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Review Article

Use of Dairy Farming Practices in Uttarakhand: A Review Paper

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Abstract

Dairy is an inherent component of agriculture, both being intrinsically linked and complementing each other for overall food security. As an inevitable part of agriculture, the people from the time of its evolution consider livestock as one of the oldest traditional occupations in farming. At the Global level, it provides 15 percent of total food energy and 25 percent of dietary fibre. In countries like India, dairy keeping is a multifunctional activity driven by income growth. Mixed cropping with dairyis the most dominant farming pattern that farmers preferred. Livestock makes the provision of inputs into mixed cropping systems to provide a buffer against environmental and economic shocks. It is consider as one of the fastest growing parts of the agricultural economy, furnishing livelihood and food security of billions of people. It contributes highest in Agricultural Gross Domestic Product that is around 25.6 percent and 4.11 percent in the total Gross Domestic Product. Dairy contributes around 16 percent to the income of small farm households as against an average of 14 percent for all rural households. In India dairy farmers are facing many problems due to lack of knowledge, information on many aspects. Present paper aim is to discuss the status of dairy farmers and technologies for dairy farmers.

Keywords: Dairy farmers; Livestock; Technologies.

Introduction

The Indian Agricultural system is predominantly a mixed crop livestock farming system, with the livestock sector supplementing farm incomes by providing employment, draught animals and manure. India has vast resources of livestock, which plays an important role in National economy, socio economic development of million of rural households. In India the significance of animal husbandry in the Indian economy arises also because of its assistance to deal with the serious problem of unemployment and under employment for weaker section in the country and for providing subsidiary occupation. In an integrated system, crops and livestock interact to create a synergy, with recycling allowing the maximum use of available resources. Crop residues can be used for animal feed, while livestock and livestock by product production and processing can enhance agricultural productivity by intensifying nutrients that improve soil fertility, reducing the use of chemical fertilizers and on the other hand, milk, meat, wool, egg from livestock ensures steady source of income to rural households. Dairy is recognized as an instrument for social and economic development. Dairy is a potential source of gainful employment, creating additional income to rural people, particularly

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landless farm labourers, marginal and small farmers who are resource deficit. The livestock, specifically dairying is highly integrated with crop production. More than 75 percent of the farmers keep 2-3 milch animals for survival of their livelihood. (Gaikwad, 2021). World milk production during 2018-19 was 843.75 million tonnes. India is largest milk producing country it has grown from 17 million tonnes in 1951 to 187.7 million tonnes in the year 2019. India accounting for more than 22 per cent of the world milk production. Per capita availability of milk in India is 394 gms/day. Of the total milk production in India, about 48% milk is either consumed at the producer level or sold to non producers in the rural India. The balance 52% of the milk is marketable surplus available for sale to consumers in urban areas. It is anticipated that India needs around 600 million tonnes of milk per year to fulfill the demand for milk and milk products. This means that India's milk production needs to grow at around 3.2% CAGR for the next 40 years according to **(*Ramsinbhai, 2019*)**, FICCI paper on development of Dairy sector in India)

The rapid growth of milk production is mainly because of the increase in the number of animals rather than that of improved productivity and the low productivity is due to the reason that people do not adopt improved dairy farming practices at the desired level. Over the decades the country has witnessed significant changes in Animal Husbandry Management in country. The credit of this by and large goes to the network of public and private institution involved in bringing out improved dairy practices. In India dairying is recognized as an instrument for social and economic development but, in spite of several years of efforts, the pace of development is not uniform in different parts of the country.

Dairy farming in Uttarakhand

Dairy farming is one of the most important economic activities in Uttarakhand state, and is closely intervened with farming systems. Traditionally, a significant importance is attached to animal husbandry in this region. According to Uttarakhand Dairy Development Board, milk production in state has increased steadily. Milching cow and buffalo are reared at all altitudes and they have high potential to develop dairy farming. Milk production in the state is 1741(000 tonnes) in the year 2017-2018 and per capita availability 447 gms/day. Various measures also have been taken by the government to develop dairy business and livestock farming. The government has provided infrastructural and policy framework from which millions of dairy farmers are benefiting from it. Market and institutional help provided by the government are some other factors. Dairy farming in the rural area has become a major source of livelihood generation for the people who do not have enough land resources and other means of income generation living in poor conditions by providing employment opportunities. Growing urban and industrial centers like, Dehradun, Haridwar, Rishikesh, Haldwani Kathgodam, Nainital, Rudrapur, Pantnagar and Kashipur etc. are creating continuous demand of milk and milk products. Role of Uttarakhand Co-operative Dairy Federation Limited (UCDFL) and milk unions of the districts is important in this regard which are working with thousands of milk societies spread throughout the Uttarakhand. Economic status of the milk producers belonging to these milk societies is continuously being improved by the sale of milk. By the time various problems are also associated with these milk societies and milk producers.

