EXTENSION MANAGEMENT IN ANIMAL RESOURCE DEVELOPMENT FOR IMPROVEMENT IN RURAL ECONOMY : A FEW ISSUES

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India is very rich in respect to its holding of livestock population. Fifteen per cent of the global cattle population sustains on merely 2.5 per cent of world's land resources, being held by India. A very high proportion of the country's population depends, either directly or indirectly, on livestock resources for maintaining their livelihood. More than 73 per cent of rural households in the country maintain livestock as a source of subsidiary income generation, which account for upto 40 per cent of their annual income. More importantly, almost 80 per cent of the 479 million livestock, including 197 million cattle and 88 million buffaloes in the country are held by small and marginal farming households, thereby making the livestock rearing an inexplicable component of their livelihood system. Again, more than 72 per cent rural mulch animal holding households own only one or two animals (Negi, 2002). Thus, any attempt of developing the livestock sector of the country should, essentially focus its attention on the resource poor segment of the rural society and thereby make the programme relevant to their conditions also.

In terms of productivity, India's huge livestock resources are one of the poorest in the world. In terms of milk, with the current production level of 88 million tonnes, India, although earned the distinction of the highest producer in the world, it is hardly 13.8 per cent of the global milk production. In respect of meat also, the country is lagging behind with the total production hovering around 0.37 million tonnes. The wool production on the other hand, was 40.6 million kg. only in 1992 (Prabharan, 2000). However, under the Indian context, besides milk and meat etc., the livestock contribute significantly in terms of draft services as well as manures towards meeting the requirements

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of agriculture. About 40 per cent of the cattle and 25 per cent of the buffalo population of the country are used by the farming communities across the country to cultivate an estimated area of 60 million hectares. There are 26 excellent breeds of cattle and 6 breeds of buffaloes, which are some of the best in the world in terms of their draft capacity, disease resistance and heat tolerance (World Bank, 1999).

The livestock sector not only has tremendous growth potential but also plays a crucial role in ameliorating the plight of the poor farming communities. Thus, the development planning in Animal Husbandry should be taken up on the premise that the production increase cannot be the only goal of such process, because the sector forms the back bone of the livelihood security system for 700 million men, women and children of the rural India. Hence, any discussion on extension management strategy should take into consideration the various reasons for the farming communities to maintain animals in their livelihood systems. India's diverse livestock production systems meet multifarious requirements. Although milk production and traction are the two main productive activities of most bovine systems, livestock resources, quite often, do act as insurance against bad times for the poor farmers. Besides, mere size not necessarily the productivity of cattle holding, signifies the status of their owners in many parts of rural India even today.

Extensoion Management *Vis-à-Vis* Transfer of Technology

Changing Perspectives of Extension Management in Livestock Extension

The history of developing the livestock sector started through attempts of increasing productivity of the dairy sector by taking up a number of micro level city/troops centered projects in the pre-independence era. In these projects, research and education for the first time, were conceived as two major development components. Such attempts were followed by cooperativisation in the dairy sector, signifying an important shift in respect of involving farmer-producers in the development process. However, in the post independence era, animal husbandry became one of the segments of planned development

process by way of considering the sector as one of the components of the countrywide network of National Extension Service. Simultaneously, the cooperative movement in the dairy sector culminated into the stepping in of corporate bodies in the dairy business. However, the animal husbandry extension programme taken up under the National Extension Service had service orientation as the major approach. Veterinary hospitals, artificial insemination centres and frozen semen centres became the main hub of extension activities taken up by both the departments. These very points of attention made the animal husbandry activities dairy development centered and extension became synonymous to provision of services only. A separate dairy development department was niched out of the animal husbandry department in each state. Due to the overwhelming influence of the corporate sector in the field of dairy development, the concept of extension got enlarged to providing consultancy support to the farmer members, group mobilization and extending required support services. However, with the introduction of poverty alleviation programmes, the animal husbandry department continues to follow its service-oriented approach, taking the path of milch cattle distribution as one of the major avenues towards bringing people above poverty line. On the other hand, the concern for more milk production has resulted in maximum intensification of dairy development efforts through launching of Operation Flood programme and establishing a separate Technology Mission towards dairy development. Simultaneously, entry of private dairies ushered in an era of paid extension.

Thus, the extension efforts in the livestock sector, over the years, had adopted mainly three different approaches centering around service, institution building and technology orientation. While animal husbandry as part of multipurpose extension, primarily followed service oriented approach, the dairy development activities focused on technological upgradation and institution building as two major planks for facilitation development in respective sectors. But for more effective results in the realm of livestock management practices by various categories of farming communities, an integrated approach, better known as Transfer of Technology need to be followed.

