Fungal mycelium growth: effects of the sand particle size

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Malinky biostation

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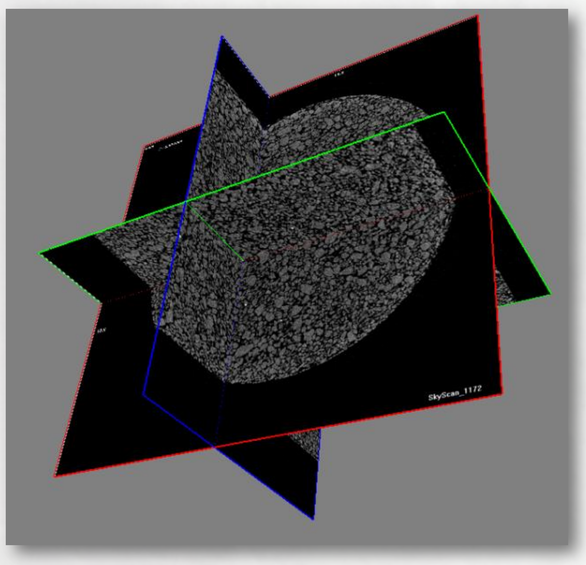
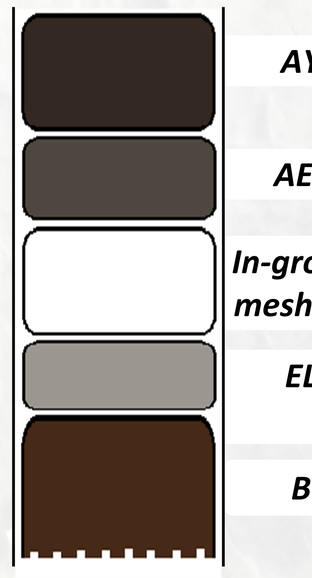


Sand with Ø = 0.25–0.5 mm, electronic microtomography, 3D image CTVol 2.3.2.0 (SkyScan)

		A	B	C
Object surface / volume ratio	*1/mm*	*8.29*	*13.09*	*14.99*
Solid phase volume	*%*	*60.08*	*55.10*	*58.79*
Surface of closed pores	*mm²*	*2001*	*1359*	*10189*
Closed porosity	*%*	*0.34*	*0.25*	*2.05*
Filtration capacity (Eggelsmann, 1981)		*act. low*	*medium*	*act. high*



Soil columns design in the laboratory filtration experiment: aggregates were not water resistant; an in-growth mesh bag Increased the filtration capacity of the column.

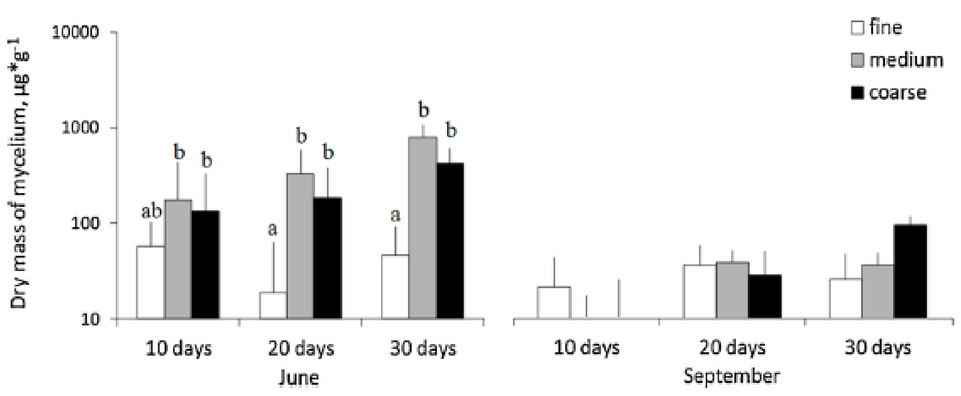
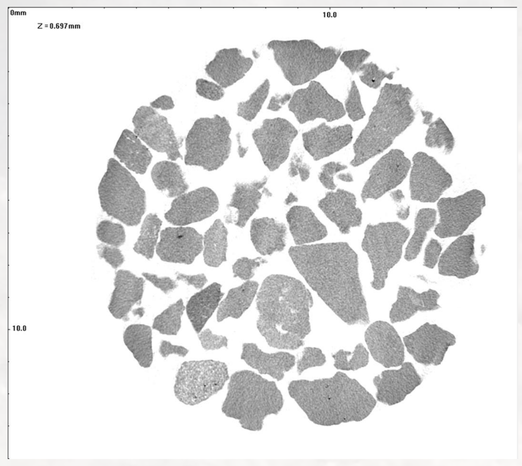


