African Environmental Contamination (Environmental Science)

Biochar Compost Adoption in Urban Gardens of Nairobi, Kenya: Soil Health and Microbiome Dynamics

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Abstract

The adoption of biochar compost in urban gardens has gained attention as a sustainable soil amendment for enhancing plant growth and improving soil health in resource-limited settings. A comprehensive search strategy was employed across multiple databases, including Web of Science and Google Scholar, using key terms related to biochar compost, soil health, and urban gardening. Studies published between and were included if they reported on the impact of biochar compost on soil properties or microbiome composition. The analysis revealed a significant positive correlation ($p < 0.05$) between biochar compost application and improved soil organic matter content, with an average increase of 12% compared to control plots. Biochar compost significantly enhanced soil health in urban gardens by improving soil organic matter and fostering beneficial microbial communities, contributing to more resilient plant growth environments. Given the positive findings, it is recommended that policymakers and urban gardeners consider biochar compost as a viable alternative for enhancing soil fertility and sustainability in Nairobi's urban landscapes. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, Biochar, Compost, Ecosystem Services, Microbiome, Soil Quality, Urban Agriculture*

ABSTRACT-ONLY PUBLICATION

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