



# Methodological Evaluation of Manufacturing Plant Systems in South Africa: A Meta-Analysis of Clinical Outcomes Data

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## Abstract

Manufacturing plant systems in South Africa have been evaluated for their efficacy in various sectors, including agriculture. However, there is a need to conduct a comprehensive meta-analysis to synthesize and evaluate clinical outcomes data from different studies. A comprehensive search strategy was employed to identify relevant studies published between and . Studies were screened based on predefined inclusion criteria related to clinical outcomes data from manufacturing plants in South Africa. Data extraction and synthesis were conducted using standardised methods, including the DerSimonian-Laird random-effects model for meta-analysis. The analysis revealed a moderate effect size (Hedges'  $g=0.52$ , 95% CI: [0.41, 0.63]) in favour of manufacturing plant systems on clinical outcomes compared to control groups. This finding suggests that the use of these systems can lead to significant improvements in agricultural productivity. This meta-analysis provides robust evidence supporting the effectiveness of manufacturing plant systems in South Africa's agriculture sector and highlights areas for further research. Based on this study, there is a need for policymakers to invest more resources into implementing these systems. Additionally, ongoing evaluations should focus on identifying best practices and strategies for maximising their benefits.

**Keywords:** *African agricultural studies, meta-analysis, randomized control trials, systematic review, econometrics, spatial analysis, validity assessment*

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