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## Enhancing dairy production and farm income through irrigated fodder adoption: Evidence from smallholder producers in Ethiopia

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### Abstract

This study examines the economic impacts of adopting irrigated fodder among small-scale dairy farmers in Ethiopia. The study utilises cross-sectional data from 351 dairy producers in four districts from the southern, central and northern parts of the country, consisting of 181 adopters and 170 non-adopters, collected in 2021. The research employs propensity score matching (PSM) and endogenous switching regression (ESR) techniques to evaluate the impact of adopting irrigated fodder on milk yield, dairy income, and total farm income. The Rosenbaum limits approach is used to achieve covariate balancing and address the impact of unobserved selection bias. Results show that education, irrigated land size, milking cow ownership, extension service, dairy cooperative membership, dairying experience, and farmer breed types positively affect irrigated fodder technology adoption. The Propensity Score Matching (PSM) results show that farmers who grow fodder have much higher milk productivity (2.54 liters per cow), dairy revenue (2,228.42 ETB  $y^{-1}$ ), and overall farm income (8,566.96 ETB  $y^{-1}$ ) than farmers who do not, demonstrating enhancements in milk production (2.87 litres per cow), dairy earnings (3,975.08 ETB), and total farm income (10,427.20 ETB) among those who have adopted it. The findings indicate that the use of irrigated fodder technology has a substantial positive impact on milk productivity, dairy revenue, and overall farm profitability. The research highlights the significance of ongoing efforts to enhance skills in irrigated fodder management and provide advice to promote the adoption of irrigated fodder among those who have not yet adopted it and to maintain the advantages for those who have already adopted it.

**Keywords:** Dairy revenue, ESR, Ethiopia, irrigated fodder, milk production, PSM