CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
S1912

Project Title
Polyphosphates in Mustard Algae Pool Pest Could Bolster Growth of Backyard Vegetable Plants

Abstract

Objectives/Goals
Observed the efficacy of polyphosphate-rich mustard algae on kale plant growth to determine its organic fertilizer potential, transforming a prevalent swimming pool pest into a vegetable garden growth enhancer.

Methods/Materials
Extracted mustard algae from swimming pool. Deposited into buckets and cultivated supply. Planted ten kale plants evenly divided into two 27" x 9" clay deck boxes; five labeled Experimental and five labeled Control. Kale individually labeled and planted 3" deep/5.5-7" apart. Fed experimental group 200ml mustard algae water/control group 200ml garden hose water every 2-3 days. Measured and documented soil moisture daily. Tested soil pH and phosphate levels 1x/wk. Collected data on plant height and leaf count.

Results
Control group gained in growth with average height of 21cm, while experimental group lagged behind slightly, yet gained in average # leaves. Similarly, while control group average height rapidly increased initially, it inclined at a slower, steady rate, narrowly beating experimental group by .3. But the experimental group had a growth spurt from wk 0 to wk 1, then height leveled off and plants increased in leaf count. Result could stem from polyphosphate deficient soil; experimental group fed polyphosphate-rich mustard algae water, boosting height initially and then stimulating leaf growth.

Conclusions/Discussion
Results did not fully support hypothesis overall because experimental group average height was less than control group. Limiting factors involved experimentation for a 4-week period during frigid nite temperatures (inhibiting photosynthesis, equating to less energy for kale growth); lack of sunlight from move to new residence shrouded in shade; attack of caterpillars and slugs; and planter that may have restricted root growth. With further testing, this readily available mustard algae backyard swimming pool pest could become a viable organic fertilizer in lieu of synthetic fertilizers that can seep into groundwater, causing a host of health issues for future generations.

Summary Statement
I devised an experiment to test the efficacy of mustard algae (a prevalent swimming pool nuisance) as an organic fertilizer, used to bolster the overall growth of backyard vegetable garden plants, such as kale.

Help Received
Conducted experiment on my own. While I planned to work with a professional and have access to a research lab, I only received a response from one professor (out of ten) who politely declined.