



Management Techniques of Dairy Animal for Optimum Production

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Abstract

Dairy farming has changed dramatically from being a traditional family-run business because the dairy industry is organised and every step of the process has technological specialisation. A more practical way for farmers to start and run a sustainable dairy farm that generates optimum profits for the farm and permits long-term care of dairy farms' effects on the environment and animals. Farmers, dairy animal honours, and commercial large farms can easily and comfortably use a variety of technological approaches, including as RFID, facial recognition technology, tracking devices, robotic milking equipment, and automatic cow traffic management equipment.

Key words: Dairy animal, RFID, Robotic milking devices.

Introduction

Large number of dairy farms continue to operate and manage organic dairy farms, most of which are located in villages. These farms give milk to large corporations for processing before it is finally sold to a retail store.

All components of scientific management of dairy animals must be understood by dairy farmers in order to be successful. The best strategy is to establish and manage a sustainable dairy farm that provides maximum earnings to the farm and enables long-term care of the effects of dairy farms on the environment and animals. But in recent years, farming communities have consistently favoured dairy farming as an economically viable business.

The farmers frequently face challenges owing to a lack of funding, resources, and training. Consequently, the potential to apply fine-scale management within farming systems through the use of



technology targeted at gathering and analysing data for decision-making has been underpinned by precision in dairying.

Advanced management procedures for dairy cows include automation technology including plant wash, vat wash, yard wash, teat spraying, in-bail feeding, data computing systems, electronic milk metres, and mastitis diagnosis. Increased output and efficiency through the adoption of better techniques that improve nutrition and livelihood security are essential for the profitability and sustainability of dairy farming in India.

Breed of animal

Exotic pure breeds like Holstein-Friesians and Jersey are well known for their great milk production capacities. Yet, raising exotic animals, particularly in India's hot and muggy regions, has significant drawbacks. They often eat a lot of feed, making them costly to keep, and they have a limited tolerance for tropical diseases. Yet, native breeds produce less milk than exotic cows, which results in lower milk sales revenue. Yet, it has some benefits including low feed consumption, low maintenance costs, greater local environment adaptation, and high tolerance to topical bovine diseases. Breeds that are crossbred that blend the greatest characteristics of exotic and native breeds thrive in tropical climates. Sahiwal, Gir, Red Sindhi, and Tharparkar cow breeds are famous for milk production, and also Jaffrabadi and Murrah buffalo breeds are popular for milk production for Indian farmers.

Feed for animal

For dairy animals to grow properly, a systematic feeding technique with adequate nutrition is crucial. When an animal produces less than 5 litres of milk, it receives 15 kg of green feed, 5 kg of dry feed, and 2 kg of concentrate. When an animal produces between 5 and 10 litres of milk, it receives 17.5 kg of green feed, 5.5 kg of dry feed, and 3 kg of concentrate. It's crucial to increase concentrates after calving while also slicing fodder into little pieces, with the peak phase occurring between 70 and 140 days afterwards. Supplemental feed should contain between 16 and 20 percent crude protein and enough crude fibre.

In order to lower production costs, at least a percentage of the necessary forages, such as hybrid napier, berseem maize, lucerne, etc. should be grown on the farmer's own property. The dairy animals are fed materials such as wheat busa, oil cakes, molasses and feed additives including minerals and vitamins. The ratio of 1:3 between legume and non-legume feed is kept. The dairy animals receive azolla, which contains 20–30% protein. To lessen the mineral shortage in animals from mineral-deficient zones, a mineral mixture unique to the location might be fed to the animals. The National Dairy



Development Board (NDDDB) of India has created user-friendly computer software to help milk producers on their doorstep to balance the ration of their lactation animals with the available feed resources and area-specific mineral mixes. "Nutrition masters" were developed to balance feeds in the field. These "Nutrition masters" have information on the nutritional needs of lactating cows and buffaloes for milk production as well as other physiological processes like maintenance and pregnancy. They also have data on the chemical composition of frequently used feed ingredients across various agro-climatic regions. Mobile apps can be used to create the balanced rations by farmers who own smartphones.

Calf care and management

It involves clearing mucus, trimming the naval cord 2.5 cm from the area of the naval region, allowing the calf to suckle colostrums within an hour of birth and continuing to do so for three days, feeding the calf starter after one month of age, green food after four months, deworming the calf within seven to ten days, and weaning the calf four to eight weeks after birth. You can administer commercial colostrum (bovine haemoglobin, cheese whey or colostrum from immunised cow). Disbudding, ear tagging, and castration are further management techniques that are crucial for the care and management of calves.

