



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Jacob D. Seabury	Project Number J1729
Project Title CO+F(2)+E(2) Brewing Organic Gardens: Benefits of Recycling Coffee Grinds	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My hypothesis is used coffee grinds can be recycled, add value to improve plant growth and help the environment#but a proper ratio of coffee to soil probably is necessary for different types of plants.</p> <p>Methods/Materials Three tests were conducted to evaluate the effects of coffee grounds in the soil with seven varieties of plants and grass. Soil tests measuring three major nutrients (Nitrogen, Phosphorus and Potash) were completed on all soil combinations used for the project. The primary test evaluated coffee versus fertilizer versus soil only. The secondary test measured the effects different ratios of coffee to soil on the plants. The third test provided more definitive results on coffee to soil ratios using Biomass. Watering amounts were aided by using a moisture meter and Biomass was measure with a triple-beam balance scale.</p> <p>Results Results of the Primary test concluded that the used coffee grinds produced results better than or equal to fertilizer sticks and much better than soil only. Results of the Secondary test showed that when mixing both soil and coffee grinds together, a 1:3 ratio of coffee to soil is an optimal level for most plants. Results of the Biomass tests showed that a 1:1 ratio was a healthy mixture for grasses, and test samples with coffee and soil produced 15% to 280% more biomass. Plant varieties responded positively but with different degrees to the use of coffee grinds and the different percentages of coffee to soil mixtures.</p> <p>Conclusions/Discussion The plant family that benefited most was in the Violaceae family (Pansy and Viola). Coffee grinds add to both the composition of the soil and nutrients needed by the plants. Coffee is an organic by-product and recycling it back into the earth would prevent millions of tons of used coffee grinds being dumped in our landfills. Recycling would help reduce the use of man-made fertilizers and reduce possible runoff of unused chemicals and fertilizer.</p>	
Summary Statement I researched, tested and evaluated the contribution of the nutrients of coffee grinds for plants; the chemical changes in the soil; and the physical characteristics of the plants samples using coffee as an organic fertilizer.	
Help Received Parents helped with board assembly, proofreading, and driving to pick up supplies. Father supervised testing and assisted in formatting graphs. Mr. Al Remyn (Arborist) and Carlos Ruiz at Flowerdale Nursery helped with consultation and suggestions. Starbucks, Pete#s Coffee, and Deidrich#s Coffee,	