



Assessment of performance of smallholder dairy farms in Kenya: an econometric approach

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ABSTRACT

Objective: The aim of the study was to estimate the technical and cost efficiencies of smallholder dairy farms in Kenya (Embu and Meru counties).

Methodology and results: Data were collected through a cross-sectional survey from 135 (96 in Embu and 39 Meru) randomly sampled farms using semi-structured questionnaires. Stochastic frontier production and cost functions were estimated using the maximum likelihood estimation (MLE) technique. It revealed zero-grazed herds of four animals (mainly Friesians and Ayrshires) on two-acre sized farms that practice mixed crop-livestock farming system. The animals were underfed daily with roughages (52.2 Kg), concentrates (2.2 Kg) and mineral supplements (37 g); producing 15 Kg of milk on average. The major factors influencing milk output were the number of lactating cows and the amounts of roughages, concentrates and mineral supplements, while the prices of roughages and labour caused most variation in its production cost. The mean farmers' technical and cost efficiencies were 83.7 and 95.6%, respectively. The production model coefficient was 2.11. These results implied that milk production could be increased by 16.3% through better use of available resources given the current state of technology without extra cost, while the cost of milk production could be decreased by about 4.4% without decreasing output.

Conclusion and application of results: The results indicate that optimization of farm efficiencies could increase milk yields while concurrently lowering its production cost. The study further provides evidence that any efforts towards reducing land sub-division and promotion of enterprise specialization could increase milk affordability.

Key words: smallholder dairy, cost and technical efficiency, function coefficient