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Entrepreneurship skills in Dairy Industry: A Critical Study on Importance of Hygienic Conditions in Dairy Industry

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Abstract –

In terms of the variety of rural jobs available, India offers enormous opportunity for the growth of entrepreneurship. Since India produces more milk than any other country in the world (108 million tons), dairy farmers play a crucial role in the growth of the dairy industry and the socioeconomic fabric of the nation. One of the major occupations of the rural people in our nation is dairy farming. Any nation's entrepreneurs play a crucial role in fostering technical advancement and economic expansion. Milk is an incredibly valuable and nourishing food that must be handled and kept with caution because of its limited shelf life. Due to its natural qualities, milk is a great medium for many microorganisms to thrive. These germs can enter milk through the process of milking, handling, storing, or transporting it to markets. Maintaining animal health, adhering to optimal practices for milking, and upholding cleanliness standards in the milking parlor are essential for reducing the microbial burden in raw milk. The current study offers recommendations to prevent milk contamination and aids in understanding the many forms of hygiene that should be maintained in the dairy.

***Index Terms*— Entrepreneurship skills, Dairy Industry, Milk production, Hygienic conditions.**

I. INTRODUCTION –

A. Dairy Industry in India –

India is the largest producer of milk in the world, contributing 23% of global milk production.

The dairy industry has been one among the foremost dynamic sectors of the agricultural industry and has grown significantly over the last 15 years (2004-2018). Milk production in India has increased at a CAGR rate of 6% since 2004. (Ministry of Agriculture and Farmers Welfare and therefore the Department of Animal Handy and Dairy Data), which has increased demand, as higher incomes cause higher consumption of milk and dairy products.

With the rise in milk production, it's important to anticipate a rise in demand for milk and milk products within the near future. it's therefore imperative that each one the states of India produce strong, statistical evidence for the estimation of the above requirements. The unorganized sector, consisting of small farmers and cooperatives, mainly contributes to the dairy market. Over the past few years, the organized sector has been rapidly catching up with the top customers by offering customized products, which has increased the organized market share.

The milk surplus states in India are Uttar Pradesh, Punjab, Haryana, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu. The manufacturing of milk products is concentrated in these milk surplus States. The production of milk products i.e. milk products including infant milk food, malted food, condensed milk & cheese stood at 3.07 lakh tons in 1999-2000. Production of milk-powder including infant milk-food had risen to 2.25 lakh tons in 1999-2000, whereas that of

malted food is at 65000 tons. Cheese and condensed milk production stands at 5000 and 11000 tons respectively. (http://164.100.166.67/sites/default/files/2019-10/AF_Animals_Milk_Dairy_Intro_0.pdf)

India with a total milk production of 110 million tones remained the largest milk producing country in 2008-09 with a share of close to 15 percent of world milk production. Maharashtra is one of the milk surplus states in India. Total production of milk in Maharashtra is around 7.00 million tones. In Maharashtra there are dairies in the cooperative sector, the government sector and the private sector. The total milk production of cooperative and government sector is around 82.00 lakh liters per day (LLPD), with almost equal share of each. The unorganized sector has additional production of around 18.00 LLPD to 20.00 LLPD. (https://economictimes.indiatimes.com/industry/cons-products/food/india-retains-milk-largest-producer-tag/articleshow/5369158.cms?from=mdr)

B. Entrepreneurship Skills in Dairy Industry –

India has immense potential for entrepreneurship development in terms of diversity of rural occupations. Livestock production is one of the promising sectors of entrepreneurship development in India (Bandopadhyay, 2007). Development of entrepreneurship ensures optimal utilization of resources and facilities and value addition to product and services. It also helps in developing capability to cope up with the impact of globalization. There are many factors that influence the entrepreneurial behaviour of human beings. According to Amarnath and Samvel (2008) the emergence of entrepreneurs in a society depends upon closely interlinked social, religious, cultural, psychological and economic factors. India is largest milk producer in the world (108 million tons), therefore role of dairy farmers is very important in Dairy industry and socio-economic development of the society. Dairy farming in India is practice with one or two indigenous buffaloes or cow milk has now emerged as the second largest agricultural commodity and that is why dairy as a business is becoming more and more popular among farmers and also among the educated unemployment people. Dairy farming is one of the important activities of the rural population of our country. Dairy enterprise, next to agriculture, not only provides continuous income and improves dietary standards of family, but also supplements the income and reduces unemployment to a large number of the rural poor. The entrepreneurs are key persons of any country for promoting economic growth and technological change. The appearance of their activities i.e. development of entrepreneurship is directly related to socio-economic development of the society. Entrepreneurial behaviour is the study of human behaviour involved in identifying and exploiting opportunities through creating and developing new ventures.

C. Importance of Hygiene in Dairy Industry –

Milk is a priceless, nutritious meal that needs be stored and handled carefully due to its short shelf life. Because it is an ideal setting for the growth of germs, particularly bacterial pathogens, which can degrade food and infect customers, milk is very perishable. Milk processing helps to prevent food-borne illness by preserving milk for days, weeks, or even months. Through methods like fermentation or cooling, which is the factor most likely to affect the quality of raw milk, it is possible to increase the shelf life of milk by several days. Pasteurisation is a heat-treatment procedure that increases the amount of time milk may be consumed while also drastically reducing the quantity of potentially harmful germs. Milk can undergo additional processing to become high-value, concentrated, and conveniently transportable dairy products with long shelf life, such butter, cheese, and ghee. Small-scale dairy farmers can make more money from processing dairy products than from selling raw milk, and they have better access to local and metropolitan markets. The seasonal variations in milk supply can also be managed with the aid of milk processing. Whole communities can gain from the conversion of raw milk into processed milk and products since it creates jobs off-farm for milk collection, transportation, processing, and marketing.

