CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
J1917

Project Title
Artificial Light vs. Sunlight

Abstract

Objectives/Goals
Which light source will produce a healthier plant, the artificial LED light source or regular daylight?

Methods/Materials
I researched that for the days in February that I was growing my plants, that according to where I lived, I received 10 hours of daylight in Hollister, CA. So I programmed a timer to turn on my LED light source for 10 hours a day. I used catgrass and cilantro seeds to plant, because they would sprout in a weeks time. I placed both seeds in identical containers with identical amounts of seeds, identical growing mediums, watered them each 1/4 cup of water a day, at the same time of day, but placed one under the LED light source and one in a location that had access to full sun. I took pictures, and measured my plants everyday for 14 days, and recorded my findings into a Microsoft Excel spreadsheet.

Results
Surprisingly I discovered that the LED plants had a higher germination rate, and they grew taller, and faster than the plants grown in daylight.

Conclusions/Discussion
My hypothesis was wrong, I thought that the plants grown in sunlight would be reaching for the sunlight, and they would grow taller and faster. I discovered that the plants grown under the LED light grew taller and faster. I believe that possibly the weather, meaning cloudy weather, may have effected the plants grown in sunlight. I also noticed that the plants grown under the LED light did not suffer any effects of heat, because the LED light put out little to no heat. This is important because too much heat can damage a plant, and it can also evaporate the water that the plant should be absorbing.

Summary Statement
I found that plants grown under an LED light source produce a healthier plant, verses a plant grown in sunlight, as weather, excessive heat, and evaporation are not a factor in the LED grown plants.

Help Received
My science teacher approved my idea. I researched it, planted it, I did the experiment, typed it and put it together myself. I also created the Microsoft Excel spreadsheet myself.