

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

By: Viosa Hernandez

Introduction

- Electronic devices using Wifi are ubiquitous, found in almost every public and private space, and are nearly inseparable from people in the modern world.
- Wifi is non-ionizing radiation (light) with radiofrequencies of 2.4, 5, or 6 GHz.
- The effects of Wifi interactions are significantly understudied and remain obscure.
- Given the widespread use of Wifi worldwide, the need for research of its effects is urgent, especially because the results of published studies are inconsistent.

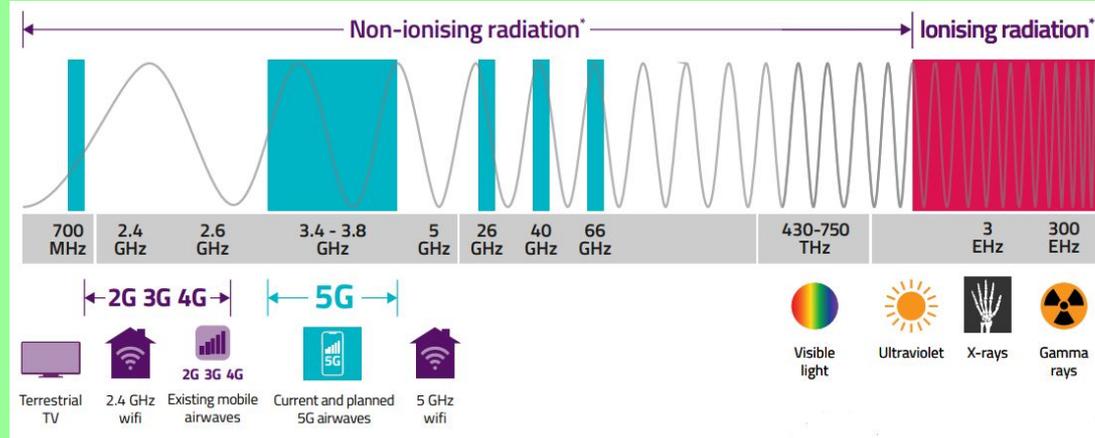


Figure 1. Light spectrum showing frequencies ranging from non-ionizing Wifi to ionizing radiation.
<https://www.nea.gov.sg/our-services/radiation-safety/radiofrequency-radiation/background>

Objectives & Hypothesis

- To test how Wifi affects the germination and initial growth of *Raphanus Sativus* and *Lepidium Sativum*.
- To determine whether these effects might vary among root vegetable (*Raphanus Sativus*) and herb (*Lepidium Sativum*) plants.
- To examine whether the effects of Wifi on plants might vary among common electronic devices, like Wifi Boosters, iPhones, and iPads.
- My hypothesis is that Wifi will affect plant germination and development, and these effects will be harmful to the growth of both plants.

Methodology

Wifi
Booster
Group

iPad
Group

iPhone
Group

Control
Group



**Methodology:
Plant Groups
Setup and Partitions**

Detail
iPad Group



Figure 2. Experimental Setup of Partitions for Four Plant Groups. (V. Hernandez 2026)

- Each *Raphanus Sativus* pot contained two seeds, planted ca. 0.5 inches from the surface in the seed-starting soil mix.
- Each *Lepidium Sativum* pot contained a pinch of seeds (ca. 10) planted 0.25 inches from the surface in the seed-starting soil mix.
- All plants grew in the same conditions, with consistent sunlight, water, temperature (75 degrees), pH, and soil.
- Group 1: The Control group (no Wifi)
- Group 2: The iPhone 10 group. The iPhone was placed vertically against the back of the pot tray (opposite the window), with the screen facing away from the plants; LS pots were placed adjacent to the iPhone (one on each side).
- Group 3: The iPad Pro group. Same configuration as iPhone group.
- Group 4: The Eero 6 Wifi Booster group. Same configuration as iPhone and iPad groups.

Raphanus Sativus: Germination

- Average germination time is significantly faster in all groups exposed to Wifi.
- The rate of germination for the iPad and Wifi Booster groups is between 20-23% greater than the control group.
- A greater proportion of seeds germinated in all groups exposed to Wifi.
- The majority of pots in the control group had only one seed germinate.
- The majority of pots in the Wifi groups had two seeds germinate.
- ANOVA single factor test shows a statistically significant difference between the Control group and the iPhone, iPad, and Wifi Booster groups, with a p-value= 0.039.

