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A review article on empowerment of resource poor farming community through dairying

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Abstract
Dairy farming in India is largely undertaken by small and marginal category farmers who possess more than 70 per cent of the milch animals (www.nabard.org). Majority of these farmers belong to downtrodden communities, especially Scheduled Castes who possess meagre or no land and earn their livelihood through dairying or farm labour. Dairy farming is good option for women of these communities when their male partners become wage earners as also it is a woman dominated enterprise. These farmers have limited access to information, inputs, credit, and training because of the socio-economic limitations as well as poor educational status. Therefore, various extension efforts are to be made for proper identification of these farmers on a group basis to effectively target and channelize the benefits for their socio-economic upliftment and technological empowerment.

Keywords: Communities, especially, scheduled castes

1. Introduction
Role of dairy farming
Dairy along with agriculture continues to be an integral part of farmers' life in rural India. Dairy as an important secondary livelihood option plays a significant role in poverty alleviation and overall socio-economic development of the rural populace particularly among landless labourers, small and marginal farmers and women. Roughly about 80 million farm households are engaged in dairy farming with very high proportion being small, marginal and landless farmers (Dixit and Ponnusamy, 2022) [20]. The country possesses 17 per cent and 56.4 per cent of the World's cattle and Buffalo population respectively (Hegde, 2019) [1] and has earned top position in milk production globally. It also plays a significant role in providing employment and income generating opportunity particularly for women, the landless and the downtrodden communities. Besides, it also ensures nutritional security at the household level.

2. Dairy farming and egalitarian society
About 85 per cent of the farmers in India are small and marginal. Together they possess about 47 per cent of the total landholdings where as they own about 75 per cent of the total milch animals. Dairying provides year-round income to these farmers unlike crop sector which is seasonal. Dairying is a good and easier option even for the landless and women headed/women only households to earn their living (Basic Animal Husbandry Statistics, DAHD & F, GOI). The dairy sector is therefore an effective avenue to enhance income of the downtrodden communities and achieve inclusive development in the country.

3. Categories of farmers in India
India's agriculture sector accounts for about 15.90 per cent of the country's USD 2.7 trillion economy and 49 per cent of employment (Report on Policies and Action Plan for a secure and sustainable Agriculture, GOI, 2019). In India farming is done by diverse category of farmers belonging to different social classes and castes. Farmers belonging to few categories dominate farming such as Jats in Haryana and Punjab, Gowda in Karnataka, Reddy in Andra Pradesh, Gounders in Tamil Nadu etc. Farmers belonging to Scheduled Castes and Scheduled Tribes either own meager land holdings or do not possess land and secure their livelihood through animal husbandry and agricultural labour. Women belonging to different categories are also involved in farming activities to a major extent. Infact, dairying is a women dominated enterprise as they perform 60- 70 per cent of the dairy activities like cleaning the shed, grazing animals, milking etc. (Ponnusamy, 2017) [2].

However, their contribution is not recognized and rewarded sufficiently. The situation is worse among women belonging SCs and STs as they are deprived of food and nutrition security at the household level.

4. Technology reach among the farmers

Off late, many novel extensions approach like decentralization of extension planning and monitoring, increased collaboration with non-governmental organizations (NGOs), and the formation of multidisciplinary teams of scientists, agro-clinics, and the Agricultural Technology Management Agency (ATMA) have been brought out to increase the reach and efficacy of the extension services in India. But still farmers' access to agricultural land, labour, inputs, capital and informational needs is not uniform across different castes and often, information and technology diffusion are constrained by social and economic boundaries. Farmers belonging to the lower caste are found to have limited access to new farm technologies, inputs and information, training and demonstrations etc. of the agriculture department ultimately resulting in lower farm income (Birthal *et al*., 2015) [12]. In heterogeneous farming society, the information delivered to the contact farmer does not necessarily reach every section of the society due to social stratification (Munshi, 2004) [13]. Moreover, the lower educational status of marginalized farmers also hinders information dissemination by extension agencies. Alongside, these marginalized farmers are often excluded from rural development activities (Deshpande, 2011) [10]. This situation might still widen the economic inequality among the farmers of different castes in the rural areas. In a complex and hierarchical social system in which caste plays a very decisive role in everyday life, proper targeting and dissemination of technology to the marginalized sections of society are very important for their development. Therefore, GOI has recognized the need to effectively target and prioritize the socially-marginalized farmers while framing agricultural strategies for their socio-economic and technological empowerment.

