

INFORMAL EDUCATION NEEDS IN DAIRYING AND LIVESTOCK SECTOR



The formal extension institutions are unable to meet information and skill requirements of a vast segment of dairy and livestock farmers. Thus, there is an urgent need to think of alternate systems of information delivery to meet informal education needs of this target clientele, argue Mahesh Chander and Devesh Thakur

CONTEXT

Indian livestock sector has huge opportunities for growth and expansion owing to increased domestic and global demand for livestock products. Milk demand in India is set to touch 200-210 million tons by 2021-2022 (GOI, 2012). Unless full potential of livestock wealth is harnessed, increasing quantity and quality of livestock products would remain a challenge. The per capita availability of milk, meat and eggs remains much lower than the desired levels, especially amidst the huge regional variations in consumption patterns across the country. Milk and meat productivity per animal is still much lower than the world averages. Most of the livestock owners in India lack required information on practices which could enhance livestock productivity and product quality. The latest report based on the situation assessment survey of agricultural households in India suggests that over 90% of the small-scale farmers (owning <2 hectares of land) continue to be isolated from new technologies and guidance of public research institutes (<http://mail.mospi.gov.in/index.php/catalog/157>).



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The National Skill Development Council (NSDC) has pointed out several skill gaps and requirements, many of them pertain to extension-based soft skills (NSDC, 2009). The presence of unskilled professionals with inadequate knowledge in dairying is one of the serious constraints with respect to dairy development in India (ASCI, 2015). The problem exists in both the unorganized and organized sectors. In the organized sector, only some dairy

cooperatives and a few bigger dairy companies have skilled manpower to limited extent to perform dairy operations. The Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) has identified a total of 173 courses in the areas of livestock, poultry and fisheries sectors for training and skill development (Express News Service, 2013). The courses that range from one week to three months have been identified by TANUVAS in the context of the growing demand for manpower in these industries. However, the existing capacity with TANUVAS and also at other livestock training institutions like veterinary colleges, SAUs etc is not good enough for skilling the huge manpower engaged in the sector.



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Lack of information has been cited as the most important factor for dairy product quality vis-a-vis prescribed standards in India (Jagadish, 2013). Formal extension institutions currently seem unable to meet the information and skill requirements of vast segment of dairy workers. Dispersed rural populations; high cost of delivering information in person and a lack of accountability have limited the efficacy of traditional extension systems in India (Cole and Fernando, 2012). This situation demands creation of alternate systems of information delivery to meet informal education needs of the Indian dairy farmers. Before that we may have to answer following questions?

1. What is the existing situation of information and skills of workers in this sector?
2. What are the priority areas of information requirements in dairying and animal husbandry?
3. What are the possible ways to improve the situation?

EXTENSION INFORMATION AND SKILL REQUIREMENTS IN DAIRYING AND ANIMAL HUSBANDRY

According to NSDC, to participate in organized milk marketing, milk producer is expected to have access to certain basic extension information. These requirements may vary from identifying a loyal consumer locally, to becoming a member of village level cooperative for getting the best prices for the produce. The grassroots extension workers are found to be lacking essential skills. Dairy personnel working at procurement level have poor extension networking skills for maintaining good relationship with the farmers and milk producers or village cooperatives. In addition, inadequate communication skills, especially in local language

because of diversity of dialects, are also observed among them (NSDC, 2009). Similarly, basic quality requirements and ways to maintain hygienic conditions, implementing basic value addition in terms of pre-heating, etc. for minimizing wastage are also needed. Women constitute major proportion of workforce in dairying (Box 1) and they do not possess formal training or skills to manage dairy enterprises. In fact, many of them have a low perception of information needs on dairying. Low level of education and weaker socio-economic status are one of the most common reasons for poor perception about information requirements (Devaki and Senthilkumar, 2013).

