



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Elizabeth (Lizzie) G. McMillin	Project Number 31801
Project Title Growing Green: A Study of Organic vs. Inorganic Fertilizers for Crop Production	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In an era of environmental concerns, the objective of this project is to determine if there is any significant differences in the types of commercially available fertilizers: compost, organic and synthetic.</p> <p>Methods/Materials Using an indoor seed starting system, four trials were conducted using potting soil amended with fertilizer. Each trial consisted of 36 samples; each sample contained three radish plants grown from seed. The average plant height was tracked during the course of a two week period to determine the growth rate for each soil.</p> <p>Results There appeared to be little, if any, significant difference between the fertilized soils. Though, the soil amended with compost was the first to germinate and develop non-cotyledon leaves. This is not to say that fertilizers do not alter plant growth because many potting soils are already nutrient-rich prior to use. A longer term study is recommended to observe the long range effects of fertilizer use on plant growth during the course of an entire growing season since this often will require amendments to be added to the soil over time.</p> <p>Conclusions/Discussion Fertilizers are a large number of natural and synthetic materials worked into the soil to increase its capacity to support plant growth. The primary nutritional needs obtained by the use of fertilizers are nitrogen, phosphorus and potassium. Organic fertilizer may include things such as manure, blood meal, alfalfa meal, or seaweed. Likewise, compost consists of manure, decayed plant and vegetable matter, and under the right conditions, animal matter. Yet synthetic fertilizers are made by the Haber process using oil or other petrol-based chemicals and/or other fossil fuels such as coal.</p> <p>The results of the project are potentially significant, in that, it makes little or no logical sense to continue to use fossil fuels to produce synthetic fertilizers for crop production. The economic expense and environmental consequences with continued use of these fertilizers is foolish when low-cost, green alternatives are readily available.</p>	
Summary Statement This study focuses on the comparison of organic and synthetic fertilizers for crop growth and production.	
Help Received My mother helped type the report. All equipment used in the project came from my family's hobby farm, Terra Del Sol.	