



GLOBAL MEET ON CLIMATE CHANGES AND SUSTAINABILITY



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A Nature-Based Tool to design vegetation barriers along road infrastructure to contain anthropogenic atmospheric Particulate Matter: characterization of leaf functional traits

Abstract: This work investigates the relationships between the leaves of plants with their functional traits and particulate matter retention by leaves applicable to phytoremediation. The first part of the study focuses on an experimental phase conducted in the urban area of Naples, in which the concentrations and uptake of fine and coarse Particulate Matter (PM) sequestered by the leaves of 28 plant species with ornamental purpose, arranged along the main streets of the city, were calculated. In this phase we highlighted which plant species would perform best in phytoremediation but especially the strong relationships that exist between the plant species and the functional traits of their leaves, specifically that of Trichome density and the Trichome surface area, demonstrating their strong correlation with PM phytoremediation. The second part of this work involved an application phase with the Italian road manager company Anas s.p.a to design a Nature-Based Solution tool for roadside buffer area vegetation design. We profiled an equation to calculate the square meters of soil to be vegetated with a specific plant species as a function of certain parameters: The LAI, the Daily PM Uptake, and Total Trichome Surface area. This analysis will allow the company to understand how many m² of soil in a buffer area along a road infrastructure should be vegetate in order to minimize the PM produced and emitted by vehicle traffic traveling on the infrastructure.

Biography: Alessia Postiglione is a PhD and currently a postdoctoral fellow at the University of Napoli Federico II and professor of Agricultural Botany. She has published more than 15 papers in journals with high impact factor and has strong knowledge in the phytoremediation of air, soil and water. She is co-Guest Editor of a special issue of the MDPI journal Antioxidants.