



Methodological Evaluation of Manufacturing Plants Systems in Nigerian Agriculture: A Randomized Field Trial for Yield Improvement Analysis

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Abstract

Manufacturing plants have been introduced in various sectors of Nigerian agriculture to enhance productivity and efficiency. A randomized field trial was conducted across 100 farms, utilising a mixed-effects regression model to analyse yield data. The analysis revealed an average increase in crop yields by 25% compared to conventional farming methods, with significant reductions in labour and resource usage. Manufacturing plant systems show promise for enhancing agricultural productivity in Nigeria, particularly through targeted interventions that reduce costs and improve output. Policy makers should consider subsidizing or mandating the adoption of manufacturing plant technologies to maximise yield improvements and economic benefits. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Agriculture, Methodology, Randomized Trials, Yield Analysis, Precision Farming, Innovation Adoption, Agricultural Productivity*

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