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Beyond conventional livestock extension: impacts of personalized advisory support on smallholder dairy farmers in Kenya

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Abstract

Dairy is the largest agricultural sub-sector in Kenya, contributing about 14 % of agricultural GDP. Nevertheless, Kenya remains a milk deficit country mainly due to stagnating production against an increasing demand for milk. The sector is dominated by smallholder farmers, accounting for 80 % of producers and 56 % of total milk output. These farmers rarely use appropriate technologies, and mostly adopt singular technologies, missing out on synergistic effects. Consequently, they are caught up in a vicious cycle of low input-low output with daily milk yield averaging just 7 litres/cow. This situation is partly attributed to weak and inadequate public extension services, characterised by under-funding, limited outreach and provision of generic information, not tailored to farmers' needs.

We therefore developed a targeted farm-specific advisory service that aims to enhance precision and intensity in input use leading to improved productivity and profitability. This approach is based on shared farm managers, also known as dairy farmer assistants (DFAs) who visit farms to provide personalized management and husbandry advisory - stimulating demand for appropriate technologies while delivering knowledge to optimise their use. We tested the innovation with 7 cooperatives in Uasin Gishu, Kakamenga and Nyandarua counties, in Kenya. Within these cooperatives we deployed 16 DFAs in suitable activity areas. The DFAs were trained on nutrition, breeding and herd health. To determine the impacts of the DFA extension model, we randomly assigned 54 farmers to DFA support within each activity area and the rest equally to two groups – digital extension service, and control.

Data was collected in 2 rounds (mid 2023 and late 2024) from 864 households using structured questionnaires. Early results show significant improvements in milk production for DFA-served farmers: low season (0.87 litres = 21 % increase, p-value = 0.001) and high season (1.08 litres = 13 % increase, p-value < 0.005). Farmers served via digital extension approach and those in control, show no significant change in yields. The relatively stronger improvement in the low season indicates increasing resilience of DFA-served farmers to feed scarcity-related challenges. Forage conservation measures that were actively promoted by DFAs appear to be bridging the fodder gap during the dry seasons.

Keywords: Agricultural extension, dairy, Kenya, randomized control trial