Socio Economic Status of Dairy Farmers

Sabapara et. al. (2014) concluded that majority of the dairy farmers were middle to old aged, literate, nuclear type of family having more number of children and have medium level of extension contact. ***Ahuja et al. (2016)*** revealed that majority of the respondents were middle aged, literate having nuclear family with medium family size, small land holding, some were landless with small and medium herd size, low extension contact, low media exposure and very low social participation. ***Narmatha et al.* (2017)** showed that majority of the dairy farmers are middle and old aged, belonged to nuclear family, had high dairy farming experience, had medium livestock possession. ***Kalaivani et al.* (2017)** revealed that majority of dairy contract farmers were male, marginal farmers, were from nuclear family, belonged to old age and low income group. ***Prasad et al.* (2017)** revealed thatdairy farmers were mostly of the age below 50 years, had high school education, medium family size. ***Dipu et al.* (2019)** revealed that the peri urban small and marginal dairy farmers are not full dependent on dairy farming for income and young people are less interesting in dairy farming as well. ***Koli et al.* (2019)** showed that majority of the respondents belonged to middle aged, educated upto secondary school had medium family, possessed small land holding, herd size, dairy farming experience, medium level annual income, sale of milk, extension agency

contact, economic motivation, level of adoption and high level of knowledge about the modern dairying and animal husbandry practices.

Adoption of Dairy Farming Practices

Adoption is a decision to make full use of an innovation as the best course of action available. Adoption is essentially a decision making. The sequences of stages in the process of adoption by farmers are:[1] Awareness of the existence of an innovation.[2] Conviction of usefulness.[3] Acceptance in the sense of willingness to try the innovation.[4] Complete adoption. Adoption of an innovation is a process composed of learning, deciding, and acting over a period of time. The adoption of specific practices is not the result of a single decision to act but series of actions and thoughts decisions. Improved dairy farming practices are the dairy practices involving better and new technologies of dairying which ultimately ensures good animal health, better milking hygiene, nutrition, environment, high production of milk and socio economic management. Different practices include Feeding practices, Breeding practices, Management practices, Health care practices. **(*1*) *Animal health care Practices:*** Poor animal health is one of the principal constraints to increasing small scale dairy productivity, as it results in high morbidity and low production. Overcoming this constraint could significantly improve productivity and result in real and direct benefits for producers. It includes Vaccination of all animals as recommended or required by local animal health authorities, regularly checking of animals for signs of disease, attending sick animals quickly and in an appropriate way, use of veterinary medicines as prescribed by veterinarians. **(2) *Breeding:*** Milk producers can improve productivity and returns from dairying through selective breeding and control of reproduction. Reproductive efficiency (e.g., calving intervals, conception rates) can be improved by using genotypes that are suitable to the production environment, and appropriate husbandry practices. Artificial insemination (AI) is used mainly for cattle, and to a lesser but growing extent for other dairy animals such as sheep and goats. In developing countries, AI is routinely used by large scale dairies, which often produce breeding males that are sold to smaller producers for natural mating. **(3) *Feeding practices:*** The quantity and quality of the feed and water provided largely determines the dairy animal's health and productivity, and the quality and safety of its milk. Regular grazing, feeding advance pregnant animal with extra concentrate, feeding colostrums to newborn calves, regular feeding of green fodder etc are some suggested feeding practices. **(4) *Management Practices:*** Management practices ensures proper care of the animals, proper keeping of animals in ventilated houses, adequate spaces for them, proper cleanliness of the animals and maintaining adequate open space for them. Through these practices good animal health and high milk productivity can be assured. ***Tailor et al.* (*2012*)** revealed that feeding of green fodder, feeding of colostrums to newly born calves have high adoption whereas practices like Artificial insemination, rearing of crossbred, pregnancy diagnosis and full hand method of milking had low adoption level. ***Divekar et al.* (*2016*)** concluded that higher extent of adoption was observed in reproductive management, followed by health care management, while lower extent of adoption was seen in milking and general management practices. ***Khode et al.* (*2017*)** concluded that majority of the respondents 38.13 percent had medium level of adoption of improved animal husbandry practices. ***Meena et al.* (*2017*)** concluded that 80 percent of the dairy farmers adopted improved reproductive practices, 96.67 per cent of the dairy farmers adopted improved dairy management practices, 76.67 per cent of the dairy farmers adopted improved health care practices. ***Godara et al.* (*2018*)** revealed that majority of the dairy farmers had medium level of adoption regarding breeding, feeding, management and health care practices. ***Kadian et al.* (*2018*)** observed that 66.25 per cent of respondents had medium level of adoption of breeding practices, 68.34 per cent fell under medium level of adoption in feeding practices, 70.83 per cent under medium level of health care practices and 51.25 per cent fell under medium level adoption of management practices. ***Gupta et al.* (*2019*)** observed that 56.66 per cent of respondents have medium level of adoption about improved dairy management practices followed by 22.5 per cent respondents have low level of adoption and 20.83 per cent have high level of adoption about improved dairy management practices. ***Bidyut et al.* (*2020*)** revealed that 53.85 percent respondents had medium level of adoption of improved dairy farming practices, while 53.08 percent respondents had low adoption level of improved dairy farming practices. ***Sabapara et al.* (*2014*)** concluded thateducation, caste, land holding, extension contact and mass media exposure are positively related to adoption of improved dairy farming practices. ***Ahuja et al.* (*2017*)** revealed that education, mass media exposure, economic motivation and scientific orientation are important

