



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Kris M. Evered	Project Number S1512
Project Title Does Ascorbic Acid Reduce Salt Stress in Lactuca sativa Plants?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This experiment is to test if various concentrations of ascorbic acid (Asc) will reduce salt stress in Lactuca Sativa Capitata plants that are exposed to various dilutions of salt (NaCl). Because vitamin C (Asc) acts as an antioxidant, I hypothesize that it will reduce the oxidizing effects of salt stress in these plants.</p> <p>Methods/Materials Ninety Lactuca Sativa Capitata plants were exposed to 500ml of H₂O alone and in combination with differing dilutions of NaCl (0.2922g and 1.461g) and Asc (0.0495g and 0.0099g). The results of the exposure were recorded over a 15 day period. Observations were made daily of each plant's health. The characteristics of plant color, leaf integrity, and insect infestation were evaluated and recorded according to a designed scale. Averages and standard deviation values for each observation were computed and analyzed.</p> <p>Results An unexpected white fly infestation changed this experiment. The results were influenced by two stresses on the plants, abiotic (salt stress) and biotic (insect stress). The insect stress most detrimentally affected the control group. The ascorbic acid alone and with the lowest levels of NaCl fared the best for the salt stressed groups., displaying less color change and more leaf integrity despite high insect infestation. On the other hand, the greatest amount of NaCl combined with the lesser amount of ascorbic acid had the highest rate of morbidity with the mean reaching 3.5 in color and leaf integrity. The salt stressed plants without ascorbic acid did not die, as expected. Their salt stress response seemed to help them combat the insect infestation which killed the control group.</p> <p>Conclusions/Discussion Asc in both concentrations helped the plants under salt stress. When the plants were exposed to the highest levels of NaCl, the lowest levels of Asc were not beneficial; the highest level of Asc worked better. When plants were exposed to lower levels of NaCl, both levels of Asc were beneficial. In dealing with the biotic stress of the whitefly, both Asc and NaCl functioned to allow the plants greater resistance to the effects of insect infestation. The response to salt stress alone created internal responses that helped battle the whitefly stress.</p>	
Summary Statement This experiment examined if different concentrations of ascorbic acid (Asc) would reduce the salt stress in Lactuca Sativa Capitata plants that were exposed to various dilutions of salt (NaCl) and insect infestation.	
Help Received Mother helped set up project. I used lab equipment at UC Riverside under the supervision of Dr. Julia Serres. Father helped with graphing results.	