



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Michael Q. Nguyen	Project Number 22516
Project Title Sinking pH	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to determine if a pinto bean would grow into a plant by using different chemicals at several, different, pH levels. (pH levels range from 0 to 14, where 0 is the strongest acid, and 14 is the strongest alkaline.) I predict that different pH levels will affect the beans' growth because there is, a big and definite change in the acidity or alkalinity of the solution. I also predict that alkaline (base) pH solutions will help make the plant grow faster.</p> <p>Methods/Materials Seven Petri dishes were set-up with labels; and each label was clarifying a different level of pH. Inside the petri dish itself included: three pinto beans, one cotton ball, and exactly 10 mL of the precise pH level solution listed on the label. Litmus Paper was used to determine the pH level of the solution. Here are the chemicals listed: Sulfuric Acid (pH 0), Lab Water (pH 5), Distilled Water (pH 6), Tap/Municipal Water (pH 7), Baking Soda (pH 8), Borax (pH 9), and Pure Ammonia (pH 14.)</p> <p>Results Some pinto beans did not grow or even germinate. The only pinto beans that did grow were the ones that were grown in the solutions of pH 5, pH 6, pH 7, and pH 8. The pH level that the pinto bean grew the best was pH 6.</p> <p>Conclusions/Discussion Therefore, concurring, I found out that different pH levels of a solution does affect the growth of plants, and that my hypothesis was incorrect. I stated that alkaline solutions would make the plant grow faster. It seems that this bean type, the pinto bean, grew the best at the pH level of six. However, the pinto beans in the pH levels of 0, 9, and 14 all died. Therefore, these results must mean that plants grow best under the pH levels close to pH 7, (which is neutral.)</p>	
Summary Statement To grow a pinto bean plant by using several, different, pH level solutions.	
Help Received Used Laboratory Equipment From MacArthur Fundamental Intermediate School Under Permission Of Ms. Kateryna Matwijewsky (Science Teacher); Dad Helped Store Materials.	