

2.2. FARMERS' PERCEPTIONS OF INNOVATIONS.

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INTRODUCTION

A large part of the transferable technologies in agriculture is not adopted by the farmers. The reasons for this poor adoption are commonly believed to lie in ineffective extension services, inadequate input supplies, credit support and market infrastructure, and last but not least: farmers' lack of knowledge as well as imperfections in the technology. Lately, however it has been realised that there is also a lack of awareness on the part of the researchers and extension agencies regarding the farmers' priorities. This has led the development community to address the wrong problems resulting in technologies which are not suitable or relevant to the farm families for whom they were evolved. The ultimate decision to adopt a particular technology depends to a great extent on the farmers' perceptions about the technology, their socio-economic situation and their need for the technology. Hence, there is now a growing concern among the researchers, extension staff and policy makers to better understand the farmers' perceptions with reference to technology generation and adoption. The perceptual differences among the

farmers themselves and between the actors in development like farmers, extension workers, researchers and policy makers are discussed below, along with the implications for development and extension.

THE CONCEPT OF PERCEPTION

The interpretation of information is called perception. These perceptions play an important role in decision making of people in general and farmers are no exception. For example, farmers have to take decisions about cropping patterns, type of seeds, time of sowing and harvesting, type of animal to be reared, time of selling of animals, and to whom to sell the produce. Based on their perceptions of cost, benefit and risk, they will decide to adopt a technology or management practice. The perceptions are relative rather than absolute and they are influenced by the surroundings to a great extent. Due to past experiences, different people can interpret the same object differently, and this in turn affects their behaviour.

DIFFERENCES IN PERCEPTIONS BETWEEN ACTORS IN DEVELOPMENT

Much of the traditional transfer of technology (TOT) was based on the perception that "researchers know better than the farmers" and that the "farmers need to be educated". Researchers were placed at the top of the knowledge hierarchy with farmers at the bottom. Farmers were considered as receivers or "clients", but never as a source of information. However, with the growing realization that farmers also know about their own conditions, they are now becoming to be seen as partners to researchers in

the development of technology. From clients they have become actors and it is for this reason that the emphasis of Farming Systems Research lies on the use of farmers' knowledge, e.g. through RRAs, mapping, transect analysis and on-farm trials (#1.3.1.; #1.3.2.; #1.3.3.). That farmers and developers live in different worlds is not only true for India (Fig. 1), and there are also perceptual differences among farmers of different social groups within the same region or even village (Box 1).

Figure 1. Farmers live in a different world than the development agencies, not only in India but also elsewhere, automatically leading to different perception of reality



A poster from the Australian CSIRO-DPI project "Improving Research through Extension".

The difference in perception of problems and solutions can be large indeed between the actors in development as tentatively indicated in Table 1. They ultimately reflect the actions of the actors in the development process. For example, local cows are perceived by researchers as a source of milk rather than for the production of bull calves. This implies that these animals are a

prime target to be utilised in crossbreeding programmes for increased milk production. Lack of adoption of such programs is than caused by the fact that farmers consider the local cow not for milk but for production of bull calves to cater to their draught needs. For this very reason some farmers wish that the local cow gives birth to a male calf of a local breed, not by crossbreeding. They may then also prefer to leave the milk entirely to the calf for its better growth. It is surprising indeed that in India the development effort is almost solely directed towards increased milk production and hardly to improved draught capacity of animals.

Box 1. Differences in the use of straw quality between actors in development

Not only between extension and farmers, but also between farmers themselves there may be difference of perception. The farmers of Haryana and Punjab for example perceive the quality of wheat as superior to paddy straw. In fact paddy straw is often burnt in the field to save labour and to prepare the field for the next crop. Though, the rice straw may be valuable as a feed, the farmer has to compromise between alternative uses of labour for agricultural operations at that period of time. Farmers of West Bengal and Gujarat prefer to feed paddy straw over wheat straw. Researchers, using laboratory estimates of nutritive quality, consider that there is hardly any difference in the nutritive quality of these straws. They, with their perceptions, find it hard to understand why any straw should be burned at all. Some of them see straw as a feed to be treated with urea in order to achieve better liveweight gain or milk production. Agronomists, industrialists and farm women may again have different perceptions of differences between wheat and rice straw. Whereas, some agronomists focus on grain yields only, farmers may also be keen to have sufficient straw for their animals (#4.5.).

