

Coniochaeta the Super Fungi

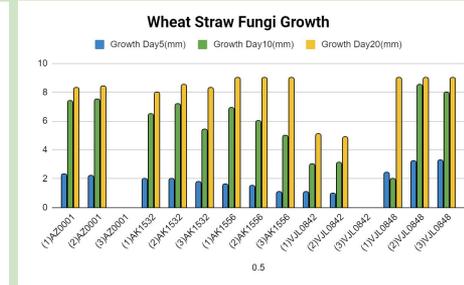
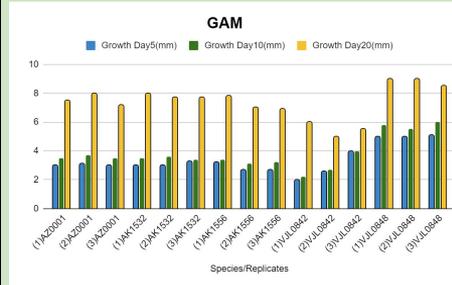
Research Question

What media will best promote the growth of Coniochaeta?

Methodology

- Subculture 5 strains of fungi onto 6 different media plates with 3 replicate plates per fungi
- Measure growth for the fifth, tenth, and twentieth day.
- Record our results/data and compare the growth rates.

Data Analysis and Results



Interpretation and Conclusion

We found that the wheat straw media best promotes the growth of coniochaeta and that it was more effective in growth than the GAM media. These findings can have important agricultural applications for promoting crop growth with Coniochaeta.

Introduction

The aim of this project is to discover what media best promotes the growth of Coniochaeta. Coniochaeta acts as a superfungi and has been known to promote plant growth². Once we identify what media best promotes the growth of this fungi, then we can apply it to things such as agricultural practices to assist with factors that make growing difficult, such as climate change.

Background and Previous Research

- **On record there are 35 different species of Coniochaeta.**
- **In source 3 they summarize the significance of endophytes, their relationships with plants, and the way they're classified by their completely different ecological roles.**
- **In source 2 they state the importance of isolating and finding differences and has data on the characteristics, Isolation sources, location, life mode, diameter growth(mm) and ITSrDNA, LSUrDNA, RPB1 and TEF1a sequence data of many different species of Coniochaeta.**
- **In source 1 they describe methods to use when isolating spores from fungi.**

Research Question

**What media will best
promote the growth
of *Coniochaeta*?**

Methodology

- We will be using two biological control strains of fungi and two *Coniochaeta* strains as the fungi of interest.
 - The strains that will be used are AK1556, AK1532, VJL0848, VJL0842. AK1556 and AK1532 are the
 - Subculture 4 strains of fungi onto the 6 different medias: WS, GAM, PDA, CMA, SA, MEA
- Have 3 replicates per fungi, standardize temperature+measurement methods.
- Track and record growth by widest diameter points on the 5th 10th and 20th day.



AK 1532

Wheat Straw Agar



VJL 0842



VJL 0848

Results

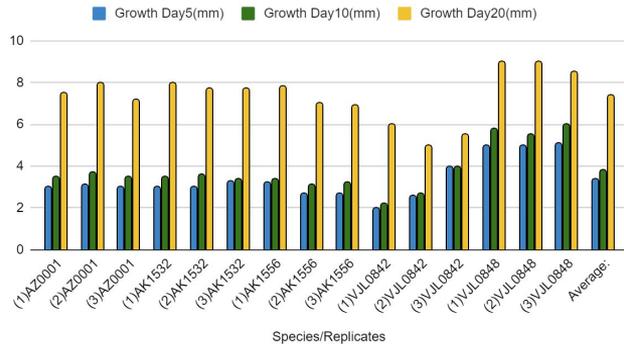
Between day five and ten there was a significant growth amount for all fungi on the wheat straw media, where as on the GAM media the growth between day five and ten was minimal. However, for both medias there was improved growth on the twentieth day. With GAM having the most growth from day 10 to day 20

Data

GAM

Species/Replicates	Growth Day5(mm)	Growth Day10(mm)	Growth Day20(mm)
(1)AZ0001	3	3.5	7.5
(2)AZ0001	3.1	3.7	8
(3)AZ0001	3	3.5	7.2
(1)AK1532	3	3.5	8
(2)AK1532	3	3.6	7.7
(3)AK1532	3.3	3.4	7.7
(1)AK1556	3.2	3.4	7.8
(2)AK1556	2.7	3.1	7
(3)AK1556	2.7	3.2	6.9
(1)VJL0842	2	2.2	6
(2)VJL0842	2.6	2.7	5
(3)VJL0842	4	4	5.5
(1)VJL0848	5	5.8	9
(2)VJL0848	5	5.5	9

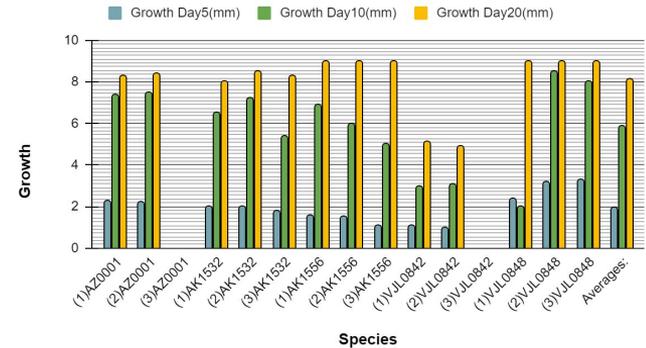
GAM



WS

	Growth Day5(mm)	Growth Day10(mm)	Growth Day20(mm)
(1)AZ0001	2.3	7.4	8.3
(2)AZ0001	2.2	7.5	8.4
(3)AZ0001			
(1)AK1532	2	6.5	8
(2)AK1532	2	7.2	8.5
(3)AK1532	1.8	5.4	8.3
(1)AK1556	1.6	6.9	9
(2)AK1556	1.5	6	9
(3)AK1556	1.1	5	9
(1)VJL0842	1.1	3	5.1
(2)VJL0842	1	3.1	4.9
(3)VJL0842			
(1)VJL0848	2.4	2	9
(2)VJL0848	3.2	8.5	9

Wheat Straw Fungi Growth



Conclusion and Further Research

We found that the wheat straw media best promotes the growth of coniochaeta and that it was more effective in growth than the GAM media. We also found that we needed to change the days between growth so that our data would be more accurate for future projects.

References:

- ¹Choi, Y.W., Hyde, K.D. and Ho, W.H., 1999. Single spore isolation of fungi. *Fungal diversity*.
- ²Harrington, A.H., del Olmo-Ruiz, M., U'Ren, J.M., Garcia, K., Pignatta, D., Wespe, N., Sandberg, D.C., Huang, Y.L., Hoffman, M.T. and Arnold, A.E., 2019. *Coniochaeta endophytica* sp. nov., a foliar endophyte associated with healthy photosynthetic tissue of *Platycladus orientalis* (Cupressaceae). *Plant and Fungal Systematics*, 64(1), pp.65-79.
- ³Rodriguez, R.J., White Jr, J.F., Arnold, A.E. and Redman, A.R.A., 2009. Fungal endophytes: diversity and functional roles. *New phytologist*, 182(2), pp.314-330.
- ⁴Weitz, H.J., Ballard, A.L., Campbell, C.D. and Killham, K., 2001. The effect of culture conditions on the mycelial growth and luminescence of naturally bioluminescent fungi. *FEMS microbiology letters*, 202(2), pp.165-170.