CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J1017

Project Title
H(2)O: Making Every Drop Count

Abstract

Objectives/Goals
The objective of this experiment was to find an effective covering method that would significantly reduce water evaporation in aqueducts. It was hoped by the experimenter, that the data could be used to help decrease water loss in aqueducts that are used commercially.

Methods/Materials
Three different types of aqueducts were built as one meter long, concrete models and then put into testing. the three aqueduct designs used in this experiment were the semicircular, narrow and deep trapezoidal, and wide and shallow trapezoidal aqueducts. The models were built to have different capacities of 6,12.5,and 20 liters each. Three different covering methods were then tested on the aqueducts. The covers tested were a plastic sheet, plastic balls, and a Canadian powder known as Water Savr. A control group (aqueducts without covers) was also used to help compare the water loss of the three covers. Each cover underwent a series of 24 hour trials. The starting and ending water amounts were recorded along with the temperature and then used to generate evaporation rates.

Results
It was discovered that the plastic balls conserved the most amount of water. The plastic balls lost 5.00%-14.50% of the water but saved at least 85% of it. The powder Water Savr saved more than 75% water, but had an 24 hour evaporation rate of 9.00%-25.00%. 8.25%-20.00% of the water was evaporated everyday with the plastic sheet, but more than 80% of the water was saved. The control group had the highest amount of water loss losing 23.33%-51.50% of the water. The control group had an average water loss rate of over 30% in all the aqueducts.

Conclusions/Discussion
Overall, the plastic balls turned out to be the most effective cover to use on aqueducts. The plastic balls helped save over 85% of of the water and loss less than 15%. Water Savr ended up being the least effective cover loosing 38% more water than the plastic balls. The plastic sheet helped save over 80% of the water, but wasn't as effective as the plastic balls. The control trials proved that a significant amount of evaporation does occur and that more than 1/2 or 50% of the water can evaporate at one time.

Summary Statement
This experiment was trying to find a more effective way to reduce water evaporation in aqueducts.

Help Received
Dad helped buy the supplies, edit my writing, and build the aqueduct models; Mom helped edit and plan out my experimentation; my teachers, Mrs. Schumacher and Mrs Gillum guided me and gave me advice; officials from the Bureau of Reclamation and the San Diego Water Authority also advised me