CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
S1515

Project Title
The Shocking Truth: Enhancing Algae Based Biofuel through Low Level Electrostimulation

Abstract

Objectives/Goals
The objective of my project was to increase the efficiency of algae based bio fuel production through the use of low level electro-stimulation.

Methods/Materials
I seeded four identical tanks with the same amount of algae. I then applied zero volts, one half volt, one volt, or one and one half volts to each tank. The tanks were allowed to grow for seven days. I calculated the relative increase in weight of the algae growth by comparing the weights to my control group (zero volts) weight.

Results
Electro-stimulation on average increased the growth rate of algae 19%.

Conclusions/Discussion
Low level electro-stimulation can be used to increase algae production by an average of 19%. This is is an inexpensive and simple technique that can be used to enhance photobioreactors production efficiency, significantly lowering the per gallon cost of algae based bio fuels.

Summary Statement
I tested how low level electro-stimulation affects the growth rate algae, and I found I could increase the growth rate of algae by an average 19%.

Help Received
My mentor, Nicholas Eckelberry, who works at Origin Oil reviewed my work and provided guidance. My chemistry teacher, Olin Bausback, allowed me to use his precision scale to weigh the algae. My father guided me in the creation of a circuit board which delivered the appropriate voltages.