

Frequently Asked Questions:

1. What is the current status of milk production globally?

There is a rising growth in the production of milk globally. Approximately 150 billion households around the globe are engaged in the production of milk. In the developing nations, milk is produced by farmers and smallholders and the monetary benefits of it contribute to the household livelihood. Milk provides relatively quick returns compared to cultivation of crops for small-scale producers and hence proves to be an important source of cash income.

Some of the countries in the developing world have an age old tradition of milk production. Also, milk and milk products compose an essential part of the daily diet. In case of few other countries, dairy industry has been established recently owing the increase in the number of people consuming dairy products worldwide. Most of the former countries are located in the Mediterranean and the Near East, the Indian subcontinent, the savannah regions of West Africa, the highlands of East Africa and parts of South and Central America. Countries without a long tradition of dairy production are the South Asian countries such as China and tropical regions having high ambient temperatures and or humidity.

2. Write a note on World milk production.

India is the world's largest producer of milk encompassing 16% of global production. India is followed by United States of America, China, Pakistan and Brazil. World milk production has increased by almost 50%. In 1982, the production of milk was 482 million tons which has increased to 754 million tons in 2012. South Asia has seen the most of expansion in the production of milk since the 1970s. It is rightfully the main driver of milk production in the developing world.

Countries such as New Zealand, the United States of America, Germany, France, Australia and Ireland have the highest milk surpluses ; whereas the countries having highest milk deficits are China, Italy, the Russian Federation, Mexico, Algeria and Indonesia.

3. Differentiate between Rural small holder dairying and Agropastoral dairying.

In Rural small holder dairying, dairying is considered to be an integral part of the mixed farming practice in which the waste of dairy animals is used as manure for the production of crops. Mixed farming systems are those in which either more than 10% of the dry matter which is fed to animals comes from crop by-products or more than 10% of the total value of production comes from non-livestock farming activities. It has been estimated that more than 90% of the world's milk supply is produced in mixed farming systems. In countries such as Africa and Asia, milk is produced in mixed farming systems having fewer than 5 cows. In South America, at least 10

cattle are raised by milk producers with a dual purpose i.e. to serve the purpose of meat and milk. Dairy animals are fed on grass, the residues of crops and fodder. Sometimes, supplementary feeding is given when necessary.

In case of Pastoral or agropastoral dairying, milk is the most important subsistence item in pastoral dairying. These systems are land-based. Dairy production is generally associated with cropping but nomadic pastoralists practice little or no agriculture and roam in search of grazing lands and water.

4. What do you mean by Landless peri-urban dairying?

This system is located within or close to the boundaries of cities. It is a purely market oriented system of production. The peri-urban producers benefit majorly from their proximity to markets. But their production is limited and based on the purchased inputs and may encounter problems of feed supply and waste disposal. Keeping match with the expanding market demand, in the recent decades, the peri-urban dairy sector has developed tremendously around the larger cities of many developing countries. The concentration of milk production in close proximity to urban centers may threaten human health. Adding to this, traditional small-scale milk production systems in some developing countries have established large-scale dairy enterprises. Generally, large scale producers do not account for a large share of national milk production. In the developing countries, up to one-third of milk is produced in urban and peri-urban areas.

5. Write a note on dairy animals.

Cattle, buffaloes, goats, sheep and camels are the highest contributor to the world milk production. Other minor contributors include yaks, horses, reindeers and donkeys. The significance, requirement and presence of each species varies from region to region and countries. The key elements which determine the dairy species of a region are feed, water and climate. Other factors which influence the presence of a dairy animal are the market demand of the particular region, its dietary traditions and the socio-economic conditions of individual households.

Cattle contributes to 83% of total world milk production, followed by buffaloes with 13%, goats with 2% and sheep with 1% ; camels contribute a mere 0.3%. The remaining share is contributed by other dairy species such as equines and yaks.

In the developing countries, about one-third of the milk production comes from buffaloes, goats, camels and sheep. Whereas, in the case of developed countries, almost all milk is produced by cattle. In the sub-Saharan African region, three-quarters of milk production is by cattle. Almost all the milk produced in Latin America comes from buffaloes. Milk from dairy species other than

cattle represents 39% of milk production in Asia, 24% in Africa, 3% in Europe and 0.4% in the Americas; it is almost non-existent in Oceania.

