



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Karly Condon; Isabella LeSage</b>	<b>Project Number</b> <b>J1804</b>
<b>Project Title</b> <b>Testing Aquaponics and Hydroponics to Find the Most Effective Watering Method to Address California's Drought</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> In this project we wanted to find out if there was a way to save more water when growing plants in California. We hypothesized that, "if alfalfa and radish sprouts are grown aquaponically, then it will result in a greater mass per liter of water for both crops than either hydroponics or the more common method of farming in soil."</p> <p><b>Methods/Materials</b> Aquaponic Fish Tank, purchased at <a href="http://www.uncommongoods.com/product/water-garden">http://www.uncommongoods.com/product/water-garden</a>, Betta Fish for aquaponic tank, alfalfa and radish sprouts, 3 mason jars, to experiment hydroponically; pots and soil, to experiment traditionally, and a triple pan balance to record mass. Grew sprouts using each method, measured mass and water usage of plants daily.</p> <p><b>Results</b> The plants mass and water usage were measured daily to calculate the total mass per liter for each method. Although the plants grown aquaponically had a lesser mass per liter than the plants grown with distilled and tap water in a closed loop hydroponic system, they obtained a greater mass per liter than the plants grown in soil and in a non-closed loop hydroponic system.</p> <p><b>Conclusions/Discussion</b> Plants grown aquaponically had a greater mass per liter than the plants grown in soil and in a non-closed loop hydroponic system, although they had a lesser mass per liter than the plants grown with distilled water and tap water in a closed loop hydroponic system. A difficulty that we encountered throughout our science fair project was that our fish tank water got really dirty from the radish and alfalfa seeds, and therefore we cleaned the tank to keep the fish safe. We theorize that perhaps the cleaning itself resulted in the closed loop hydroponic system caused larger mass than the aquaponic system. We performed this experiment to see if there was a way that we could help California in it's drought, and save water when growing plants.</p>	
<b>Summary Statement</b> We grew plants using aquaponics, hydroponics, and soil to conclude that hydroponics is the most drought friendly method of farming.	
<b>Help Received</b> Ms. Tammy Levy, Elka Worner, and a phone call to Michael Hanemann (UC Berkeley)	