Even within the same region there can be wide variations in the use of various resources. Whereas some farmers in West Bengal use mustard oil cake as concentrate feed for animals, other farmers in the same state consider mustard oil cake as a fertilizer for use in horticulture or on vegetable crops!

Table 1. Examples of perceptual differences between researchers and farmers.

Object	Researcher	Farmer	Extension Worker	Policy Maker
Local cow a source of	milk	bull calves, dung	milk	milk
Utility of X-bred bullock as draught animal	good	not good, and it may be better to dispose of male X-bred calves	not convinced, but has to recommend it to the farmer	?
Castration of bull calves at 1-2 years	recommended for better growth of the animal	consider it as a bad practice as it weakens the animal	?	?
Gram husk	poor feed	good feed supplement	?	?
Early weaning of calves	recommended	viewed as a bad practice since it weakens the calf	?	?
Nutritive value of paddy & wheat straw	no difference in the quality	some like wheat straw better, others prefer paddy straw	?	?
Criteria for feed evaluation	TDN & CP	cost of feed and its effect on growth, fat yield	feed responses on milk production	possibility to earn foreign exchange
Reason for non-adoption of technologies	farmers ignorance & or ineffective extension	technology is not relevant	technology is not relevant and farmers are "uneducated"	technology is not reaching the farmers
New grain varieties	grain yield	grain and straw yield	more grain and may be more straw	more grain
Objective of research	to increase biological efficiency of milk production	to increase farm income	to increase milk as well as draught capacity	to increase milk supply to feed the growing urban population

Note: The readers may fill the gaps with question marks depending on their perceptions. It should be remembered that perceptions are perceptions, i.e. they may differ between observers.

Perceived differences in goal setting

The diverging goals of policy makers, researchers, extension personnel and farmers often originate from different perceptions about development. Policy makers are usually interested in popular measures which may or may not contribute to agricultural production. Researchers tend to address national problems by trying to develop standard packages with little or no concern for the differences which exist between zones and among the regions. Hence the researchers' goals may not be in consonance with that of the farmers and policy makers. The extension aims at achieving their targets by concentrating their efforts on a few resource rich farmers with little or no concern for the concept of equity. When different partners of development pursue diverse goals it is difficult to achieve unanimity and to secure farmers participation resulting in delay or failures in goal accomplishment.

Perceived differences in response criteria

Farmers measure the responses of new technologies in livestock in terms of butter fat content in the milk, draught performance, dung consistency, economics of production, increased milk yield or body weight. Farmers will only prefer to rear Holstein crosses over Jersey or Brown Swiss because of their high milk production potential provided there is demand and ready market for cow milk. When milk fat is the criterium for either consumption or sale of milk, farmers prefer buffaloes to cows. The researchers' concept of fat corrected milk (FCM) has no relevance to farmers or private vendors who estimate the fat content by dipping the index finger in the milk and checking its viscosity.

Similarly farmers have their own criteria to evaluate animal feed, e.g., palatability, intake, refusals, effect on milk, body condition, diarrhoea or constipation. Feeds which result in high milk fat production are usually ranked high. Generally farmers are interested primarily on the cost incurred and benefits received from the feed stuffs rather than feed conversion ratios, live weight gains etc. which are often mentioned in scientific articles. Concepts like TDN and CP, however valuable, have little meaning to most farmers or even development workers or extensionists. The same is the case with feeding standards, though in principle it should be remembered that the standards of farmers and scientists are complementary. Unfortunately, in practice their formal expression and purpose of application differ considerably as to create an impression of differences (#3.1.). Not only nutritionists may have a wrong perception of how farmers operate, many methodologies of economists also fail to properly grasp the economics of farming (Box 2).