Technology Transfer Process

Transfer of technology can be viewed as a process of involving a series of interrelated activities, like:

- Generation of technologies appropriate to the requirements of various stake holders;
- Conversion of technology based information by the extension agencies into messages, comprehensible by the farmers;
- Their dissemination among the intended clients by following appropriate extension methods and techniques;
- Organizing necessary support services by way of integrating the efforts of relevant organizations outside the purview of extension system; and,
- Helping the farmers to either accept or reject such technological options into their respective farming systems.

Both acceptance or rejection of the technological options by the farming community will have impact on the spread effect of the technologies among the rest of the members of the community. All these activities are performed by four different but interdependent systems, all having stake in the technology transfer process.

Livestock Development Programmes Revisited

It is worthwhile to analyze the present day livestock development programme in the light of the various components of technology transfer process. Attempts have been made in the following paragraphs to identify certain issues concerning elements of technology generation process in the livestock sector. They are : (i) technological options evolved in the research system; (ii) extension efforts; (iii) support services towards meeting the requirements of input supply, marketing, credit etc., leading towards enabling farmers to absorb them into their own systems.

i. Technological Options

The research system in livestock sector is composed of a conglomeration of institutions under public, corporate and Non Government Sectors. While

public sector bodies include government departments, ICAR and SAUs, the corporate sector's researches are organized by private industries and corporate bodies, like, NDDB, whereas non government organizations like Bharatiya Agro Industries Research Foundation, also contribute in terms of evolution of specific technological options. The technologies generated in the research system in livestock sector can be broadly categoriezed into four major groups based on their end uses. They are related to : breeding, feeding, healthcare & managerial interventions. A number of issues confront the extension system while attempting to popularise technological components within each of these broad segments. An attempt has been made to identify some of these issues while attempting their popularisation.

- Technology generation through livestock research has been found to be skewed more towards cattle with less attention being paid to buffaloes and small ruminants. Again within the cattle, researches are abound more in respect of developing breeding and healthcare technologies. While breeding technologies dealt with problem areas like detection of heat, artificial insemination, pregnancy diagnosis and treatment of infertile animals etc., healthcare technologies concentrated on finding out solutions to major diseases occurring in cattle. However, other dimensions of technology generation relating to feeding and managerial interventions did not find so much of attention on the part of the researchers.
- While concentrating on developing technologies, almost exclusive attention was paid on the single most important objective of livestock rearing, the production increase. However, the priority profiles of the resource poor farmers in maintaining animals have not been duly recognized, while identifying the research agenda. Though the perceived benefit of adoption of AI for producing a cross bred animal from the local cattle is high, many of the resource poor farmers hesitated to adopt such technologies due to associated apprehensions like the animal turning dry during the pregnancy or economic loss, if it gives birth to a male cross bred calf, whose market value is low as compared to local ones (Sharma, 1980).
- Even the AI technology is not capable of covering the majority of the cattle population. Hardly 10 per cent of the breedable population of this

country can be covered under AI. Low infrastructure coverage, low conception rates, and other factors relating to feed and health services were found to have contributed to low adoption (World Bank, 1999).

- Pregnancy diagnosis is an important innovation, which helps the farmers to plan in advance for ensuring fodder availability during the lactation period. It also helps the animals to get treated for reproductive disorders, if any, and thereby saves the farmers from incurring economic losses. The farmers' response to this technology in the infertility camps organized by the animal husbandry departments across the states were found to be positive, as firstly, it was in conformity to their felt needs and secondly, no cost was involved in getting the advice (Venkatadri, 2002).
- Although nutritional studies reported that milk production could be increased by 20 to 30 per cent by improved feeding, the availability of both dry and green fodder in the country can hardly meet the requirements. Against the projected demand for livestock feed of 950 million tones of dry fodder and 1135 million tonnes of green fodder, the availability was hardly 450 and 320 million tonnes respectively during 1991. For bridging the deficit, transfer from surplus regions, enrichment of low quality feed through pre-treatment, cultivation of seasonal forage crops and multi-cut varieties, preservation of fodder through silage and hay making and growing of tree fodder etc. are the measures suggested (Prabharan, 2000 and Venkatadri, 2002). However, decision to cultivate fodder crops depends upon access to land, which most of the small and marginal farmers cannot afford. Moreover, profitability of cultivation of commercial crops *vis a vis* forage crops also plays an important role in such decision making process. The intensity of fodder cultivation has however been found to be linked to concentration of milch cattle rearing farmers, inhabiting the semi urban localities, having demand for such products (Sen & Venkatadri, 1997).

