

### Introduction

- Mycorrhizal fungi help plants acquire nutrients from the soil in exchange for organic carbon.
- Mutualistic mycorrhizal associations seen in 90% of plants (4).
- Commercial mycorrhizae inoculum are becoming a more popular alternative to the natural fungus.
- Plant mutualism with mycorrhizae is greatly impacted by plant species due to different types of photosynthesis and favored growing conditions, and also sympatric/allopatric associations between the plants, fungi, and soil (1,2,3).
- Sympatric relationships between soil, plant, and native fungi result in better growth, survival, and overall fitness (6).
- Our goal is to determine the effects of commercial mycorrhizae vs. native mycorrhizae on plant growth** depending on the sympatric/allopatric relationship between the soil, fungus, and plant.
- We hypothesize that plants exposed to mycorrhizal fungi, whether it is commercial or native, will have the greater biomass than those without fungi.**
- For this experiment, biomass will serve as an indicator of plant fitness.



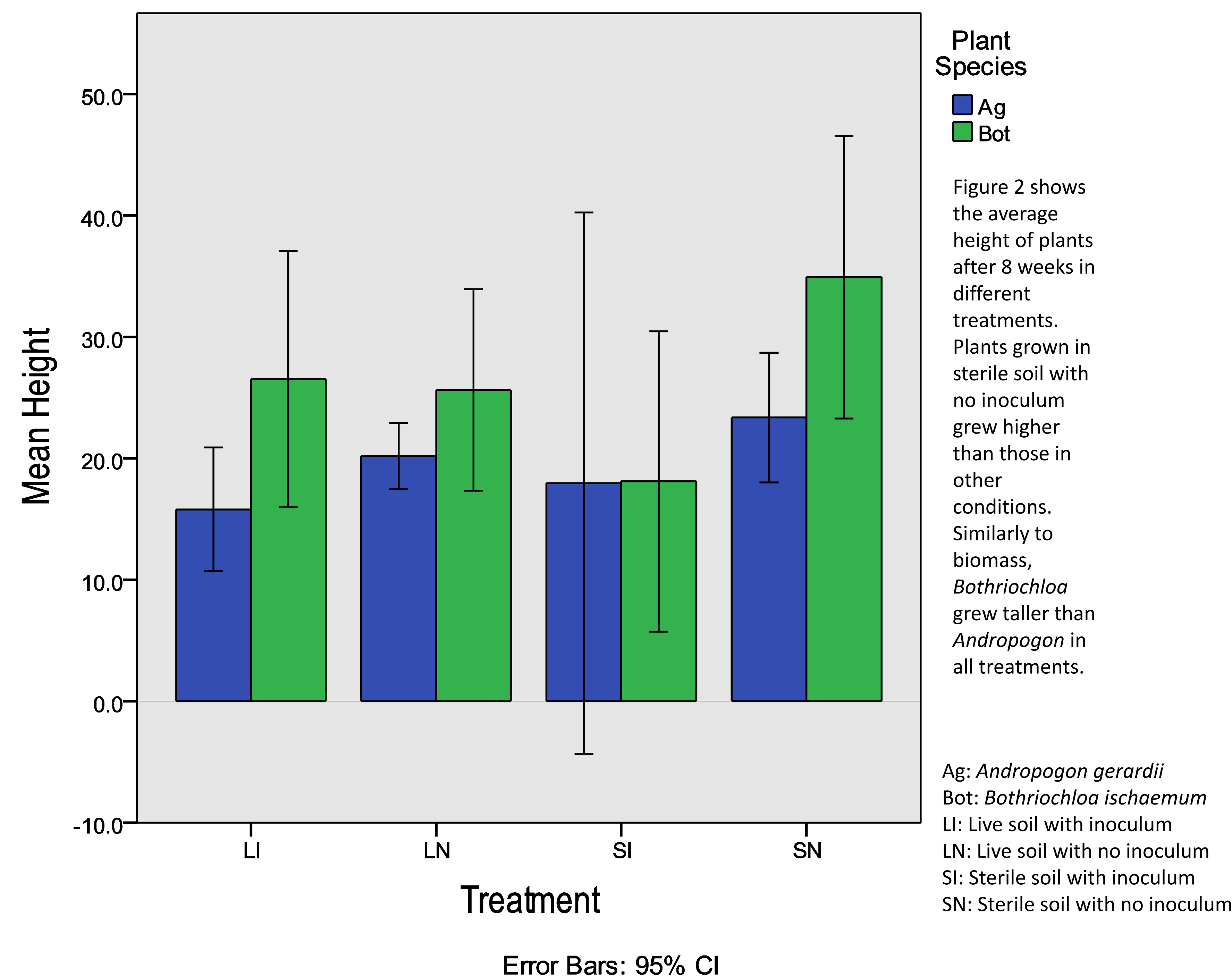
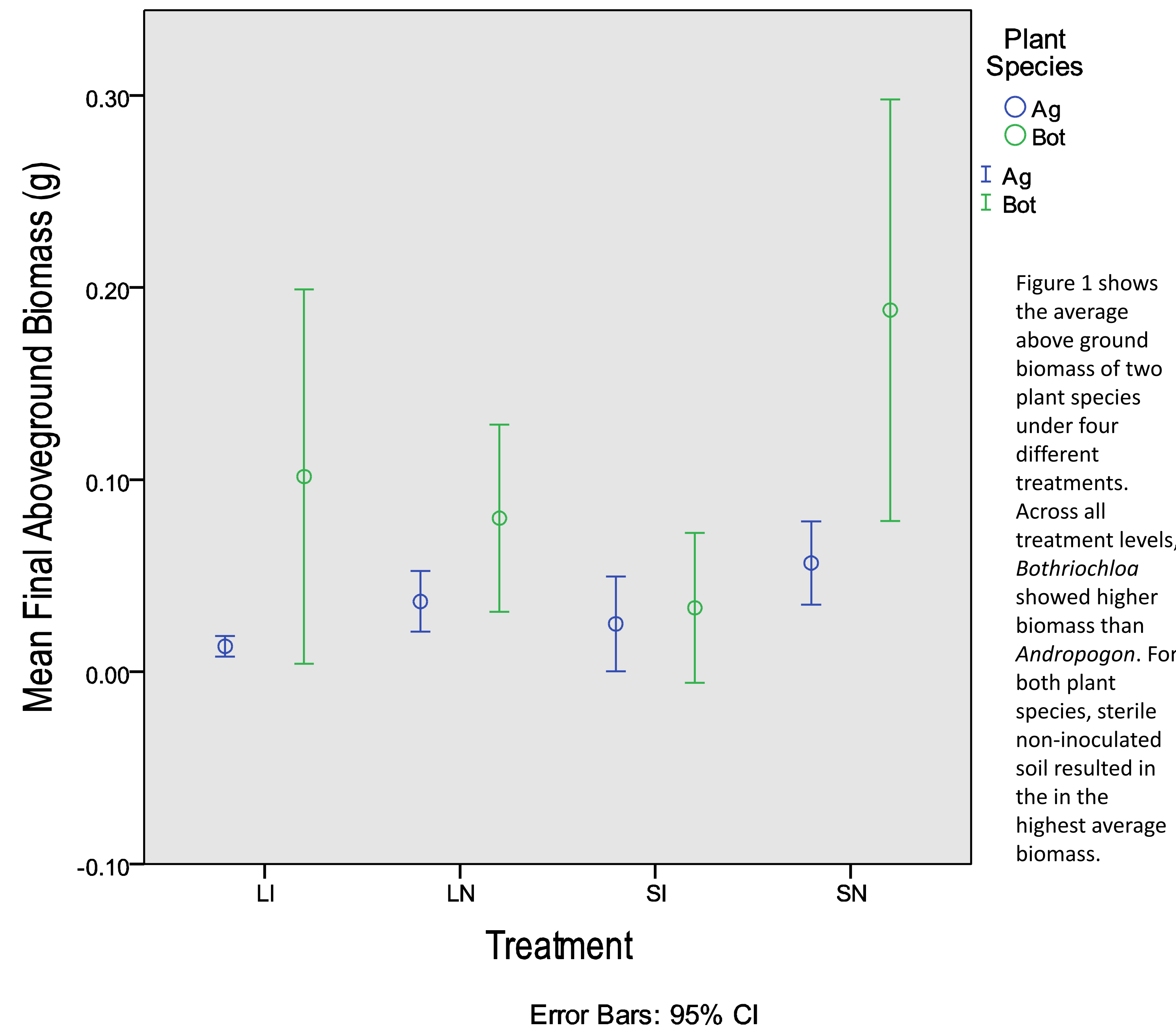
### Methods