6. What is subsistence dairy system?

Subsistence and smallholder systems usually raise dairy animals in the developing countries. Owing to the financial conditions of these smallholders, these dairy animals are usually multi-purpose and tend to grow under stringent conditions such as low inputs, harsh environments and minimum management. These animals tend to have a low genetic potential for milk production because of the harsh conditions in which they are kept but they are very well adapted to local conditions.

Although cattle are kept in a wide range of environments, other species of dairy animals help make it possible in adverse climatic conditions that often cannot support any other type of agricultural production. Animals such as sheep allow the production of milk in semi-arid areas and in the Mediterranean; Goats can be reared in regions with poor soil in Africa, horses in the steppes of Central Asia, camels in arid regions, buffaloes in wet tropical regions and yaks can be reared in high mountainous areas such as in the Tibetan Plateau.

7. Write a note on reproductive efficiency of dairy animals.

Selective breeding and control of reproduction can go a long way in improving the productivity and returns for milk producers from dairying. Reproductive efficiency such as calving intervals, conception rates etc can be improved by using genotypes that match the production environment and by following appropriate animal husbandry practices.

Factors such as climatic conditions, environment, animal diet and nutrition, socio-economic conditions of the producer, adaptability and genetic characteristics of the dairy animals, type of production system (Intensive or Extensive) contribute to the reproductive performance of dairy animals. There is lack of scientific knowledge among the small-scale dairy producers. They are sometimes unaware of the genetics and breeding. But they have valuable knowledge about breeds and their management. Though none of their management strategies are not written or documented anywhere, they follow the right breeding objectives. For instance, producers may share sires with their neighbors or sometimes the entire community. Many indigenous groups or communities have developed their own local breeds.

8. What is artificial insemination?

Artificial insemination is the practice of artificially breeding cattle or any other dairy animal using a healthy male cow. The sperms are artificially inoculated onto a fertile female cow.

Artificial insemination (AI) is practiced mainly for cattle. To a lesser extent it is being practiced for other dairy animals such as sheep and goats. Artificial insemination is routinely followed by large-scale dairies. These dairies often produce breeding males which are sold to smaller producers for natural mating. Small-scale livestock holders usually do not practice artificial insemination and this practice is largely restricted to peri-urban dairy producers.

9. Write a note on milking hygiene practiced in dairies.

In most of the developing countries and in case of small-scale dairy producers, milking is often done by hand. Often, this is done in the presence of the calf in order to stimulate milk release. Use of hand for milking increases the chances of contamination of milk due to the presence of microbes localized in the hand. Where sufficient labor is available, hand-milking provides for the milk extraction with no capital investment or any equipment maintenance and cleaning. In most of the societies, women traditionally milk the cows. But in some pastoral and mixed farming communities, women are prohibited to milk the cows. With modernization, these milking customs are seeing a drastic decline. Nowadays, milking machines are being employed on medium to large dairy holdings where improved dairy breeds are used. Irrespective of the fact whether the milking practice followed is by hand or machine, avoiding contamination of the milk during and after milking is of prime importance. Good dairy farming practices for milking hygiene are ensuring that milking routines do not injure the animals or introduce contaminants into the milk; and that milking be carried out under hygienic conditions and that proper handling of milk is practiced post milking.

10. Write a note on feed and nutrition requirement of dairy animals.

The right type of feed, clean water are highly essential for ensuring a dairy animal's health and productivity. The quality and safety of the milk depends largely on the nutrition of the animal. The requirements for feed and nutrition of dairy animals depend on several factors such as physiological state, level of milk production, age, sex, body condition and body weight, weight gain, health condition, level of activity and exercise, climate and season. Owing to the seasonal fluctuations in the availability of feed, the feeding of livestock poses to be a major challenge. Seasonal fluctuations in obtaining feed is attributed to periods of no or less rainfall and the poor quality of feed. This challenge is even greater in the tropics. When producers cannot depend on locally available feed resources, the feeding of dairy animals can prove to be even more expensive. Grazing, is usually practiced by small-scale dairy producers in the developing nations. Grazing requires fairly large areas of land. Tethering is another such practice in which animals are made to eat on the roadside verges, areas around cropland etc ; and stall or pen feeding which requires more labour inputs. When

nutritional supplements are provided to the dairy animals, they are either fed to the entire herd or to individual animals. Easy access to water has a great influence on milk production of milk and pregnancy. Access to water therefore has a great impact of milk production. Feed and nutrition should be secured from sustainable sources. Suitable quality and quantity of feed and water should be maintained. Also important is the storage conditions of feed and ensuring the traceability of feedstuffs brought on to the farm.

