



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Elizabeth S. Koo	Project Number J1615
Project Title Humic Acid or Fulvic Acid: Which Organic Acid Accelerates the Germination of the Green Mung Beans?	
Objectives/Goals I'm trying to see which organic acid: humic acid or fulvic acid, can speed up the growth of green mung beans. I think humic acid would be the best since it is composed of three organic acids: humic acid, fulvic acid, and ulmic acid.	
Abstract Methods/Materials 1. Checked and recorded the pH balance for humic and fulvic acid. 2. I put cotton mats on four plates with 1/2 tablespoon of green mung beans. 3. I put 1/2 cup of distilled water on three of the plates and the last plate with 1/2 cup of tap water. 4. I put a 1/2 tablespoon of humic acid on the distilled water plate. Did the same thing with fulvic acid. 5. Observed each day and recorded the numbers of the beans sprouted and looked closely at the size of beans. 6. I calculated the percentage of the three experiments of the beans sprouted and averaged. Materials: a dropper, distilled water, tap water, 12% concentration of humic acid (contains 2% of fulvic acid), 12% concentration of fulvic acid, 12 plates, 1/2 tablespoon measurement, 1/2 cup measurement, green mung beans, cotton mats, and an insta-chek surface pH pencil	
Results The results were based from the averages of three experiments on the fourth day: Fulvic acid with distilled: 98% beans sprouted Humic acid with distilled water: 93% beans sprouted Tap water: 81% beans sprouted Distilled water: 65% beans sprouted	
Conclusions/Discussion I concluded that my hypothesis was wrong. Fulvic acid had more beans sprouted. After doing this experiment, I figured out that fulvic acid is the key element for all plant growth. Today, our soil doesn't have enough fulvic acid or humic acid in it. If the soil lacks these elements, the plants will not be healthy. When our plants are not healthy, sick animals and people will be produced.	
Summary Statement Which organic acid, humic acid or fulvic acid, can speed up the germination of green mung beans.	
Help Received Mom helped me paste the layout on the board.	