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The root-fungus interplay in foraging for heterogeneous sources

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The distribution of nutrients in the soil is very heterogeneous at different scales relevant to plant roots, and plants respond to this heterogeneity by the architecture of the root system. The ability to form the root system in terms of the most effective nutrient uptake differs among species. Moreover, over 70% of terrestrial plants create arbuscular mycorrhizal symbiosis, which helps them to acquire nutrients from the soil. It has been shown that plants with mycorrhizal symbiosis acquire nutrients from heterogeneous soil differently than plants without mycorrhizal fungi. Our study aims to estimate the link between the root and fungal foraging for heterogeneous sources using an experimental approach. We show the root foraging precision of nine plant species together with three fungal species in the heterogeneous soil environment. The first results suggest that root foraging is not affected by the presence of mycorrhizal fungi and that fungal foraging may form in the opposite direction than root foraging.