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Small Scale Milk Processing — A Business Benefiting to Both Dairy Farmers and Consumers

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Abstract

Since 1996, small scale milk processing has been introduced in the Kolda region, Casamance, Senegal. The first pasteurization unit has been put in place with the help of Vétérinaires Sans Frontières. Up to now, there are five units in Kolda, two in Tambacounda, three in Vélingara and one in Kédougou. The establishment of these pasteurization units initiated (1) the implementation of an effective milk collection system with better possibilities for milk producers to commercialize their products and (2) the availability of new dairy products of better quality.

This study intended to characterise the different pasteurisation units and the supplying milk collection system. Emphasis was put on the evaluation of the effectiveness of the applied methods of milk pasteurization and processing. The existing pasteurisation units can be classified into different categories: traditional, slightly advanced and advanced, depending on input in equipment and technical skills. These categories are also reflected in the quality of their products.

Bacteriological analysis was performed on milk before and after the pasteurisation/cooling process. Results of raw milk samples (n=196) showed high counts of mesophilic bacteria (87.8 % above 2×10^6 cfu/ml) and also of coliform bacteria (52.0 % above 5×10^4 cfu/ml) and *E. coli* (27.0 % above 5×10^4 cfu/ml). Other bacteria isolated were coagulase-positive *Staphylococci* (34 % above 1×10^3 cfu/ml), *Bacillus cereus* (present in 35.2 %) and H₂S-reducing *Clostridia* (present in 11.2 %). *Salmonella* spp. were isolated in three samples (1.5 %) and *Listeria* spp. in only one sample (0.5 %).

Pasteurization reduced considerably the bacterial load. Analysis of samples of pasteurized milk (n=64) proved the reduction of mesophilic bacteria from average values of 107 to 104 cfu/ml, the number of coliform bacteria were reduced from average values of 105 to 102 cfu/ml, *E. coli* from 102 to 101 cfu/ml and coagulase-positive *Staphylococci* spp. from 102 to 101 cfu/ml. *Salmonella* spp. and *Listeria* spp. were not present in pasteurised milk. But *Bacillus cereus* and H₂S-reducing *Clostridia* spp. were still isolated from 50 % resp. 7.5 % of the pasteurized milk samples.

Small scale local pasteurisation units contributed significantly to secure regular income for dairy farmers through the production of value-added milk products.

Keywords: Milk hygiene, pasteurisation, Senegal