

Effective dairy extension delivery system for improved farmers' income

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ABSTRACT

The extent to which the milk production enhancement programmes succeed depends up on the extent to which the dairy husbandry services are delivered effectively to the farmers. Basically, the dairy farmers need three types of (integrated) support: i). Extension and advisory services (EAS) to enrich the knowledge and improve the skills of dairy farmers ii). Availability and accessibility of input service such as semen, vaccines, medicines, equipments, instruments, feed, fodder seeds etc and iii). Delivery of technical service by the veterinarian (Vet) or Para-Veterinarian (Para-Vet). There are many service providers but very little focus on EAS. Ways and means to improve the effectiveness of EAS are indicated.

Key words: Extension Delivery, Dairy Extension, Farmers' income, Effective delivery

The delivery of Extension and advisory services (EAS) cannot stand alone as it depends upon the other two i.e. input service and technical service. The dairy farmers need the help of a Vet or Para-Vet for getting their animals dewormed, vaccinated, inseminated, diagnosed for pregnancy, treated for ailments etc. As is well known, a field vet is supposed to perform all the three services but his focus is mainly on breeding and treatment of animals. His role as extension advisor is totally neglected as it is neither in his job description nor demanded by the dairy farmers. In India, the dairy farmers as well as the service providers do not value information, whereas they prefer to receive services such as artificial insemination (AI), treatment etc. even on payment basis as these result in visible immediate benefits. This article portrays the existing extension delivery system and suggestions to improve its effectiveness.

SERVICE PROVIDERS

There are several service providers but there is little focus on Extension Advisory Service (EAS). These service providers include State Department

of Animal Husbandry, Milk Unions, Krishi Vigyan Kendras, Veterinary Universities/Colleges, Non Government Organisations etc.

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EFFECTIVE DELIVERY OF DAIRY EXTENSION SYSTEM

Department of Animal Husbandry (DAH), the main service provider in all the states is not practically involved in EAS. The DAH never considers it as its responsibility as evidenced by the meaning it attaches to extension (delivery of inputs) and the paltry sum allocated to it (Ravikumar and Chander (2006); Chander, 2013). The emphasis is mainly on the delivery of breeding and health care services in cattle and buffaloes and the owners are also interested and willing to pay for these services (Ahuja et al 2008). Although DAH has a wider net work of veterinary institutions, its effective reach is limited to only few villages around the institutions. The Vet is the most credible source of information on animal husbandry and he has a scope to exploit his rapport with the farmers as a clinician to provide

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EAS to the latter. But in many states the Vet is losing his/her technical identity as he is being involved in non technical activities such as feed distribution, purchases of animals, identification of beneficiaries of various schemes, maintenance of several records etc.

Milk Unions through their vast network of Dairy cooperatives have been very successful in delivery of all the three services in states, where the milk procurement is linked to provision of veterinary services to member producers (24 X7). Of late many milk unions discontinued these services to the member producers (Chander and Sulaiman, 2014). With deterioration in finances (poor financial status) the unions are losing their market share to private agencies. The private milk dairies also focus on milk procurement (by offering marginally high price) but do not provide extension and advisory services (Sangameswaran, 2014). Some of the dairies (Visakha, Sangam etc.) got converted into producer companies and are able to build up an effective delivery of extension services by hiring retired veterinarians.

Krishi Vigyan Kendra (KVK) is considered as a centre for transfer of technology in a district for all the agricultural technologies which include crops, livestock, horticulture etc. More than half of the 690 KVKs do not have animal science Subject Matter Specialist (SMS). Even in KVKs where the SMS (Animal Science) is available, he/she doesn't have the support to conduct on- farm trials of different technologies in different species of animals. The focus thus remains on training of farmers (mostly on campus) with little impact on knowledge but not on skill development. Its mandate neither includes supply of inputs nor delivery of animal husbandry services.

