

## 23. FACTORS INFLUENCING MILK QUALITY IN ALTERNATIVE PRODUCTION AND MARKETING SYSTEMS IN COAST, DAR ES SALAAM AND MOROGORO REGIONS

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A survey was conducted in three regions (Dar-es-Salaam, Coast, and Morogoro) to study the factors influencing the quality of milk produced and handled under different production and marketing systems. Factors such as general husbandry conditions of milking, time taken milking a cow, milking hygiene, and milk handling and marketing conditions were studied. A total of 95 producers and 50 marketing agents were interviewed using a questionnaire. A total of 113 milk samples (73 from dairy farms and 40 from marketing agents) were collected for milk quality assessment. Milk samples were analyzed for bacterial count and physical-chemical characteristics (alcohol test, TS, BF, SNF, Ash, and FFAs content) using standard procedures. Organoleptic quality tests (smell, taste, and visual appearance) were also carried out prior to milk sampling. Descriptive statistics were carried out on the survey data. The General Linear Model (GLM) procedure was used in analysing the laboratory results for differences between different categories of observation. Organoleptic quality characteristics at both the production and marketing levels were normal. The alcohol test resulted in flocculation of 66% and 65% of milk samples from producers and marketing agents, respectively. Tests for milk acidity from producers and marketing agents, showed that 45% and 55% of milk samples respectively had developed noticeable acidity. Lactometer test on the same milk revealed that 3% and 30% of milk samples at farm and marketing levels respectively had lower than normal milk density (1.025 g/cc). Bacteriological tests showed that 82% and 18% of milk samples had good quality (< 1,000,000 cfu/ml) and poor quality (> 1,000,000 cfu/ml) respectively at farm level. Sixty one and 39% of milk at marketing level had bacterial count of good and poor quality respectively. The LSMeans ranged between  $11.5 \pm 43.1$  to  $90.2 \pm 24.9$  and  $62.9 \pm 17.6$  to  $107 \pm 30.5$  cfu/ml for production and marketing

systems respectively. However, they were not significantly different ( $P > 0.05$ ). It was also found that 21% of milk samples from producers and 53% from marketing agents had % TS below normal content of 12 to 14.9%. The LSMMeans ranged between  $11.7 \pm 1.4$  and  $9.6 \pm 0.6$  to  $12.3 \pm 1.0\%$  for production and marketing systems respectively and they were significantly different ( $P > 0.001$ ). The results on % BF contents revealed that 25% and 47% of milk from producers and marketing agents respectively had BF below normal content of 3.3% to 4.9%. The LSMMeans ranged between  $3.5 \pm 0.8$  to  $5.2 \pm 0.7$  and  $3.0 \pm 0.4$  to  $4.4 \pm 0.6\%$  for production and marketing systems respectively and were significantly different ( $P < 0.05$ ). The % SNF below normal content of 8.5 – 9.4% was found in 52% and 77% of milk from producers and marketing agents respectively. The LSMMeans ranged between  $8.3 \pm 1.2$  to  $8.6 \pm 0.7$  and  $6.1 \pm 0.5$  to  $8.2 \pm 0.5\%$ . However, they were not significantly different ( $P > 0.05$ ). The % Ash below normal content of 0.7 – 0.8% were found in 21% and 42.5% of milk from producers and marketing agents respectively. The LSMMeans ranged between  $0.7 \pm 0.02$  to  $0.7 \pm 0.05$  and  $0.6 \pm 0.04$  to  $0.8 \pm 0.08\%$  for production and marketing systems respectively and were not significantly different ( $P > 0.05$ ). Protein below normal content of 3 – 3.9% was found in 26 and 47.5% of milk from producers and marketing agents respectively. The LSMMeans ranged between  $3.1 \pm 0.2$  to  $3.8 \pm 0.3$  and  $2.6 \pm 0.2$  to  $4.0 \pm 0.4\%$  for production and marketing systems respectively and showed significant difference ( $P < 0.05$ ). Free Fatty Acids below normal content of 3.9 mequiv. were found in 63% and 50% of milk from producers and marketing agents respectively. The LSMMeans ranged between  $3.6 \pm 0.7$  to  $6.3 \pm 1.1$  and  $3.4 \pm 0.8$  to  $10.8 \pm 1.5$  mequiv/ml for production and marketing systems respectively and were significantly different ( $P < 0.001$ ). It was concluded that bacteriological quality of milk at a both levels was not as poor as expected. However, the compositional quality at marketing level was significantly lower than at the producer level reflecting a general tendency for adulteration of milk among marketing agents.