RESULTS:

CONCLUSION:

In conclusion, when I changed the distance of the plants from the router at increments of 60 cm, from 0 cm to a maximum of 300 cm, I discovered that the plants nearest to the router did not grow as high as those at the 300 cm mark.

For example, after 9 days of planting the watercress seeds, growth was measured at the 0 cm mark from the router and the plants had grown an average of 6.3 cm. Whereas, watercress growing 300 cm from the router had grown an average of 6.8 cm. Similar results were seen for the lettuce seed growth. 9 days of lettuce seed growth showed 4.5 cm of growth at the 60 cm mark whereas the lettuce had grown an average of 6.3 cm at the 240 cm mark. Finally, the radishes at the 60 cm mark had grown only 4.8 cm whereas those at the 240 cm mark had grown 9 cm. Overall, each of the three plant types grew the most in height when furthest from the router, which emitted radiofrequency radiation. Therefore the data supports my prediction and I accept my hypothesis.

I think this happened because plants are especially sensitive to radiation and this could stop them from growing at a significant rate. The plants may have interpreted the exposure to radiation as an environmental stress. This could have caused them to stop growing or at least slow down their growth. In the case of this experiment, the strength of the radiofrequency signal decreased as the distance from the router increased. All other variables such as exposure time (24 hours X 9 days), light (40 watt grow bulbs), heat/temperature (consistently 20-22 degrees Celsius), and humidity (this wasn’t measured but the greenhouse structure was enclosed with plastic on six sides) were identical. This leads me to believe that the only variable which changed was the distance from the radiation exposure and therefore, this must have had an effect on growth of the plants.

SOURCES OF ERROR

In my data, some things I observed that did not follow the trend of the results were that all seeds of the same type of plant germinated at the same time, regardless of their distance from the router. Secondly, the growth rate during the first 5 days after planting visually appeared to be the same for all plants, regardless of their distance from the router. Lastly, throughout the entire experiment, the colour of the foliage appeared the same regardless of distance from the router, and the expectation was that the plants closer to the router would have had unhealthy looking foliage.

A possible reason that all similar seeds germinated at the same time could be that all of the controlled variables remained the same such as heat/temperature, humidity, moisture such as daily watering, and type of soil. Also, where it appeared that the growth rate during the first 5 days after planting, when I did not begin measuring but when it appeared that everything was growing at the same rate, it could be that if I had a different, more precise measuring tool other than a regular ruler, a difference in growth might have been seen. Finally, all plants appeared to be healthy and green and this could be explained by stating that perhaps the radiofrequency radiation does not affect production of chlorophyll and therefore, the light which was consistent contributed to healthy foliage colour.

To minimize or eliminate these inconsistencies, next time I would alter one or more of the controlled variables such as heat, or light. But, this would interfere with the growth of the plants and then the experiment would not be valid. I would also obtain a more accurate measuring tool which would allow me to start measuring growth from Day 1 following seed planting. Finally, in order to assess whether this radiation affects chlorophyll production, I would use a router with a stronger WiFi signal which might show a different result.

PRACTICAL APPLICATIONS

This experiment studied the impact of radiofrequency radiation from a router on plant growth. Results showed a negative or slowing effect on growth when closest to the router; therefore, there could be a similar effect on human health or growth. The American Academy of Environmental Medicine has been studying the effects of non-ionizing radiation such as radiofrequency which includes WiFi (as in this experiment), cell phones and Smart Meter wireless communication. The problem has been that most studies have looked at thermal effects on health. However, this plant experiment’s results could show that non thermal radiofrequency radiation exposure causes something to halt the normal growth or development of humans. All humans on earth would benefit from this knowledge because it could cause people to lessen their radiofrequency exposure to cell phones or WiFi routers; therefore, lessening negative health effects.

QUESTIONS

1. If humans stay more than 300 cm away from a direct source of radiofrequency radiation, will their health not be affected negatively?

2. Would the same results be achieved if we used different seeds?

3. Would the same results be achieved if testing the effect of radiofrequency radiation on existing, mature plants?

A future experiment could involve the planting and growth measurement of flower

seeds, planted close by and further away from a WiFi router. The test would be to

decide whether flower seedlings planted close to a router would have slower growth

rates than those planted further away. If the results were different than growth rates of

vegetable seeds, it could be that radiofrequency radiation affects various seeds and

their growth differently. This information would be valuable for further research in

studies of radiofrequency radiation on human health.