



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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Project Title Effect of Different Types of Soil and Watering Schemes on Plant Growth	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals This project was triggered by a simple challenge that my mother made to use my skills to figure out why her plants do not grow as well as those of our neighbor. Hence I decided to study the effect of the two most important factors, soil and water, on plant growth. The objective was to do an analysis of relative contribution of different aspects of these factors to plant growth to determine which aspects influence plant growth the most.</p> <p>Methods/Materials For soil, I used 3 variables. They are Soil Nutrients (measured by N,P,K levels), Soil acidity (measured by pH level) and Soil texture (measured by water retention capacity). For water I used 2 variables which are total water quantity used in a day and timing (or frequency) of watering. I expected that Soil Nutrients would be the key factor in the plant growth.</p> <p>For measuring Soil factors I used a commercial soil test kit. For water retention, I devised my own method to measure water loss based on water that passes through the soil in a funnel. For watering, I came up with a schedule of different quantities and frequencies based on my understanding of the right range.</p> <p>Results The results were very different than what I expected. Soil texture seems to contribute a lot to plant growth. Increasing soil nutrients beyond current levels did not really help that much. Watering schedules show that plants favor certain optimum levels and over-watering does not result in better growth. Also, for same quantity, night watering is better than day watering.</p> <p>Conclusions/Discussion My conclusions were two fold. First, for better plant growth it is most critical to improve soil texture (higher water retention capacity) than any other factor. Also, day time watering should be avoided as it really does not help plants and is just a waste of water.</p> <p>Both of these conclusions lead me to believe that there is a lot of scope to reduce over-watering at our homes without impacting plant growth. This can potentially save a lot of water, which is critical now due to the drought conditions in our state.</p>	
Summary Statement I analyzed relative contribution of different factors to plant growth to determine which factors influence plant growth the most, which led me to the conclusion that soil texture and optimum water levels are the key influencing factors.	
Help Received My mother's challenge in her backyard was the inspiration for this project. My father helped me to get the pots, different types of soils and type the report. My science teacher guided me on how to organize the information on the poster board.	