variables that influences decision making of dairy farmers. ***Khode et al.* (2017)** concluded that adoption of improved animal husbandry practices were significantly influenced by education, land holding, dairy herd size and utilization of communication sources and knowledge level of dairy farmers. ***Ratnaparkhi et al.* (2017)** concluded that age, dairy farming experience was found in positive correlation with adoption of improved dairy farming practices. ***Satyanarayan et al.* (2017)** concluded that family size, family type, annual income, economic motivation, land holding and education had positive effect on adoption of scientific practices. ***Nande et al.* (2019)** resulted that age, education, number of family member, land holding, daily milk production found non significant to adoption of animal husbandry practices but annual income found significant in adoption of animal husbandry practices ***Singha et al.* (2020)** revealed that education, farming experience and training received were found positively significant with their extent of adoption of improved dairy farming practices. ***Yadav* and *Naagar et al.* (2020)** revealed that age, education, family size, dairy experience organization participation, land holding were found positively related to adoption of dairy farming practices.

Constraintsfaced by Dairy Farmers

India has highest cattle and buffalo population in the world but per animal milk productivity is very less in the country, the average productivity of Indian cow is only 987 Kg per lactation against the world average of 2038 Kg per lactation (19th livestock Census 2012). In light of the increasing demand driven by the growing population, higher incomes and more health consciousness, the slowdown of dairy industry growth is a matter of worry. Based on estimates by National Dairy Development Board, the demand for milk is likely to reach 180 million by 2022 and to supply the average incremental increase of 5 million tonnes per annum over the next 15 years is required. In India, low animal productivity results due to climatic, social, economical factors; their per capita production is one of the lowest in World due to the reasons that the farmers do not adopt the improved dairy management practices at the desired level (Sharma, 2004). In Uttarakhand, dairy is a promising economic activity for small holders who constitute the majority of farming communities in the region as here every household in rural and semi urban areas owns livestock, small scale dairies and milk collection centers are coming up on their own in the region (Singh, 2002). In Uttarakhand, Growth rate for milk production found to be 3.24 percent per capita availability which is lower than growth rate in India which is 4.47 per cent. Understanding the livestock management practices adopted by the farmers is necessary to identify the strength and weakness of the rearing systems and to formulate suitable intervention policies **(Gupta *et. al*, 2008)**. **Patil *et al.* (2009)** stated that majority of the respondents 72.44 per cent stated their constraints as low milk production from local breeds, 45.33 per cent as shortage of green fodder and 41.33 per cent as lack of clean water while 25.33 per cent stated lack of preservation facility as their constraint in adoption of improved dairy farming practices. Dhaka ***et al.* (2017)** revealed that lack of knowledge, poor extension support, poor credit support, lack of proper communication system, high cost of inputs, and lack of conviction were the major constraints perceived by the farmers in adoption of improved dairy farming practices. **Meena *et al.* (2017)** concluded that non availability of livestock extension officers, veterinary doctors, preference of natural services are the constraints in adoption of improved dairy farming practices. **Rajadurai *et al.* (2018)** revealed that the major constraints faced by the dairy farmers were high cost of concentrates, low price of crossbred cow milk, shortage of land, repeat breeding for adoption of improved dairy farming practices. **Rajpoot *et al.*(2018)** stated that low price of milk and milk products, lack of technical knowledge, high cost of construction, no vaccination against contagious diseases and lack of loan facility were major constraints in adopting improved dairy farming practices. **Rathva *et al.*(2019)** stated that high cost of feed, lack of insemination facility in time, high cost of production of milk were the major constraints perceived by the dairy farmers. **Minhaj *et al.*(2020)** revealed that lack of finace, inadequate housing, lack of proper knowledge of milk production, high cost of feed supplements, poor conception rate of A.I. and high cost of treatment were the major constraints faced by dairy farmers in adoption of improved dairy farming practices **Sharma *et al.*(2020)** revealed that the majority of dairy owners about 78 percent were not adopting the scientific feeding parameters due to poor technical knowledge and lack of training, unawareness, poor resources, and non availability of green fodder as not available throughout the year in majority of dairies.

Conclusion

In India, dairy farmers are facing various types of problems due to lack of information, education and

knowledge on many aspects.

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