

Economic and Environmental Viability of Dairy Cattle Farming in Areas under Tea Plantation: A Case Study in Gouravilla Grama Niladhari Division, Central Province, Sri Lanka

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This study evaluated the economic profitability and environmental sustainability of dairy farming in tea plantation areas, focusing on 96 household dairy farms in the Gouravilla GN Division, representing the entire dairy-farming population in the area. Data were collected through a structured questionnaire and field observations, and analyzed using SPSS with descriptive statistics, Spearman rank-order correlation, Pearson correlation coefficients, and the Kruskal-Wallis test. Economic profitability was estimated using monthly average net income based on Wood's equation-predicted milk yields, farmgate prices, and reported feed and variable costs. Profitability was mainly affected by poor breeding management, unstable milk pricing, and limited herd expansion opportunities. Poor breeding contributed to extended lactation lengths, prolonged calving intervals, reduced milk yields, fewer calves per cow lifetime, and reduced income. Unstable farmgate milk prices controlled by intermediaries' further diminished profitability, as 83.4% of farmers received 140 LKR or less per litre of milk. Monthly average net income positively correlated with number of milking cows ($r = 0.665$, $p < 0.01$) and herd size ($r = 0.320$, $p < 0.01$). However, herd expansion was constrained by limited quality feed, insufficient financing, and land scarcity, with 28.1% of farmers lacking land for pasture. Low awareness of greenhouse gas emissions, manure handling, and animal welfare highlighted environmental sustainability gaps. This study further emphasizes strengthening breeding programs, ensuring fair milk pricing through formal collection, improving feeding based on local resources, and enhancing sustainability awareness are necessary to support profitable and environmentally responsible household dairy farming in tea plantation regions specially in upcountry.

Keywords: Breeding management, Economic profitability, Environmental sustainability, Farmgate milk price, Plantation workers

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