



Impact of village livestock promoter (VLPs) on buffalo milk productivity in Nepal: A cluster randomized controlled trial

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Towards multi-functional agro-ecosystems promoting climate-resilient futures

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Introduction

Buffalo farming is a vital source of food security, nutrition, household income, and rural employment (Chiariotti et al., 2025).

However, its growth is impeded by lower milk productivity, which is further exacerbated by limited access to timely extension services (Feyissa et al., 2025; Uddin & Hoque, 2026).

Village Livestock Promoters (VLPs), a newly introduced community-based para extension provider designed to address this gap by delivering advisory services and input linkages to

Evidence gap: Rigorous evidence on the impact of VLPs on milk productivity and on how extension effectiveness varies by operation context is limited

Aim: To estimate the impact of the VLPs approach on buffalo milk productivity and assess whether its effects differ by season and scale of operations.

Methodology

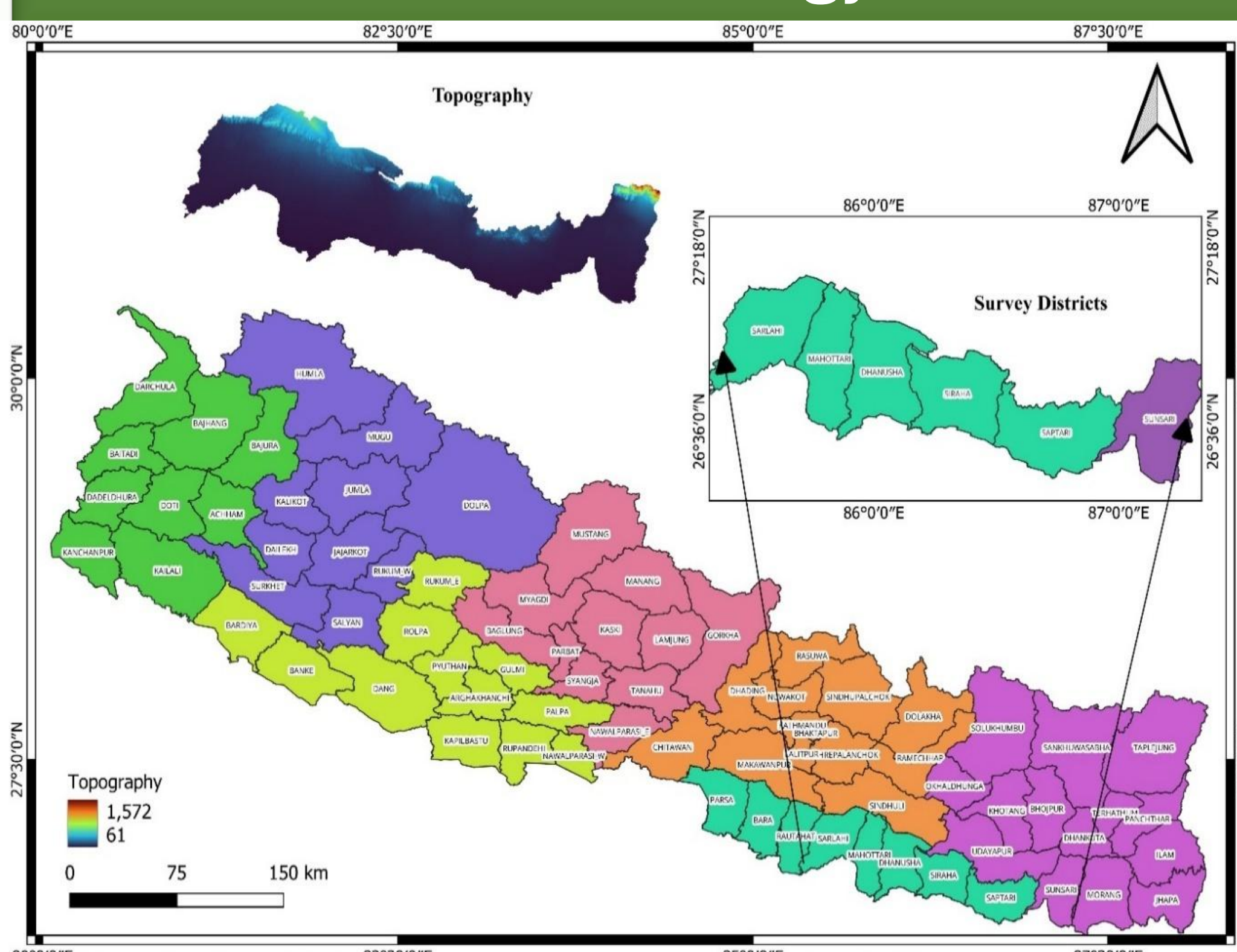


Figure 1: Map of Study Sites

Sampling: multi-stage purposive sampling to select the cooperatives and simple random sampling within the cooperatives.

Study design: Cluster-level RCTs-27 Cooperative (14 treated and 13 untreated)

Sample size: 1092 (Baseline), 987 (Endline)

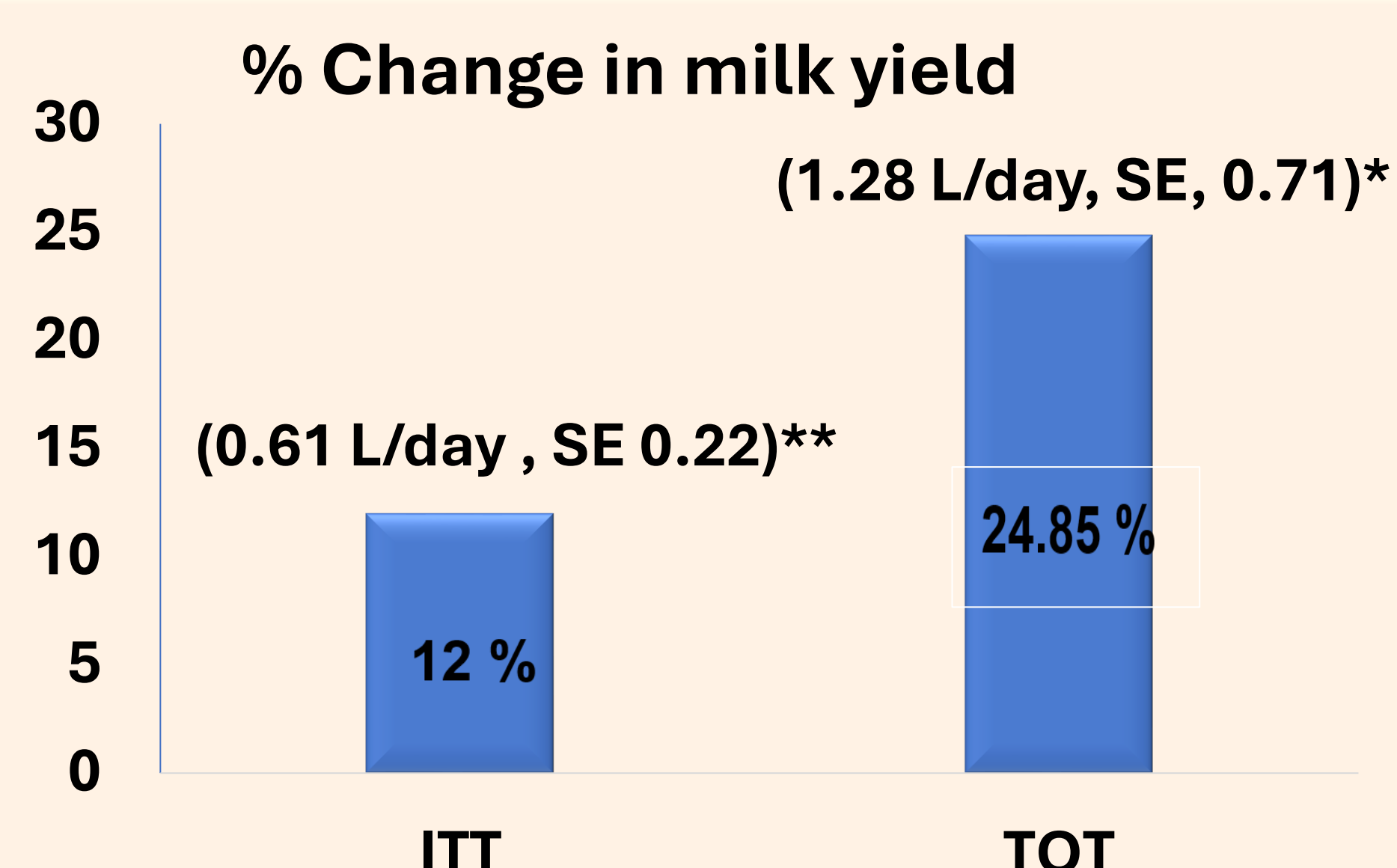
Data collection: 2023 and 2024.

