CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
Howard Nguyen

Project Number
J0915

Project Title
Reduction of NO(3) and PO(4)

Abstract

Objectives/Goals
The objective of this project is to eliminate and/or reduce the problem of agricultural runoff through the use of different biofilter mixtures or ratios.

Methods/Materials
A total of five tennis cans were suspended between two poles, each can was filled with a different biofilter media ratio. A solution of either nitrate of phosphate was then poured through each filter ratio and allowed to drain for 20 minutes. The concentration of the fertilizer was determined by using a nitrate and phosphate test kit.

Results
The 0:100 could reduce nitrate from 20 ppm down to an average of 2.64 ppm. The 25:75 ratio was the best at reducing the phosphate levels; it had an average of 2.76 ppm. Basically, it was the 0:100 that reduced nitrate the best, and the 25:75 that reduce phosphate the best.

Conclusions/Discussion
As the compost percentage decreased and the wood chip percentage increased, the filter's performance also increased. Compost is known to contain nitrogen and actually contribute to the nitrate concentration, and therefore the 0:100 ratio performed the best. However, when filtering phosphate, the 25:75 had the ratio and composition that was just right for removing phosphate.

Summary Statement
My project is about reducing agricultural run-off through the use of biofilters.

Help Received
Parents helped me purchase materials; Pershing Middle School for lending materials; Ken Dang at Alvarado Treatment Plant for inspiration; Holly Nguyen for taking pictures and editing