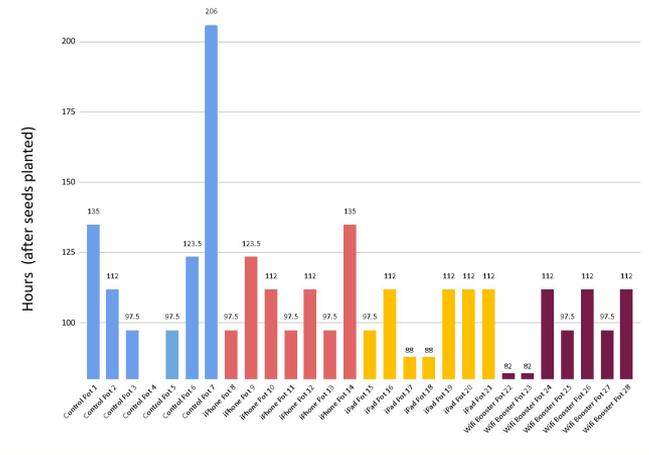


Figure 3. Germination time of *Raphanus Sativus* seeds per pot. (V. Hernandez 2026)

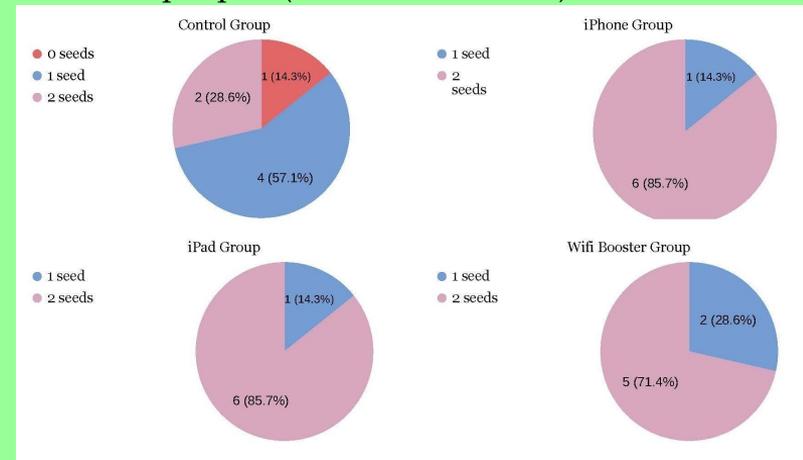


Figure 4. Number of seeds that germinated in each group per pot. (V. Hernandez 2026)

Raphanus Sativus: Initial Growth

- The average height of the Wifi Booster group is 24% greater than that of the Control group after 241 hours.
- The iPhone, iPad, and Wifi Booster groups had larger average leaf widths by 10-13% than the Control group.
- The iPhone, iPad, and Wifi Booster groups had a significantly greater mass dry weight by 80-100% than the Control group.

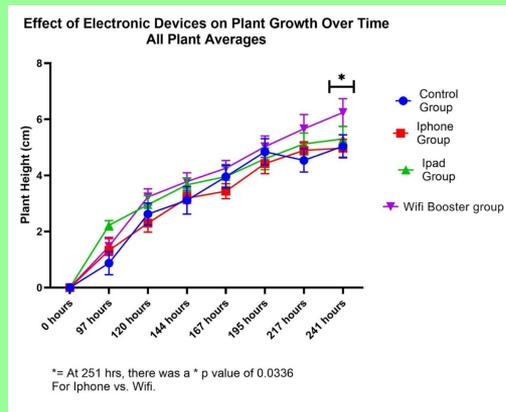


Figure 5. Average height of *Raphanus Sativus* per group over time. (V. Hernandez 2026)

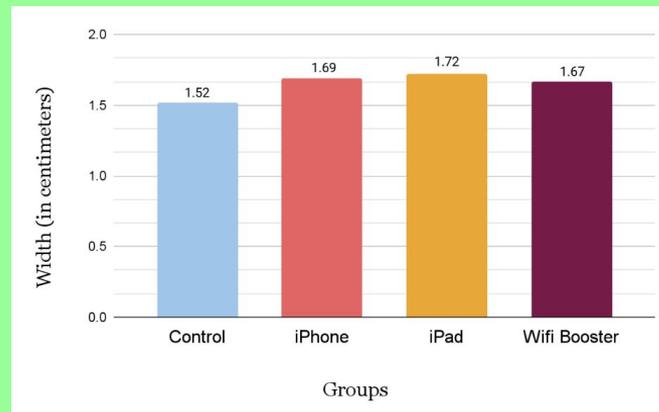


Figure 6. Average final leaf width of *Raphanus Sativus* per group. (V. Hernandez 2026)