Non Government Organisations (NGOs) such as Bharatiya Agro Industries Foundation (BAIF), JK Trust etc have been quite successful in delivery of services (mainly breeding and training) as they maintain a close contact with the dairy farmers. Their success is attributed to the dedicated leaders and committed staff, but their impact is restricted to only few pockets.

Veterinary Colleges, the main producer of veterinary graduates also provide all the three services as a part of the curriculum in training the graduates. But the impact could be seen mainly in and around the teaching veterinary hospital and the adopted villages of the college. There are 49 veterinary colleges including four in the private sector.

CONSEQUENCES OF POOR KNOWLEDGE

With very little delivery of EAS , dairy cattle owners lack knowledge to deal with a number of challenges they face and as a result they are incurring huge losses. This knowledge poverty is resulting in losses with far reaching consequences for the society in general and the farmers in specific (Rao and Natchimuthu, 2014).

Public health concerns: Dairy farmers usually sell their sick or dead animals to butchers thus contributing to the spread of important zoonotic diseases, such as Anthrax, Brucellosis, TB, etc. Most of the farmers are not aware that the animal suspected to be died of Anthrax must be disposed off through deep burial. Due to ignorance, the dairy farmers either throw the carcass near the river beds or sell or consume the meat leading to serious public health problems. The carcass should not be even opened as it results in spore formation leading to the exposed area becoming endemic to Anthrax which is of zoonotic importance. Control of diseases through slaughter is out of question in our country and hence, the affected animals move from place to place due to change in the ownership and in the process spread the diseases.

Economic loss to the farmers: The dairy farmer has to take the cow in proper heat for better conception through AI and for this he or she must know the symptoms of heat in a cow and skill in identifying a cow in heat. If he takes the cow in early or late heat the chances of conception will be low and he has to wait for another 21 days for the next heat. Similarly, the cow which was inseminated 3 or 4 times and not conceived (repeat breeding) need to be examined by a Vet. The dairy farmers due to their poor knowledge keep on getting their cows inseminated to check their luck. In the absence of

proper extension and advisory service, the dairy farmers will be losing because of the increased dry period.

Low adoption of preventive services: Prevention is better than cure. But this is rarely followed. Preventive measures such as deworming and vaccination must be followed regularly to reduce avoidable losses through mortality and morbidity. As the impact or benefits of deworming and vaccination cannot be observed (even in future) by the cattle owners, they do not consider it necessary to know about the deworming and vaccination schedules. Both the dairy farmers and Vets plunge into action during disease out breaks. Under normal situation, neither the cattle owners demand such preventive services nor does the DAH proactively deliver such cost effective services. The net result is that most of the animals are not under the protective vaccination umbrella. The observations of Sir Arthur Olver, the then Animal Husbandry Expert to Govt. of India made in 1942 are relevant even today. To quote *“Since it seems clear that Government will always have to bear the burden of controlling outbreaks of contagious disease, and should make provision for systematic animal husbandry work throughout the country. Control by slaughter is out of the question, and powers are generally lacking to prevent movement of cattle. Moreover, it has been found by experience that, except in the face of a severe outbreak, stock-owners will not pay even a small charge for preventive inoculation, though well aware of the risk of devastating loss.”*

Of late many states are organising FMD vaccination campaigns but the coverage is less. The vaccinations are mostly performed in crossbreds. The Dept. of AH, Dairying and Fisheries also laid stress on control of FMD, PPR and Brucellosis under National Livestock Mission, launched in XII Plan.

Cash input vs non cash inputs: The cattle owners especially the small holders are reluctant to use cash inputs to improve the economy of their farms. The dairy farmers prefer to allow their animals for grazing to get 2 or 3 litres of milk rather than feeding with concentrates to get more milk, though the later is economically profitable to practice.

Similarly, they do not want to spend their energy and other inputs to follow clean milk production practices necessary to produce hygienic milk. The milk producers are being paid on the basis of fat and SNF but not bacterial load in the milk.

