



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

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| Name(s) Arvind Krishnan | Project Number 35204 |
| Project Title Effect of Different Light Sources on Photosynthesis of Plants | |
| Abstract Objectives/Goals It is a well known fact that the rate of photosynthesis is dependent on the type and intensity of the light source. My goal was to determine the best source of artificial light using different types of light sources such as incandescent, florescent and LED lights that give out different wave lengths of light that would directly impact the rate of photosynthesis in plants. Methods/Materials The most critical components for my experiment were the different types of lamps used such as incandescent, florescent and LED lights. To keep the distance between the lamps and plants constant, I used a lamp holder mounted on a glass enclosure. The only variable in the experiment was the types of lamps used that produced different wave lengths of light. To monitor the rate of photosynthesis, I counted the rate of bubbles produced in the test tube by the Elodea plants at 60, 120 and 300 seconds fixed intervals of time using different light sources. Results were tabulated and graphed regularly. Results From the analysis of the data tables in my experimental results, I found that the incandescent lamp had the least impact of 15% on the overall rate of photosynthesis of elodea plants. The florescent light source had an average rate of 35% in the rate of photosynthesis which was 20% over the incandescent light source but was 35% below the rate of photosynthesis from the LED light source. Overall, the LED light source proved to have the greatest impact and contributed 70% on the rate of increased photosynthesis. This trend was confirmed by the data collected at 60, 120 and 300 seconds interval data points. Conclusions/Discussion I conclude from my experiments that the LED light source had the greatest impact on the rate of photosynthesis in Elodea plants. With increased light exposure over extended periods of time, the results were amplified to reflect this trend of LED lights being the best source for increased photosynthesis. This is encouraging data because the LED light sources consumes less electrical energy compared to incandescent and florescent lamps. Additionally, the cost and life span of the LED lights make it an attractive solution for commercial applications to increase food production in plants. | |
| Summary Statement To determine the best artificial light source to increase photosynthesis of plants | |
| Help Received Glassware given by Poway School district. | |