



**Observing the Growth of Mung Beans Using a
Martian Simulant Soil Medium: An Observational
study on the potential of interstellar agriculture.**

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Martian soil - can it sustain life?

- Martian soil has some of the nutrients needed for plant life - silica, iron oxide
- Growing plants in Martian soil could lead to possibility of planetary settlement (more permanent)
- Limits to soil might have impact on how viable growth really is

Research question: Can plants grow successfully in a Martian soil simulant when all other growth conditions remain similar to Earth (light, water, etc)?

Nutrient Information

- Nitrogen: Low, insufficient naturally, may require processing, and additional nutrients
- Plant growth lights: 10 hours per day
- Phosphorous: Sufficiently high for plant growth
- Microorganism inoculants added in with first watering
- pH: slightly alkaline water; 7.1



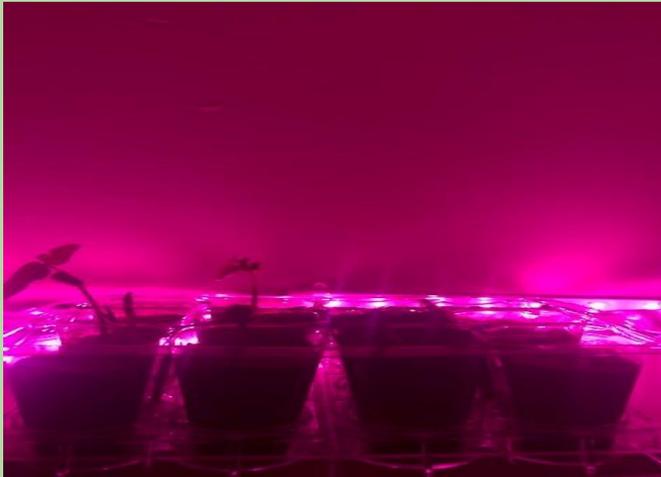
What was tested

- *Vigna radiata* seeds (common Mung beans) grown; 12 starts total
- Martian Garden soil simulant SMM2
- All growth conditions monitored or kept constant (pH, light, water, etc)
- Plant germination/sprouting, height and healthy used as indicator



What I learned

- Mung beans successfully grew in Martian simulant (11 of 12 seeds planted)
- Plant heights ranged from 4.3 - 16 cm
- Testing for soil nutrients showed Nitrogen (N) deficit present that may have impacted growth or consistency in growth between replicates



Future studies to consider

- Other plant species
- Including Earth control with more time/resources
- Other ways of testing factors like pH, light, nutrient uptake of plants
- More replication to see if results are consistent

References

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