5. Resource poor farming community and dairy farming

According to the latest (10th) agricultural census 2015-16, marginalized sections like SCs and STs together account for only about 21 per cent of the operational holdings and the rest 79 per cent is held by other dominant castes. The average size of operational holdings for SCs, STs and others is 0.78ha, 1.40 and 1.08ha respectively. Majority of the farmers belonging to marginal and small categories worked either as tenants or agricultural labour. Scheduled Caste households' account for higher proportion of agricultural and rural labour households i.e. 58.90 percent compared to 26.20 per cent of Socially Advanced Classes (Krishnan 2019) [14]. Their dependence on crop income has reduced over the years and off-farm and dairying income share have increased (Singh and Datta, 2013) [15]. Unlike crop sector, dairying in India is more inclusive in the sense that it provides livelihood to majority of the farmers belonging to marginal and small categories. Farmers with marginal, small and semi-medium operational holdings (area less than 4 ha) own about 87.7 per cent of the livestock. Hence, development of livestock sector would facilitate inclusive growth in the country (DFAD, 2013-14). As landless farmers cannot undertake dairying as they cannot grow fodder or afford to buy it, it is pertinent that dairying is largely undertaken by marginal and small farmers who mostly belong to the disadvantaged communities in the society. The farmers in the marginal and small category pursue dairying as an income generating activity, to secure income risk from volatile crop production system. The production of milk in India is mostly governed by the marginal category farmers. From this discussion it is inferred that, the future of Indian milk production lies in the hands of smallholder (less than 2 ha) dairy farmers.

6. Constraints of resource poor farming community

- The lower educational status of the disadvantageous communities inhibits them from accessing extension and advisory services delivered through lectures, leaflets, pamphlets and demonstrations.
- Marginalized communities usually have strong social network within the caste which acts as an impediment to introduce new technologies as they are suspicious of outsiders and tend to stick to their existing traditional ways of practices. Hence there is a need to sensitize these farmers regarding technological improvements in their enterprises in order to bring them to the forefront of development.
- Information dissemination through contact farmers to the marginalized sections does not really help them as the contact farmers usually belong to upper castes and have strong social network within the caste rather than across the caste (Gupta *et al.* 2018) [17].
- Weak extension and training services and the consequent lack of technological knowledge of farmers are often considered to be the major factors behind the insufficient adoption of improved technologies (Ponnusamy and Pachaiyappan, 2017) [2]
- They also lag behind in communication skills, lack of awareness regarding development programmes and schemes, no contact with department officials, discrimination in access to training and demonstrations, poor knowledge regarding feeding and management practices of dairy animals, high cost of cattle feed, non-availability of green fodder round the year, low procurement price, delayed payments, inability to access veterinary services as they reside in reside in the remote areas, lack of knowledge regarding disease outbreak and its management etc. (Mahalakshmi *et al.*, 2016) [18].
- Majority of the dairy farmers possess lower resource base at the household level. Most of the technologies developed are not suitable for them as they were either developed on research stations or to suit the farming conditions of resource rich farmers (Rao and Ban). The gap between the technologies developed and adopted is widening owing to the various factors influencing technology transfer.

7. Systems of technology transfer

Technology transfer is a stream-lined flow of technical know-how from researchers through extension personnel to farmers, who receive, understand and adopt new practices according to their requirements and circumstances. Transfer of technology is said to be successful when the end users have utilized it effectively and eventually assimilate it (Ramanathan, 2000) [21].

Technology transfer in animal husbandry is undertaken by various agencies in the country as follows:

1. State Department of Animal Husbandry (SDAH)
2. Agricultural Technology Management Agency (ATMA)
3. Extension wings of ICAR and State Agril. And Veterinary Universities (SAUs/SVUs)
4. Krishi Vigyan Kendra (KVKs)
5. Dairy Cooperatives (AMUL, KMF)
6. Milk producer Companies (MPCs)
7. NGOs. (Akshaya Patra, Adamya Chetana etc.)
8. Private companies (Nestle, Lactalis, Danone etc.)

