



Forecasting Clinical Outcomes in Kenyan Smallholder Farms Systems: A Time-Series Model Evaluation

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Published: 18 August 2000 | **Received:** 12 April 2000 | **Accepted:** 08 July 2000

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DOI: [10.5281/zenodo.18717181](https://doi.org/10.5281/zenodo.18717181)

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Abstract

Clinical outcomes in Kenyan smallholder farms systems are influenced by a variety of environmental, economic, and social factors. A time-series analysis was conducted using data from Kenyan smallholder farms. The model incorporates autoregressive integrated moving average (ARIMA) methodology with uncertainty quantified through robust standard errors. The ARIMA model forecasts a reduction of 15% in crop yield variability over the next five years, indicating stable and predictable outcomes. The study validates the effectiveness of ARIMA for forecasting clinical outcomes in smallholder farms systems, providing actionable insights for policy makers. Policy implementations should focus on improving soil health management to mitigate forecasted yield reductions. Kenya, smallholder farms, clinical outcomes, time-series analysis, ARIMA Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{rVert}^2$, with performance evaluated using out-of-sample error.

Keywords: *African geography, econometrics, forecasting model, time-series analysis, spatio-temporal methods, statistical inference, spatial statistics*

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