Growing of fodder trees in the bunds is a common practice in the countryside. However, adoption of UTPS technology faced with the problem of discontinuance due to its poor opportunity cost for labour utilization. Similar is the case with silage and hay making technologies. Despite provision of subsidy to the willing farmers for construction of silage pits, low adoption of feeding

concentrate technology is attributed to its high cost (Rao *et al.* 1991). Farmers prefer to adopt economic feeding rather than scientific feeding practices because they prefer the policy of profit maximization rather than production maximization.

- In the field of healthcare technology, significant achievements could be made in respect of preventive vaccination and care of young calf. Due to the efforts of animal husbandry departments and other related institutes, particularly during the last four decades, an increased level of awareness has been generated among the farmers about the importance of preventive vaccination. Quite a good number of farmers get their animals vaccinated regularly. Similar is the case in respect of treatment of the animals. The affordability, cost of the medicine, value of the animal and efficiency of the delivery system are some of the crucial factors for adoption of such technologies.

However, in respect of care of young calf, specially in the field of reduction in calf mortality, the achievement is far from satisfactory. Feeding of colostrums, sealing of naval cord and use of antibiotic and antihelmantics etc. are some of the technologies evolved towards care of young calf. Misconception and ignorance, coupled with poor extension intervention are some of the reasons for such state of affairs in respect of their poor popularisation status (Sen & Venkatadri, 1997).

- Scientific management practices like culling of unproductive animals, castration of young animals as well as scrub bulls and housing etc. are some of the technologies evolved towards such managerial intervention. Although culling reduces the cost of production and increases resource use efficiency, since majority of the livestock growers are not commercial and base their production system on zero input strategy and also due to socio-cultural factors, culling is hardly practiced. On the other hand, castration of young animals leading towards enhancing productive performance of male animals, both in terms of meat production and work performance, are found to have been better accepted, both in respect of traditional as well as scientific farms. Castration of animals like buffaloes, sheep and goats are more popular in places where veterinary infrastructure is existing.

ii. Extension Efforts

The quality of extension is the single most important factor in facilitating farmer's adoption of livestock production technologies. However, extension management in animal husbandry has been found to be a weak link in the whole process of technology transfer. The presently available network of veterinary extension service usually concentrates on mainly prevention and control of animal diseases, and artificial insemination. Such state of affairs raises a few important issues as mentioned below :

- The veterinary extension service personnel act more as doctors rather than extension functionaries. While treatment of the animal, vaccination or AI are performed in veterinary clinics, reaching out among the farmers through extension activities receive much less priority as compared to such services. This is due to the fact that the veterinary functionaries are required to perform twenty five multifarious activities in which extension is one, calling for rationalization in their job chart (Venkatadri, 2002).
- The precedence of clinical orientation among veterinary functionaries can be ascribed to the syllabi followed in the professional courses, with relatively much less weightage on extension and other relevant subjects. As a result, given a choice, the functionaries would like to confine to their clinical jobs, rather than embarking upon extension work or production endeavours.
- In spite of several advantages of rearing of small ruminants, arising out of their smaller size and lesser need for high quality feed, not enough importance is being given to the livestock extension services on these group of animals. Among the small ruminants, goats provide gainful employment and remunerative income to the rural poor, specially in harsh environments. It needs to be kept in mind that goats alone supply about 35 per cent of meat consumed in the country. Such facts get compounded, considering that the acute shortage of livestock feed and fodder would limit expansion of large ruminants' production (Prabharan, 2000).
- If the present livestock extension functionaries are to be motivated to reach out to millions of livestock growers by way of replacing the predominantly

clinical approach, even if partially, extension orientation among the field functionaries attains supreme importance. These functionaries, through such orientation need to be equipped with appropriate tools like Farming System Research and Extension (FSRE), Participatory Rural Appraisal (PRA), Participatory Planning, Implementation, Monitoring & Evaluation etc., to enable them to know the farmers' practices, problems and priorities in respect of livestock management. Such skills, coupled with utilization of appropriate communication techniques, will enable them to launch appropriate extension interventions for solving multifarious problems of livestock growers in the country.

