

Moreira, I. S., Novo, B., Monteiro, P., Pinto, G., Castro, P. M. L., Alves, A., Tacão, M., & Alves, M. (2024). *Microbial consortia selection for the development of an innovative Nature-based solution for air pollutants remediation*. Abstract from Nature Based Solutions Summit, Porto, Portugal.

Air pollutants, like benzene, toluene, and xylene (BTX), pose significant health and environmental risks being associated with 6.7 million premature deaths annually. Despite plants natural air purification capabilities in green infrastructures, high pollution levels in cities can hinder urban greening when tolerance levels are exceeded. Therefore, this study aimed to develop plant-beneficial microbial consortia with the capacity to degrade air pollutants envisioning their application as plant inoculants to promote plants' resilience and their efficiency in air purification. Leaves and rhizosphere samples from *Tilia* sp., *Rhododendron* sp. and *Euonymus* sp. were collected in Porto city (Portugal), in an area with high traffic-derived air pollution (NO<sub>x</sub>, benzene – as in Qualar database). Total pigments concentration showed low variability among plants genera (from  $3.24 \pm 0.45$  to  $3.57 \pm 0.30$   $\mu\text{mol g}^{-1}$ ). The neutral to alkaline pH of leaf extracts and high relative water content results indicated good tolerance of the sampled plant genera to pollutants. To select BTX-degrading microbial consortia, leaves and rhizosphere samples were incubated with 300ppm of BTX as the only carbon source, far exceeding EU limits. BTX concentration was monitored through GC-FID. Microbial strains within BTX degrading consortia were identified through sequencing of microbial phylogenetic markers.