



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Jerry M. Song	Project Number J1930
Project Title Solving World Hunger	
Abstract Objectives/Goals I have always been upset that so many people in the world have hardly anything to eat. If food were more common, that wouldn't be a problem. My experiment, #Solving World Hunger# will test if plants can grow all day and nights. It will also test if artificial sunlight is as efficient as natural sunlight. Methods/Materials In my experiment, I grew three broccoli plants with different lighting and time. One plant was grown only during the day with natural light. Another was grown only at night with artificial light (55-watt incandescent light bulb). The last was grown day and night; it was exposed to sunlight during the day and under a light bulb at night. I used very similar broccoli plants to control many factors. The independent variable was the different lighting and time, while the dependent variable is the amount each plant grows. Results At the end of my experiment, I found out that the plant grown at day and night grew the quickest. However, it was not as efficient as I had hoped as it only grew a few more centimeters than the plant grown only during the day. Meanwhile, the plant grown at night could not grow quickly and did not have any buds. Conclusions/Discussion Overall, I determined that my hypothesis was partially correct. I correctly guessed that the plant grown in the day and at night would grow the quickest. However, I did not think the growth rate would be so close to the plant grown only at day. Therefore, I can conclude that plants, like humans, need to #go to sleep.# At night, plants are performing respiration, a process which changes food to energy plants can use. However, my experiment wasn't flawless. First, rain kept on pouring which decreased the growth of the plants that grew outdoors. Also, bugs constantly ate the plants that grew outside. Next time, I will use spray to get rid of bugs and build a greenhouse to protect the plants from rain. If my experiment were more successful, plants can be grown at a quicker pace resulting in an increase of the amount of food. This will help farmers be more efficient. Due to the concept of supply vs. demand, if there is more food, the price of the food would go down. More people would be able to afford food, and this may help solve world hunger.	
Summary Statement My project is about finding an efficient way to grow plants by using 24 hour lighting.	
Help Received My mom and sister helped make my board. My teacher helped me create my write-up. My dad helped find problems with my experiment.	