

The role of soil microbes in mitigating soil erosion and heavy metal dispersion

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The increasing occurrence of extreme weather events, such as heavy rain, flooding, and drought, attributed to climate change, has led to a rise in soil erosion and the consequent dispersion of heavy metals, resulting in contamination of surrounding water and soil. Soil microbes have the capacity to generate polysaccharide biopolymers, including xanthan gum, comprising glucose, mannose, and glucuronic acid. Several research has applied xanthan gum for enhancing soil strength due to its viscous nature. This study aims to evaluate the effectiveness of a biopolymer produced by *Pseudomonas aeruginosa* in mitigating soil erosion and heavy metal dispersion. The studied biopolymer, which generated from *Pseudomonas aeruginosa*, was found to sequester Cd, Cu, Pb, and Zn in soil solution, thus effectively immobilizing heavy metals. Furthermore, soil mixed with the biopolymer showed twice the shear and compressive strength compared to control soil, indicating its potential for mitigating soil erosion.