



Adoption Dynamics of Climate-Smart Agriculture Practices among Northern Cameroon Smallholder Farmers: A Longitudinal Analysis

Chukwuebuka Okpala¹, Makemba Njockini^{2,3}

¹ Department of Interdisciplinary Studies, University of Douala

² Department of Research, Catholic University of Central Africa (UCAC)

³ Department of Advanced Studies, University of Douala

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Correspondence: cokpala@gmail.com

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Author notes

Chukwuebuka Okpala is affiliated with Department of Interdisciplinary Studies, University of Douala and focuses on Environmental Science research in Africa.

Makemba Njockini is affiliated with Department of Research, Catholic University of Central Africa (UCAC) and focuses on Environmental Science research in Africa.

Abstract

Climate-smart agriculture (CSA) practices are gaining traction among smallholder farmers in response to climate change challenges. The systematic literature review utilised peer-reviewed articles from databases like Scopus and Web of Science, employing a mixed-methods approach integrating quantitative data analysis with thematic coding. Over the study period, there was an observed increase in CSA adoption rates by approximately 25% among smallholder farmers, particularly those with higher levels of education and access to extension services. The review highlights significant socio-economic barriers to CSA adoption but also identifies key drivers such as training programmes and government incentives. Policy makers should prioritise enhancing farmer training programmes and providing financial support for implementing CSA practices, especially in areas with high climate variability. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, climate change, diffusion of innovations, sustainability, smallholder farming, qualitative analysis, participatory methods*

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