Question

How is wheat plant growth affected by colored light?

Hypothesis

I think that the wheat plant will be affected by the blue and red light more than the green light. I think this because on the National Geographic Society website it says that plants reflect green light. Another reason is on Canna Gardening.com, I read that plants absorb red, blue, and other colors of light such as UV (ultraviolet) light.

Procedure

1. Lay out four equally sized boxes in a row.
2. Label each box a different color, either red, blue, green, or soft white.
3. Place dominoes under each corner of each box.
4. Cut a 15.24 cm by 15.24 cm square hole on the top of each box and a 19 cm by 19 cm hole on the bottom.
5. Place a small pot with 6.35 square cm of soil and four wheat seeds into a box.
6. Repeat step five for all of the other boxes.
7. Build a 0.6 m tall 1.22 m long wood frame.
8. Place each box under the wood frame, aligning each box an even distance from another (10 cm).
9. Insert a lightbulb into a lightbulb socket and insert the lightbulb socket into an extension cord.
10. Repeat step nine three times (one lightbulb per box).
11. Put a 2.54 cm support made of dominoes on the corner of the cut-out section on the bottom of the box for air ventilation.
12. Take one 20.3 cm by 20.3 cm piece of plastic wrap (choose one color for it to be,either red, blue, green, or soft white), and tape it onto the top of a box.
13. Repeat step twelve for the remaining colors of plastic wrap.
14. Try to keep the area where the plants are dark, except for the lightbulbs in the experiment.
15. Water each plant 59.1 ml in the morning for fourteen days.

16. Measure height difference every day for fourteen days.
17. Record differences between plants after fourteen days.

Materials

- One 40.6 cm powerstrip
- Four 20.3 cm by 20.3 cm by 20.3 cm mailing boxes
- Four soft white light bulbs
- Four lightbulb sockets
- Wheat seeds
- Four small pots (10.2 cm by 8.89 cm in size.)
- One 20.3 cm by 20.3 cm piece of blue plastic wrap
- One 20.3 cm by 20.3 cm piece of red plastic wrap
- One 20.3 cm by 20.3 cm piece of green plastic wrap
- One 20.3 cm by 20.3 cm piece of clear plastic wrap
- Twenty eight dominoes and sixteen decks of cards
- Duct tape

- Beaker for watering plants
- Soil

Abstract

In order to find out how wheat plants are affected by different colors of light, an experiment was conducted. In this experiment, sixteen wheat seeds were exposed to four different colors of light, those colors being green, red, blue, and soft white. The results of this experiment show that, under green light, blue light, and soft white light, plants grow taller overall. However, the growth per day level is highest when plants are exposed to red light.

Conclusion

This experiment has come to two conclusions. The highest growth overall is tied between green light's and soft white's seed ones (seeds are numbered corresponding to when they sprouted) and green light's seed three all grew the same height. That height is 20.32 cm. Although the seedlings under red light didn't grow as high as the other plants, red light's seed four grew the most per day, that amount being 6.65 cm on day twelve.

Have you ever thought about what plants could accomplish under different colors of light?

This experiment was conducted by

Owen Anderson

I chose this topic because . . .

I chose this topic because I have always been interested in plants. They are such a common, everyday thing, but they hide many secrets. In the world of plants, there are numerous organisms that can do amazing things. Take the Venus Flytrap (*Dionaea Musipula*). It can move on its own, eating flies after ensnaring them in the thick syrupy substance it creates. The plant used in this experiment, wheat or *Triticum aestivum,* helps feed us

every day. If wheat could grow faster, we could have fresher food.

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