



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> Nichele R. Lee	<b>Project Number</b> <b>J1616</b>
<b>Project Title</b> <b>Photosynthesis: What Color Light Helps Plants Grow?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My goal for this project was to learn how the color of light affected photosynthesis on plant growth. I believed that the red light would have the best effect and green light would have the worst effect on plant growth.</p> <p><b>Methods/Materials</b> I soaked kidney beans in a bowl of water for 24 hours and then planted 4 beans in each of the 6 pots filled with topsoil. I watered each pot and placed them on a tray. Meanwhile, I assembled six greenhouses using 2-liter soda bottles, colored Christmas light bulbs and aluminum foil. After that, I placed the assembled greenhouses on top of the pots. Each pot was labeled to the colored light inserted in its greenhouse. I left the lights on the entire duration of the experiment. I watered and checked the plants each day for 3 weeks. I measured the plant height everyday after seed sprouted and recorded all observations and data in a notebook. After three weeks, I repeated the procedure for Trail 2. The height measurements were tabulated and charted to compare plant growth of each color light. The appearances of the plants were used to evaluate the effect of the color light on the plants.</p> <p><b>Results</b> The bean plants in red light grew the tallest and healthiest with dark green leaves and thick stem. The beans in green light germinated the fastest but the plants appeared weakest with pale yellow leaves and thin stems.</p> <p><b>Conclusions/Discussion</b> The reason light can effect the growth of a plant is that it provides the energy to activate the photosynthesis process inside the plant once the light is absorbed. The results of Trail 1 showed that red light had the best effect on plant growth and green light had the worst effect probably because green light did not get fully absorbed by the bean plant since the plant pigment, chlorophyll, reflected green light. In Trail 2, I discovered that heat was just as important as light in plant growth. If a farmer were to grow kidney beans in a green house, I would recommend her to use green light to germinate the beans and red light to grow the bean plants.</p>	
<b>Summary Statement</b> My project examines how photosynthesis work and what color light helps plants grow best.	
<b>Help Received</b> My mother bought the kidney beans and Christmas lights for my experiment. She also helped me with project design, editing and display layout. My father gave me the idea of wrapping my greenhouses in aluminum foil.	