



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> Amelia A. Kyle	<b>Project Number</b>  35041
<b>Project Title</b> Super Soil to the Rescue!	
<b>Objectives/Goals</b> Healthy soil provides nutrients for plant growth, holds water, is a habitat for good microorganisms, and helps plants, animals and humans to live. Natural fertilizers help to keep soil healthy and increase plant growth. This study examines how different types of soil fertilizers compare as far as improving plant growth and health. My hypothesis was that plants would grow more efficiently in natural fertilizers when compared to those grown in either artificial fertilizer or in plain soil. <b>Abstract</b> Healthy soil provides nutrients for plant growth, holds water, is a habitat for good microorganisms, and helps plants, animals and humans to live. Natural fertilizers help to keep soil healthy and increase plant growth. This study examines how different types of soil fertilizers compare as far as improving plant growth and health. My hypothesis was that plants would grow more efficiently in natural fertilizers when compared to those grown in either artificial fertilizer or in plain soil. <b>Methods/Materials</b> In order to test this hypothesis, I planted radish seeds in four plant pots. In plant pot A, the seeds were planted in plain soil. In plant pot B, the seeds were planted in soil mixed with artificial fertilizer. In plant pot C, the seeds were planted in soil mixed with earthworm castings, and in plant pot D, the seeds were planted in soil mixed with kelp meal. The plant lengths were measured and recorded regularly for four weeks. The average number of leaves on the plants was also calculated, and the plant leaf size was observed and compared. <b>Results</b> Three trials were performed. In all trials, the plants grown in the soil mixed with earthworm castings grew the fastest, had the greatest average number of leaves, and the largest observed leaf size. The plants grew the next best in soil mixed with artificial fertilizer, followed by the plants grown in plain soil. The plants grew the slowest in kelp meal. <b>Conclusions/Discussion</b> The data from this study partially supports my initial hypothesis. Earthworm castings are a natural fertilizer and were the best performing fertilizer in this study. The plants grown in the worm castings not only grew the fastest, but also looked the healthiest with larger leaves and more leaves on them. Soil can be damaged by artificial fertilizer, which can decrease the amount of soil carbon, kill the good bacteria and algae in soil, and injure or kill the earthworms that live in it. It is therefore best to use natural fertilizer in order to keep soil and our environment healthy for the survival of future generations.	
<b>Summary Statement</b> This study examines different types of fertilizers and their effect on plant growth.	
<b>Help Received</b> Mother provided general guidance during project and board design; Father helped generate graphs representing data.	