Analytical approach: Main model (difference-in-differences), Robustness (ANCOVA and Fixed effect).

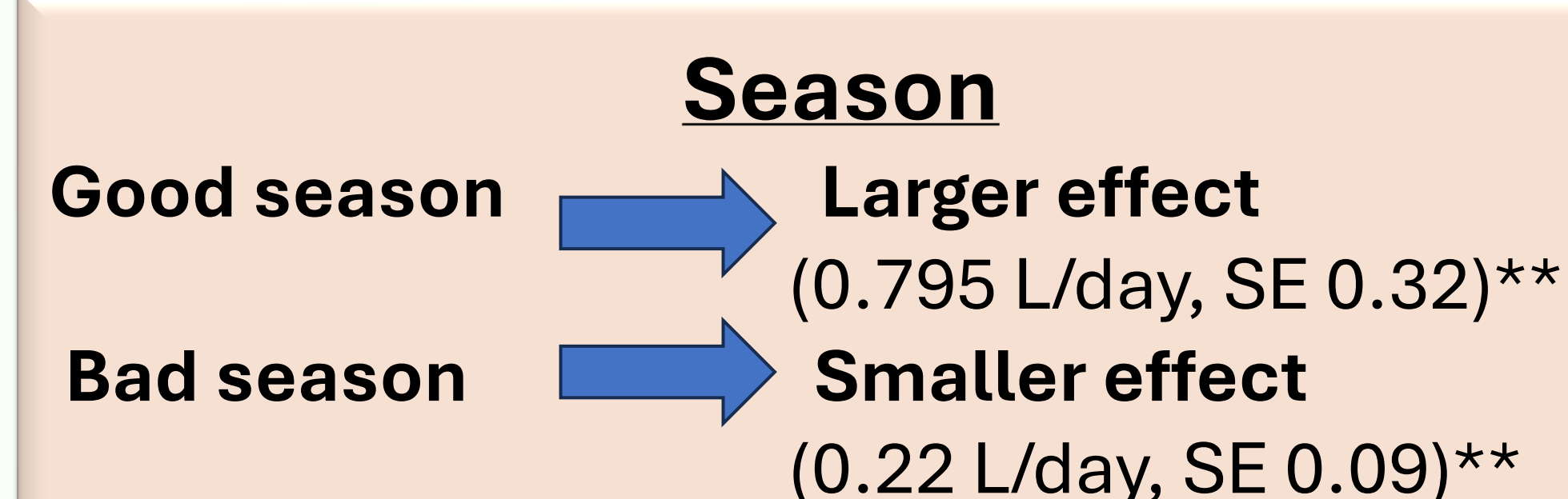
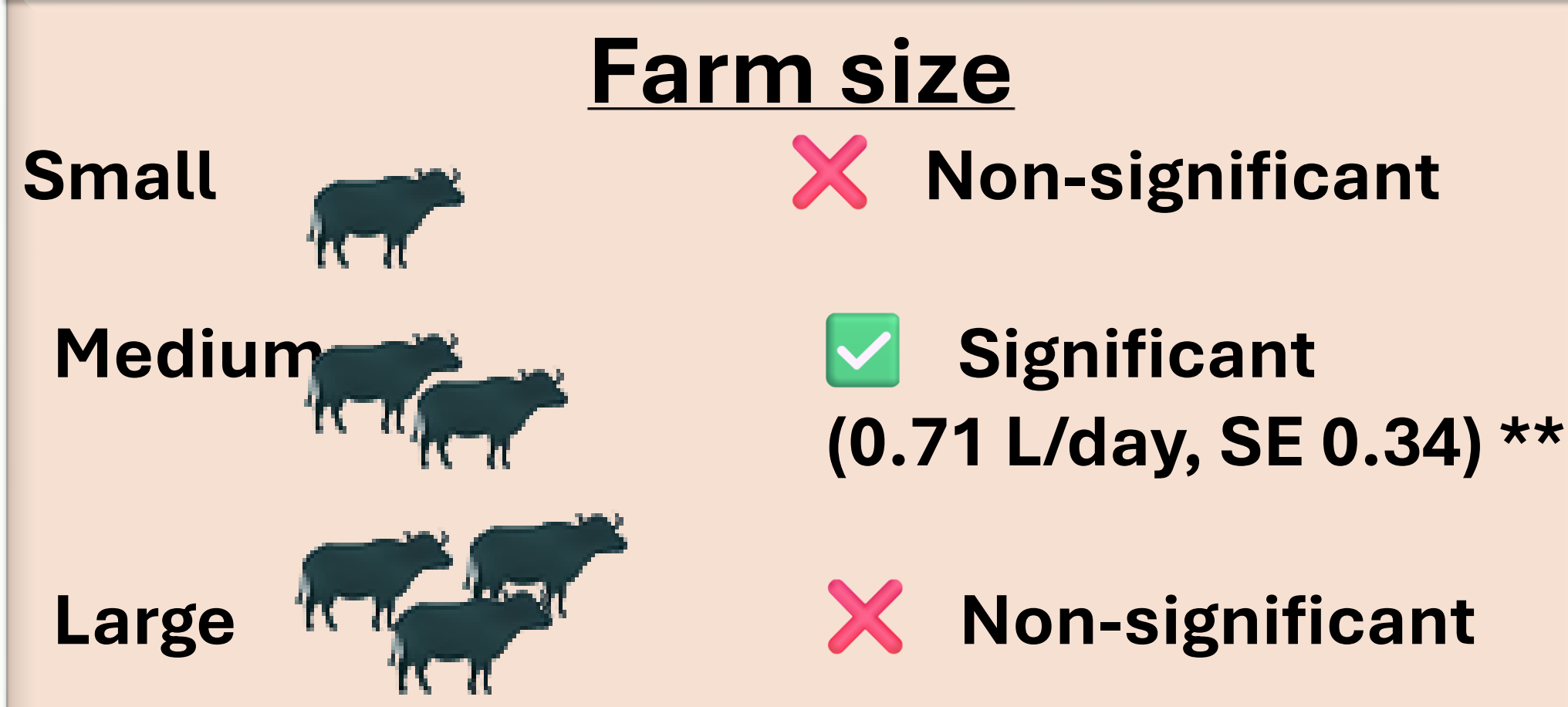


