Establishment and Growth of Vetiver Grass Exposed to Landfill Leachate

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Abstract

Solid waste dumpsites in Dar es Salaam city are of environmental concern due to their associated leachate release into aquatic systems. They pose health risks to the Dar es Salaam residents due to the environmental pollution they cause. Currently, no control measures are employed. An effort to control leachate from Vingunguti dumpsite in Dar es Salaam using vetiver grass is in progress. Effectiveness of vetiver grass to control soil erosion and to treat wastewater is well researched; however, limited information exists on the response of vetiver grass growth to leachate and their effectiveness in phytoremediation of degraded dumpsites. This study aimed at assessing the survival of vetiver grass to landfill leachate so as to establish the use of vetiver grass in reclamation of dumpsites in Tanzania. Vetiver grass was subjected to various concentrations of leachate (0-50% v/v). The results showed that vetiver grass grew well only when it was exposed to leachate concentration of 10-30 (v/v) %. Above this concentration, vetiver grass growth was greatly reduced and complete death occurred at leachate concentrations of 75% (v/v) and above. Establishment and growth of vetiver grass Vingunguti dumpsite leachate would need approaches that limit the stress to young vetiver plants.

Keywords

Landfill leachate; Phytoreclamation; Vetiveria zizanioides; phytoremediation