

The Journey of Milk from Animal (Usually Cow and Cattle) Udder to Market to Homes- The Part of a Dairy Entrepreneurship Scheme

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ABSTRACT: Milk is a white, nutrient-rich infant mammals (including humans who are breastfed) before they are able to digest other types of food.[1] Early-lactation milk contains colostrum, which carries the mother's antibodies to its young and can reduce the risk of many diseases. It contains many other nutrients[2] including protein and lactose. Interspecies consumption of milk is not uncommon, particularly among humans, many of whom consume the milk of other mammals

The process of milking and dairy consists of eight major steps to provide all consumers with a healthy and delicious dairy product. The steps are rearing, harvesting, storing, transportation, testing, processing, packaging and selling.

Dairy Venture Capital Fund scheme was started in December 2004 with an outlay of Rs. 25 Crore. This scheme has been fragmented into two separate scheme viz. Dairy Venture Capital Fund & Poultry Venture Capital Fund from the financial year 2008-09.

During June 2010, the Dairy Venture Capital Fund scheme was revamped to Dairy Entrepreneurship Development Scheme to make it more effective through wider coverage, enhanced component-wise outlays and by including new components for assistance under the scheme. The new modified scheme DEEDS was started from 01.09.2010.

I. INTRODUCTION

To start off, dairy cows spend their days eating, sleeping and ruminating. The rearing process is when farmers utilize growth hormones and antibiotics to increase the milk production, and decrease the spread of infectious disease in cows. The harvesting part is when the cow's udder is full. Cows are milked two to three times a day with a machine, normally. The machines help to milk up to 25 cows at a time. These machines mimic the calf's action of sucking on the udder gently.[3]

The department of Animal Husbandry, dairying and fisheries is implementing Dairy Entrepreneurship Development Scheme (DEEDS) for generating self-employment opportunities in the dairy sector, covering activities such as enhancement of milk production, procurement, preservation, transportation, processing and marketing of milk by providing back ended capital subsidy for bankable projects. The scheme is being implemented by National Bank for Agriculture and Rural Development (NABARD)

Objective of the Scheme

1. To promote setting up of modern dairy farms for production of clean milk
2. To encourage heifer calf rearing, thereby conserving good breeding stock
3. To bring structural changes in the unorganised sector so that initial processing of milk can be taken up at the village level itself
4. To upgrade the quality and traditional technology to handle milk on a commercial scale
5. To generate self-employment and provide infrastructure mainly for unorganised sector

5 Entrepreneurs who are changing milk drinking in India

RS Sodhi – Managing Director, Gujarat Co-operative Milk Marketing Federation (Amul) ...

Srikumar Misra – Managing Director & CEO, Milk Mantra. ...

S Nagarajan – Managing Director, Mother Dairy. ...

Devendra Shah – Founder, Parag Milk Foods. ...

Aalekh Agarwal – Founder, Cowboys.desi.

The milk from the udder is then stored in the vats that are refrigerated at about 39 degrees Fahrenheit or colder. But the milk is only in the vat for up to two days at the most. The vats are agitated to decrease the separation of milk fluid and the fats. The milk is then collected from every farm 24 to 48 hours. The tankers keep the milk cold during transportation. But before the milk gets into the tanker, the driver of the tanker is qualified to grade the milk and reject if necessary. A sample is collected from each farm pickup and sent to the lab to be tested. The tests are for: milk fat protein, bulk milk and bacteria count. If the milk does not reach quality standards, it is then rejected. A majority of farmers are paid by the quality and consumption of their milk. After the testing and the milk is approved, it's then processed. Pasteurization involves heating each milk particle.

Milk is sterile when secreted into an uninfected udder. Contamination occurs during and after milking. Exclude milk from clinical mastitis cases to avoid high bacterial counts. Use mastitis control routines at each milking to reduce the proportion of infected cows and clinical mastitis cases. Avoid contamination from dirty udders and teats by good cow housing and grazing management. Wash off visible dirt from udders and teats prior to applying the teat-cups.[4]

II. DISCUSSION

It is possible to maintain higher milk production by supplementing cows with growth hormones known as recombinant BST or rBST, but this is controversial due to its effects on animal and possibly human health. The European Union, Japan, Australia, New Zealand and Canada have banned its use due to these concerns.