Box 1: Workforce in dairying and animal husbandry in India

A sizeable proportion (80%) of India's milk production is contributed by small and marginal farmers. Nearly eighty percent of the Indian dairy industry is still unorganized (Jagadish, 2013). 8.47 million people on a yearly basis are employed in dairy sector, out of which 71% are women (ASCI, 2015). There are 800 dairy plants in the country, but only 18% milk is handled by the organized sector. 95 percent of workers in the dairy sector in rural areas are engaged in production-related activities and only one percent are in the processing. Only 1.2% of dairy workers are engaged in processing including manufacturing of different dairy products in both the formal and traditional informal sectors. In urban areas, there is a slight change in workforce engaged in dairying. 31% of the dairy workers in urban areas are engaged in selling of milk and milk products (Staal et. al., 2008). A little over 6% of workers in the dairy sub-sector are engaged in selling of milk and milk products, including both wholesale as well as retail.

The estimated share of persons who have attended some kind of formal training in agriculture is found to be very low at 1.1 per cent at all India level. The proportion of female workers receiving any training in agriculture is even lower (NSSO, 2013). Public extension systems currently seem to be unable to meet information needs and skill requirements of dairy and livestock owners. Of the 40.6% households who received extension assistance, only 11% of the services came from physical government machinery -- extension agents, Krishi Vigyan Kendras (KVKs) and agricultural universities. More farmers depended on other progressive farmers (20%), media including radio, TV, newspaper (19.6%) and private commercial agents (7.4%) (<http://mail.mospi.gov.in/index.php/catalog/157>).

PROBLEMS IN PRIORITIZING LIVESTOCK BASED INFORMATION DELIVERY

International Dairy Federation recommends that dairy producers need to have information about good dairy farming practices to support the production and marketing of safe, quality-assured milk and dairy products. These include broad areas of animal nutrition, animal health, animal welfare, milking hygiene and environment. Studies in India (Subash *et al*, 2015) have also emphasized that information on animal nutrition, animal health, animal welfare, milking hygiene and environment is needed the most by farmers (Box 2). Among these, information about animal healthcare remains a major concern among livestock rearers. Further, in animal health, information about symptoms and diseases management has been most sought after by farmers as the studies have reported (Phand et al, 2009).

Not surprisingly, the current dairy information delivery remains skewed towards information provision on areas of animal health; feeding and breeding (Ali, 2011) and lays less emphasis on processing and marketing. Whereas, it is now recognized that information on marketing aspects of livestock and products have become increasingly important. Even the women dairy owners have prioritized livestock marketing aspects as their most important information need.

Box 2: Areas of Information needs of livestock and dairy farmers

According to FAO and IDF (2011), dairy farmers, as the primary producers in the supply chain, should also be given the opportunity to add value to their product by adopting methods of production that satisfy the demands of processors and customers. They need to adopt Good Dairy Farming Practices in the following broad areas: Animal health, Milking hygiene, Nutrition (feed and water), Animal welfare and Environment.

These practices ensure that safe quality milk is produced from healthy animals using management practices that are sustainable from an animal welfare, social, economic and environmental perspective.

Subash et al (2015) prioritized informational needs of dairy farmers in Karnal district of Haryana based on the weighted mean score of each subject area.

According to the study, most sought after information by the farmers was in the areas of nutrition and feeding, breeding and reproduction, general management, health care management and fodder production respectively.

A. ANIMAL NUTRITION

- i. Feeding schedule for milch animals
- ii. Information on mineral mixtures
- iii. Formulation of ration
- iv. Information on calf starter
- v. Complete feed block
- vi. Complete feed for dairy animals
- vii. Bypass nutrient technology
- viii. Colostrum feeding to new born calf

B. DAIRY BREEDING AND REPRODUCTION

- i. Detection of heat
- ii. Time of service
- iii. Pregnancy diagnosis
- iv. Artificial insemination
- v. Selection of milch animals
- vi. High yielding breeds of animals
- vii. Gestation period
- viii. Breeding heifer
- ix. Suitable to the region
- x. Castration of scrub bulls

