CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)

Saloni P. Kadakia

Project Number

S0803

Project Title

Aureococcus anophagefferens, Toxic Algal Blooms in United States Waters: Control, Prevention, and Mitigation

Abstract

Objectives/Goals
The objective is to deduce the grazing rates of the toxic algal bloom, the isolation and culturing of the algea by using protozoan communities, and the usage of mescocosm experiments to measure the effect and manipulation of nutrient forms and concentrations on these blooms.

Methods/Materials
Control algae were grown in a lab with recorded surroundings. The algae was then run through optimal environments of increased calcium and other such nutrients essential to its growth. Samples of algal bloom were also used in the Mouse Bioassey, the HPLC, and the optical detection method of the ocean color detector.

Results
From these experiments a new method of culturing and treating these blooms, by using bivalve reduction, was found that reduced the bloom rates of this toxic species to nearly 1/4 the original bloom. This process then created an environment of low essential nutrients around the algea that then prevented the blooms from further progressing as quickly as they usually would in the ocean.

Conclusions/Discussion
This method of preventing the algae from blooming to toxic level densities will thus prevent the algae's toxic product to enter the gills of non- motile water species. New methods of detecting potentially devastating blooms will also quickly provide for warning capabilites for the public as well as for businesses that depend on coastal resources.

Summary Statement

Using microcosm experimentation, nutrient exchange, and protozoan communites to control toxic algal blooms.

Help Received

Mother and Father helped for transportation and needed materials; Used minimal lab equipment at Cabrillo Marine Aquarium, advice from Dr. Coran at the University of Southern California, partcipant of Southern California Junior Academy of Science