



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ishana H. Narayanan</b>	<b>Project Number</b> <b>J1922</b>
<b>Project Title</b> <b>The Effect of the Different Colors of Light on Plant Growth</b>	
<b>Abstract</b> <b>Objectives/Goals</b> I became interested in this project when I was growing roses with my mom last summer. The roses my mother planted grew strong and healthy, but the ones I grew were frail and weak. Blaming it on sunlight, I decided to test which colors of light (red, blue, green) would be the best to grow plants in.  Different shades of light are proven to have different wave lengths; the longer the wave length, the slower the speed of the wave is, the shorter the wave length, the faster the speed of wave is. Plants grow in sunlight which is white light of all the lights in the visible spectrum put together. Since plants need light to grow, I wanted to test which color of light, red, blue, or green would be the best for plant growth.	
<b>Methods/Materials</b> Build a box using plywood which is 24" wide, 18" tall and 12" deep. Plant green bean plants in each clay pot and wait for the plants to become about 1.5 centimeters tall and then begin the experiment. Place three plants in each section of the box in a way so that each different color has three green bean plants inside of it. Turn the light on for 12 hours and off for 12 hours. Record results every other day.	
<b>Results</b> The plants grown under the green light had a very unsteady growth rate as the plant grew about 13 cm in the first two days and grew just about 1/10th of a cm towards the end of the experiment with minimal leaf increase. The plants that were grown under the blue light had a steadier growth rate compared to the plants grown in the green light but again the growth fizzled towards the end. The plants grown under the red light had a very steady growth rate as each red plant grew about 2 cm every other day throughout the two week period. There was a steady leaf increase as well. In comparison to my control, red is the best to grow plants in.  At the end of the experiment, I studied each plant's roots. The plants grown under the green light had extremely thin roots, small stems, and very unhealthy leaves when compared to the plants grown under the red light which had sturdy roots, thick stems, and healthy leaves. The plants grown under the blue light had healthy stem and leaves but not very healthy roots.	
<b>Conclusions/Discussion</b> Plants are grown best under red light because photochromic pigments absorb the red light resulting in seed germination, root development, flowering and fruit production.	
<b>Summary Statement</b> Which color of light is the best for plant growth?	
<b>Help Received</b> Father helped me build the boxes. Mother helped to buy supplies. Mrs. Nguyen gave guidance.	