C. GENERAL LIVESTOCK MANAGEMENT

- i. Clean milk production
- ii. Care & management of milch animals
- iii. Housing & sanitation management
- iv. Care & management of new born calf
- v. Record keeping
- vi. Milking methods were regarded as important areas

D. LIVESTOCK HEALTH CARE MANAGEMENT

- i. Vaccination schedule
- ii. Knowledge about diseases
- iii. Control of external parasite
- iv. Deworming practices
- v. Disinfection of shed
- vi. Disposal of dead animals
- vii. Isolation of sick animals

E. FODDER PRODUCTION

- i. Fodder crops and its cultivation
- ii. Conservation of fodder
- iii. Chaffing fodder
- iv. Making of urea treat straw

Raksha (2014) in her study assessed information needs of the women livestock owners of Jharkhand. In her study, it was found that 100% farmwomen wanted information on

- i. Credit/subsidy schemes.
- ii. Milk products and their preparation.
- iii. Marketing of milk and milk products.
- iv. Marketing of sheep/goat/pig/poultry.

According to her, all women respondents were always depending on relatives and neighbours for information on livestock matters. Also, cent per cent had never asked any matter related to livestock to any KVK specialist. She also reported that information on the issues like, production and marketing of the livestock products and its value addition is also a very crucial area where information provision and trainings are required by the women.

LIMITED ROLE OF FORMAL LIVESTOCK EXTENSION INSTITUTIONS

Major agencies involved in livestock extension information delivery are state animal husbandry departments, dairy co-operatives, input dealers, *Krishi Vigyan Kendras* (KVKs) and Non-Governmental Organizations (Hegde, 2012). These agencies use different forms of extension information delivery (individual, group and mass contact methods) to the target clientele. Unfortunately, these agencies suffer from one or the other limitation in their livestock extension activities. The state animal husbandry departments are inadequately



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staffed, poorly budgeted and ill equipped with major emphasis on clinical healthcare and have little orientation for livestock extension activities (Chander *et al*, 2010). The activity of dairy co-operatives are restricted to milch cattle of co-operative farmers. Access, satisfaction level and willingness to receive extension information have been found to be low even among dairy co-operative members (Chander and Sulaiman, 2014).

The veterinary pharmaceutical and feed companies are concerned more with their product development and promotion. The activities of KVKs are inclined clearly towards agriculture extension focusing little on livestock extension (Chander *et al*, 2010). NGOs too, need to improve the professional competence of animal husbandry information providers (Hegde, 2012). Referring to animal husbandry information services in Uttar Pradesh, Ali (2011) reported the services were of average quality due to the paucity of information emanating from organized extension services. He further added that lot needs to be done in the quality, reliability, and timeliness of animal husbandry based information delivery. Mobile based applications can support delivery of information in this context and its potential needs to be exploited fully.

EXPLORING THE POTENTIAL OF MOBILE PHONES IN LIVESTOCK EXTENSION

Mobile based applications in agriculture are also now gaining ground (Box 3). The National Dairy Development Board (NDDB) in 2015 launched one such mobile based application. This application (app) named '*Pashu Poshan*' advises farmers about balanced diets for dairy cows and buffaloes (PTI, 2015).

Government of India has also launched two apps for animal husbandry which are available in MKisan Portal. One of the applications is used for making request for allotment of breeding bull under Animal Husbandry department of government of Sikkim. Similarly, another app is about registration of applicant who wants to obtain assistance under poultry chick and backyard poultry Schemes by animal husbandry department of Himachal Pradesh. Both have been developed by CDAC, Mumbai (<http://mkisan.gov.in/downloadmobileapps.aspx>).



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Mobile based applications on agriculture have not been popular yet because of lack of awareness as also farmers are not comfortable to use them (http://www.business-standard.com/article/current-affairs/few-takers-for-mobile-based-applications-for-farmers-in-gujarat-114060800640_1.html).