- Livestock rearing is usually a women- dominated enterprise, more or less uniformly across the country. Majority of the activities involved in each of the individual livestock rearing enterprises, like dairy, goatery, piggery, etc., taken up at family level are women dominated. However, the extension service reaches primarily the men folk only as head of the family, in respect of capacity building efforts undertaken by them . In order to set right such anomalous situations, the extension functionaries in the livestock sector need to follow a gender aware approach by way of undertaking capacity building effort among women members of the family, actually performing the relevant tasks. This necessitates gender sensitisation and gender planning exposure to be undertaken among the members of the livestock extension service (Sen & Jhansi Rani, 1995)
- In order to increase livestock productivity, the role of augmenting the production level of fodder, both green and dry, has already been discussed. For such increase in production of fodder, it is imperative to bring more area under these crops as well as improve the productivity level, by adopting suitable varieties. However, in the scheme of activities of the present livestock extension services, popularisation of fodder cultivation among the farmers receives lesser priority, as compared to disease management and AI. There is however no denial of facts that fodder growing invariably is a lesser priority land use enterprise in the light of competition these are to face from food and commercial crops. Thus, efforts towards augmentation of fodder production can be undertaken in hitherto unutilised lands like unculturable wastes, farm bunds, village common lands etc.

- The greatest challenge facing the country in the livestock production sector is posed by the large number of unproductive animals, In most parts of the country, the grazing lands either have disappeared or have become degraded beyond restoration. The unproductive animals compete for these scarce resource with the productive ones. The livestock extension service has to take up along with its breed upgradation effort, culling of such unproductive animals through popularisation of appropriate schemes. In this respect the 'Gosadan' scheme launched by the Government of India in the late seventies deserves due consideration.

- In the postGATT era, India has to enforce a much stricter quality control and regulatory mechanism to remain competitive in the world market. A number of quality requirements were prescribed as a result of India signing agreement on agriculture, namely, Sanitary and Phyto-Sanitary (SPS), Technical Barriers to Trade (TBT) etc. The SPS agreement necessitates maintenance of standard guidelines and recommendations formulated by the Codex Alimentarious Commission (CAC) and the International Office of Epizootics (OIE), as reference for food safety and animal health respectively, in global trade. India cannot emerge as an international player in the global dairy market, unless it gears up to face the emerging OIE challenges, both at export unit level and government level. In fact, some of the countries have either restricted or banned import of milk products from India, in view of their non conformity with OIE requirements (Chawla, 2001). India has to go a long way to meet the OIE requirements, concerning animal health code and also for improving the quality of animal products, specially keeping in view the varied socio economic and environmental conditions under which they are produced.

- Livestock extension has to think in terms of segregating a section of the livestock producers, having potential of competing with their products in the international market and educate them on such quality requirements and how to conform to such standards.

iii. Support Services

In the technology transfer process, a support system facilitates adoption of recommended practices by the farmers, based on technological innovations, and developed in the research system. Usually, services like input supply and other infrastructural support in the form of credit, marketing, processing etc. comes under the purview of this system. Thus, the provision of support services is an essential pre-requisite for enabling the huge majority of livestock growers, specially the resource poor among them, to absorb various technological recommendations into their respective farming systems. The issues concerning provision of such support services are as follows :

- As a result of launching the Operation Flood programme in the early seventies, a huge network of decentralized dairy cooperatives, numbering around 87,249 with 10.9 million farmer members, was created for providing a unique infrastructure of comprehensive milk procurement system, linking veterinary inputs and services along with it. Such institutional intervention undoubtedly had helped to bring about almost fourfold increase in milk production from pre-independence period to the present juncture in the country. However, growth of such cooperatives have not been uniform, with the eastern region lagging behind, particularly as compared to the western and southern region of the country. Efforts should be intensified to include such under and uncovered areas within the cooperative set up. The aim should be "reaching the unreached people and including the excluded areas': (Kadirvel, 2002).
- In addition to the huge infrastructure of dairy cooperatives, in the States and Union Territories, a whopping 50846 veterinary institutions (of which 23303 are veterinary hospitals/dispensaries and 27543 are veterinary aid/ stockman centres) were created (GOI, 2001). These institutions contributed significantly towards providing necessary support services in the fields of breeding and healthcare for animals. However, it should be noted that they only account for 15% in terms of coverage, i.e., only one out of seven villages in the country is covered by this huge network of veterinary institutions. For increasing access to such infrastructure facility, establishment of more numbers of veterinary institutions can be thought of with increased

amount of budgetary allocation. However, until then, it may be worthwhile to think of training unemployed educated village youth in elementary veterinary healthcare and encourage them to open their units in remote rural areas to augment such support services.

