



Sustainable Land Degradation Control in Northern Nigeria: Metrics and Implementation Strategies

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Published: 24 December 2008 | **Received:** 25 September 2008 | **Accepted:** 27 November 2008

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DOI: [10.5281/zenodo.18875374](https://doi.org/10.5281/zenodo.18875374)

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Abstract

Sustainable land degradation control in northern Nigeria has become a critical issue due to increasing agricultural activities and population pressure. A mixed-method approach combining quantitative data analysis with qualitative field observations was employed. Soil samples were collected from 50 plots across three districts to assess soil health indicators, while semi-structured interviews were conducted with 30 farmers and extension workers to gather insights on programme implementation and feedback. The findings indicate that the SLDCP has led to a significant increase in average soil organic matter content by 25% (95% CI: 18%, 32%) in treated plots compared to control areas, highlighting the effectiveness of targeted fertilization strategies implemented within the programme. The evaluation underscores the importance of tailored implementation strategies and continuous monitoring for sustainable land management outcomes. Promoting community engagement through farmer field schools and integrating traditional knowledge with modern agricultural practices are recommended to enhance long-term sustainability. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Sahelian, GIS, Indicator, Interventions, Soil Conservation

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