Host-Symbiost Relationships of Dark Septate Endophytes in Arid Grasslands Roots
Poster Presentation
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Dark septate fungal endophytes (DSE) are fungi colonizing plant roots. DSE play an important role in our ecosystems. Studies thus far provide little insight into their ecological functions. DSE are found inside or around the root tissues and are distinguished by their dark color in their cells. DSE have been found in the roots of arid grasslands and many other plant species and studies have shown that DSE can aid in alleviating plant stress. The objective of this project is to study and characterize xerophilic DSE in arid grassland ecosystems. Xerophilic fungi are fungi able to tolerate conditions of low water activity (aw < 0.85). Fungi were isolated and transferred to MEA (malt extract agar) media to allow for growth. Dichloran Glycerol (DG-18) Agar Base was used to provide a media with different values of water activity (aw) to test tolerance to drought. The levels of water activity range from aw=1.00 to aw=0.70. Observations were taken every five days by measuring the diameter of each fungal colony. A pilot study was conducted over 20 days using 10 different species of fungi. Data from the pilot resulted in growth of all tested fungi on media with 1.00 aw. At 0.95 aw, four fungi were able to grow with Cuvularia (45 mm), Coniochaeta (45mm), Paecilomyces (25mm) and Aspergillus (0.5mm) colony diameter after 20 days. The only fungus with capacity to grow at 0.90 and 0.85 aw was Coniochaeta (1 mm). Our preliminary experiments showed that endophytic fungi associated with grasses showed xerophilic properties allowing them to adapt and actively grow at lower water content.