Rhizofiltration of urban effluent: microbial ecology and conceptual treatment mechanisms.

South African rivers are increasingly being polluted by urban runoff, one of the most common sources of diffuse pollution. Rhizofiltration is a novel type of phytoremediation mimicking riparian ecology. The rhizofilter was designed to rapidly filter large volumes of polluted urban runoff before it enters river systems. Analyses of chemical, physical and microbiological parameters, in combination with metagenomic analyses, revealed that the rhizofilter design and the composition of waste water selects for copiotrophic aerobic microorganisms capable of mineralising potentially recalcitrant organic carbon sources, while driving oxidative processes such as nitrification. Simultaneously, intestinal microbial commensialists and pathogens are removed by the system.

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