CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)

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Project Number

33554

Project Title

Effects of Near Infrared Light on Plant Growth

Abstract

Objectives/Goals

My brother broke vertebrae and required a surgery binding the vertebrae. My family and I were told about a about near infrared (NIR) light healing therapy. Harvard Medical School believes that the near infrared (NIR) light therapy stimulates mitochondrial activity and promotes healing. It appeared to have a very positive effect on my brother, and his doctors were impressed with how quickly my brother#s bones fused. Since the near infrared light stimulates mitochondria, I was curious to see if it might also have a positive effect on plants. I believe that the NIR light may have a positive Effect on the growth of the plants. I decided to test tall fescue dwarf lawn seed grass.

Methods/Materials

I tested a total of 40 plant samples, 20 grass samples were control, and 20 were experimental. I planted the grass seeds in 40 pots and the pots were moved every other day to make sure the position was not a factor in growth. Each plant was watered daily; I tested the soil with a moisture meter. I positioned the near infrared (NIR) laser light over the experimental group of grass for ten minutes, three times daily. I did this for thirty days. I recorded observations daily and documented blade heights weekly.

Results

According to my results, there was a significant difference in grass blade heights when a near infrared light was applied to the grass samples for ten minutes three times a day. The near infrared light did not significantly affect the temperature of the grass, I confirmed this with the use of a infrared camera (i7FLIR) that measured in degrees Celsius to the nearest tenth while the NIR was on the sample. I checked soil temperatures in the samples and found no significant differences. The average blade heights for the control samples after a period of 30 days was 9.06 cm. The average blade heights for the experimental (NIR) samples was 13.83cm. This meant there was a 52.65% average difference in the blade height between the control and experimental groups. The difference was dramatic.

Conclusions/Discussion

Scientists have found that oil can be extracted from algae. Since near infrared (NIR) laser light appeared to accelerate the growth of grass, I believe this technology could also be applied to algae. Near infrared, #cold# infrared, light exposure might significantly enhance the growth of algae aqua cultures.

Summary Statement

My project tested the effects of NIR light on the growth of tall fescue grass

Help Received

I would like to thank my science teacher for loaning me some of the equipment that helped me preform this project.

Preliminary