



Enhancing Soil Health and Fertility through Agroecological Approaches in Ghana

Yaw Gyamfi¹, Kofi Adjei^{2,3}, Nii Ameyaw Jr^{4,5}

¹ Noguchi Memorial Institute for Medical Research

² Kwame Nkrumah University of Science and Technology (KNUST), Kumasi

³ Accra Technical University

⁴ Department of Soil Science, Accra Technical University

⁵ Department of Crop Sciences, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi

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Correspondence: ygyamfi@gmail.com

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Author notes

Yaw Gyamfi is affiliated with Noguchi Memorial Institute for Medical Research and focuses on Agriculture research in Africa.

Kofi Adjei is affiliated with Kwame Nkrumah University of Science and Technology (KNUST), Kumasi and focuses on Agriculture research in Africa.

Nii Ameyaw Jr is affiliated with Department of Soil Science, Accra Technical University and focuses on Agriculture research in Africa.

Abstract

Ghana faces challenges in maintaining soil health due to intensive farming practices, leading to decreased fertility and productivity. Agricultural field trials were conducted across three regions in Ghana, employing mixed methods including surveys and soil analysis to assess changes in soil organic matter content (SOC) over two growing seasons. Inter-cropping with leguminous plants significantly increased SOC by an average of 15% compared to monoculture practices, although the effect was more pronounced in regions with higher rainfall. Agroecological approaches have shown promise in improving soil health and fertility, particularly when integrated with local agricultural knowledge and resources. Farmers should be provided with training on agroecological practices and access to locally produced compost as a cost-effective means of enhancing soil quality. Soil Fertility, Agroecology, Ghana, Inter-cropping, Composting The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agroecology, soil biodiversity, integrated pest management, sustainable agriculture, conservation tillage, organic amendments, intercropping*

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