Exploitation by middlemen: The middlemen or brokers exploit the cattle owners especially those with low level of knowledge. Majority of the farmers do not know either the characteristics of a good dairy cow or its market value or both while purchasing animals and hence chances of getting exploited by the middlemen are very high. This exploitation could be noticed especially during the implementation of Government schemes, namely, distribution of milch cows. In most cases, the purpose for which the animals are distributed (to create assets for improving the livelihoods) is defeated as the animals are sold before realizing their potential.

Lack of awareness about efficient and transparent marketing methods: The milk producers in most of the dairy cooperative societies know that testing of milk is not done transparently and thus is leading to several malpractices. The Automatic Milk Collection Unit (AMCU) which is a transparent system to assess the value of the milk is not used in many dairy co-operative societies. Unfortunately, majority of the member producers are also not aware that they are the owners of the dairy co-operative societies and their milk union is empowered to establish such AMCUs in the societies.

Ignorance about the negative consequences of technologies: Most often than not, the researchers highlight the advantages (known) of technologies or practices without explicitly indicating the negative consequences (known or unknown) of adoption of such technologies. The dairy farmers are usually given the information that crossbred cows give more milk than local cows but under what conditions is not revealed to them. It is well known that Crossbred cows need quality feed and management for better performance. These animals being more susceptible to diseases need better health care. Superior technologies need quality inputs and services. The crossbred cow milk is quite

often rejected in the societies as it contains SNF (Solids Not Fat) than the prescribed standards (Rao et al., 2011). Till recently, the milk containing less than 8.5 % SNF was rejected. Now the standard has been lowered and the milk containing 8.2 % SNF is being accepted.

Poor market information: The dairy farmers must know when, where, whom and how to sell (or purchase) their animals or products. When they are ignorant about this vital market information, they may incur losses or gain less profits. They must know the source, availability, prices etc of both inputs and outputs which enable them to take appropriate decisions in purchase of inputs and sale of products. Wherever, the dairy coops are functioning efficiently, the dairy farmers are aware of the milk procurement and feed prices. There are several critical areas where accurate, reliable and timely information plays an important role in enabling the farmers to take appropriate decisions leading to better economy of their farms.

EXISTING SCENARIO OF DAIRY EXTENSION

The existing scenario of dairy extension is depicted through several studies.

1. Focus of research is on high input and high output technologies which do not find favour with resource poor dairy farmers (Rangnekar, 2014)
2. Technologies evolved through laboratory research needs to be tested on farmers' fields which are rarely conducted/ organised.
3. Focus of dairy extension is on delivery of inputs rather than education of the farmers.
4. Lack of appropriate extension policy (Rao et al, 2011)
5. Low investments in extension (Chander and Prakashkumar, 2013)
6. Skill development, technology transfer and extension is conceived as an important sub mission under National Livestock Mission (XII Plan) with little focus on effective delivery of inputs and services. The Dept. of Animal Husbandry, Dairying and Fisheries, GOI also

recognised “ dissemination of technology, skills and quality services to farmers for improving productivity” as one of the four important challenges of Animal Husbandry sector (Annual Report 2017-18) .

7. Indigenous Technical Knowledge (ITK) needs to be promoted and its validation should not be based on scientific methods and reasoning alone. Many a time the farmers' reasoning is questioned and more often than not the useful practices are rejected. The scientists must understand that for the farmers 'what mattered more is whether the practice worked rather than the reasoning behind it'.
8. **Farmers as innovators:** Dr. Anil K Gupta made the following valid observations on the agricultural extension system in India based on his *Shodhyatras* to several villages spread over more than 16 states, interacting with several people and discovering thousands of useful innovations: i) The agricultural extension systems have seldom tried to learn from farmers first before sharing new knowledge or practices ii) They may not always acknowledge the knowledge provider even if they do make use of some local practices iii) They may also not prioritize sustainable practices over less sustainable ones iv) Very rarely, extension professionals and agricultural scientists realise that the rural people had the capacity not only to innovate but also to provide effective solutions to problems that rural communities face, and v) Differences exist in what the scientists are pursuing and what the farmers need – this is the main reason for the low adoption of many scientific innovations.