Although the objectives of these agencies differ from each other with respect to their mandates, they have immensely contributed for technology dissemination in animal husbandry thereby contributing to the socio-economic empowerment of the disadvantaged communities (Ponnusamy and Pachaiyappan, 2017) [2]. Since the animal health management gets precedence over production and productivity, the livestock extension activities are sporadic and spread over time and space and do not meet the requirements of a vast majority of farmers (Lehmann *et al*. 1994) [25]. Therefore, SDAH which is the primary agency for livestock extension in the State must increase its annual spending on extension activities like training, demonstration, information dissemination, creating awareness regarding spread of animal diseases to avoid economic losses and improve the income of dairy farmers.

8. Ways to target the resource poor farming community

Lack of land/meager land holding, small size of herd, lack of knowledge about scientific management of dairy animals, no access to training and field visits, reflect the disdain conditions of the disadvantaged communities in dairying. Therefore, proper identification and targeting of these communities is essential for their socio-economic upliftment and for providing sustainable income security which leads to empowerment especially for women. Following are some of the ways through which we can achieve their empowerment.

a. **Community based targeting:** A unique method involving the principle of 'learning without a trainer' methodology that is applied through a peer to peer, activity-based group model. Participants work together in small groups through sharing existing knowledge and experiences to solve problems are able to help each other understand and acquire skills required for their socio-economic improvement. Ex: Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for providing unskilled waged job to unemployed rural youths and women in off-season.
b. **Need centric approach:** Involves identification of beneficiaries whose needs and priorities match with each other so that they can be clubbed under one roof to impart the necessary knowledge, skills and techniques to solve their day-to-day problems. Ex: Establishment of Customer Hiring Centres (CHCs) in areas where the crop grown demands mechanized operations.
c. **Gender based extension:** normally, more than 70 per cent of the activities in dairying are carried out by women yet they lack access to resources like inputs, institutional credit, extension and advisory services, skill training and other welfare measures**.** This necessitates the need to target specifically rural women and provide handholding support to them to achieve whole family's empowerment. Ex: Pasu Sakhi- A woman empowerment model in animal husbandry carried out through Mahila Kisan Sashaktikaran Pariyojana (MKSP), a sub-component of National Rural Livelihood Mission (NRLM).
d. **Segmentation method of targeting:** the dairy farmers can be distinguished based on their income/herd size/education level/age etc. to streamline specific category of information, inputs and other benefits to different segments of the clientele group.
e. **Demand driven approach:** Assessing the genuine requirement of the dairy farmers is the most important factor to be considered before dissemination of technologies developed on the research stations as this would narrow the technology gap in the dairy sector and enables the research system to bring out innovations that are near customized to farmers' circumstances.
f. **Incentive based targeting:** Announcing benefit in terms of cash and kind would bring majority of the dairy farmers under one roof which makes dissemination and delivery of technologies easier as well as increased successful adoption of the new technology. Ex: financial incentives to paddy growing farmers for making use of machineries for harvesting rather than burning of residues.
g. **Adoption of a village**: Developing agencies like Non-Governmental Organizations (NGOs) and Not-for-profit-organizations may adopt villages having higher proportion of disadvantaged communities with poor access to resources and introduce project interventions for their socio-economic progress and follow up to ensure the sustainability of the project benefits
h. **Organizing camps:** Regularly organise camps at the village level and mobilize farmers to the centre of the village to disseminate information regarding animal health management and scientific dairy farming practices and also demonstrate improved practices to enable them to adopt the same in their own households.

9. Schemes of animal husbandry department for empowerment of resource poor farming community

No doubt the Government has taken a number of initiatives for development of SCs, which yielded positive outcomes. However, the focus of most of the welfare Schemes mainly centered on individual beneficiaries rather than integrated development of SCs as a group. Moreover, the level of awareness about the beneficial schemes is very low among the Scheduled Castes. Awareness is the foremost factor responsible for effective reaching of the programme/scheme.

10. Constraints of the system

The State Departments of Animal Husbandry (SDAH) - is mostly dominated by animal health concerns with negligible attention to production related advice to farmers. Moreover, their spending on livestock extension activities is only around 1–3 percent of their total budget. Consequently, the NSSO survey, 2005 revealed that only 5.10 per cent of the farmers' households in India were able to access information on animal husbandry against 40.40 per cent of the crop farming households (Chander *et al*. 2010) [24].

