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"Reconcile land system changes with planetary health"

## Food loss and waste and its economic and climatic resilience on the dairy business in southwest of Bangladesh

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## Abstract

The southwest (SW) is the third highest milk producing region in Bangladesh (11%) of 10.79 million ton). The green transformation of the dairy value chain is considered as the pathway for the sustainable and commercially viable dairy business without stressing the environment. Therefore, the objective of this study was to estimate milk loss and waste and its economic loss, Income loss and Greenhouse gas (GHG) emissions in SW of Bangladesh. The data were generated from 111 dairy farmers comprising of three farm types: household farms, family farms and business farms which were then used to build and validate the typical farms and thereafter are subjected to modelling by Technology Impact Policy Impact Calculations (TIPICAL) model of the International Farm Comparison Network (IFCN). The results revealed that each farm in the SW lost on average of 1.09 kg milk/day out of total 5.13 kg/day with the lowest of 0.47 kg/day and highest of 1.53 kg/day. Milk wastage was highest during milking (43%), followed by transportation (26%), processing (9%), and storage (8%). Food loss directly increased milk production costs by 12.5% and a decrease in income by 5.5% and Greenhouse gas (GHG) emission is increased by 6.1%. The simulation results revealed that developing awareness programmes and policies for supporting the green transition in dairy systems are associated with decreasing milk loss and waste. The findings of this study would be beneficial for economic (decreasing cost and increasing income) and environmental resilience (decreasing GHG emission) which implies further investigation to understand more in-sight on waste, and it is possible to extrapolate to the similar other country elsewhere.

Keywords: Greenhouse gas emission, Income, milk production, TIPICAL model, typical farm

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