

Dairy Product Waste in the World

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Milk is an integral part of the diet of infants. Although intake of milk decreases as we get older, however, milk and milk products are one of the most important parts of the human diet. Apart from supplying dietary energy, it seems that whole milk is a good source of dietary fat, protein and other nutrients. Milk and dairy products are considered nutrient-dense foods due to having significant contribution in providing protein, calcium, magnesium, selenium, riboflavin, vitamin B12 and Pantothenic acid.

Raw milk is usually processed into various products such as consumer milk, butter, cheese, yogurt, condensed milk, milk powder and ice cream. Due to high perish ability properties of milk, it is necessary to provide consumers with products in good quality and free from pathogenic bacteria.

However, there is a significant waste in the dairy industry like other parts of food industries during production, transportation and consumption. Due to the population growth and increasing concerns regarding food security and protection of environmental resources, the importance of food waste has increased more than ever. It has been estimated by The Food and Agricultural Organization of the United Nations (FAO) that approximately one-third of the food produced in the world gets lost or wasted along the supply chain each year. Almost 12-25% of dairy food product is wasted in the regions of the world. The lowest and highest wastes are related to Industrialized Asia and Sub-Saharan Africa, respectively.

Food waste throughout the food supply chains from initial agricultural production down to final household consumption varies based on the specific conditions and local situation of country and income. Generally, most wastes in developing countries are related to production, harvest and storage while in developed countries, it is occurring in preparation and consumption. It is reported that in all three industrialized regions (Europe, North America and Oceania, industrialized Asia), 40-65% of milk and dairy production waste has occurred at the consumption level, whereas agriculture, post-harvest, processing and distribution are the levels that the most wastes occurred in low-income countries. Waste of dairy products like other food products waste, which is inevitable, has a significant effect on

food security, food quality and safety, economic development and on the environment. It occurs throughout different levels of food supply chains such as agriculture, post-harvest, processing, distribution, and consumption. So, it is necessary to identify the levels and/or major levels that food waste occurs in dairy sector. Since, raw milk is processed to various dairy products; it is basically required to minimize wastes at farming level. It is reported that dairy cow's illness, especially mastitis infections resulted an approximate 3-4% decrease in milk yield. Therefore, performing Good dairy farming practices as well as providing training and program to improve milk quality should be considered as the first solutions to minimize dairy waste. Furthermore, it is indispensable to store milk under hygienic conditions and deliver it for processing within the specified time. In production sector, training of staff, optimizing packaging materials to improve product shelf life, maintaining the cold chain during the production process, storage and till retailers and exerting Good manufacturing practice are all the major solutions that could be effective in reducing related waste in dairy products.

It is reported by FAO that the major dairy wastes occurred throughout agriculture, post-harvest and distribution in Sub-Saharan Africa, North Africa, West and Central Asia, South and Southeast Asia and Latin America. Distribution wastes in these regions could be improved by maintaining the cold chain using efficient, properly functioning refrigeration equipment, systematic monitoring of product temperature and eliminating or

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reducing handling steps in addition to maintain proper product rotation. Moreover, training retailers or developing partnerships with retailers to optimize transit and storage might be effective in minimizing dairy wastes. Unlike low-income countries, in medium- and high-income countries consumption level is devoted the highest waste in supply of food chain of dairy product. Therefore, consumers in these regions have an important role in reducing wastes. It is necessary that consumers be provided with diverse range of products and various packaging sizes. Furthermore, improving consumer awareness about optimal conditions for food conservation, storage, and product shelf life by public authorities, particularly labeling could be positively effective in decreasing dairy wastes.

It could be concluded that there are several reasons for waste of dairy products. It is fundamental to determine the levels that considerably participate in dairy waste from initial agricultural production down to final household consumption and it differs among various countries., In low-income countries dairy wasted could be principally attributed to lack of technical and managerial knowledge in harvesting, post-harvesting, processing and distribution in addition to financial limitation, while in medium/high-income countries, inappropriate consumption pattern is the main reason of dairy waste in the supply chain.

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