

Recent Management Practices for Reducing Expenditure of Dairy Cattle Farming

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Livestock plays vital role in the lives of millions of rural, peri-urban, and urban farmers of India. Livestock production is an important source of income for the rural poor in India where 70% of the livestock is in the hands of small and marginal farmers and landless labourers who own less than 30% of the land area. The sector contributed 16% to the income of small farm households as against an average of 14% for all rural households. Not only it provides livelihood to about 70% of rural community but also provides employment to about 8.8 % of the Indian population. Being a huge source of livestock, the livelihood of about 20.5 million people of country depends upon livestock rearing. This sector contributes 4.11% GDP and 25.6% of total Agriculture GDP (Dash, 2017). Again, cattle farming has been a traditional livelihood in India which is contributing 14.5% of the world's cattle population, with 83% of those being indigenous breeds.

However, Indian cattle farmers often face many challenges like limited access to resources and technology, lack of access to quality feeds and fodders, small landholdings, lack of proper knowledge, unavailability of uniform marketing system, high disease incidences due to tropical climate and many others. Recently, the structure of the dairy farm industry has been changed due to its profitability and sustainability. Milk production has increased with increases in milk produced per cow and with decrease in number of milk cows. Small size farms become non-profitable and are being replaced by the large commercial dairy farming. However, this change in dairy farm size has not been uniform across regions of the country. The sustainability of dairy business depends upon the structure and regional pattern of dairy farm size and production.

There are many factors which affect the profitability of dairy cattle farming. Out of these, high

cost of inputs (i.e. cost of feeds /fodders /housing /treatment), more disease incidences due to climatic vulnerability, competition with human for feed sources, unavailability of good germplasm, unlikeliness of animal farming, unavailability of structured marketing for milk and milk products are important. Management of cattle is very important for the success of dairy business because it helps to improve production efficiency as well as profitability. Basically, there are four pillars of dairy cattle management viz. feeding management, breeding/reproductive management, housing management and health management. In addition, the sustainability of farming depends on many other factors. In this article, those management practices are discussed under following heads which control the expenditure of dairy farming.

Feeding management

It is an established fact that feed cost alone covers more than 60% of the total cost of milk production. Therefore, utmost care must be taken while feeding dairy animals. There are some ways to reduce cost of animal feeding which include the following:

- i) **Precision feeding-** Supply precise amounts of balanced rations for different categories of dairy animals to ensure each cow gets the accurate nutrients.
- ii) **Provision for grazing-** It allows the animals to harvest their own forage and spread their own manure in the field naturally resulting into reduction of production cost i.e. costs of machinery, fuel, labour etc.
- iii) **Forage usage-** Use forages when grains and other concentrate components of ration become expensive or even unavailable. Not only that, if sufficient green fodders are available, green fodder-based feeding should be practiced to

- curtail the use of concentrated feed and to increase the energy density.
- iv) **Reduction of herd size-** Reduce herd size during feed/fodder scarcity period which can reduce the feed and labour cost.
- v) **Supply actual amount of ration-** Calculate and supply the actual number of feed/fodders after analysed the data through machine learning.
- vi) **Group feeding-** It allows maximum utilization of ration and facilitates mechanized feeding resulting into less labour requirement.
- vii) **Maintaining proper forage quality-** Harvest the forage at the optimal stage of maturity to preserve nutrient content, follow proper ensiling (compacting and sealing) and store it to maintain the quality and to reduce wastage.
- viii) **Feeding of fresh feed-** After milking, cows should be provided with fresh feed either in the form of silage or a total mixed ration.
- ix) **Feeding of whole milk to the young one-** Feed whole milk to the calves in place of using milk powder.
- x) **Use of alternative feed ingredients-** While preparing concentrate ration, use bye-products and alternate feed ingredients of similar nutritive values in place of costlier ingredients.
- xi) **Use of hay-** Hay can be prepared from good quality grasses/legumes and store properly to use in scarcity period.
- xii) **Follow specific feeding schedule in a day-** Proper feeding schedule must be followed to reduce feed wastage.
- xiii) **Use hydroponic fodder-** In case of shortage of land for growing green fodder, hydroponic fodder may be grown and fed to the dairy cattle which is highly nutritious. If farmers can bear the cost of Hi-Tech greenhouse cultivation unit of hydroponic and can control the water borne diseases, it has many advantages.
- xiv) **Sprout feeding-** Sprouts can be added in the ration of dairy animals to get advantage of high fertility rates, high milk production, low mineral supplementation, low involuntary culling rate, better coat condition, improved herd health, low feed cost per cow and many more.
- xv) **Use protected fat and protein in feeding-** Follow feeding practices with protected fat and protein for maximum utilization of feed.
- xvi) **Use enzyme supplements-** It should be practiced to increase digestibility of feeds.

