

MILK TESTING ACTIVITIES AT THE DAIRY CHEMISTRY DIVISION: AN OUTLOOK Dr S.A.Neeliah, S.Buldewo and B.R.Kureemun, Agricultural Services, MOAFS, MAURITIUS



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- Local dairy sector has declined considerably
- A very small sector
 - Dairy products consumption has been increasing with better purchasing power
 - Imports







Adapted from Ramkissoon (2005)





Figure 1: Import of milk and cream (CIF value) and as a % of total agri-food imports





- Several initiatives to boost up the milk sector
 - Dairy Chemistry Division- as part of the initiative of the Government to support sector since seventies



 Food testing activities within Agricultural Services of the Ministry of Agro-Industry & Food Security date far back to the twenties.

Chemical Division ("Chemistry Division" in the forties)

The main activities: testing of morning and evening milk samples from Govt dairy for fat, solids non-fat and lactose.



Range of values

Table 1: Range of values for fat and total solids content

Parameter	Morning milk	Evening Milk
Fat %	2.6-4.2	3.1-4.9
Total solids %	10.9-12.9	11.6-13.8



- Intensification in testing activities with creation of an Agricultural Chemistry Division in 1962.
- Increase in number of samples: survey on milk quality around island

Some 1091 samples were tested over & above normal routine testing of milk from government stations.



As from 1967, the Division was further involved through provision of analytical assistance in UNDP/FAO project whose objective was to enhance milk production.

During year 1972, Dairy laboratory under Agricultural Chemistry Division acted as control unit for quality of local milk & milk products.



Creation of a DCD

In 1973, in line with policy to support dairy sector, Dairy Chemistry Division was created, taking over milk testing activities of the Agricultural Chemistry Division.

A survey of about 400 cow-keepers for tests such as fat, protein, solids nonfat, density, freezing point depression, total acidity, coliform count & total bacterial count.



Creation of DCD

Division involved in research, particularly mastitis surveys
Training of stakeholders was an important activity of the Division.
Over the years the number of samples gradually increased together with the number of clients.



1985: introduction of the Pilot Milk Scheme Project, guaranteeing a fair price for milk produced by small cow-keepers DCD : technical assistance - quality control of milk at all stages, that is cowkeepers', collectors', bulk and the packed pasteurised product by carrying out daily checks on the milk collected.

Parameters: fat %, protein % and lactose % and extraneous water percentage.+ coliform counts on pasteurised milk samples.



- As from 1986, Division continued to monitor quality of milk from 3 Government stations
 - DCD only one responsible for assessing chemical & bacteriological quality of milk in accordance with a rigid protocol between Maurilait Ltd and the Agricultural Marketing Board (AMB).



Technical assistance to other govtal and non-govtal organisations such as Mauritas, the Mauritius Standards Bureau, Agricultural Research and Extension Unit (AREU) and the Mauritius Livestock Marketing **Cooperative Federation**, the Ministry of **Environment and the Food Inspectorate** of the Ministry of Health and Quality of Life.



Various projects:

- Assessment on the quality of milk produced by small cowkeepers in the framework of the Pilot Milk Scheme
 - Serological study of the immunogenic state of cows reared in Mauritius, against *Staphylococcus*
- Project on mastitis
- Microbiological status of street-vended foods
- Pollution status of water of natural water body



Investigation of the low lactose content at Palmar Livestock Breeding Station Investigation on sporeforming bacilli in pasteurised milk: determination of the temperature-time relationship for complete destruction of these heat-resistant microorganisms Identification of micro-organisms responsible for off-flavours in milk

 Microbiological status of street-vended foods. etc...



Market surveys on the quality of locally manufactured dairy products
Changes (microbiological and chemical) occurring in fresh raw milk during collection and transport
Plan of nutrition of lactating cows at Government Livestock stations



 Indepth study at farmgate level to determine physiological status and level of adulteration by water of fresh raw milk produced by the Cow Breeders' Association)

Investigation of the pollution status of a natural water body situated at BelleMare (Bassin Requin)
Microbiological profile of flour



Risk assessment of vegetables consumed in the raw state
Analytical assistance to School Feeding Project
Participation in MSB food and Agricultural Standards Committee
Apercu of milk quality





Figure 1: monthly average fat content in raw milk submitted by the AMB





Figure 2: monthly average of samples not meeting legal norms with respect to adulteration with water



- 2006: new premises at Food Technology Laboratory (FTL)
 - new responsibilities, in field of microbiological testing & product development, above its normal testing of milk & dairy products.
 - integration of Food Hygiene Laboratory of the Veterinary Services under FTL complex in 2006







These units fully equipped with state of art equipment & personnel constantly trained to meet growing exigencies of our agrobusiness sectors locally & internationally.

Number of samples





- Drop in no. of milk samples submitted to Division coincides with phasing out of PMS.
- However, incentives provided under Food Security Fund Strategic Plan (2008-2011), DCD still involved in milk testing
 - Some 116,000 milk and dairy products samples were tested at the Division from 1999 to 2011.



Divisional Scientific Officer -Codex Contact Point & Division -secretariat to National Codex Committee.

Officers also actively involved in drafting & revision of food standards & regulations at national level.

COMESA reference laboratory for food safety, has been hosting training programmes for various local and overseas stakeholders in food sector (UOM students)



Increase in number of microbiological analysis to be performed on milk products New parameters: B.cereus, etc Assessment of locally available dairy products with respect to microbiological load in 2007-2008 (E. coli, faecal coliform, S.a, C.perfringens, yeasts & moulds). Labelling of dairy products also assessed in 2007/2008.



New projects

Innovative milk based products were prepared on a trial basis

Table 3: Novel products developed at the DCD (milk based)

S.N.	Novel products	Ingredients added
1	Flavoured yoghurt	Aniseeds and mint
2	Flavoured yoghurt	Spices for Briani
3	Sweetened yoghurt	Stevia powder
4	Flavoured cottage cheese/paneer	Barbecue spices
5	Cottage cheese with herbs/paneer	Mint, parsley
6	Low fat cottage cheese/paneer	Not applicable



The Division has embarked on laboratory accreditation project since 2007.
Microbiological parameters - total colony count, total coliform count, *Staphylococcus aureus* and *Escherichia coli*.

Activities carried out will be revamped (in line with FAO project for reorganisation of the Agricultural Services in Mauritius).

