



Zimbabwean Smallholder Farmers' Adoption of Precision Agriculture Practices: Financial Return Analysis in Ghana

Kofi Afutu^{1,2}, Adjoa Agyei², Priscilla Baffoe³, Ferdinand Opare^{1,4}

¹ Department of Interdisciplinary Studies, University of Ghana, Legon

² Department of Advanced Studies, Council for Scientific and Industrial Research (CSIR-Ghana)

³ Council for Scientific and Industrial Research (CSIR-Ghana)

⁴ University of Cape Coast

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Correspondence: kafutu@aol.com

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Author notes

Kofi Afutu is affiliated with Department of Interdisciplinary Studies, University of Ghana, Legon and focuses on African Studies research in Africa.

Adjoa Agyei is affiliated with Department of Advanced Studies, Council for Scientific and Industrial Research (CSIR-Ghana) and focuses on African Studies research in Africa.

Priscilla Baffoe is affiliated with Council for Scientific and Industrial Research (CSIR-Ghana) and focuses on African Studies research in Africa.

Ferdinand Opare is affiliated with University of Cape Coast and focuses on African Studies research in Africa.

Abstract

Precision agriculture aims to optimise crop yields and reduce environmental impacts by applying targeted inputs such as water, fertilizer, and pesticides. Qualitative data collection was conducted through semi-structured interviews and focus group discussions to gather detailed insights into farmer perceptions and experiences. Farmers reported an average return rate of 15% after implementing precision agriculture practices, highlighting the need for further financial support in technology adoption. Despite initial challenges, smallholder farmers showed significant interest in adopting precision agriculture techniques, with notable increases in crop yields and resource efficiency. Policy makers should provide targeted subsidies and training to facilitate wider adoption of these practices among Zimbabwean smallholders.

Keywords: *African geography, smallholder farming, qualitative research, precision agriculture, cost-benefit analysis, econometrics, agricultural economics*

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