



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Zareen Choudhury	Project Number J0904
Project Title Phytoextraction: An Organic Decontaminator	
Objectives/Goals Soil contaminants form negative impacts on our ecosystem: ruining groundwater supplies, killing organisms, and posing a threat to our health. Certain plants can decontaminate soil through the process of phytoextraction; my project was to find out which plant (Euphorbia, Blue Fescue, Umbrella Plant, or Kale) would decontaminate the most amount of zinc contamination from the soil. I hypothesized that the Blue Fescue would, because of its high toxicity-resistance levels and long roots.	
Abstract Methods/Materials I had 3 of each type of plant (12 plants in all), with 1 control and 2 variables for each type. The variable plants all received a dosage of zinc chloride; within each plant type, 1 variable plant would get zinc at a ratio of 776.4 mg of Zn/kg of soil and the other variable plant got a ratio of 100 mg of Zn/kg of soil. After 3 weeks, the control plants and the plants with a concentration of 776.4 mg of Zn/kg of soil were sent to a lab, to see how much zinc they extracted by then. After an additional 5 weeks, all variable plants were sent to the lab, and the final data were taken.	
Results After 3 weeks (for 776.4 mg/kg plants): The Kale had the most percent increase in zinc, followed by the Blue Fescue, then Euphorbia, and last the Umbrella plant. After 8 weeks (for 776.4 mg/kg plants): The Kale had the highest percent increase, then Euphorbia, third Blue Fescue, and last Umbrella plant. After 8 weeks (for 100 mg/kg plants): Kale had the highest increase in zinc, then Euphorbia, followed by Blue Fescue, and fourth Umbrella plant.	
Conclusions/Discussion The amount of phytoextraction by each plant depends on a few features in the plant: its root length; tolerance levels to drought, disease, and climate; and growth rate. Because the Kale was extremely tolerant to disease and had a medium-sized root length, it extracted the most zinc. Even though the Kale extracted the most zinc, it looked the most unhealthy at the end, as though it would soon die. So the Kale would not be good for practical applications, which extend over many years, for it would die early. Hence, the Blue Fescue, which came second in absorption level and remained healthy, would be the best option for cleaning zinc-contaminated soil.	
Summary Statement My project intended to conclude which of my four plants is the best option for decontaminating zinc from soil, to help in real-life applications.	
Help Received Mother bought materials; Leo Garbini (Mom's colleague) helped make zinc chloride solution.	