CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
S2015

Project Title
Effect of Ultraviolet Light on Plant Development and Fruit Production Year 3: The Next Generation

Abstract

Objectives/Goals
To determine if reducing the exposure to UV light on pea plants affects the plants' development, fruit production, rate of germination and fruit production over two generations.

Methods/Materials
Build a habitat for the pea plants using wood and clear plastic. One area of habitat is coated with UV blocking film. Three environments exist for plants to grow: Control, Receiving UV Light, and UV Light Blocked. Five pots grow in each environment, one plant per pot. Measure plants and then after pea pods grow, remove pods and measure weight, number of seeds and length of pods from first generation. Extract seeds from pods. Germinate seeds produced from all plants. Plant germinated seeds so that each environment has five pots (and five plants) from each of the three environments, for a total of 45 second generation plants. Grow second generation plants and then repeat steps for first generation, comparing fruit production over two generations.

Results
The average weight for of the seeds produced from the UV Light Blocked environment was 3.78 grams, produced from the Receiving UV Light environment was 3.18 grams, and produced from the Control environment was 2.87 grams. The average length of the pea pods produced from the UV Light Blocked environment was 6.15 cm, produced from the Receiving UV Light environment was 5.49 cm, and produced from the Control environment was 5.7 cm. The average number of seeds per pea pod produced by from the UV Light Blocked environment was 4.6, from the Receiving UV Light environment was 3.8, and for the Control environment was 3.4. The percentage of seeds that germinated from seeds produced in the UV Light Blocked environment was 87.92%, from seeds produced in the Receiving UV Light environment was 79.20%, and from seeds produced in the Control environment was 83.20%.

Conclusions/Discussion
Reducing the amount of UV light the pea plants received resulted in those plants being more productive when compared to pea plants exposed to full sunlight. The seeds from the pea plants grown in the UV Light Blocked environment germinated at a faster and higher rate. Over two generations, the seeds from the UV Light Blocked environment were not as productive, producing less and smaller fruit and showing signs of disease at an earlier stage of plants' development.

Summary Statement
Analyzing and recording the effect UV Light has on pea plants' fruit production and seed germination over two generations.

Help Received
Father help build structure. Teachers answered endless questions.