The abundant fraction of soil microbiomes regulates rhizosphere function in crop wild progenitors

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Abstract

The rhizosphere influence on the soil microbiome and function of crop wild progenitors remains virtually unknown, despite its relevance to develop microbiome-oriented tools in sustainable agriculture. Here, we quantified the rhizosphere influence — a comparison between rhizosphere and bulk soil samples — on bacterial, fungal, protists and invertebrates communities and on soil multifunctionality across nine crop wild progenitors in their sites of origin. Overall, rhizosphere influence was higher on abundant taxa across the four microbial groups, and had a positive influence on increased rhizosphere carbon storage and nutrient contents compared to bulk soils. The rhizosphere influence on abundant soil microbiomes were more important for soil multifunctionality than rare taxa and environmental conditions. Our results are a starting point to uncover the roles of both abundant and rare soil taxa in enhancing multifunctionality in agroecosystems.
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