CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22236

Project Title
Slow The Flow: Controlling Erosion on Dirt Roads

Abstract

Objectives/Goals
The objective of this experiment was to determine the most effective water bar to use on dirt roads. A water bar is an alteration of the road terrain to divert water flow in order to minimize erosion.

Methods/Materials
A model road (4'Length x 2'Width x 3"Depth) was built from wood and filled with red earth (the soil most common to this local area). A 45-degree mound water bar was formed on the model. Droplets of water, comparable to a moderate rainfall, were lightly sprayed on the model. This process was repeated with a 30-degree mound water bar, a 45-degree rolling dip water bar, and a 30-degree rolling dip water bar. The experiment was done on a surface with no water bar as well to compare the difference when no water bar of any kind is formed. Three more trials were done following the same process.

Results
The 30-degree angle more effectively controlled erosion than the 45-degree angle, using either the mound or the rolling dip style water bar. When the data from the 30-degree angle trials were averaged, the rolling dip had slightly better results. The data from the 45-degree angle indicated it was not as effective as the 30-degree angle; however, the rolling dip was more effective than the mound. The trials involving the surface with no water bar had more than double the erosion as the least effective water bar.

Conclusions/Discussion
Using the data from this study, I conclude that the rolling dip and mound water bars are equally effective in minimizing erosion on dirt roads at a 30-degree angle. Based on the information collected from interviews with two experts, I recommend a rolling dip style water bar because mounds are quickly flattened by vehicle traffic.

Summary Statement
This project compares four kinds of water bars in order to determine which is most effective in minimizing erosion on dirt roads.

Help Received
Mother edited (except logbook); father supervised building of model