



CALIFORNIA STATE SCIENCE FAIR 2002 PROJECT SUMMARY

Name(s) Julissa Florido	Project Number J1609
Project Title Does Leaf Senescence Affect the Absorbance Spectrum of the California Sycamore (<i>Platanaceae racemosa</i>)?	
Objectives/Goals The objective is to see if leaf aging (senescence) will affect the absorbance of light.	Abstract Procedures: Gather all your materials. Mass a gram sample from a sycamore leaf and blend with 40mL of distilled water for fifteen seconds. Strain the solution to remove large particles and pour it into a cuvette (2/3 full). Repeat steps 2-3 for all of the leaves (senescent and healthy). Turn on the spectrophotometer and let it warm up for fifteen minutes. Using a cotton ball, clean the fingerprints off the cuvette that contains distilled water. Place it in the spectrophotometer and zero it. Replace the standard, distilled-water cuvette with the first sample solution. Record the absorbances from 400-800nm (in 20nm increments). Take out the cuvette and repeat the above procedure for each sample solution. Materials: 5 senescent leaves; 5 mature, healthy leaves; Spectrophotometer; 11 cuvettes; Distilled water; Cotton balls; Mesh strainer; Blender.
Results The results showed that mature, healthy leaves had peak absorbances at wavelengths of 680nm and 400nm. These numbers correlate closely with the wavelengths of light needed for the light and dark reactions of photosynthesis. What I also noticed was that there was a small decrease in absorbance at 540nm (which would explain the leaf's reflection of green light). On the contrary, the senescent leaves did not show a large increase or decrease in the range of 500-700nm, but it did show a small peak absorbance at 400nm.	
Conclusions/Discussion My data supported my hypothesis. Any possible experimental error would have resulted from the limitations of the spectrophotometer that was used. Although there was less fluctuation in the absorbance spectrum of senescent leaves, it was interesting to see that there was still a small peak absorbance at 400nm. This might indicate that there is a delayed termination for some photosynthetic activity. An idea for a future project would be to compare the absorbance spectra from different species of leaves and look for similar trends.	
Summary Statement This project analyzes how the absorbance spectrum is influenced by leaf senescence.	
Help Received Equipment for this project was supplied by Raymond A. Villa Fundamental Intermediate School. My teacher and the UCI mentors helped me practice for the interview and gave suggestions on how to improve my research paper.	