His relentless efforts made him to succeeded in achieving the objective of giving due respect and recognition to the grassroots innovators through Presidential awards protecting the Rights of Innovators (IPR) by obtaining patents for 730 technologies and kept more than 10, 000 in the public domain.

Many extension professionals have suggested for a paradigm change in extension approach and

policy interventions to improve the income of the resource poor farmers whose livelihoods depend upon the productivity of the animals they rear (Rangnekar, 2014; Rao et al, 2011; Chander and Sulaiman ,2014; Anil, 2016). It is time for the GOI to evolve strategy to education of farmers which is a pre requisite for adoption of improved technologies/ practices.

TWO SERIOUS PROBLEMS WHICH NEED IMMEDIATE ATTENTION

The farmers across the country are incurring huge losses mainly because of repeat breeding and mastitis in cows and buffaloes.

Repeat Breeding:

The dairy farmers have fairly good knowledge about the heat symptoms, time of insemination, pregnancy diagnosis etc especially in areas, where AI services are accessible to them. But, the dairy farmers usually complain of poor conception through AI (especially in buffaloes) and repeat breeding. These two are the main problems ever since the AI programme is implemented in India. The main reasons attributed to these problems are

- Improper time of AI(Inseminations done in holidays are usually in pre or post heat)
- Poor skill of the inseminator (gopalamitras, lay inseminators,)
- Low plane of nutrition in cattle and buffaloes

Technologies like synchronisation of estrous, scanning to evaluate the reproductive status of the animals, hormonal interventions are available but not accessible to the farmers. The DAH in many states in collaboration with either Milk Unions and or Veterinary colleges/ universities are organising fertility campaigns to address this problem. These campaigns have limited coverage (due to shortage of man power and medicines) and difficulty in follow up of the cases under treatment. Almost all the veterinary dispensaries in India do not have the Ultra Sound Scanners, diagnostic tool required to analyse the reproductive status of the animals. Its use is restricted to teaching hospitals and pet clinics. Similarly, many field veterinarians will not be in a

position to assess the reproductive status through rectal examination. Their skills need to be upgraded.

Mastitis:

This problem is mainly attributed to inability of the dairy farmers in following the hygienic animal management practices including clean milk production. By the time the symptoms appear the udder tissue might have been affected to a great extent. Again, technologies are available for detection of sub clinical mastitis, antibiotic sensitivity test to identify the causative organism and the antibiotic to which the organism is sensitive, SOP for clean milk production etc. but these are not accessible to the farmers. Milk Unions are focusing on educating farmers on clean milk production practices to reduce the incidence of mastitis but most of the farmers do not follow as they do not realise the long term benefit of preventing the occurrence of mastitis in their animals. They do not get any immediate benefit by following such clean milk production practices. Some unions are also resorting to community milking to address this problem.

To prevent mastitis one of the feasible solutions at the farmers' end is adoption of clean milk production practices. To treat mastitis, the vets usually adopt hit and trial in choosing the antibiotic rather than resorting to antibiotic sensitivity test which of course is cumbersome. Although this test was evolved many decades back, its use in the field is almost negligible. Indiscriminate use of antibiotics in animal practice adds to the antimicrobial resistance.

SUGGESTIONS FOR IMPROVEMENT

The service providers must effectively deliver the needed inputs and services to the dairy farmers. As on today the dairy farmers are unable to access the services for a variety of reasons which include i) service centres are distantly located, understaffed or closed during holidays ii) quality inputs such as semen, vaccines, feed, fodder seed etc are either not available and or expensive iii) low emphasis on EASs iv) poorly trained staff, iv) Vets are assigned jobs which are not technical (anybody other than vet also can do) v) Vets relying on their experience

rather than on diagnostic tools for diagnosis and treatment of cases.

