



Are earthworms antagonists for Sclerotinia sclerotiorum?

Pia Euteneuer, Johann Zaller, Siegrid Steinkellner,
Pauer Stefan, Reisinger Johanna, Sailer Judith, Strickner Lorenz
University for Natural Resources and Life Sciences, Vienna

Sclerotinia

- Soil borne fungi
- more than 400 hosts
- 3- 10 years infectious



Sclerotinia



- Sclerotial survival structure

Sclerotinia



- Way of infection
 - Mycelium trough roots

Sclerotinia

- Way of infection
 - Mycelium through roots
 - Spores by apothecia



Earthworms

- *Lumbricus terrestris*
 - Common earthworm, dew worm, nightcrawler
 - Fungi, plant material, bacteria ...



Earthworms

- Anegic
 - foraging aboveground during the nighttime
- Burrows and middens



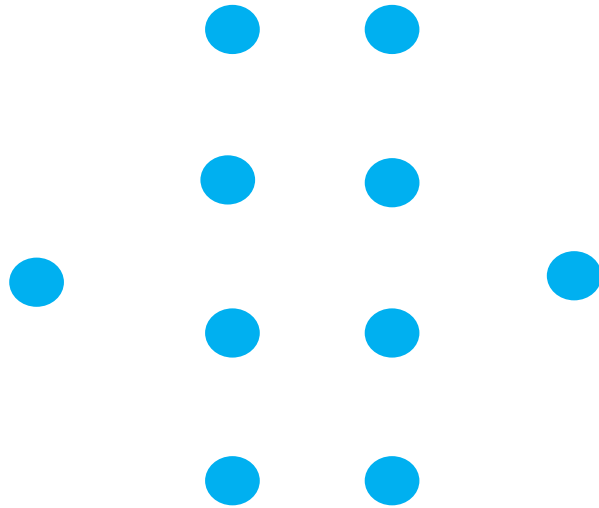
- Buckwheat (*Fagopyrum esculentum*)
- Phacelia (*Phacelia tanacetifolia*)

- Accessible 5x10mm

- Non-accessible 1x1mm



- Toothpick scheme

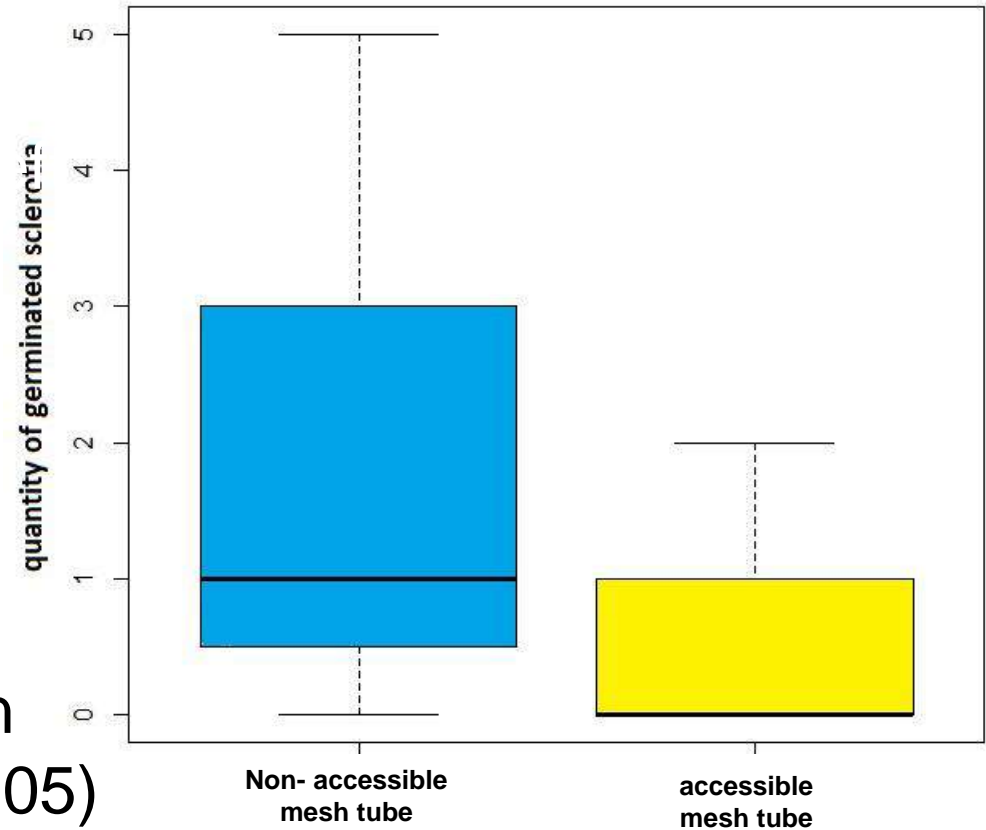


- Toothpick scheme





Outcomes



- Less sclerotic stipes in acc. mesh tubes ($p < 0.05$)

Conclusion



- Polysaccharides inhibits germination by their antifungal function

Conclusion



- Polysaccharides inhibits germination by their antifungal function
- The increased surface activity indicates searching habits and the attempt to forage sclerotia

Contact

Pia Euteneuer (pia.euteneuer@boku.ac.at)

Experimental station Gross-Enzersdorf,
Lower Austria

References

Butt, K. R., Nuutinen, V. and Sirén, T. (2003): Resource distribution and surface activity of adult *Lumbricus terrestris* L. in an experimental system. *Pedobiologia* 47, 548–553.

Klinger, R. (2010): Regenwürmer – Helfer im Garten. Darmstadt, Pala Verlag.

Shumway, D. L. and Koide, R. T. (1994): Seed preferences of *Lumbricus terrestris* L. *Applied Soil Ecology*. Volume 1, 11–15.

Valckx, J., Pina, A. C., Govers, G., Hermy, M. and Muys, B. (2011): Food and habitat preferences of the earthworm *Lumbricus terrestris* L. for cover Crops. *Pedobiologia* 54S, 139– S144.

Wang, C., Sun, Z., Liu, Y., Zheng, D., Liu, X. and Li, S. (2007): Earthworm polysaccharide and its antibacterial function on plant-pathogen microbes in vitro. *European Journal of Soil Biology* 43, 135-147.

Wolfarth, F., Schrader, S., Oldenburg, E., Weinert, J. and Brunotte, J. (2011): Earthworms promote the reduction of *Fusarium* biomass and deoxynivalenol content in wheat straw under field conditions. *Soil Biology & Biochemistry* 43, 1858-1865.