Sl. no	Name of the scheme				
1	**Rastriya Gokul Mission**	**Objectives**	**Sub-schemes**	**Funding**	**Duration of the project**
		Development and conservation of indigenous bovine breeds Genetic upgradation of bovine population Enhancement of milk production and productivity	Extension of AI coverage Accelerated breed development plan Breed multiplication farms	100% grant-in-aid for all the components except: 50% capital subsidy on breed multiplication farm entrepreneur 50% subsidy on use of sex sorted semen for getting assured pregnancy andsubsidy of Rs 5000 for farmers getting assured pregnancy using IVF	2021-22 to 2025-26
a)	Extension of AI coverage	Objectives	Benefits	Establishment of MAITRIs	
		Provides free of cost quality AI services at the farmer's doorstep.	1.5 Crore dairy farmers expected to get benefit of the scheme annually. Income of the participating farmers is expected to increase by Rs. 21500 annually after 3 years. Direct employment to 90,958 educated rural youth on self-sustainable basis.	Selected educated rural youth will be provided 3 months' basic training in AI. An amount of Rs. 31000 per trainee will be made available for training and Rs. 50000 for procurement of equipment	
b)	Accelerated Breed Improvement Programme	Incentives	Benefits		
	1) Using IVF technology 2) Using sorted semen	Subsidy at Rs. 5000 per pregnancy is available to the farmer Subsidy at Rs. 750 per assured pregnancy Incentive to AI technician @ Rs. 100 per AI	Income of participating farmers is expected to increase by Rs. 60000 per annum		
c)	Breed Multiplication Farms	Objectives	Funding		
		To develop private entrepreneurs to undertake cattle and buffalo breeding	One time assistance of 50% of project cost by the central government and remaining 50% as loan from scheduled banks		
2	National Programme for Dairy Development	Objectives	Funding	Benefits	
		To strengthen infrastructure for quality milk production and linking the farmer to consumer	90:10 for NER States and Hilly States 60:40 for other States	Installation of 8900 bulk milk coolers at the village leveland strengthening milk testing facilities	
3	Supporting Dairy Cooperatives and FPOs Engaged in Dairying	Benefits	Outlay	Duration	
		2% interest subvention on secured working capital loan and Additional 2% interest subvention at the end of loan repayment period	500 Crore	2021-22 to 2025-26	
4	Dairy Processing and Infrastructure Development Fund	Objectives	Funding	Duration	
		Modernization of milk chilling and processing plants and value added products making facilities	2.5% interest subvention loan through NABARD	2018-19 to 2030-31	
5	National Livestock Mission				
	3 Sub-missions	Objectives	Benefits	Subsidy	
a)	Breed Development of Livestock and Poultry	Entrepreneurship development for rural poultry, goat, sheep and pig	Direct employment to 1.5 lakh farmers	Poultry-25 lakhs Sheep and goat-50 lakhs Pig-30 lakhs	
b)	Feed and Fodder Development	Quality fodder and seed production. Entrepreneurship for feed and fodder	7 lakh jobs and 20 lakh livestock rearing households get nutritious fodder locally	Funding 50% subsidy and remaining loan	
c)	Innovation and Extension	Incentivize applied research for development of the sector. Supporting extension activities for animal husbandry.			
6	Livestock Health and Disease Control	Eradicate Peste-Des-Petits Ruminants (PPR) by 2030 Control Foot and Mouth disease, Classical Swine Fever and Brucellosis	Reduced risk to animal and human health. Overall increase in livestock productivity.		
7	Animal Husbandry Infrastructure Development Fund	Establishment of Dairy processing and value addition infrastructure, meat processing infrastructure, animal feed plant	Funding Loan upto 90% of the estimated project costs		
8	Kisan Credit Card to Animal Husbandry Farmers	To help animal husbandry farmers in meeting their working capital needs at lower interest rates			

11. Conclusion

Dairy sector is a key platform to achieve inclusive and equitable growth of disadvantageous communities in the country. Though the income share from dairy sector was smaller but its contribution towards rural livelihood was more secured than other sources. This re-emphasises the importance of dairying in farming system for its doubly beneficial social impact in improving incomes and reducing income inequality (Mandal *et al*., 2010) [16]. Therefore, dairying has the capacity to reduce poverty at the household level and it should be an integral part of poverty alleviation Programmes. Farmers belonging to disadvantaged communities with similar socio-economic situation must be mobilized on to a single platform to effectively target modern practices and advanced technologies towards them for achieving their socio-economic and technological empowerment.

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