

SOMATIC CELL COUNT AND ITS INFLUENCE ON THE QUALITY OF MILK IN CROSS-BRED COWS

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THESIS

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We, the undersigned, members of the Advisory Committee of Dr. C.T. Sathian a candidate for the degree of Doctor of Philosophy in Dairy Science agree that the thesis entitled "SOMATIC CELL COUNT AND ITS INFLUENCE ON QUALITY OF MILK IN CROSS-BRED COWS" may be submitted by Dr. C.T. Sathian in partial fulfillment of the requirement for the degree.

Mukundan
27.3.2001

CERTIFICATE

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Certified that this thesis entitled "SOMATIC CELL COUNT AND ITS INFLUENCE ON QUALITY OF MILK IN CROSS-BRED COWS" is a record of research work done independently by Dr. C. T. Sathian under my guidance and supervision and that it has not previously formed the basis for the award of any degree, diploma, associateship or fellowship to him.

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ABSTRACT

A study was undertaken to find out correlation's if any, between somatic cell count and chemical composition of cross-bred cow milk; the influence of age of the cow, parity, stage of lactation and season on somatic cell count of milk; evaluate the effectiveness of California Mastitis Test (CMT) in detecting subclinical mastitis; find out whether chemical preservatives, formalin and potassium dichromate will be effective in preserving cells in milk; assess the difference in concentration of somatic cells between fractions of milk collected during milking and to evaluate the effects of mopping of udder and teat dipping in controlling high somatic cell count in milk.

A modified procedure of Membrane Filter- Deoxyribo Nucleic Acid (MF-DNA) method was developed and standardised with Direct Microscopic Somatic Cell Count as well as using pure DNA for estimation of somatic cell count. This method was precise and suitable for field use. California Mastitis Test (CMT) scores has good correlation with somatic cell count and is useful for selecting milk for processing into various products based on somatic cell count. On analysis of six hundred individual morning milk samples it was found that lactose per cent is negatively correlated with somatic cell count. Total Solids (TS) and Solids-Not-Fat (SNF) per cent of milk had a negative correlation with somatic cell count in samples with fat per cent between 3.5 and 4.5 or SNF per cent between 8.5 and 8.99. Above groups of samples constituted a major share of total samples collected.

Chloride content of milk had no significant correlation with somatic cell count. Use of low lactose level in milk as an indicator for high somatic cell count is recommended. Somatic cell count had a negative correlation with milk yield of cows. A study on pooled milk samples from milk co-operatives revealed that TS per cent was significantly lower during cold and wet season (June, July and August) than warm and dry season (December and January).

There was no significant difference among foremilk, mid-stream milk and strippings in somatic cell count and CMT may be done on any fraction of milk. Study revealed that formalin (0.4 per cent) may be used as a preservative for milk samples meant for Direct Microscopic Somatic Cell Count (DMSCC) while potassium dichromate is not fit for this purpose. None of these preservatives were not suitable for milk analysis by MF-DNA method of somatic cell count. The experiment proved that teat dipping was an effective practice in comparison with mopping of udder prior to milking in controlling high somatic cell count in milk.