



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Savannah J. House	Project Number 36052
Project Title The Prosperous Environments of Plants: Part 2	
Abstract Objectives/Goals My experiment was conducted to test whether plants need all elements of photosynthesis to survive and if plants can be revived after being deprived of one element. The goal is to use this information to later create a greenhouse on Mars where plants and animals use one another to survive. Methods/Materials I planted twelve trials of carrot seeds: nine in pots and three in plastic bags, filled three-fourths with soil, and watered 50 milliliters of water every 4 days. Three pots were control plants, three were covered with Weed Barrier to prevent sunlight access, and three were not watered. The three plastic bags had a watering system, but were sealed to limit carbon dioxide exposure. I built a canopy to cover the plants when it rained. Later, the same plants were exposed to all elements of photosynthesis, and then were not watered for 16 days to activate their survival mode. Afterward, they were watered 50-100 milliliters of water every 4 days, continuously being exposed to all elements of photosynthesis. Results While the plants were deprived of one element, one of the three control plants grew carrots, water deprived seeds did not sprout, and sunlight deprived seeds sprouted, but soon died. While the plants were exposed to every element of photosynthesis, all formerly water deprived plants revived, one formerly carbon dioxide deprived plant revived, formerly sunlight deprived plants did not, and neither did the control plants. Conclusions/Discussion After careful research and experiments, I can conclude that water is needed for a plant to grow, carbon dioxide is not necessary, and sunlight is needed after plants sprout. As well, after being deprived of water or carbon dioxide, plants can revive themselves; after being deprived of sunlight, they cannot.	
Summary Statement After careful research and experiments, I found that water is needed for a plant to grow, carbon dioxide is not necessary, and sunlight is needed after plants sprout.	
Help Received My father helped me build the canopy for my plants and my current and former teachers: Ms. Hayley Smith, Ms. Stephany Escalante, and Mr. Phil Scutari helped me with any scientific questions I had about how to do my project.	