FUNgi! How Mycorrhizal Fungi Affects the Growth of *Desmodium Canadense* and *Salvia Azurea*

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Introduction

- Mycorrhizal fungi can be very beneficial for plant species in nutrient deprived environments
- The hyphae of the mycorrhizal interactions allows for more surface area on the root to expand throughout the soil.
- The hyphae of the plant helps with the water uptake.
- Plants that are grown with the interaction of mycorrhizal often times have greater root-to-shoot ratios as well as an increase in leaf surface area (Allen, 1981).
- The increase in surface area will help the plant utilize more nutrients, increase photosynthesis, and show an increase in growth.
- Growth was measured on height, biomass, and leaf size and surface area. The prediction was that the plants without commercial inoculum would grow better.

Hypothesis

We hypothesize that the plants grown with the native (AM) infested soil and no inoculum will have larger leaf sizes.

Methods

- We selected two different plant species to work with: *Desmodium Canadense* of the Legumes family, and *Salvia Azurea* of the Perennial Forbs family.
- Each treatment consisted of six plants for a total of 24 plants in each species. So we had two species with four treatment levels and replicated six times.
- We separated our plants into four variable groups per species, each consisting of six plants, by planting young individual plants from each species into our variable soil concentrations. The variable groups are as follows: (LI)=Living prairie soil; inoculated with commercial mycorrhizal inoculum, (SI)=Sterilized prairie soil, inoculated with commercial mycorrhizal inoculum, (LN)=Living prairie soil, not inoculated with commercial mycorrhizal inoculum, and (SN)=Sterilized prairie soil, not inoculated with commercial mycorrhizal inoculum.
- The commercial inoculum used in this experiment is MycoBloom.
- We tested the effect (AM) has both with and without commercial inoculum, on the plants leaf surface area, as well as stem diameter at base of the plant and size over a six week period within a controlled grow room environment with equal water, light, and nutrients provided regularly.
- After eight weeks plants were harvested to weigh root and shoots.
- ANOVA was used to analyze our results and create graphs.

Literature Cited

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Data Representation

Figure 1 **Week 3 Height of *Desmodium Canadense*** based on soil treatment.

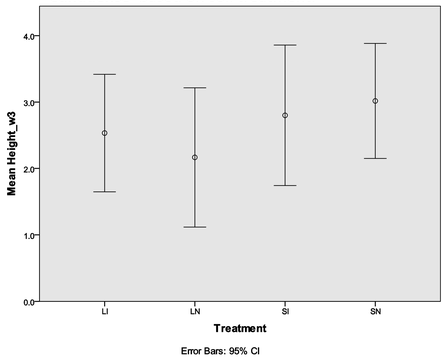


Figure 2 Week 3 of *Salvia Azurea* based on soil treatment.

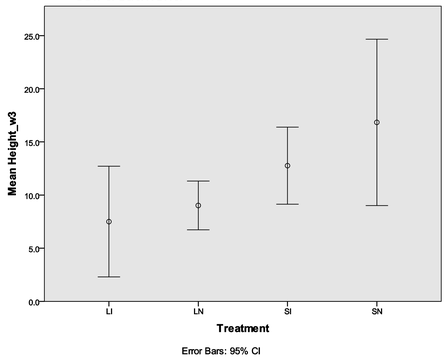


Figure 3 Surface area of *Desmodium Canadense* based on soil treatment.

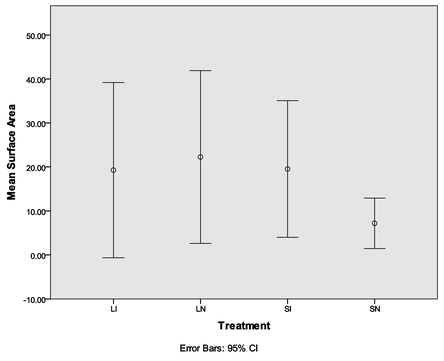
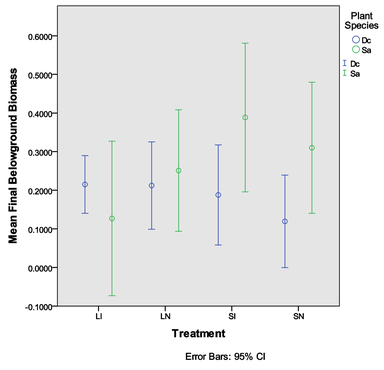


Figure 4 Belowground biomass of each species based on soil treatment.



Images

Results

- Figure 1: Week 3 height *Desmodium Canadense* there was no significance in soil treatment (F=2.916, P=.154). There was no significance in inoculum treatment F=.040 P=.844).
- Figure 2: Week 3 height of *Salvia Azurea* there was significance in soil treatment (F=9.680, P=.006). There is no significance in inoculum treatment F=1.766, P=.201).
- Figure 3: The surface area of *Desmodium Canadense* there was no significance in the soil treatment (F=3.844, P=.086). There was no significance in inoculum treatment (F=1.535, P=.250)
- Figure 4: The belowground biomass of both species based on treatment. There was no significance in soil treatment (F=1.119, P=.296). There was no significance in inoculum treatment (F=.071, P=.792).

Discussion/Conclusion

None of the results supported our hypothesis that the plants grown in native sterile soil with no commercial inoculum would grow better in terms of leaf surface area and overall height. Our results suggested that there was a species effect due to the significantly larger SA plants whereas, the DC plants are fairly consistent across the variable groups. This makes since because there appeared to be no consistent observed growth patterns. However during week three, the measurements of height among the SA plants suggested that the soil treatment was significant. It also seemed that there was no significance at the end of the experiment when weight of the overall biomass for each plant was measured.

We propose a few conclusions as to why the results turned out the way that they did the first one is the plants were still very young when we harvested them. Because of this it may have been harder to tell how the inoculum was affecting them. If given more time to grow and mature we may have seen more of a difference. The second one may have been the species of plants that were chosen.

The height of DC and the inoculant treatment had no significance. Although there was very little evidence from our results that showed that the fungi had any effect on the growth of the plants, more experiments need to be conducted to fully conclude that it has no effect.