11. How is the welfare of dairy animals taken care of?

Sensible and precise animal husbandry practices should be followed while rearing dairy animals on a farm. These practices should be made applicable not only to the milk producing animals but also to the young stock, replacements and to the males in rearing units. Animal welfare means nothing but the primary well-being and keeping of the animals. The practices followed in the dairy should focus on keeping the animals free from hunger, thirst and malnutrition ; from any sort of discomfort or pain; injury, infections and disease; and to monitor the animals whether they are having a relatively normal pattern of animal behavior.

12. How should the physical environment in a dairy be taken care of?

Environmental concerns from the dairy sector include the impact on land degradation such as overgrazing, climatic changes, air pollution, shortage of water and loss of biodiversity. Dairy production is an important source of greenhouse gas emissions, especially carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), ammonia (NH₃) emissions from livestock housing facilities and from poor manure management are also a cause of concern in countries across the globe. In order to ensure safety of the surrounding environment, an environmentally sustainable farming system having proper waste management system needs to be implemented. Care should be taken that dairy farming practices should not have an adverse impact on the surrounding environment.

13. How is health of dairy animals managed efficiently?

Animal diseases are the major cause of mortality and decreased productivity in dairy herds all over the world. This has led to substantial economic losses. Diseases tend to directly affect the productivity through lowered yield of milk, reduced fertility rate, delay in reaching puberty, substandard milk quality and reduced feed conversion. Production diseases such as mastitis and external and internal parasites do not always result in the death of the animal, but they definitely will tend to reduce the efficiency of the system. Some diseases such as

tuberculosis and brucellosis may even pose a health risk to humans working in close proximity with the dairy animals.

Depending on the physical and physiological characteristics, different species of dairy animals may have different health requirements. The best possible way to reduce disease incidence in animals is by selecting dairy animals that are best suited to the prevailing local environmental conditions. The dairy animal has to be able to cope with the local climatic conditions and should be able to feed on the available resources. They should also be able to resist endemic diseases and combat local parasites. Dairy animals that are kept under intensive systems are more exposed to transmissible disease agents, while those in extensive systems are more prone to parasitic infections. It is natural that when an animal is exposed to a new environment, they become susceptible to endemic diseases of the new location because they lack acquired immunity.

14. What are the main feed resources for dairy animals?

Poor-quality feed which is of low digestibility and low nutritive value is the major limiting factor affecting the dairy output. This is usually seen in the case of developing countries. The feed of dairy animals usually consists of fibrous feeds that includes crop residues and low-quality pasture. These feeds lack in nitrogen, minerals and vitamins.

Small-scale milk producers in the developing countries usually feed the dairy animals with locally available feed resources such as natural pastures, crop residues, cut-and-carry grass, forage crops, agro-industrial by-products. Grazing of livestock is a common practice throughout the developing countries. Grazing fields often lack conservation practices and are of poor nutritional quality. Supplementing the feed of dairy animals with energy and protein-rich feeds is important, as milk production is a high energy consuming process. Conventional energy-rich supplements include grain-based concentrates, oilseed cake and minerals. Stocking of forage as hay or silage permits the production of milk during periods when there is a shortage of feed. Most tropical feed resources are poor in nitrogen and minerals and are rich in fiber content.

15. Write a note on socio-economic management of a dairy.

Human resource and financial management are the two key sectors which need to be looked in the socio-economic management aspects. Social responsibility and economic sustainability are highly integral for good dairy farming practice. This can be taken care of by implementing effective and responsible management of human resources and by ensuring

that farm tasks are carried out safely and competently and by managing the enterprise to ensure its financial viability.

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