African Ruminant Science (Agri/Animal Science)

Improving Soil Health and Fertility through Agroecological Practices in Ghana: An Agronomic Perspective

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Abstract

Soil health and fertility are critical for sustainable agricultural productivity in Ghana, where smallholder farmers rely heavily on rain-fed systems. A mixed-method approach was employed, including farmer interviews and soil analysis. Data were collected from 50 randomly selected plots across three regions. Analysis revealed significant improvements ($p < 0.05$) in soil organic matter content by 12% after implementing agroecological practices compared to control areas. Agroecological practices significantly enhance soil health, leading to improved crop yields and economic benefits for smallholder farmers in Ghana. Farmers should be encouraged to adopt integrated pest management strategies along with agroforestry systems to further improve their agricultural productivity. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Geographic Terms: Sahelian*

Methodological Terms: Agroecology

Theoretical Terms:
Holistic Farming

Relevant Concepts:
Soil Biology

Ecosystem Services

Agrobiodiversity

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