Results

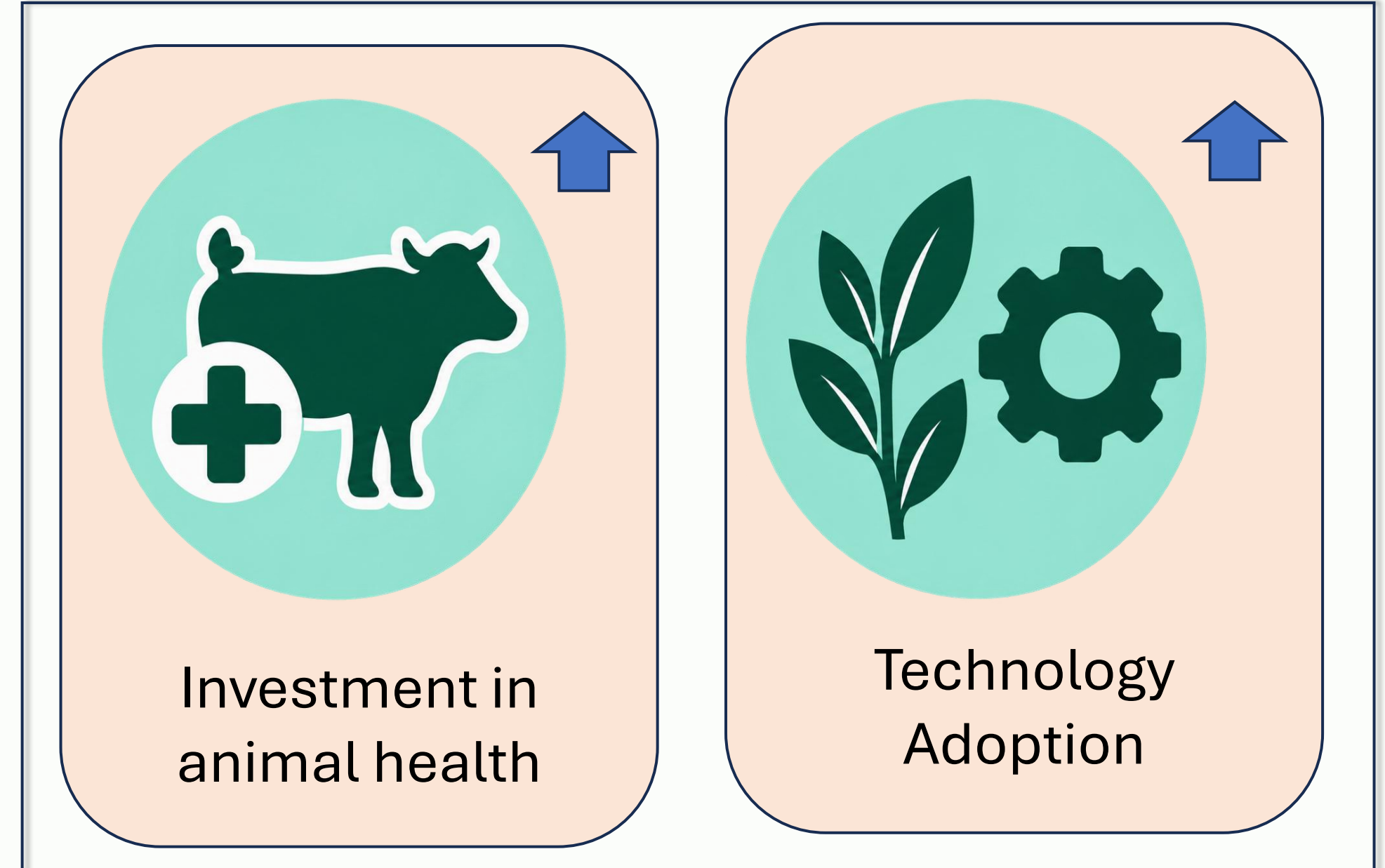
Milk productivity (ITT and ToT estimates)



Which farmers benefited more?



Mechanisms



Discussion

VLPs increased milk productivity, a similar finding supported by (Chatterjee et al., 2019).

Effects of VLPs were stronger in the wet season and medium herd size, reflecting effect depends on better feed and water availability (Khanal et al., 2022) and scale of operations (Kitole, 2025).

VLPs drive higher investment in animal-health and facilitate technology adoption via providing information and linking access to inputs (McKinley et al., 2026; Romero et al., 2026).

Conclusions

VLPs increased buffalo milk productivity, demonstrating the potential of community-based extension to improve production.

The effect varies across production contexts, with stronger productivity gains among medium-sized herds and during favorable contexts,

VLP participation led to behavioral changes in investment patterns and technology adoptions.

Policy implications

Scale up the VLP approach in areas with weak extension coverage.

Strengthening context-specific training for VLPs and farmers.

Tailoring extension delivery to herd size and seasonal conditions

Improve access to livestock inputs and services.

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