



Mechanization and Appropriate Technologies on Small Farms in Mali: A Longitudinal Study

Mohamed Traore^{1,2}, Ibrahim Diallo¹, Samba Dicko^{3,4}

¹ USTTB Bamako (University of Sciences, Techniques and Technologies)

² Department of Animal Science, International Center for Tropical Agriculture (CIAT), Mali

³ Department of Animal Science, USTTB Bamako (University of Sciences, Techniques and Technologies)

⁴ International Center for Tropical Agriculture (CIAT), Mali

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Correspondence: mtraore@hotmail.com

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Author notes

Mohamed Traore is affiliated with USTTB Bamako (University of Sciences, Techniques and Technologies) and focuses on Agriculture research in Africa.

Ibrahim Diallo is affiliated with USTTB Bamako (University of Sciences, Techniques and Technologies) and focuses on Agriculture research in Africa.

Samba Dicko is affiliated with Department of Animal Science, USTTB Bamako (University of Sciences, Techniques and Technologies) and focuses on Agriculture research in Africa.

Abstract

Mechanization of small farms in Mali has been a focus for agricultural development to enhance productivity and sustainability. A longitudinal study employing mixed-methods approach including surveys, interviews, and field observations across four regions of Mali. Data collected from to analysed using descriptive statistics and regression models. Farmers reported an increase in productivity by 15% with the use of appropriate technologies, particularly in maize farming where mechanized harvesting reduced labour needs by 30% Appropriate technology adoption significantly improved farm efficiency over time, reducing dependency on traditional methods and increasing yields. Government policies should incentivize further investment in mechanization and provide training for smallholder farmers to maximise benefits from these technologies. Mali, Small Farms, Mechanization, Appropriate Technologies, Longitudinal Study The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agriculture, mechanization, small-scale farming, appropriate technology, rural development, qualitative methods, quantitative analysis*

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