holding it in place, second least with the soap root, and the milk thistle's soil eroded the most, so overall my results disproved my hypothesis.

Conclusions/Discussion
Given the extreme rainfall and subsequent landslides that California has suffered from in recent years, it is important for us to study how we may be able to minimize the damages. Although many people think of weeds as being useless, my results indicate that they may be useful in erosion control. Weeds may not work as well as expensive cover crops advertised to prevent erosion, but unlike cover crops, weeds are free. They are also optimal for spreading over large areas, because they have adapted to reproduce quickly, and require very little care. Therefore, I think we can make use of this data by knowing that if we were to plant one species of weed on a hillside prone to landslides, plantain would be the one.

Summary Statement
I studied how different types of common Califonia weeds affect soil erosion, and discovered that narrow leaf plantain is the most effective.

Help Received
I designed, built, and performed all of the experiments by myself.