



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Mia L. Dostal	Project Number J1907
Project Title Comparing Plant Growth in Aquaponic Systems to Traditional Soil Farming	
Abstract Objectives/Goals The purpose of this project was to find out which plants grow best in aquaponic systems so we can take advantage of these water saving systems and replace regular, drought creating farms, with aquaponics systems that save 20 times as much water. Methods/Materials 24 plant seedlings, 8 seedlings of each kind of plant, 20 gallon fish tank, 2 long pieces of PVC pipe, 1 small piece of PVC pipe, 6 small blocks, fish tank gravel, 10 shibunkin goldfish, power head pump, tubing, netting baskets, planting pots, soil, and PVC pipe elbow connectors and ends. Results The results of this experiment were that the broccoli plants grew the widest, growing 5.08cm wider than the control, the lettuce grew the deepest growing 5.4cm deeper than its control, and the lettuce grew the tallest out of all three, none of the aquaponic plants grew taller than the controls, so the lettuce grew -2.04cm taller than the control. Compared to their controls, the lettuce control grew 2.04cm taller, 5.4cm less deep, and 1.51cm skinnier than the average of the aquaponic lettuce, the chives control grew 2.91cm taller, .02cm less deep, and 1.62cm skinnier than the aquaponic chives, and the broccoli control grew 3.02cm taller, .62cm less deep, and 5.08cm wider than the aquaponic broccoli. Conclusions/Discussion The tests for this experiment failed to disprove my hypothesis, which was " That the lettuce will grow the best if it's compared to chives and broccoli, because leafy plants need higher nitrogen levels, then the lettuce will be able to thrive with the nitrogen produced by the fish." The lettuce grew the best out of the plants by growing the deepest and tallest. It grew 5.4cm deeper than its control and though none of the aquaponic plants grew taller than the controls, it grew the closest. Now that we know which plants can grow best and we can replace industrial soil farms that grow things like lettuce, i.e. kale, arugula, and cabbage. Also, we can save wildlife and make our plants healthier by reducing the use of pesticides on crops.	
Summary Statement I tested to see if what kind of plants grown in aquaponic systems grow taller, wider, or deeper then plants grown in soil and found that lettuce plants grow the best in aquaponic systems compared to broccoli and chives.	
Help Received I designed and built my tank by myself, but my parents helped me with cutting PVC pipe. I had help from Rebecca Bainbridge, who is a scientist that works at Aquaponics U.K., I also got to use the work shop at the Monterey Bay Aquarium Exhibit Production, where I put together my tank and cut the PVC pipe.	