

EGU21-12568

<https://doi.org/10.5194/egusphere-egu21-12568>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Fungi play a key role in the restoration of species-rich grasslands: trace-labelling carbon through the food chain

Elly Morriën^{1,3}, Casper Quist², Sena Cuk¹, Jules Koppen¹, Eva Varkevisser¹, and Emilia Hannula³

¹University of Amsterdam, IBED, Earth Surface Science (ESS), Amsterdam, Netherlands (w.e.morrien@uva.nl)

²Wageningen University & Research, Biosystematics

³Netherlands Institute of Ecology (NIOO-KNAW), Terrestrial Ecology

Restoring natural plant communities on abandoned agricultural fields can be challenging due to a degraded soil community and a fertilizer legacy. We discovered that fungi are the initiators of a tighter connected soil food web which restores the closed carbon and nutrients cycles in soils, thereby accommodating species-rich plant communities in grasslands. Boosting the fungal channel as a bottom-up approach could thus be used as a next-generation restoration measure. We show data of soil inoculation experiments and trace the progression of change in the fungal community via sequencing and functioning via community response profiles. We assessed the top-down foraging of predators and consumers on the microbiome by analysing gut contents of consumers and predators from different restoration stages. We will be able to show preliminary data on the effect of fungi and their higher trophic levels in stimulating species-rich plant communities as well as give a prospect on the wider applications for microbiome engineering.