



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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| Name(s) Jordan C. Kelterer | Project Number J1718 |
| Project Title Why Do Leaves Change Color? | |
| Objectives/Goals The objective is to determine how light affects the color development of leaves of the Liquid Amber Tree (<i>Liquidambar styraciflua</i>) and the Photinia Tree, (<i>Photinia x fraseri</i>). I predict the 110 green leaves, each one being partially covered in aluminum foil, will not change color underneath the foiled part of the leaf because of the deprivation of sunlight during the autumn season. | |
| Abstract I selected three Liquid Amber trees and two Photinia Frateri trees, both classified as deciduous trees, and all receiving sunlight. I partially covered 22 green leaves on each of the 5 trees with aluminum foil to manipulate the variable. I used a Color Chart to establish the color green at the time of covering the leaves. After the leaves changed color I carefully removed the aluminum foil and determined the color green, using the Color Chart to measure the experiment. I photographed the leaves to document changes to the leaves. The leaves were preserved by waxing. | |
| Methods/Materials I selected three Liquid Amber trees and two Photinia Frateri trees, both classified as deciduous trees, and all receiving sunlight. I partially covered 22 green leaves on each of the 5 trees with aluminum foil to manipulate the variable. I used a Color Chart to establish the color green at the time of covering the leaves. After the leaves changed color I carefully removed the aluminum foil and determined the color green, using the Color Chart to measure the experiment. I photographed the leaves to document changes to the leaves. The leaves were preserved by waxing. | |
| Results Leaves deprived of light do not change color. 58 of 110 manipulated leaves survived the 59 days of the experiment. All 58 of the 110 manipulated leaves survived the 59 days of the experiment. All 58 of the manipulated leaves, which were partially deprived of sunlight, remained the same color green on the day they were harvested, between Nov. 17 - Dec. 30, 2006, under the foils as they were on the day the leaves were partially wrapped in foil, Nov. 3, 2006. Not only does light affect leaves changing color by breaking down chlorophyll but it speeds up the process. | |
| Conclusions/Discussion The experiment concluded that leaves deprived of light do not change color. Further, it proves that the light breaks down the chlorophyll, allowing the natural pigments of carotene and anthocyanin to show through. | |
| Summary Statement This experiment shows how light and chlorophyll are significant factors in leaves changing color in deciduous trees. | |
| Help Received Mrs. Wentz, St. Anne Teacher & Advisor Pamela Kelterer, Mother, Assistant for Ladder and Foiling | |