



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Brenna Jean Cherry	Project Number J1605
Project Title The Effects of Light Variation on Lima Bean Growth	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective was to determine the growth effects of various light sources: incandescent, fluorescent, and natural sunlight on lima bean seedlings. I propose that plants grown under fluorescent light should grow the most, since fluorescent light emits both red and blue rays that are essential in healthy plant growth. I further propose that sunlit plants would be next, and that incandescent lit plants would grow the least since it only emits red rays.</p> <p>Methods/Materials I planted six one-inch diameter pots containing three seeds each in commercially prepared potting soil. Two pots were placed in a south facing window to maximize solar energy. Two pots were placed 36 inches below a 25W incandescent bulb and two pots were placed 36 inches underneath a 25W fluorescent bulb. The artificial lights were kept on from sunup to sundown (6am-6pm). Each pot was watered the same amount, 50 ml per pot per day. The measurements that were to be recorded were: height of plant, number of leaves, length of leaves, and width of leaves.</p> <p>Results After analyzing my data, I found that the plants grown under the fluorescent light grew much more than the plants grown under the natural sunlight or under the incandescent light. I concluded that my original hypothesis had been proven correct. The fluorescent lit plants lead in growth in all areas measured. However, my secondary hypothesis was proven false. The plants that grew the least were the ones grown in natural light.</p> <p>Conclusions/Discussion My original hypothesis was proven correct. After reviewing my research, it completely makes sense. Fluorescent lights emit both red and blue rays, the plants were able to grow in both height of plant and height and width of leaves, while the plants under incandescent lights grew only in height and at a much slower pace than the fluorescent lit plants. I thought; however, that sunlight containing both red and blue rays, would grow faster than the plants grown under incandescent light. I now understand that, although I was able to choose the intensity and distance of my artificial lighting, I was not able to manipulate these variables in natural sunlight. Further, during the three weeks of my experiment, we had nearly two weeks of rain. These unfavorable weather conditions, reduced the insolation of the sun and the penetration of the visible rays. This reduced the rate of photosynthesis in the solar lit plants.</p>	
Summary Statement My project is about the way that different types of light: incandescent, fluorescent, and solar, effect the growth rate of lima bean seedlings.	
Help Received My mother helped me cut and paste my boards.	