SPORES IN SPACE

The Effects of Microgravity on Endomycorrhizae

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Introduction

- Mycorrhizae - mutualistic relationship between fungi and plants

- Off-world agricultural concerns
  - Alien soils may be nutrient poor
  - Reduced gravity may affect root efficiency
  - Fertilizer may not be possible
Overview - The Experiment

- Spore/Flax association in microgravity (on ISS) and on Earth
- Light microscopy
  - Compare proportion of infected plant cells from ISS and ground experiments
- Analysis - Two Sample Proportion Test
Materials

- Type 3 FME
- Flax (*L. usitatissimum*)
- Mycorrhizal Spores (*R. intraradices*)
- Growth Medium (Sphagnum Moss)
- Sterile Water
Initialization/Activation

- $A=0$, unclamp clamp B and mix
- $A=0$, unclamp clamp A and mix
- Ground experiment conducted in triplicate simultaneously
Once Activated

- 4-6 week Flax and fungal hyphae development
- Light microscopy
- Compare root cells infected by hyphae under both conditions
Possible Results and Conclusions:

1. Increase in infected root cells in microgravity
   - Endomycorrhizae more efficient

2. Decrease in infected root cells in microgravity
   - Endomycorrhizae less efficient

3. No change in infected root cells in microgravity
   - Relationship not effected by microgravity
References

Thank you!