Care and management of milch animal

It includes giving the cow instructions to let down milk without the calf sucking, giving her more concentrate in the amount of 1 kg for every 2–2.5 kg of milk, and giving her green fodder. Additional management practises include providing for the needs of animals while they are in a holding area, reining in undesirable behaviours, getting rid of manure and bedding materials, isolating sick animals, insuring animals, and getting rid of carcasses. In order to maintain an animal's health, encourage urination, and encourage the production of clean milk, regular exercise is also advised.

Housing management

For productivity, health, milk quality, reproduction, animal welfare, and farm profitability, advances in housing management have been made throughout the past 100 years. Improvements in cow comfort are being made in all housing schemes. Cows can now fit in stalls in tie stall and free stall systems based on their size and, in some cases, the stage of lactation. Looking ahead, external pressure and public perception might persuade farmers to think about less restrictive alternatives to complete confinement. grazing, semi-intensive and intensive systems of management. Shelter management is most essential in current global scenario to provide comfortable microclimate to dairy cattle and



buffaloes. Proper designing and orientation of shelter will improve the integration of feeding, watering, milking, cleaning, efficient manure disposal and proper utilization of labour. In loose housing with conventional shed, a single cow requires 3.5 sq.mt. covered area and 7.0 sq.mt. open area, while 1 sq.mt. covered and 2 sq.mt. open areas are required for 5- 10 young calves. For keeping 50 buffaloes, 4.0 sq.mt. covered area and 8.0 sq. mt. open area is required.

Health of dairy animal

When it comes to dairy animals, animal health comes first. Animal welfare (being free from hunger, thirst, malnutrition, discomfort from pain, and injury), the environment (excessive grazing, climate change, pollution, and greenhouse gas emissions), and vaccination of animals against diseases like FMD, BQ, HS, and anthrax are the main indicators for managing dairy animals. Acute indigestion brought on by abrupt changes to a high-energy diet can result in acidosis, which affects the digestion and rumen's function. A rumen gas buildup may result from feeding too many legume pastures to animals (Bloat). Dairy animals have a number of health problems that must be taken care of, including foot rot, grass tetany, mastitis, milk fever, mouldy feed toxicity, udder oedema, and urea toxicity.

Advances in dairy animal management technology:

The use of contemporary technology has simplified the dairy farmer's job. Also, it has increased productivity, boosting the sector's profitability and competitiveness. Let's examine how technology is used in the modern dairy farming sector.

The following are some of the most well-known livestock management technologies:

RFID tags: These tags make it easier to monitor a cow's whereabouts.

Collar technology: This method uses a transponder to monitor a cow's health, milk production, frequency of milking, and eating patterns while transmitting the data to the farmer.

Facial recognition technology: The ability to identify each cow in a herd using facial recognition technology depends on minute features like the separation of the eyes, the length of the face, and the patterning of the pelt. It collects information on each cow's behaviour and notifies you when your herd is acting strangely. Swinging cow brushes make it easier than ever to keep your cows clean. Swinging cow brushes move as soon as they make contact with a cow, which aids in grooming and may also promote blood circulation.

Cattle Health Tracking Devices: These are wearable animal gadgets that monitor an animal's health and wellbeing.



Robotic milking devices: These devices feature sensors on their arms or cups, which can be individually attached to the teats of cows. The sensors can determine whether the cow is ready to be milked and which of its teats are. Once milking has begun, the machines can also detect contaminants and determine the milk's colour and quality. The milk is diverted if it cannot be consumed by humans to a different container. Once process is done, the devices may also automatically clean and disinfect the teats.

Automatic Cow Traffic Management: Managing and moving animals to milking stalls and then returning to barns can be a very laborious task. Cattle injuries are another possibility. Electronic gates that are computer-controlled and open and close automatically are part of an automated cattle traffic management system. These gates are capable of classifying the livestock according to milking readiness. The ready animals are transferred to the milking area, while the rest are either placed in the waiting room or brought back to the stables.

Conclusion

Legumes and high protein diet useful for high milk production, clean and soft bedding material is more convenient for pregnant animals regular screening for disease, deworming and vaccination should be followed for healthy production. Recent advanced techniques like RFID, Facial recognition technology, tracking devices, Robotic milking device, Automatic cow traffic management device are easy and convenient for farmers and large commercial dairy farms on large scale production.