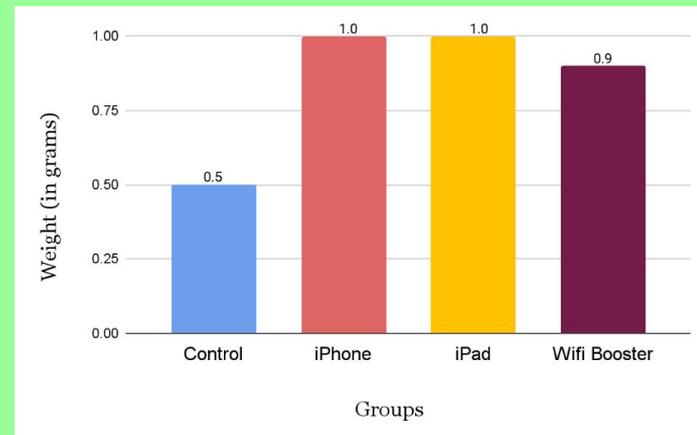


Figure 7. Final mass dry weight of each group. (V. Hernandez 2026)

Plant Growth Over Time

Wifi
Booster
Group

iPad
Group

iPhone
Group

Control
Group

7 Days



10 Days



16 Days



Figure 8. Development of plant groups of *Raphanus Sativus* after 7, 10 and 16 days. (V. Hernandez 2026)

Lepidium Sativum: Germination & Growth

- Seed germination times are generally the same between groups, between 50-62 hours after planting.
- Maximum heights are generally the same between groups, between 6.75-8.35 cm.

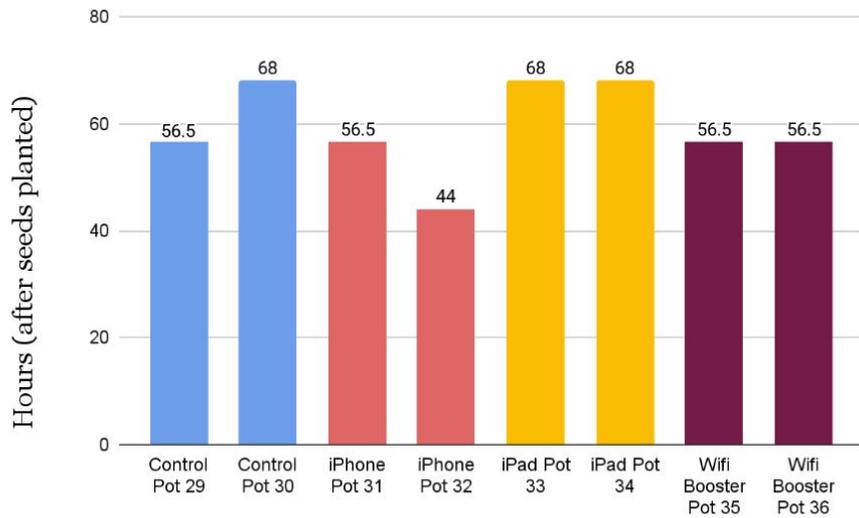


Figure 9. Germination time of *Lepidium Sativum* per group. (V. Hernandez 2026)

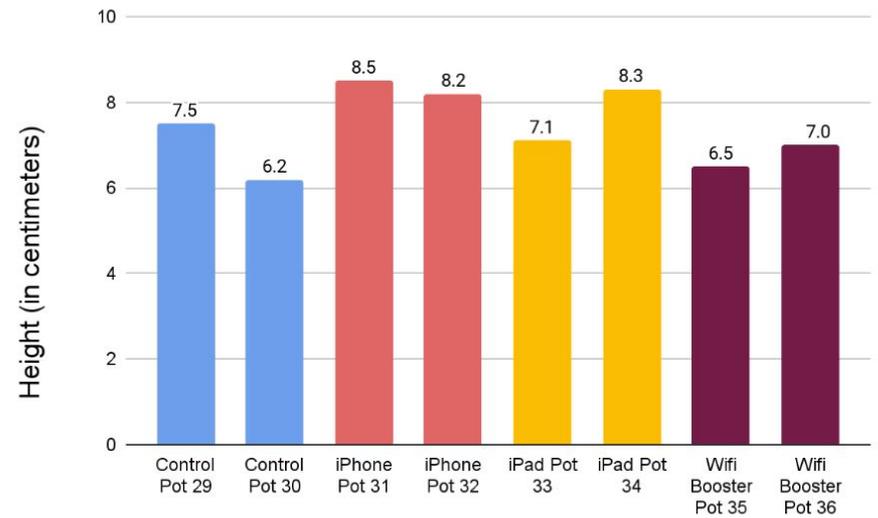


Figure 10. Maximum height of *Lepidium Sativum* per group. (V. Hernandez 2026)