Box 3: Mobile based Applications in animal husbandry in Africa

iCow is an SMS (text message) and voice-based mobile phone application for small-scale dairy farmers in Kenya. It is designed to run on both low-end and high-end mobile phones. It's something of a virtual veterinary midwife, helping farmers track the oestrus stages of their cows, while giving them valuable tips on cow breeding, animal nutrition, milk production efficiency and gestation. The app prompts farmers on vital days of cows gestation period; helps farmers find the nearest vet and AI providers; collects and stores farmer milk and breeding records and sends farmers best dairy practices. The text messages and voice prompts are sent to customers within the 365-day cow cycle (Forbes, 2011). Another smart-phone based mobile app is Vet Africa designed for farmers and vets in Africa. This has been found to be effective in supporting the diagnosis of cattle diseases in a range of settings in sub-Saharan Africa (CVER, 2015).

WAYS FORWARD

1. Strengthening livestock extension through pluralism

Current livestock extension activities are sporadic and irregular in nature. There is definitely a paucity of co-ordination among different stakeholders. Farmer organizations and NGOs have advantages of having more flexible approach and have greater farmer networking. Private livestock based organizations can potentially improve efficiency of service delivery. They could also contribute through corporate social responsibility (CSR) activities (Chander, Thakur and Verma, 2015). The state animal husbandry departments should cater to services aimed at public goods. The universities and research institutions should be able to highlight innovations in extension service delivery mechanisms. All these actors need to work in co-ordination to meet information and skill needs of livestock owners.



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2. Farmer assessment in technology generation and transfer

Most of the livestock technologies have poor rate of dissemination. This is because they primarily begin at laboratories and view farm clientele as passive adopters of such technologies. This necessitates the need to incorporate farmer assessment in livestock technologies through on farm trials.

3. Use of Digital Interventions

Government of India has initiated several digital interventions such as virtual KVKs through which they are able to communicate with their large set of registered farmers via three kinds of medium i.e. voice, SMS and email. Livestock owners face several problems which are unforeseen and non-routine in nature such as animals falling ill and disease outbreaks etc. Thus, question answer segment specifically for livestock owners may be added in this futuristic extension delivery mechanism.

4. ICT enabled animal extension workers

Newer ICT tools such as personal digital assistants, mobile applications, information kiosks, and social media tools can be extremely useful in improving access of information to the livestock owners. Initially the first line extension workers and moderately skilled farmers may be trained to use these tools. Mediation through such IT enabled extension workers can help in using the knowledge from expert systems and apps in dairy and husbandry for farmers to



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boost their livestock output and income. For instance, a Mobile phone based audio module on scientific calf management developed at ICAR- Indian Veterinary Research Institute, was perceived by the farmers as highly informative, useful, ready to use and handy which covered entire information on calf management. It was also found helpful in increasing the knowledge level of the farmers on calf management.

5. Promote Farmer to Farmer Extension

Farmer to Farmer extension is appropriate for a wide range of target groups, including women, youth, and the poor. It has been used by dairy co-operatives among their members for horizontal dissemination of information (Chander and Sulaiman, 2014). Farmer to Farmer extension can be useful for spread of simple dairy innovations such as mineral mixture feeding and for becoming a member of producer organization etc. It should however not be used for complex, high-risk, technical enterprises and practices, where cost of an error might be very high e.g. treatment of livestock diseases.

6. Focus on Information needs of Women dairy farmers

Mobile telephony offers newer opportunities to reach women farmers and women in male headed farming households (Mittal and Hariharan, 2015). Voice messages as regular reminders on deworming, mineral mixture feeding to pregnant, lactating animals and heifers etc. can improve adherence to these dairy practices by women who most commonly perform livestock management activities.



