SUITMA 11
11 th Conference on Soils of Urban, Industrial, Traffic and Mining Areas
Soils and the food, water, energy nexus
05.09.– 09.09 2022 Berlin, Germany

Composition and associations of bacteria and fungi in urban allotment gardens soils from Santiago de Compostela, northwestern Spain

M. Gómez-Brandón[1], M. Probst[2], C. Herbón[3], M.T. Barral[3], R. Paradelo[3]

[1] *Grupo de Ecoloxía Animal (GEA), Universidade de Vigo, Spain*
[2] *Department of Microbiology, University of Innsbruck, Austria*
[3] *CRETUS, Departamento de Edafoloxía e Química Agrícola, Universidade de Santiago de Compostela, Spain*

remigio.paradelo.nunez@usc.es

Abstract

The soil microbiome in urban agriculture has not received much attention to date despite its important role for soil functionality. In this work, we evaluated the composition and diversity of fungal and bacterial communities through DNA extraction and 16S/ITS marker gene sequencing in 40 soil samples collected from 10 urban allotment garden areas in the city of Santiago de Compostela (northwestern Spain). The soils were mostly acid, with medium to coarse textures dominated by sandy loams and rich in organic matter, with organic carbon contents ranging from 24 to 72 g kg-1. As typical for agricultural and other soil types, the most abundant bacterial phyla found in the urban garden soils belonged to Proteobacteria, Acidobacteriota and Actinobacteriota, whereas Ascomycota and Mortierellomycota accounted for the highest proportion of fungi. Despite anthropogenic activities are expected to affect negatively microbial diversity, the richness of both bacterial and fungal communities was comparable to that of soils from natural ecosystems. Nevertheless, network analysis showed that the typical modular structure, indicating close microbial interactions, were absent in the urban garden soils. Here, associations occurred between only two microbial units and they appeared to be patchy and random. Taken together, our findings provide evidence that the soil microbiomes in the studied allotment gardens comprised a random assortment of microbes, with potential implications for soil and ultimately ecosystem functionality.