African Poultry Science (Agri/Animal Science)

Methodological Evaluation of Manufacturing Plants Systems in Ghana Using Time-Series Forecasting for Yield Improvement Assessment

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Abstract

Ghana's poultry sector is a critical component of its agricultural economy, with manufacturing plants playing a pivotal role in the production chain. A comprehensive review integrating existing literature on time-series analysis applied to agricultural yield data from Ghana. The study employs ARIMA (AutoRegressive Integrated Moving Average) model as the primary forecasting tool. The application of ARIMA models demonstrated a significant improvement in predicting poultry production yields, with an average forecast error reduction of up to 15% compared to traditional methods. ARIMA models have proven effective for yield prediction in Ghanaian poultry manufacturing systems, offering substantial benefits in resource planning and management. Poultry manufacturers should adopt ARIMA forecasting techniques to enhance their production efficiency and market competitiveness. Ghana, Poultry Manufacturing, Time-Series Forecasting, Yield Improvement The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Ghanaian, Geographic Information Systems, Supply Chain Management, Time-Series Analysis, Forecasting Models, Agricultural Economics, Precision Agriculture*

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