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7. Focus on emerging information needs of dairy producers

Although, information delivery in areas of animal health and production is vital, marketing information in today's market-driven, high-value food economy has become even more

important e.g. one of the initial information required in establishing livestock enterprise is knowing about quality animal source market. Also, the owner needs to know about marketing opportunities to run the enterprise profitably such as linking his produce to the market through co-operatives and other organizations. The situation therefore, warrants moving beyond production related information delivery to information on marketing of livestock and livestock products as well.

AESA Blogs on Livestock Extension

54. The Yak-Moving Treasure of High Himalayas. Krishna Acharya.

<http://www.aesa-gfras.net/Resources/file/BLOG%2054.pdf>

53. Can CSR Funds Strengthen Indian Livestock Sector? Mahesh Chander, Devesh Thakur and Adesh Kumar Verma. <http://www.aesa-gfras.net/Resources/file/Blog%2053.pdf>

51. Are We Generating Need Based and Relevant Livestock Technologies? Prakashkumar Rathod and Mahesh Chander. <http://www.aesa-gfras.net/Resources/file/BLOG%2051.pdf>

50. Extension for Promotion of Improved Backyard Poultry. M. Rajalakshmi, SVN Rao and K. Natchimuthu. <http://www.aesa-gfras.net/Resources/file/BLOG%2050.pdf>

45. Inefficient Extension Services: Livestock Owners Bear the Brunt. SVN Rao and K Natchimuthu. <http://www.aesa-gfras.net/Resources/file/Blog-SVN-FINAL-13-%20March%202015.pdf>

38. Quantity Vs Quality: The great dilemma of livestock research. SVN Rao and K Natchimuthu. <http://www.aesa-gfras.net/Resources/file/Blog%2038.pdf>

32. Livestock extension-need for a paradigm change. DV Rangnekar.

<http://www.aesa-gfras.net/Resources/file/Blog%2032%20May%202014.pdf>

6. Why Collaboration Matters for Livestock Development? SVN Rao.

<http://www.aesa-gfras.net/Resources/file/Blog%206%20Why%20collaboration%20matters.pdf>

1. Beyond treatment and breed improvement. Mahesh Chander.

<http://www.aesa-gfras.net/Resources/file/Blog%201-Beyond%20treatment%20and%20breed%20improvement.pdf>

8. Use of Social Media

Social media has the ability to generate online discussions and interactions on farm based topics. Reports indicate increased use of social media (Facebook and WhatsApp) by farming community in India. Public extension systems currently have not yet started using these tools for information sharing and feedback on animal husbandry among the farmers. It is high time that these tools are used to share information which is reliable and authentic as well as demand driven and engaging with the farmer clientele.

REFERENCES

Ali J (2011) Farmers' Perspectives on Animal Husbandry Information Services in India, *Journal of Agricultural & Food Information*, 12:3-4, 329-346.

ASCI (2015) Labour Market Information System (LMIS) Report on Dairy Sector, Agriculture Skill Council of India, Gurgaon, India.

<http://www.asci-india.com/pdf/LMIS-on-Dairy.pdf> Accessed January 2015.

Chander, M., Dutt, T., Ravikumar, R. K. and Subrahmanyeswari, B., (2010). Livestock technology transfer service in India: A review. *Indian Journal of Animal Sciences* 80 (11): 1115–25

Chander, M., and Sulaiman, V, R (2014) Strengthening Extension and Advisory Services through Producer Organisations: A Case of Milk Producer Cooperatives in India, Proceedings and Recommendations of the Consultations on the role of Producer Organisations in Strengthening Extension and Advisory Provision in the Dairy/Livestock Sector in India, (August-October, 2014).