Fig. 1. Dry biomass of fungal mycelium harvested after 10, 20 and 30 days of growth during June (A) and September (B), data from two soil depths are combined. Different colors indicate sand of different particle size: fine (0.25–0.5 mm), medium (0.5-0.8 mm) and coarse (0.8–1.2 mm). Different letters in (A) indicate significant difference (Pairwise Test for Multiple Comparisons of Mean Rank Sums (Nemenyi-Tests), Tukey distances, $P < 0.05$, (Pohlert, 2014)); there was no significant difference in (B). Whiskers show standard errors, $n = 20$.



The pore space of coarse (Ø = 0.8–1.2 mm) sand

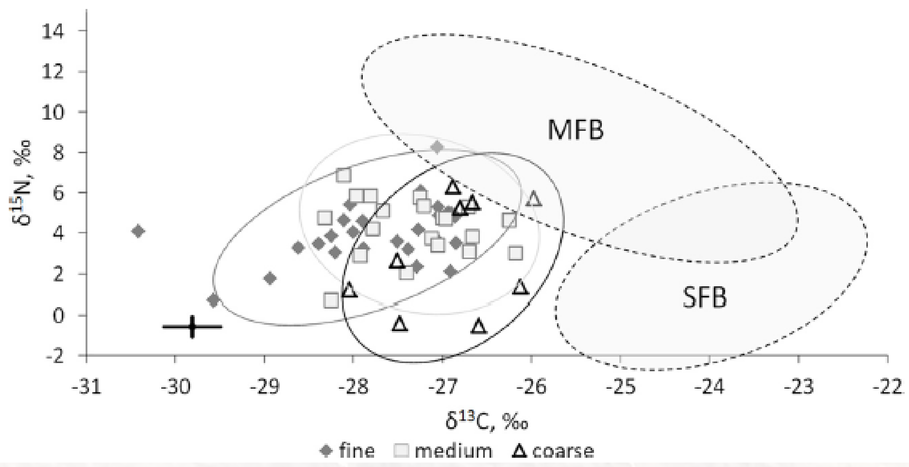
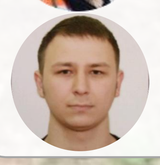


Fig. 2. Isotopic composition ($\delta^{13}C$ and $\delta^{15}N$ values) of mycelium harvested from mesh bags filled with sand of fine, medium and coarse particle size. Standard ellipses, both for mycelium and fruit bodies, are calculated according to Jackson et al. (2011). Grey ellipses indicate mycorrhizal (MFB, $n = 90$) and saprotrophic (SFB, $n = 60$) fungal fruit bodies harvested at the same site. Black cross indicates mean $\delta^{13}C$ and $\delta^{15}N$ value of leaf litter ($n = 35$, ± 1 SE).

Acknowledgements and Collaborators:

Dr., Prof. Alexei Tiunov (IPEE RAS)

M.Sc. Marina Khmeleva (IG RAS)



Dr. Konstantin Romanenko (V.V. Dokuchaev Soil Science Institute)

Russian Academy of Sciences

EGU General Assembly 2022

RFBR

Project is partly funded by the Russian Foundzation for Basic Research (Project No. 20-34-90088)