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Adoption of improved buffalo breed and its effect on milk productivity and household revenue

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Abstract

Buffalo farming is a vital component of Nepal's economy, contributing 8% to the national GDP and 12% to agricultural GDP. Despite its importance, the sector faces challenges related to low production efficiency and poor reproductive performance, as well as the dominance of local breeds with limited genetic potential. This study investigates the determinants of adopting improved buffalo breeds and evaluates the impact on milk productivity and household income, drawing on survey data from 937 households in 27 dairy co-operatives across six districts in the eastern lowlands of Nepal. A multistage purposive sampling method was employed to select districts and cooperatives, followed by simple random sampling of member households within the cooperatives. The results indicate that 21% of households have adopted the improved buffalo breeds. Moreover, results from the propensity score matching approach reveal that adoption is significantly and positively associated with various forms of capital (e.g., household wealth, herd size) and technology use (e.g., improved fodder such as Napier grass, access to veterinary services, and availability of pure breeds in the community). Additionally, institutional factors, such as farmers' social networks and access to extension services, also play a significant role in adoption. Conversely, adoption was negatively linked to high animal morbidity and reliance on off-farm income. The estimated differences between the matched treated sub-sample group with similar households with local breeds indicate that the adopters who have adopted improved breeds, if they had adopted local breeds, their milk production is likely to be 1.08 litres less per animal per day. This lower yield was further associated with an estimated 10% reduction in per capita milk consumption and a decrease of 30329 NRs in annual revenue in the household. These findings highlight the critical role of targeted extension services, improved feed systems, and structured breeding programmes in enhancing productivity and livelihoods. Strengthening these areas may help bridge the milk supply gap and trade deficits and improve food and nutrition security.

Keywords: Extension services, improved buffalo breeds, milk productivity, Nepal , propensity score matching, village-livestock promoter

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