CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

Jamie K. Lau

Project Number

34430

Project Title

Will the Demise of Incandescent Bulbs Affect Our Houseplants?

Abstract

Objectives/Goals

In recent years, millions of households across the country have committed to conserving energy by changing the household light sources from incandescent bulbs to light emitting diodes (LED) or Compact fluorescent lamps (CFL). Different lights with varied wavelengths can affect the photosynthetic process of plants. This investigation will examine the effects of each type of light on the growth rate of the common houseplant Dracaena Sanderiana over the course of 17 days.

Methods/Materials

Five separate plants were grown under each light. Plants were grown at an ambient temperature of 65° F in potting soil and exposed to 12 hours/day for 17 days. All bulbs generated 600-800 lumens. LED, CFL, and Incandescent Light Bulb; Lamp cord spliced for multiple bulb sockets; Dracaena Sanderiana Plant (Lucky Bamboo).

Results

Incandescent bulbs clearly promote the largest percent change in number of leaves on the plant (Table below). Availability in the broadest wavelength promotes the most amount of photosynthetic activity in Dracaena Sanderiana, which confirms that Incandescent lamps stimulate healthy growth for the Dracaena Sanderiana.

Vertical growth of the Dracaena Sanderiana under different types of light shows less variation with a range from 0.4%-1.1%.

Type of Light	Percent Change in Leaf Count
A=Sunlight	25%
B=Incandescent	70%
C=LED	23%
D=CFL	18%

Conclusions/Discussion

This study suggest that incandescent light is best to promote houseplant growth. The basis of this may be related to the broader emission of wavelengths of incandescent light compared with LED and CFL lights. We know energy conservation is beneficial for our community and the animals of our ecosystem; however, common houseplants utilizing other sources of light, such as LED and CFL may not thrive as well.

Summary Statement

The emission amplitude and spectral distribution of different household light sources will cause a change in the growth of common household plants.

Help Received

Teacher helped supply lab equipment. Father helped set up board.

Preliminary