Milk is an excellent medium for many microorganisms to flourish because of its natural properties, and these microbes can get into milk during milking, handling, storage, or transportation to markets (Garedewet al., 2012). These bacteria may come from the environment, milked animals, milkers, or milking parlour equipment (Gran et al., 2002). Microorganisms can proliferate in milk after they have been introduced and alter its quality. Consumers may suffer harm if pathogenic microbes are present since they can induce human illnesses and disorders (Barros et al., 2011).

It is impossible to prevent microorganism contamination of milk due to the unique production process. As a result, a key factor in determining the quality of milk is its microbial composition (Karmen and Slavica, 2008). Along the entire dairy supply chain, a variety of management and control strategies have an impact on the safety of raw cow milk. In order to lower the microbial burden in raw milk, it's crucial to maintain animal health, follow best practises for milking, and maintain milking parlour hygiene (FSA, 2006). Dairy cows may harbour human diseases, raising the possibility of contracting a foodborne illness. Additionally, there is a risk of additional contamination from people or the environment, as well as the growth of inborn pathogens, throughout the milking process, subsequent cooling, and storage of milk (CAC,2004)

II. Materials and Method –

One of contemporary India's most successful development initiatives is dairy development, which is recognised on a global scale. One of the world's greatest populations of livestock is found in India. India is home to 20% of the world's cattle and 50% of the world's buffaloes, the majority of which are milk cows and buffaloes. India currently produces the most milk in the world. One of the most promising industries is milk and milk products, and it is well deserving of praise. Data from the Food and Agriculture Organisation Corporate Statistical Database (FAOSTAT) show that milk production increased from 198.44 million tonnes (MT) in 2019–20 to 209.96 MT in 2020–21. India produced 21% of the world's goods and services. Casein and lactose production, which is currently primarily significant, offers a wide range of applications. The decimalization of milk exports has taken place. (https://www.ibef.org/news/india-ranks-first-contributes-24-of-global-milk-production-govt-to-ls). Due to its perishable nature, milk is easily ruined by a rise in pH, microbial contamination, and many other factors. If basic hygiene is not upheld during the manufacturing process and storage conditions, milk products will also deteriorate. To avoid or reduce microbial contamination or deterioration brought on by microorganisms, it should be maintained in dairy processing facilities.

Although milk and milk products are a vital source of energy for our bodies, according to Pal and Jadhav (2013), they can occasionally become contaminated by bacteria that cause spoiling. Pal (2012) came to the conclusion that microbial contamination of milk and dairy products is a global issue and can happen at any point along the food chain, from farm to fork. The presence of microorganisms in everyday items is undesirable since they degrade the quality of milk products. It is widely acknowledged that good hygiene contributes significantly to food safety and hence safeguards the consumer's health. The food is safe, healthy, and won't harm consumers, can be ensured as well as to prevent the growth or survival of pathogens that cause disease during production, processing, handling, packaging, storage, and distribution, hygienic practices should be strictly flowed. According to Pal and Mahindra (2015), washing and sanitizing the surfaces that come into touch with milk and milk products account for about 60% of all contamination in a dairy plant. The major steps needed to manufacture high-quality dairy products that are safe for human consumption are the maintenance of high standards of sanitation during the processing, packing, and distribution of milk products; and stringent sanitary practices by food handlers.

After referring various research documents and websites and also discussion with experts in the field following hygiene practices that should maintain in dairy industry -

1. Plant hygiene
2. Processing hygiene
3. Personal hygiene

Plant hygiene

1. Cleanness of the plant/dairy, floors, walls, doors.
2. Rooms should be kept clean and in good repairs.
3. Equipment and utensils should be disinfected.
4. Equipment repairs & maintains should properly be carried out often processing.
5. All product contact-surfaces should be kept clean.

Processing hygiene

1. Packaging should be stored in dairy place away from manufacturing areas.
2. Products should be transported in clean vehicle under appropriate condition.
3. The milking unit should be cleaned regularly, daily.
4. Different tests like water test, fat test and SNF test should be conducted at the time of accepting milk.

5. The milk should be pasteurized homogenized and processes into different milk product.

Personal hygiene

1. Personal handling foods should be subjected to health checks regularly.
2. Factory premises should be provided with clean remaining water and good wash room.
3. Training of the personnel should be conducted to maintained hygiene.
4. Care should be taken to deliver untouched milk products.
5. Workers should wear clean protective clothing and washing gear.

III. Findings –

1) The cleanness should be maintained in the plant in order to avoid the contamination of milk.
2) The equipment and utensils should be disinfected repaired and maintained before and after milk processing.
3) The milk received should undergo different test and process at the time of accepting.
4) According to the respondents the packaging and transporting of the milk should be carried out in hygienic condition.
5) As per the data received personal hygiene is of utmost importance.

IV. Conclusions –

Milk now makes up a significant portion of the diets of a huge portion of the world's population and is a source of key nutrients like protein and other elements needed to maintain a healthy body. Many other kinds of bacteria, which can ruin food or spread disease, can also travel on it. Public health officials, consumers, and food manufacturers all have serious concerns about the quality of milk. Dairy products may unquestionably have their shelf life extended by using proper packaging and storing techniques under stringent hygienic guidelines.

V. SUGGESTION

1. The diary can contain more milk than earlier if it maintains the hygienic conditions.
2. The diary should adopt the new technologies to maintain the production and quality levels.
3. Installation of quick coolers at cooperatives, ongoing training for farmers and cooperative staff on hygienic procedures and milk processing is necessary to further limit bacterial growth.

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