

ICT FOR TRANSFER OF TECHNOLOGY IN LIVESTOCK MANAGEMENT

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ABSTRACT

The dairy sector in India plays a pivotal role in upliftment of socio-economic and employment generation for rural households. India is the top milk producing nation in the world contributing about 15% to the global milk pool. In the ongoing decade (2000 onwards) the compound growth rate of milk production has been more than 3.5% per annum. The contribution of agriculture and allied sectors is about 14.20% of total GDP while livestock sector alone is contributing about 32% of agriculture. Information and Communication Technology (ICT) in the operational process, rural development, communication, just in time services plays the major roles in fulfilling the needs to achieve the productivity of their services and products. Hence, the only alternative to empower the villages is to use ICT tools to bridge the gaps in adoption of recommended new technologies. The ICTs include community radio and television, cellular-telephony, use of computing devices, digital imaging, the Internet and Wide Area Networking (WAN), Wi-Fi and Mixed Media. The use of ICT to contribute for sustainable growth in livestock production in India is not a matter of providing computers and Internet connectivity or computerization of livestock research and development institutions. Krishi Vigyan Kendra is very important base for transfer of technology from laboratory to farmers' field with respect to agricultural and allied subjects. The KVK model is aimed to provide timely and appropriate technical advice to the needed farmers on need basis. The modern information tools viz., mobile, lap-top and internet, agri-portal system through internet, market price information system through mobile phone are the key ICT based technologies delivered to the farmers and timely information/advice are communicating as per the need of the situation.

Keywords: *ICT, Transfer of Technology, Livestock Management, KVK Sirsa.*

1. INTRODUCTION

The use of new Information and Communications Technology (ICT) has revolutionized manufacturing and services the world over. In the more developed countries, the use of ICT has become central to improve productivity in agriculture and livestock production especially through its application in precision agriculture and livestock farming. It is of developing effective information systems for planning and monitoring livestock development programmes, improving livestock services and enabling learning for capacity development that use ICT effectively and efficiently.

The contribution of livestock sector to India's economy, livelihoods, food and nutritional security and potential is very essential for further development. This would need more robust planning and monitoring of the livestock sector, the need to make livestock services upto International standards and build capacity across the sector to meet the challenges of global competitiveness in animal production and marketing. Ultimately, India will need to apply new ICTs effectively in improving these systems so that they support meeting each of the above requirements for its livestock sector.

2. INDIAN LIVESTOCK AND ITS IMPORTANCE

India covers vast geography of nearly 32.9 million sq. KM with population of more than One Billion covering 6,00,000 villages. India has a huge bovine population of 196 million cattle and 80 million buffaloes together producing 121 million tons of milk accounting for about 15 per cent of the world's milk production. During the last 55 years since independence, livestock population has increased manifold and now India ranks first in world's milk production. The dairy sector in India provides regular employment to 9.8 million people in principal and 8.6 million in subsidiary status. While the share of agricultural output to the total GDP has been declining, the share of livestock output to agriculture has been increasing and now it accounts for 25 per cent of agricultural output and 6 per cent of total GDP. (Birthal *et al.*, 2002). The importance of livestock goes beyond its food production function. It provides draft power and organic manure for agriculture and fuel for domestic purpose. Growth in livestock sector is thus reckoned to reduce interpersonal and inter regional inequalities, and alleviate poverty. Thus, ICT initiatives will provide a strong case for effective coverage and dissemination of livestock outreach information to the farming community.

New ICTs include community radio and television, cellular telephony, use of computing devices, digital imaging, the internet and wide area Networking (WAN), Wi-Fi and Mixed Media. For Example use of radio for internet

access and Internet radio, SMS services and WAP (Wireless Access Protocol) based Internet access using cellular telephony as also embedded use of micro-processors, computing devices and applications and digital media in processes and systems for data and information management and communications.

3. TRANSFER OF TECHNOLOGY TO THE LIVESTOCK OWNERS

3.1 Cyber Livestock Extension: Latest Tool of ICT

Cyber space is the imaginary or virtual space of computers connected with each other on networks, across the globe. Thus computers can access information in the form of text, graphic, audio, video and animation files. Software tools on networks provide facilities to interactively access the information from connected servers (*Sharma, 2000*).