In the US however, no such prohibition exists, but rBST is not used on dairy farms. Most dairy processors, if not all, will not accept milk with rBST. The U.S. Food and Drug Administration states that no "significant difference" has been found between milk from treated and non-treated cows but based on consumer concerns several milk purchasers and resellers have elected not to purchase milk produced with rBST

Pasteurization is the process of heating milk to a high enough temperature for a short period of time to kill the microbes in the milk and increase keep time and decrease spoilage time. By killing the microbes, decreasing the transmission of infection, and elimination of enzymes the quality of the milk and the shelf life increases. Pasteurization is either completed at 63 °C for thirty minutes or a flash pasteurization is completed for 15 seconds at 72 °C. By-products of milk include butterfat, cream, curds, and whey. Butterfat is the main lipid in milk. The cream contains 18–40% butterfat. The industry can be divided into 2 market territories; fluid milk and industrialized milk such as yogurt, cheeses, and ice cream.

III. COMPONENTS FROM MILK

Whey protein makes up about 20% of milk's protein composition and is separated for the casein (80% of milk's protein make up) during the process of curdling cheese. This protein is commonly used in protein bars, beverages and concentrated powder, due to its high quality amino acid profile. It contains levels of both essential amino acids as well as branched that are above those of soy, meat, and wheat. "Diafiltered" milk is a process of ultrafiltration of the fluid milk to separate lactose and water from the casein and whey proteins. This process allows for more efficiency in cheese making and gives the potential to produce low-carb dairy products.

IV. FRESHENING OF MILK

Cool temperature has been the main method by which milk freshness has been extended. When windmills and well pumps were invented, one of their first uses on the farm, besides providing water for animals themselves, was for cooling milk, to extend its storage life, until it would be transported to the town market.[5]

The naturally cold underground water would be continuously pumped into a cooling tub or vat. Tall, ten-gallon metal containers filled with freshly obtained milk, which is naturally warm, were placed in this cooling bath. This method of milk cooling was popular before the arrival of electricity and refrigeration.

V. PASTEURIZATION

Pasteurization is used to kill harmful pathogenic bacteria by heating the milk for a short time and then immediately cooling it. Types of pasteurized milk include full cream, reduced fat, skim milk, calcium enriched, flavored, and UHT.[96] The standard high temperature short time (HTST) process of 72 °C for 15 seconds completely kills pathogenic bacteria in milk,[97] rendering it safe to drink for up to three weeks if continually refrigerated.[98] Dairies print best before dates on each container, after which stores remove any unsold milk from their shelves.

A side effect of the heating of pasteurization is that some vitamin and mineral content is lost. Soluble calcium and phosphorus decrease by 5%, thiamin and vitamin B12 by 10%, and vitamin C by 20%.[99] Because losses are small in

comparison to the large amount of the two B-vitamins present, milk continues to provide significant amounts of thiamin and vitamin B12. The loss of vitamin C is not nutritionally significant, as milk is not an important dietary source of vitamin C.

VI. CONCLUSION

A dairy product is food produced from the milk of mammals. A production plant for the processing of milk is called a dairy or a dairy factory. Dairy farming is a class of agricultural, or an animal husbandry, enterprise, for long-term production of milk, usually from dairy cows but also from goats, sheep and camels, which may be either processed on-site or transported to a dairy factory for processing and eventual retail sale.[6]

Department of Animal Husbandry, Dairying & Fisheries (DADF), Ministry of Agriculture, Krishi Bhawan, New Delhi has given administrative approval for implementation of the Central Sector Scheme entitled "Dairy Entrepreneurship Development Scheme" during 2015-16

The multiple objectives of the scheme involves generating self-employment & providing infrastructure for dairy sector, setting up of modern dairy farms & infrastructure for production of clean milk, encouraging heifer calf rearing for conservation & development of good breeding stock, bringing structural changes in the unorganized dairy sector so that initial processing of milk can be taken up at the village level, upgrading traditional technology to handle milk on a commercial scale and providing value addition to milk through processing and production of milk products.

The National Bank for Agriculture and Rural Development (NABARD) will be the nodal agency for implementation of DEEDS scheme in all the states and Union Territories throughout the country. A snapshot on the scheme is as follows.

A snapshot on the scheme:

- Farmers, Individuals, Entrepreneurs and Groups of Unorganized and Organized sector are eligible. Group of organized sector, includes Self-Help Groups (SHGs) on behalf of their members, Dairy Cooperative Societies and Milk Unions on behalf of their members, Milk federations, Panchayati Raj Institutions (PRIs) etc.
- An applicant is eligible to avail assistance for all components under the scheme but only once for each component.
- More than one member of a family could be assisted under the scheme provided they set up separate units with separate infrastructure at different locations.

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