CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
34067

Project Title
Green to Red: The Change of Leaves' Colors over Time

Abstract

Objectives/Goals
My goal is to understand why leaves change colors at different rates. My hypothesis is: If the pH in the soil is lower, the trees' leaves will change colors sooner, compared to the trees with higher pH in the soil.

Methods/Materials
Selecting 57 Liquidambar trees in the city of Goleta, I took six pictures for each tree over the course of three months (October-December). The pH level in the soil was measured for each tree. All the data points were placed in six groups, classified by the level of pH that was found in the soil. I then found the average amount of days it took the trees to begin to change colors (when the first colored yellow/orange/red leaves appeared on a tree) for all the groups.

Results
The higher the level of pH was, the longer it took for the trees' leaves to begin to change color. In general, I see a positive correlation between the pH level in the soil and the rate at which the trees' leaves begin to change colors. The graph created by plotting average days and pH groups is roughly linear. The equation obtained from the graph has a constant of variation, k, of 2.68.

Conclusions/Discussion
I noticed that when the pH reaches 6.1, the line on the graph stays around an average of 16 days. I think my results mean that the level of pH is going to affect the rate of color change for these trees until it reaches a less acidic level (higher pH). At this point, the time needed for the trees' leaves to change colors seems to be unaffected by the acidity of the ground. To show that my results where significant, I conducted a t-test. By looking at the t-test values I was able to prove my hypothesis. This project could have potential implications for farming, textiles, city planning and the environment.

Summary Statement
My project is about how the pH of the soil affects the rate at which trees' leaves change color.

Help Received
Science Teacher helped me consider my variables, Aunt and Cousin helped review data, Parents helped gather data and type.