



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Mariko K. Powers	Project Number J1422
Project Title The Effect of pH on Seed Germination	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of my project was to determine how different pH levels effect lettuce and poppy seed germination.</p> <p>Methods/Materials Ascorbic acid/lime solutions were prepared at different pH levels ranging from pH 3 to 11. 2 ml pH samples were added to 5 poppy or lettuce seeds and incubated for 6 days at room temperature. Samples from different local bodies of water (ocean, creek, lagoon, etc) were tested for pH level and a 2 ml sample was added to lettuce or poppy seeds. The root length was measured.</p> <p>Results The poppy seeds did not germinate in pH levels below 5 using ascorbic acid/lime solutions, but there was slight growth for lettuce seeds at pH 4. From pHs 5-11 root growth was detected in ascorbic acid/lime solution for poppy and lettuce seeds. Poppy seed growth at pH 11 decreased significantly, however for lettuce seeds in pH 11 growth remained high. No seeds grew in ocean water but growth detected in all other sources of water which ranged in pH from 5.3 to 8.</p> <p>Conclusions/Discussion In extremely low pHs below 4 the seeds did not germinate within 6 days. However, I did believe that at higher pH levels seed germination would also decrease. This was partially correct as poppy seed germination did decrease at pH 11 however for lettuce seeds growing at pH 11 the root growth was fairly high. This information is important because if a plant does not germinate it may be due to a high level of acidity. However, pH is not the only determining factor in seed germination as indicated by lack of growth also seen with high salt levels (ocean water). I have come to find that different seeds will have different reactions to different pHs and different elements in its environment.</p>	
Summary Statement In my science project I studied the effect of pH on lettuce and poppy seed germination using an ascorbic acid/lime solution and water samples from local bodies of water.	
Help Received School provided chemicals, parents provided other supplies, mother edited and helped type report.	