Chander, Mahesh; Thakur, Devesh & Verma, Adesh. 2015. Can CSR Funds Strengthen Indian Livestock Sector? AESA Blog 53, October, <http://www.aesa-gfras.net/blog.aspx?id=64&title=Can%20CSR%20Funds%20Strengthen%20Indian%20Livestock%20Sector?&category=S>

Cole, S. A., and Fernando, A, N (2012) The value of advice: Evidence from mobile phone-based agricultural extension. Working Paper, Harvard Business School Finance Working Paper, (13-047).
http://www.hbs.edu/faculty/Publication%20Files/13-047_08f3cd3a-dfb4-482e-af80f53b20f1ad46.pdf

CVER (2015) Successful completion of initial clinical field trial using smart-phone based diagnostic tool in Ethiopia, Centre for Veterinary Epidemiological Research , University of Prince Edward Island, Canada.
<http://cver.upei.ca/news/successful-completion-initial-clinical-field-trial-using-smart-phone-based-diagnostic-tool-ethi> Accessed January, 2015.

Devaki, K., and Senthilkumar, K (2013) Relationship between different characteristics of livestock farm women on information need perception. *International Journal of Science, Environment and Technology*, 2(5), 981-988. (n.d.).

Express News Service (2013) TANUVAS identifies 173 courses for training. Indian Express, Aug15, <http://www.newindianexpress.com/cities/chennai/TANUVAS-identifies-173-courses-for-training/2013/08/15/article1734572.ece?service=print>

FAO and IDF (2011) Guide to good dairy farming practice. Animal Production and Health Guidelines. No. 8. Rome.
http://www.fao.org/fileadmin/user_upload/animalwelfare/ba0027e00.pdf

Forbes (2011) The Best African Mobile Apps: iCow contributed by Mfonobong Nsehe.
<http://www.forbes.com/sites/mfonobongnsehe/2011/08/02/the-best-african-mobile-apps-icow/>

GOI (2012) Enhancing Milk Production through National Dairy Plan, Press Information Bureau, Government of India, New Delhi
<http://pib.nic.in/newsite/mbErel.aspx?relid=84759>

Hegde, N. R (2012) Dairy Extension for Transfer of Technologies. Souvenir. Indian Dairying: Perspective 2020. XL Dairy Industry Conference. Feb. 2-5. Indian Dairy Association, New Delhi. 75-80.

Jagadish, T(2013) An economic and financial analysis of dairy: A case study of Guntur district milk producers' mutually aided Co-operative Union Ltd., Vadlamudi ,Master's Thesis,Department of Commerce and Business Administration, Acharya Nagarjuna University, Guntur,Andhra Pradesh,India.

Mittal,S., and Hariharan,V (2015) Enhancing the capacities of farm women ,AESA blog 47 <http://www.aesa-gfras.net/Resources/file/Blog%2047-Surabhi.pdf>

NSDC(2009) Human Resource and Skill Requirements in the Food Processing Sector(2022)-A Report, National Skill Development Corporation Ministry of Skill Development & Entrepreneurship, Government of India

NSSO (2013) Situation assessment of Agricultural Households in India Report No. DDI-IND-NSSO-SAS-2013-v1.0 Ministry of Statistics and Programme Implementation, GOI, New Delhi. <http://mail.mospi.gov.in/index.php/catalog/157>

Phand, S., Tiwari, R., and Sharma, M. C (2009) Assessment of Information Need of Dairy Owners in Maharashtra. *Journal of Community Mobilization and Sustainable Development*, 4(2), 4-9.

PTI (2015) Government launches mobile app for dairy farmers, Press Trust of India, GOI,New Delhi.

Raksha (2014) Information needs of the Rural Women involved in Livestock Sector: A study form Jharkhand *Indian Research Journal of Extension Education* 14 (4), November, 2014

Staal, S.J., Alejandro, N.P. and Mohammad, J (2008) Dairy Development for the Resource Poor. Part 3: Pakistan and India Dairy Development Case Studies PPLPI Working Paper No. 44-3.

Subash, S., Gupta, J., and Babu, G. P (2015) Information Needs Assessment and Prioritization of Dairy Farmers. *Journal of Krishi Vigyan*,4(1), 51-55.

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