Livestock extension relates to the process of *carrying* the technology of scientific animal husbandry to the livestock owner to enable him/her to utilize the information in making appropriate decisions to improve the production of animals and thus improve his/her economy. Livestock extension services seek to impart the necessary skills to the farmers for undertaking improved animal husbandry operations, to make available timely information and improved practices in an easily understandable form suited to their level of literacy and awareness and to create in them a favourable attitude for innovation and change (*Benor, 1984*). Extension is the central mechanism in the livestock development process, both in terms of technology transfer and human resource development (*Samanta, 1993*). Cyber extension means using the power of online networks, computer communications and digital interactive multimedia to facilitate dissemination of animal husbandry technology.

3.2 Limitations of Traditional Livestock Extension Methods

1. *Expensive*: It costs a lot of money to produce and print extension materials and to train a whole chain of livestock extension personnel.
2. *Time Consuming*: For a message to pass from a research station/university to the livestock owners, it involves many actors to understand and deliver the message to next layer.
3. *Message Distortion*: A number of evaluation studies of Training and Visit system of extension indicate that the quality of extension messages gets heavily distorted and eroded when it ultimately reaches to the end users.
4. *Poor Communication Capacity*: There may be wide gap between the technologies disseminated from the research laboratories and adopted at the level of end users.
5. *Neglect of Technology Transfer in Livestock Production*: Technology transfer is neglected for livestock production and it can mainly be attributed to; (a) Transmission of information for crop production has been a major priority for most extension services but not livestock production although the demand for livestock products is growing more rapidly than the demand for crops, (b) The focus of animal husbandry extension is on animal health rather than production aspects. It is thus found that the capacity of traditional livestock extension system is very limited and the challenges of reaching all the villages and the livestock owners are becoming more and more difficult (*Mathewman and Mortan, 1995*).

3.3 Advantages of New Technology Transfer Method

1. *Save Money and Time*: Scientists can prepare and update electronic versions of messages, FLDs and OFTs results themselves and load into computers which save money and time to reach interested end users instantly.
2. *Continuous Availability*: The key attribute of cyber extension is its availability all the time (24 hours). It can be uploaded at any time as and when required by the end users according to their needs.
3. *Cut Steps in the Diffusion Process*: Cyber outreach will remove a number of steps altogether from the traditional extension process. All the programmes can be eliminated altogether. The information can be directly posted on the Internet, which will be available to extension functionaries and farmers at district, Sub-division, block and village level. All the concerned will get the information immediately and queries/clarification/improvement will also be addressed equally fast without involving a chain of extension functionaries.
4. *Information Rich and Interactive*: It appeals to the interested extension workers and analytical farmers and allows them to search and locate information they need.
5. *Instant International Reach*: Cyber extension method of technology transfer will eliminate the time and distance barrier that get in the way of knowing the latest information on any particular livestock problem from any part of the world and can be discussed with the best scientist/expert in the field.

3.4 Information and Communication Technologies (ICT) for Livestock Management

The applications of ICT have made a difference in the delivery of services in rural India. In National Dairy Development Board, ICT is being used at milk collection centre and in Cooperatives to measure butter fat content of milk, test the quality of milk and promptly make the payment to the farmers/livestock owners. It has resulted in the removal of incentives to those who adulterated milk, reduced the time for payment and build-up the confidence in farmers on cooperative systems.

3.4.1 Semantic Web

Semantic Web is a group of methods and technologies that allow machines to understand the meaning (or semantics) of information on the WWW. Efforts are on to make the Web capable of analyzing all the data, *i.e.* the content, links and transactions between people and computers on the Web.

3.5 Pervasive Computing

Pervasive computing is the trend that is increasing everywhere, connected computing devices in the environment, a trend being brought by a convergence of advanced electronic and wireless-technologies and the internet. Researchers expect that in the future, smart devices all around us will maintain current information about their locations, the contexts in which they are being used, and relevant data about the users.

3.6 Cloud Computing

Cloud computing is Internet-based computing, whereby shared resources, software and information are provided to computers and other devices on demand, like the electricity grid and it typically involves over-the-Internet provision of dynamically scalable and often virtualized resources. Most cloud computing infrastructures consist of services delivered through common centres and built on services (Sharma, 2010).

4. CONCLUSIONS

Several emerging information and communication technologies (ICT) with relevant to livestock management in India have been discussed. Even though financial resources may limit ICT equipment investments, strengthening traditional communication channels and systems will largely improve information flow and collaboration. Hence, the only alternative to empower these villagers is to use ICT tools in bringing these gaps in their day-to-day lifestyle and its bottlenecks. Also, the ICT can help surmount barriers present in providing information resources at a low cost and make applications feasible and profitable.

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