



# CALIFORNIA STATE SCIENCE FAIR

## 2011 PROJECT SUMMARY

Name(s) <b>Julia C. Clark</b>	Project Number <b>J1906</b>
<b>Project Title</b> <b>How Does Fertilizer Affect Plant Growth?</b>	
<b>Objectives/Goals</b> My objective was to determine how different types of fertilizer affect plants growth. My hypothesis was that the fertilizer urea would have the greatest effect on the plants' mass and appearance. I believed this because urea contains a high percentage of nitrogen, so therefore it causes vegetation to thrive in its environment.	<b>Abstract</b> Before I planted my seeds, I tested the soil for nitrogen, phosphorus, and potassium. I planted my lettuce seeds, Black Seeded Simpsons, in potting containers. Then I watered my lettuce, I had beakers in which I mixed fish emulsion, urea, and 10-10-10 into the water, and in one beaker I mixed in no fertilizers (control group). I watered my lettuce every five days. As my lettuce grew I measured the height of the plants weekly. Before I harvested my lettuce I photographed the plants and tested the soil again. Then I harvested the lettuce, shook off the soil, and massed it, finding the mass of each group. I then analyzed the data to determine how the fertilizers affected plant growth.
<b>Results</b> I created three types of graphs: soil nutrients levels, lettuce growth heights, and total lettuce mass for each group. The lettuce growth height graph indicates that lettuce fertilized with urea grew the most. It shows that lettuce fertilized with urea grew 10.8 centimeters, lettuce fertilized with 10-10-10 grew 10.3 centimeters, lettuce fertilized with fish emulsion grew 9.6 centimeters, and control lettuce (unfertilized lettuce) grew 8.5 centimeters. The lettuce mass graph indicates that lettuce fertilized with urea and fish emulsion had the greatest mass at 14 grams, lettuce fertilized with 10-10-10 had a mass of 13 grams, and unfertilized lettuce had a mass of 11 grams. My data indicated that my hypothesis was correct. I concluded that plants fertilized with urea grow faster and larger than plants fertilized with 10-10-10, fish emulsion, and control, because urea contains a high percent of nitrogen, and therefore plants thrive in their environments. If I were to do a similar experiment, I would like to further investigate several aspects; I could test the same fertilizers, except use different crops (wheat, corn, or beans), I could use the same fertilizer, but different plants and see their response, or I could use different soil types and see how these affected plant growth.	
<b>Summary Statement</b> I was trying to determine how different types of fertilizers affected lettuce plants height and weight, as well as soil nutrient levels in the soil.	
<b>Help Received</b> Father helped purchase fertilizers and lettuce seeds.	