



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <p align="center"><b>Cole R. Rabano</b></p>	<b>Project Number</b>  <p align="right">36766</p>
<b>Project Title</b> <p align="center"><b>Mustard Algae: Swimming Pool Pest or Vegetable Garden Growth Enhancer?</b></p>	
<p align="center"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To prove that if polyphosphates enhance a plant's growth, then mustard algae, a prevalent swimming pool pest containing polyphosphates could be used to enhance the growth of backyard vegetable plants.</p> <p><b>Methods/Materials</b> Place two deck boxes in the backyard in direct sunlight for at least six hours a day. Fill with potting soil and plant kale 1.5" from each other, inserted into a hole 2" deep. Label boxes and plants. Extract mustard algae from infected pool using Max Liquidator. Transfer mustard algae water into two 3-gallon buckets placed in area of part sun/part shade (See logbook on mustard algae cultivation). Water plants daily with 200ml of garden hose water in one watering can for control group and 200ml of mustard algae water in the other watering can for experimental group. Record height of each kale plant every 5-6 days.</p> <p><b>Results</b> After eight weeks, the control group reached an average height of 43.79cm, while the experimental group grew to an average height of 34.2cm and the coloring of the control group was a deeper, healthier green.</p> <p><b>Conclusions/Discussion</b> Experiment did not support the hypothesis because the average growth per week for the experimental group fed mustard algae water was significantly smaller than the control group's growth over the eight weeks. Limiting factors were a) the caterpillar infestation; b) the use of moisture control soil which retained the polyphosphate algae water and caused the roots to grow too rapidly, overdosing on phosphorus and suspending growth; and c) failure to check the PH of the soil--optimal conditions to make polyphosphates available to the plant is 6.5. Limiting factors could be overcome in the future by using different soil to make way for accelerated, steady growth, while monitoring PH levels to keep the soil stable. By taking the findings from this experiment, addressing limiting factors and running another trial, it might still be possible to transform the mustard algae swimming pool pest into a product that enriches and enhances backyard vegetables organically.</p>	
<b>Summary Statement</b> <p>Experiment intended to transform mustard algae, a common swimming pool pest, into an organic, backyard garden growth enhancer.</p>	
<b>Help Received</b> <p>I designed and conducted the experiment on my own. My teacher Mrs. Susan Ackermann reviewed my results. I sought the advice of gardening experts Gary Bollman of Armstrong Garden Centers and Chris Brown of Hollywood Hydroponics and Organics to trouble shoot gardening problems and Pool Store</p>	