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P53. Green roofs as a biotechnological solution to increase water retention in urban areas

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Urban world population has grown rapidly over the last decades. 74% of the European population live in urban areas, and that is expected to increase to over 80% by 2050. This rapid urbanization brings several environmental problems, aggravated due to climate change. Conservation and enhancement of green infrastructures in urban areas is imperative for sustainable urban development.

Green Roofs (GR), a multilayer technological construction that uses vegetation on top of buildings or structural slabs, are becoming a strong choice to promote urban greenery, using an area that accounts for ca. 50% of the impermeable urban surface area. Besides energy benefits to the building structure, water retention/runoff delay to the stormwater drainage systems is another ecosystem service provided by GR.

In the present study, a GR pilot system using aromatic plants and a commercial substrate has been studied regarding its capacity of water retention. Based on a previous water runoff model, rainwater retention by the system has been calculated to be ca. 30%. In previous studies, aromatic plants demonstrated that could be successfully used on GR in the Mediterranean region. Strategies to increase plant growth and minimize the adverse effects of the harsh environment on plant growth on the top of a building are important. Pot experiments using *Satureja montana* comprised inoculation of a selected mixture of plant growth promoting bacteria. Differences in the growth of plants in control and inoculated pots were followed to assess the potential of bacterial endophytes as bioinoculants in green roofs vegetation is under analysis.

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