



Galloway, NJ

SPORES IN SPACE

The Effects of Microgravity
on Endomycorrhizae

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A photograph of a space station module in orbit above the Earth's surface. The text "Mission 11 to ISS Starting September 2016 In Progress" is overlaid on the image.

Mission 11 to ISS
Starting September 2016
In Progress

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

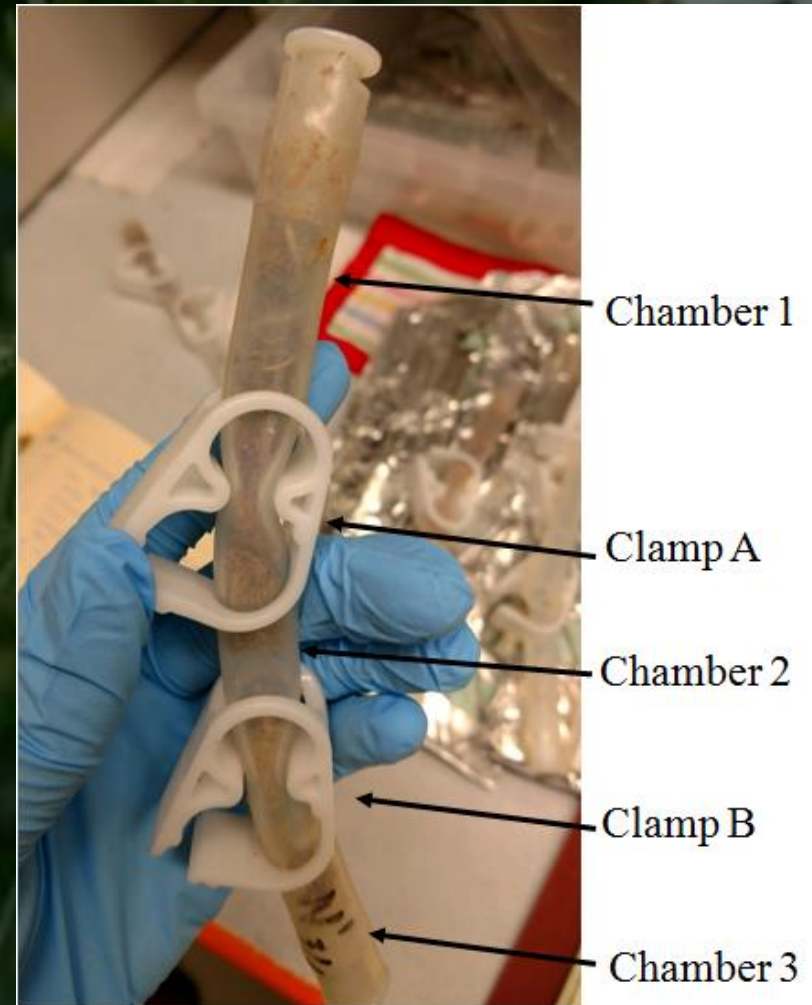
Materials



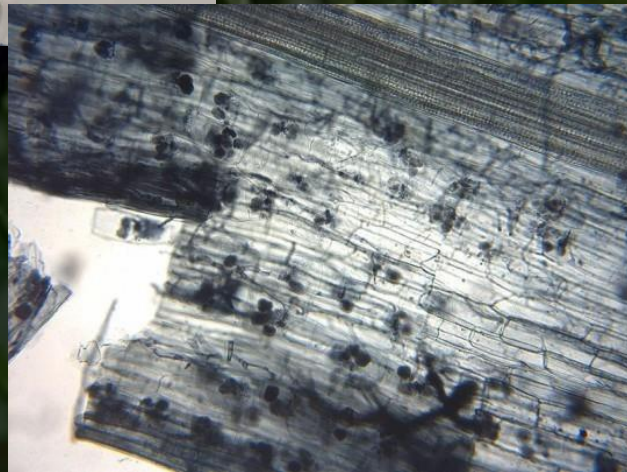
- Type 3 FME
- Flax (*L. usitatissimum*)
- Mycorrhizal Spores (*R. intraradices*)
- Growth Medium (Sphagnum Moss)
- Sterile Water

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

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Acknowledgements



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Thank you!