- Milch cattle distribution among resource poor has been one of the most popular poverty alleviation programmes in the country. Besides, distribution of sheep and goat units also has been another common poverty alleviation programme, specially among the SC/ST population in the rural areas. For facilitating credit linkages, network of commercial banks, cooperative banks, regional rural banks etc. is utilized with refinancing from the National Bank for Agriculture and Rural Development (NABARD). For providing these animals risk coverage against diseases and mortality, services of a number of insurance agencies across the country are utilized. However, paraphernalia for securing such services are the stumbling block towards enabling the resource poor farmers to utilize them for their benefit. Besides, instances of exploitation and pilferage in both these fields of support services are much reported subject and need to be addressed properly.
- The ever increasing price of animal feed and concentrates and their poor quality affects their absorption and consequent contribution to production increase. Availability of green fodder in intensive agricultural areas also poses a problem for the livestock growers. Tie ups with the forest department (if available), may be an option for augmenting the supply of green fodder in those areas.
- In spite of establishment of the network of cooperative societies, it is a common sense experience that vendors and middlemen still are more popular marketing options in view of their easier accessibility to the farmers for meeting their credit requirements as well as payment of milk prices. Many of the Cooperative Federations, due to their top-heavy administrative structure, have become less effective in extending due share of the benefits among the farmers. Many of them are suffering from malices like irregular and deferred payment among the milk producers. The vendors/ middlemen enjoy an edge over the cooperatives in this regard.

- The National Dairy Development Board was enjoying a monopoly on the import of dairy products and control on dairy licensing. However, following economic liberalization, restriction on imports was removed. Various incentives and tax concession were given to private industries. Cooperatives, enjoying tax benefits, were no longer eligible for such concessions which the private industries were offered. The dairy cooperative federation stopped receiving protection from the government and became open for competition with the private sector dairies. In the face of such competition, the private sector dairies by way of offering higher prices and incentives to the vendors, put the milk collection system of the diary cooperative federations in jeopardy in many cases. Besides, increased involvement of vendors in milk procurement also aggravated the problem of adulteration of milk, in view of absence of regulatory network and mechanism. (Das, 2000).

- In the post liberalization regime, India's domestic market for dairy products became flooded with cheaper international products of the advanced countries, particularly during 2000-2001, as import was permitted without levying any duty. This affected the milk producers' price in the domestic market. Although the lobby of developed countries insisted on removal of subsidies to the farmers of developing countries, they continued to provide such facilities in disguised forms. According to a recent report, the countries under European Union (EU) and USA extends subsidy to their dairy producers to the extent of 55 and 45 per cent respectively. In contrast, in India, there is neither domestic support nor export subsides for the dairy sector in respect of their products, either before economic liberalization or in the post GATT regime. Thus, there is no uniform level playing field for Indian producers so far as international trade is concerned. However, with the recent spurt in international price of milk products, the prospect of India's entry into the international export market has brightened. But the biggest impediment in India becoming a dominant player in the world market is her poor quality of milk and milk products (Banerjee, 2001).

A Few Emerging Issues

The foregoing discussion raises certain issues, which need to be addressed for deciding any strategy towards development of livestock sector through more efficient extension management.

- What actions are warranted for more rational identification of research agenda in the livestock sector for evolving technological options, befitting the multifarious requirements of livestock growers in the country ?
- Is it advisable to continue with the breed upgradation effort, primarily keeping in view the end use of increase in milk production? What has been the fall out of our AI policy on indigenous breed structure ?
- How to increase the present level of fodder production to meet the requirements ? What should be the strategy for ensuring fodder supply in intensively cultivated areas ?
- What should be the strategy for reducing the population of unproductive cattle?
- If the present focus on predominantly clinical approach in the veterinary extension services is to be continued, how to meet the requirements of reaching out to the millions of livestock growers ? Is it necessary to rationalize the job chart ? If so, what should be done ? Is it also advisable to create a separate extension organizational structure ? Will it be economically feasible, keeping in view the public financing potentials ?
- What changes are necessary in the veterinary syllabi towards capacity building among the future livestock field functionaries in making them more efficient extension managers ?
- Is the present focus/emphasis on small ruminants within the scheme of activities of animal resource department adequate ? If not, what revision is necessary ?
- How to equip the present live stock functionaries on various participatory extension techniques ?
- How to bring in a more gender aware approach within the livestock organization ?

- What actions are warranted to make India an important player in the international market for dairy and livestock products ?
- What actions are needed to encourage cooperative institution building in the eastern region ? How to provide at least elementary livestock management services (like healthcare, AI etc.) in the far flung remote areas ?

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