CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
Keegan P. Wright

Project Number
J1728

Project Title
Going Green with Grey Water

Abstract

Objectives/Goals
My project tested the survival rate of red worms to seven dilutions of 4 dish soaps (2 conventional and 2 eco-friendly)to determine if grey water with eco-friendly soap residue allowed for a higher worm survival rate.

Methods/Materials
4 liquid dish soaps, 2 conventional and 2 eco-friendly. Each soap was divided into 7 categories of 100ml: 100% soap; 50% dilution; 25% dilution; 12.50% dilution; 6% dilution; 3% dilution; 100% water. Each of the 28 samples were mixed individually with 4 oz of potting soil in a 16 oz paper container. 4 live red worms were added to each of the 28 containers then covered with the vented lids after making 4 additional perforations with a toothpick to insure adequate air flow. The containers were placed on a patio table outside for 5 days.

Results
Palmolive Eco - 100% survived at dilutions of 0%, 3%, 6%, 12.5%, 25%. 25% survived at 50% dilution. 0% survived at 100% soap. Green Works - 100% survived at dilutions of 0%, 3%, 6%. 25% survived at 12.5% dilution. 0% survived at 25% and 50% dilutions. 0% survival at 100% soap. Dawn - 50% survived at 0% and 12.5% dilutions. 100% survived at 3% dilution. 75% survived at 6%. 0% survived at 25%, 50% dilutions and 100% soap. Palmolive Conventional - 100% survived at 0% and 3% dilutions. 50% survived at 6% dilution. 0% survived at 12.5%, 25%,50% dilutions and 100% soap.

Conclusions/Discussion
The worm survival rate was higher for the eco-friendly soaps, especially in dilutions of 25% or greater. This suggests that grey water from eco-friendly soaps sufficiently diluted could be used for irrigation and toilet flushing, which would reduce potable water use.

Summary Statement
How to reduce fresh water use by reusing and recycling grey water.

Help Received
Mom helped with the tri-fold layout and Dad showed me how to research at the library and on the internet.