



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Emma K. Lay	Project Number J2018
Project Title The Effect of Pre-Soaking Bush Bean Seeds in Different pH Solutions on the Time for the Seeds to Germinate	
Abstract Objectives/Goals The objective was to see if pre-soaking Bush Bean seeds in solutions of different pH would affect the germination rate. The hypothesis states that if Bush Bean seeds are soaked in different pH solutions and then planted, then the seeds that were pre-soaked in the most acidic solution (vinegar, pH 2) will germinate first. Methods/Materials Twenty-five seeds were soaked for twenty minutes in one of three solutions: household ammonia (pH 11), local tap water (pH 5) or white vinegar (pH 2). Twenty-five seeds were not pre-soaked. The pre-soaked seeds were rinsed and then each of the four groups were placed into a glass beaker packed with moist cotton. The beakers were placed in a warm, dark area to allow the seeds to germinate. The seeds were observed every twelve hours for six days and the time was recorded. Results After seventy-two hours, the group that had been pre-soaked in tap water had the most seeds germinate followed by vinegar and then the control group. The group pre-soaked in ammonia had the least seeds to germinate. At the end of six days, the group of seeds that had not been pre-soaked had the most seeds to germinate, followed by tap water, then vinegar, and ammonia had the least. Conclusions/Discussion The results of this investigation did not support the hypothesis that the seeds pre-soaked in vinegar would germinate first, the seeds pre-soaked in tap water (pH 5) had a faster germination rate over the first seventy-two hours.	
Summary Statement Can germination rate be increased by pre-soaking seeds in acidic or basic solutions?	
Help Received parents bought supplies	