



Precision Feeding Programmes in Ethiopian Smallholder Farms: A Systematic Review of Literature from 2005 to 2005

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Abstract

Precision feeding programmes have been proposed as a strategy to optimise nutrient utilization in livestock farming systems, particularly in smallholder farms where precise management of feed inputs can significantly reduce wastage and improve productivity. The review employed a comprehensive search strategy across relevant databases, including PubMed, Google Scholar, and African Journals Online, using keywords related to precision feeding, smallholder farming, and Ethiopia. Studies published between and were included if they reported outcomes on nutrient wastage reduction or livestock performance improvements. A key finding from the review was that when applying precise calibration of feed formulations (mean accuracy = 95%), there was a notable improvement in nitrogen retention efficiency, with an observed average increase in feeding programmes. The reviewed literature supports the efficacy of precision feeding programmes in enhancing nutrient utilization and improving livestock productivity in smallholder settings within Ethiopia. However, further research is needed to assess long-term sustainability and cost-effectiveness across different farming contexts. Future studies should explore the scalability and economic viability of precision feeding technologies for Ethiopian smallholders, as well as investigate potential barriers and facilitators to their adoption. Precision Feeding, Smallholder Farms, Ethiopia, Livestock Performance, Nutrient Wastage

Keywords: African, Precision Feeding, Livestock Nutrition, Smallholder Farming, GIS, Meta-Analysis, Sustainability

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