Conclusions

- *Raphanus Sativus* seed germination rate and time are significantly affected by all Wifi devices, in comparison to the Control group.
- *Raphanus Sativus* plant growth and viability are significantly affected by all Wifi devices, in comparison to the Control group.
- The Wifi Booster group of *Raphanus Sativus* had the lowest germination time and greatest final average plant height
- *Lepidium Sativum* seeds and plants did not respond to Wifi devices like the *Raphanus Sativus* seeds and plants.
- *Lepidium Sativum* seeds might not interact with Wifi frequencies or the seeds might require less energy to germinate and grow, perhaps related to the shallow burial (0.25 inches) of their seeds when planting.

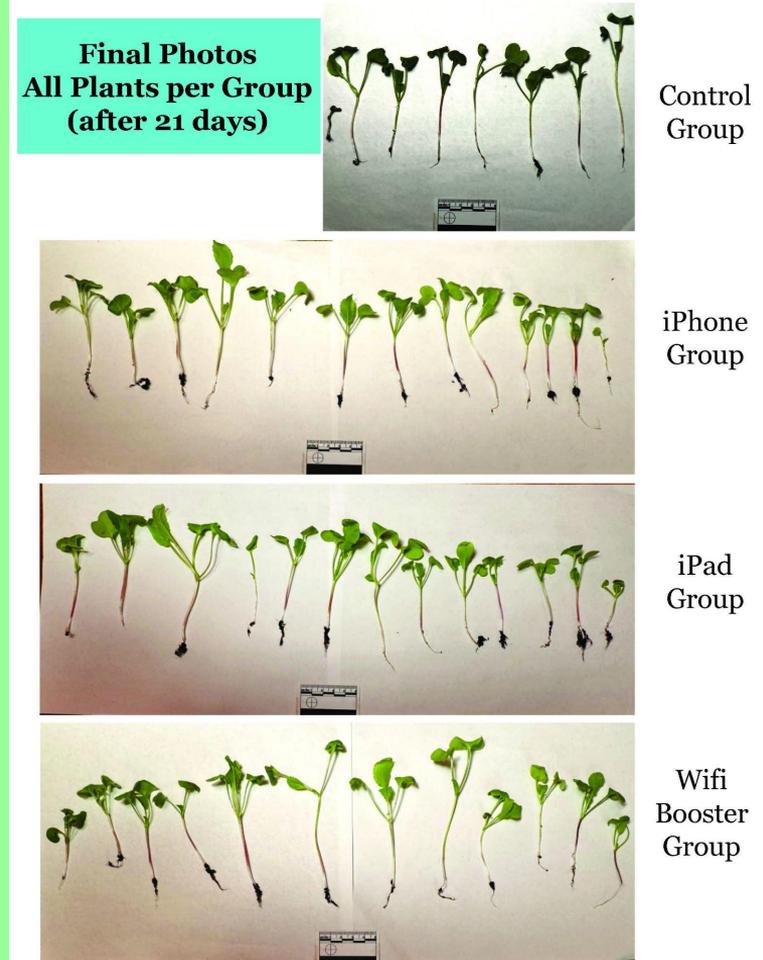


Figure 11. Final photos of all *Raphanus Sativus* plants per group after 21 days (V. Hernandez 2026)

Applications & Future Research

- Farmers could use Wifi to stimulate seed germination of root vegetables. This would make more efficient use of seeds and decrease waste.
- Farmers could use Wifi to increase harvests of root vegetables, potentially by as much as 100%.
- People could place plants in their homes near Wifi devices to help their plants thrive and produce larger leaf widths, higher average heights, and faster germination times.
- The ability of these Wifi devices to interact with and stimulate plants might have serious implications for animals, including humans, as their uses become more extensive in the world and newer devices are created that emit higher energy frequencies (like 6 GHz).
- Future research should test how Wifi affects the seeds and the entire life cycle of *Raphanus Sativus* and *Lepidium Sativum*.
- The scope of future research should also extend to other living organisms, particularly bacteria and animals.
- More studies are needed to understand how Wifi might impact human development, as for example, in respect to fertility, the brain and central nervous system, memory, sleep, and learning.