



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Delaney E. Fritz</b>	<b>Project Number</b> <b>J1812</b>
<b>Project Title</b> <b>The Effects of Water Quality on Alfalfa Growth</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I have always been interested in the propagation of plants because my parents own nurseries where they grow palms, tropical, and hanging flower baskets. We have a well on our property, and I wondered what the effects of different water sources are on plants. My goals were to find the best source of water for growing alfalfa. I chose to grow alfalfa because it grows quickly, and I could easily observe changes over a short period of time. My hypothesis is that the well water will grow healthier plants because it may contain more trace minerals.</p> <p><b>Methods/Materials</b> I tested three samples of well water and three samples of tap water for water quality. I planted six trays of fifty cells each with alfalfa seeds. I started testing after three days of growth when the seedlings first emerged. Next I watered the three trays of tap water and three trays of plants with well water. I observed and measured the plants daily. I recorded the results for the height, soil moisture, light levels, temperature, and humidity. My materials included test tubes, a digital stopwatch, and LaMotte Testabs for the water quality testing. My other materials were a light and moisture meter, a temperature and humidity meter, and a metric ruler for measuring alfalfa heights.</p> <p><b>Results</b> My total number of samples was 42 samples tested for water quality and 300 alfalfa plants observed. I tested the alfalfa plants a minimum of 10 days and on average the alfalfa plants that were watered with well water consistently grew taller than the alfalfa watered with tap water. The moisture and light conditions were consistent and equal. The humidity and temperature were maintained at the same level for all plants. The average plant heights for the alfalfa plants were 31.9 cm for those watered with well water and 21.6 cm for those watered with tap water.</p> <p><b>Conclusions/Discussion</b> My conclusions were that the plants watered with well water grew more rapidly and appeared more robust than the plants watered with tap water. The height of the alfalfa plants watered with well water changed significantly each day. The alfalfa plants watered with well water were on average 33% taller than the plants watered with tap water. I would recommend also testing different plants to see if the results are the same, and also testing for trace minerals in the water.</p>	
<b>Summary Statement</b> My project tested the differences between well water and tap water on alfalfa growth.	
<b>Help Received</b> My science teacher shared her testing material; my father let me use his greenhouse facility.	