- Bothriochloa ischaemum* (Bot) and *Andropogon gerardii* (Ag) seedlings were separated from growing flats
- 4 treatment levels:

Live soil with inoculum (LI)	Sterile soil with inoculum (SI)
Live soil no inoculum (LN)	Sterile soil no inoculum (SN)

- Seedlings of each species were transplanted to "Cone-tainers" and labeled by species, treatment level, and replicate number
- Inoculated groups were given ¼ teaspoon of Plant Success Endo- and Ecto-Mycorrhizae
- Tools were sterilized between different treatment levels and a thin layer of sterile soil was added to each "Cone-tainer" to prevent contamination
- Height was recorded weekly for each plant, and plants were dried and weighed to determine their biomass

### Results



### Conclusion and Discussion

- Our findings did not support our hypothesis that treatments with mutualistic mycorrhizal associations would result in greater biomass.
- There was not a significant difference in biomass between the commercially added and the wild mycorrhizae.**
- The lack of significance between wild and commercial fungi indicates it may be an effective replacement when wild fungi is absent.
- Inoculum treatment was significant to biomass ( $P=0.005$ ) and height ( $P=0.028$ ) of plants.
- Sterile, non-inoculated soil resulted in greater biomass and height in both species.**
- This suggests that mycorrhizal associations did not benefit our specific grass species.
- The trade of carbon for nutrients between the fungi and plants has potential to become parasitic, which could have resulted in the lower biomass of our inoculated treatments (7).
- It is also possible that if the experiment had run longer, we would have had different results, as mycorrhizae are usually required for grasses to complete their life cycle.
- Several of our grasses did not survive transplanting, lowering our sample sizes and potentially affecting our results.
- Additional research could be done to determine if the amount of inoculum added affects plant fitness, as it is possible too much of the fungus could parasitize plants.

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