Ideally the dairy farmer must have knowledge and skills on various aspects of improved dairy farming and able to access the quality inputs and services required to improve the productivity of dairy cows. This is possible when the service providers

play a proactive role in effectively delivering the services to the dairy farmers at affordable charges. Some of the important suggestions are:

1. Effective delivery of livestock services depends on two factors: The number of veterinarians and animal health workers and their competence to address the contemporary challenges faced by livestock keepers. Collaboration between Livestock Development Organizations (DAH, LDA, Milk Unions, KVK etc) and Veterinary Universities (VUs) is critical for betterment of the livestock sector. **It is suggested to establish academic staff colleges at regional level for capacity development in livestock sector.**
2. There is a need to increase the coverage of AI from the present 25 % to 50% and the conception rate from 30 to 40 % in bovines under field conditions. Unfortunately, lot of resources are being spent on high tech research and technology development like embryo transfer, sex sorted semen technology etc instead of focusing on improving the conception rate through AI. **The quality of AI services must be improved and made accessible to the dairy farmers on all the days including holidays (at least two hours in the morning). Similarly the lay inseminators / gopalamitras/ vety. Assistants etc must be properly trained in AI before sending them to the field.**
3. It is well known that the vets and paravets focus their attention mainly on breeding and health care services that too in large ruminants for the obvious reasons. The owner of the large ruminants is also more concerned about the breeding and health care aspects as they have direct and immediate impact on the milk production. However, practices like vaccination, deworming, clean milk production, balanced feeding etc., (that have poor observability of results) which indirectly influence the milk production are ignored both by the farmers and the veterinarians. **Education of farmers on improved practices through the use of extension methods must be made mandatory for all the field Vets and para-veterinarians by including in their job chart.**
4. Economically important problems like repeat breeding and mastitis must be addressed with a concerted effort from the DAH, Milk Unions, Vety. Colleges, NGOs etc. The DAH and milk Unions can provide the logistics in organising farmers, collection of samples whereas the Vety. Colleges can provide the expertise in disease diagnosis and treatment of cases. **It is necessary to identify the areas of collaboration between various dairy development organisations to effectively utilise the scarce resources including the skilled man power and develop an appropriate action plan for implementation for the benefit of the farmers .**
5. The indiscriminate use of antibiotics in livestock has already started showing its impact on human and livestock health (anti microbial resistance). This could be mitigated through the use of antibiotic sensitivity test in the field by the veterinarians. Appropriate mechanism needs to be evolved for collection of samples, testing and diagnosis in addition to communicating the same to the concerned veterinarian at the earliest so as to enable the veterinarian to employ the required antibiotic. **Many ITK practices have been documented and validated and the same could be promoted. for their obvious advantages like cost effectiveness, easy accessibility of the inputs, less dependency on technical expertise, less of side effects on the health of the livestock etc. These practices could also be used to reduce the use of antibiotics.**
6. Unfortunately public and private institutions have been focusing more on distributing inputs (most often subsidised) which is considered

as an end in itself rather than means to increase production. **What the farmers need is remunerative price for their product and not subsidies which in fact did not help in increasing the production. The dairy farmers in India get Rs.17 to 27 per litre of milk depending upon the area and similarly the consumer price varies from Rs.38 to 90. It is high time that the dairy farmers must get minimum support price for milk.**

7. **What we can try a model like** “contract poultry farming” which have made inroads in few states. They are successful mainly because of the integration of supply of inputs (feed, vaccines, extension advisory services) and service delivery of vaccinations, deworming, etc.) by the integrators with the labour and facilities provided by the farmers (shed, electricity, water, litter etc). All the three services viz. supply of inputs, extension and advisory services are provided by one agency i.e. integrator. The integrator also collects eggs and birds and make a fixed payment (per kg of live bird). Although this system is exploitative to the farmers, still it is more popular among the small and marginal farmers especially in south India as it covers investment and market risks.

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