

The Effects of Wifi from iPhones, iPads and Boosters on the Germination and Growth of *Raphanus Sativus* and *Lepidium Sativum*

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Research Question

Problem Statement

- Devices emitting Wifi are ubiquitous and nearly inseparable from people in the modern world.
- Yet, the effects of Wifi radiation on living organisms remain obscure.
- By testing how Wifi affects the growth and development of two common plant species, this experiment hopes to stimulate further research on its effects on other living organisms, including humans.

Objective

- To test how Wifi from a booster, iPhone, and iPad affects the germination and growth of *Raphanus Sativus* (Cherry Belle Radish) and *Lepidium Sativum* (Garden Crest)

Hypothesis

- Wifi will affect plant germination and development and these effects will be harmful to plant growth.



Data Analysis & Results

Germination

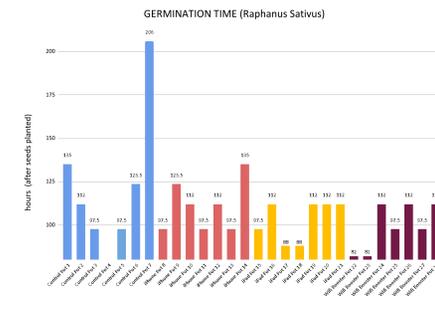
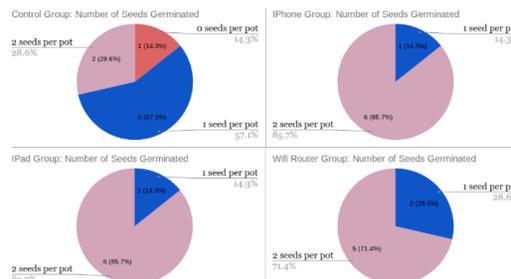
- RS (*Raphanus Sativus*) plant seeds exposed to the Wifi booster and iPad germinated faster. ANOVA analysis demonstrates a statistically significant difference (p-value= 0.039).
- RS plant seeds were more likely to germinate by exposure to Wifi devices.

Average Height

- Average RS plant height in the Wifi booster group was ca. 24% higher.
- Other groups showed no significant statistical differences in plant height.

Leaf Width

- RS plants exposed to Wifi had slightly larger leaf widths.



Methodology

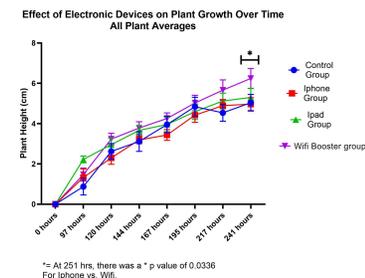
- 4 groups of 7 pots each with 2 seeds (56 seeds total) of *Raphanus Sativus* (Cherry Belle radish) were separated by aluminum-screened partitions; each group had the same conditions (sunlight, water, soil, temperature, etc.)
- Group 1 was the control; Group 2 exposed to iPhone; Group 3 exposed to iPad; Group 4 exposed to Wifi booster
- The iPad and iPhone were actively on and transmitting signals of music played at one decibel of volume.
- A pinch (about 10 seeds) of *Lepidium Sativum* (Garden Cress) were planted in 8 plastic cups, 2 cups per group.
- The plants were photographed and recorded daily in respect to development time, height, and physical conditions.



Conclusions and Interpretations

Conclusions

- Electromagnetic radiation emitted from these modern electronic devices resulted in the germination of significantly more seeds, more rapid development & germination of the seeds, larger leaf widths, and higher average heights of plants
- LS (*Lepidium Sativum*) plant seeds were studied, with no major difference observed between groups. LS uses less energy to grow, so the electromagnetic radiation may not have been able to make an impact



Applications

- Since these modern devices impact the growth and germination of certain plants, they could potentially impact humans

Future Directions

- Test electromagnetic radiation on other living organisms, namely bacteria
- Run the experiment for a longer duration (ex. 6 months) to observe long-term effects of electromagnetic radiation

