



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

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| Name(s) Diane L. Polyakov | Project Number S2015 |
| Project Title The Effect of Ultraviolet Light on Plant Development and Fruit Production | |
| Abstract Objectives/Goals Does reducing the amount of ultraviolet light on pea plants affect the plants' development, fruit production, and chlorophyll levels? Methods/Materials To start my project I built a new habitat for the pea plants. I created three different environments for the pea plants: Control, Receiving UV Light, and UV Light Blocked. A total of five pots grew in each environment. I routinely measured the height of the plants using a centimeter ruler and photographed the plants' growth. The plants eventually produced flowers and then pea pods. I harvested the peas, measured and weighed each pea pod, and then separated them into individually labeled Ziploc bags : one for each pot. After the first harvest, I arranged to take my plants to UCI and Marko Spasojevic, a graduate student, allowed me to use his Department's SPAD meter, or chlorophyll meter. The SPAD meter measurements enabled me to calculate the levels of chlorophyll in the leaves of the pea plants. Results The pea plants growing in the Control environment produced 16 pea pods, those growing in the UV Light environment produced 22 pea pods, and those growing the the UV Light Blocked environment produced 34 pea pods. The average length of the pea pods growing the Control environment was 7.44 cm, in the UV Light environment was 6.18cm , and in the UV Light Blocked environment was 6.69. The average weight of the peas pods in the Control environment was 3.62 grams, in the UV Light environment was 3.84 grams, and in the UV Light Blocked environment was 4.00 grams. Lastly, the average number of peas per pod in the Control environment was 5, in the UV Light environment was 6, and in the UV Light Blocked environment was 6. Conclusions/Discussion The pea pods from the UV Blocked environment were also the heaviest and had the highest number of peas per pod. A surprising result was that some of the pots in the Control Group environment produced no peas. Also, a mold developed on the plants in the UV Light Blocked environment. This is probably because ultraviolet light is necessary for the production of vitamins which inhibits the mold growth. The plants in the UV Light Blocked environment were likely unable to produce the vitamins to stop the growth of the mold. | |
| Summary Statement The focus of my project was to see how Ultraviolet Light emitted from the sun affects plant growth, fruit production, and chlorophyll levels in pea plants. | |
| Help Received Professor Katharine Suding and Graduate Student Marko Spasojevic allowed me to use the SPAD meter at the University of California Irvine Lab. | |