Breeding/reproductive management

Effective reproduction management is a great challenge for dairy farmers particularly for high milk producing cows because of complex relationships among the body score condition of animals, dry matter intake, transition from the dry-period to lactation, onset of normal heat cycles, detection of heat, embryonic survival etc. There are some management strategies related to reproduction of cows described as under which can be followed to minimize the expenditure of dairy farming.

- i) **Selection of superior germplasm-** The dairy animals having good genotypic and phenotypic quality should be selected for planned breeding programme.
- ii) **Maintaining records-** Maintain all types of records in the farm to get information of animals on body weight, heat, service, calving, pregnancy rate, morbidity rate, mortality rate, health status etc. It can reduce the rearing cost of unproductive dairy cows.
- iii) **Heat detection-** Proper heat detection methods are to be adopted to get information of estrous both from heifers and those animals already calved.
- iv) **Time of insemination-** Dairy animals should be inseminated at 10-12 hours after the onset of heat either naturally or artificially (AI).
- v) **Transition cow management-** Nutrient requirements for transition cow should be met out to get optimum production and reproduction performance from cows.
- vi) **Pregnancy diagnosis-** Dairy animals must be checked for pregnancy at 45-60 days after breeding. In case of non-pregnancy, care should be given for the next estrous to avoid economic loss.

- vii) **Feeding of vitamins and minerals-** Nutritional requirements should be fulfilled for maintaining regular estrous cycle of animals and for maintaining herd reproduction status.
- viii) **Selection of replacement animals-** It is always better to raise replacement stock with the herd. In unavoidable cases, replacement animals can be purchased from outside with strict quarantine measures and checking productive and reproductive records.
- ix) **Health status of animals-** Maintain proper herd health program for all categories of animals.
- x) **Colostrum feeding-** It must be ensured that calved received adequate colostrum after birth to strengthen their immunity.
- xi) **Advanced reproductive technologies-** Follow latest technologies for IVF, use of sexed semen, sexed embryos, ETT, estrous synchronizations, ovulation synchronizations, genetic markers for early pregnancy detection etc. to achieve more genetic gain within short time and to exploit dairy animals with good reproduction.

Housing management

Climatic condition plays very important role in any livestock production system. As a tropical climate, dairy animals in our country are exposed to hot and humid climatic conditions which cause adverse effects on health, production, reproduction, and welfare.

Hristov et al. (2006) envisaged that housing is one of the foremost requirements of dairy cows for better production, health, and welfare. It should be constructed in such a way that during summer, the building can reduce heat gain and promote heat loss by radiation and conduction. Uncomfortable housing has detrimental effects on housed animals which makes them not only more susceptible to diseases but also less productive. Thus, housing not only will protect the dairy animals from extremes of temperature, rainfall, sunlight, humidity, strong winds etc. but also from theft.

- i) The longitudinal axis of shed should be constructed in East-West direction to avoid warm environment within the shed and to get maximum sunlight and air in the open paddock.

- ii) Floor of the shed should be sloppy (1:60 to 1:40) to drain out urine/water and to facilitate washing of shed. For closed area, concrete floor is suggested in spite of higher cost of construction because it is very easy to maintain for long run, hygienic, causes less disease incidences, no frequent repairing etc.
- iii) Shed should be daily cleaned to remove organic matter, regularly washed with water, dried, provided with fresh bedding materials etc.
- iv) To reduce the cost of shed, local roofing materials like bamboo or wooden structured thatched roof may be used. It is also more comfortable for all seasons.
- v) To avoid heat stress within the shed, it should be well ventilated with proper inlets and outlets. The space of closed area and open paddock for different categories of animals should be as per BIS specifications. Height of the shed should be of 10-12 ft.
- vi) The farm should be away from the main road to avoid dust and pathogen.
- vii) The topography of the land must facilitate natural draining of water from the shed.
- viii) Tree should be planted to provide natural shadow for animal shed.
- ix) Manger and water trough should be constructed as per BIS specifications. It should be cleaned daily before offering feed/ water.
- x) Construction of compost pit/lagoon for proper farm waste disposal and reutilization for crop field. It can fetch additional income from sale of vermicompost or replace the cost of fertilizer application in fodder crop production.

Health management

Ensuring dairy cattle health and well-being is important for sustainable milk production and to make the dairy farming an economic enterprise. The steps are: Frequent visit of farm, Close observation of high-risk animals, Identification of non-pregnant animals, Routine treatment, and vaccination of animals, avoiding indiscriminate use of antibiotics, udder health management, replacement of diseased or low productive animals and Record keeping.

Other management strategies

Some dairy management practices which are not included above but can reduce the dairy production costs are performance-based feeding, disposal of produces, gobar gas production, surveillance of herd, sale of surplus /unproductive /low-productive animals.

Conclusion

Profitable and sustainable cattle farming requires good management skills of dairy owner. This article focuses on the various management strategies related to feeding, breeding or reproduction, housing, health, and other management practices of dairy animals which are to be adopted by the dairy farmers for reducing the input cost of dairy production. An early identification of problems and their prompt interventions not only reduce the risk of farming but also increase the income from dairy enterprise.

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