Box 2. How is it that farmers are still in business ?

Many studies have indicated that the cost of milk production is very high. In that way it is not remunerative for the farmers to rear animals for milk production. But still, there are farmers that produce milk ! Usually cost of milk production is calculated by considering all costs, including family labour and costs of fodder growing or collection. Though this may be a valid approach for commercial farmers, it does not apply to all farmers in the same manner. Obviously, not all farmers consider dairy farming as a losing proposition. Some may have different perceptions about costs and benefits, and they accept low returns on family labour, and to some extent on costs for feeds and fodders.

Perceptions of technology

The rate of adoption is influenced by the farmers's perception of the characteristics of the technology and the required changes in farm management and distribution of family labour. Some important characteristics that farmers, men and women each in their own way tend to consider are such as:

- relative advantage,
- observability of results,
- divisibility,
- simplicity,
- complexity
- initial cost,
- compatibility with the social system.

Research has confirmed that farmers compare new technologies and management approaches with the traditional or the existing ones on the above characteristics before deciding on whether to adopt a new method or not. However, a particular technology need not to be superior to the traditional technology on all these counts and trade-offs are common. For example, many dairy farmers in India do not like to dispose of their unproductive cows to the butchers. Even though it is profitable to do so, it is not compatible with the existing social system. Similarly it is also common that farmers adopt a particular technology, not because it is profitable, but because it is adopted by opinion leaders in the social system. For some farmers, it may be more preferable to spend money in order to save labour.

Perceptions can even differ among the family members on various aspects of farming. For example, men and women may differ on issues like an

increased herd size which adds to the workload of women, while it may increase the cash flow for the man. Gender issues like these are socially determined, and the reverse is possible (#2.1.), even though most of the farm technologies aim primarily to reduce the burden of the men, rather than work and drudgery of womens' labour. Farm men are mostly associated with activities such as ploughing, spraying, harvesting, threshing etc., for which machines are available. Strenuous activities like transplanting of rice, or weeding of a crop are often done mostly by women, activities that are yet to get the attention of the researchers.

All these differences help to explain the reasons for the differential adoption of technology among farmers. For example landless dairy farmers prefer to rear more low producing animals than one or two high producing animals (crossbreeds). Their perception is that high producing animals require better management, quality of feed and other inputs which are not accessible to them. Further, the risk of losing the high producing animal is high compared to low producing local cattle. Similarly, resource poor farmers have to accept getting less milk on roughage, rather than more milk by feeding concentrates which need ready cash to be purchased.

ASPECTS OF PERCEPTIONS IN MESSAGE DEVELOPMENT AND COMMUNICATION

The skill of the extensionist lies in communication, e.g. the identification and transfer of appropriate messages of the farmers, as well as the extraction of proper feedback. To be effective the message must not only be received by the farmers. Some of the principles of perception can be utilised while

developing messages, and while planning to disseminate them. The aim of the extension worker is to capture and maintain attention of the audience or the farmers for the duration of the message. At the same time, the extensionist has to be keen to pick up signals and information from the farmers. Some techniques that might be used while communicating with the farmers' community are given in Table 2.

Table 2. The use of "perceptions" for the development of appropriate messages

Contrast	a moving object among other stationary objects, bright light in darkness, loud noise in silence, objects on white or black background will attract attention.
Novelty	video is a novelty in many developing countries attracts the attention of the farmers at least in the initial stages.
Pictures or models	or live examples are more effective than numbers or words.
Involve as many senses	as possible e.g. eyes and ears, to enhance the concept development among the farmers.
Avoid conflicting messages	to reduce distortion among the receivers.

CONCLUSION

It is essential to appreciate and recognize the perceptions and priorities of the farmers before contemplating development programmes. Only a shared vision among the researchers, extension personnel, farmers and the policy makers can help to evolve suitable strategies for increased production and prosperity. Research and extension staff must bear in mind the cardinal principles of perception i.e., relativity, selectivity, organisation and psychology if it wants to understand and develop suitable messages to increase their communication farmers.

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