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RESEARCH ARTICLE

AGRICULTURAL EXTENSION SERVICES FOR DAIRY FARMERS IN WARENG DISTRICT, KENYA.

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Abstract

Agricultural extension information aims at empowering dairy farmers with adequate information for effective and sustainable livestock farming. It is concerned with delivery of messages transmitted through several channels by extension workers. Farmers are expected to use new technologies and develop modern livestock farming practices. The aim of this study was to investigate the extent to which information services offered by the livestock extension workers meet the needs of smallholder dairy farmers in Wareng District. The study was informed by Roger's Theory of Diffusion of Innovations. A survey research method was applied where qualitative research design was used. The research instruments comprised of interview schedules and documentary reviews. A sample of 105 smallholder dairy farmers from Wareng District and eight key informants from the Ministry of Livestock Development were interviewed. The findings of the study indicate that smallholder dairy farmers in Wareng District have varied information needs. The study established that provision of extension information services is not satisfactory as most of the farmers' information needs are not met. The study also reveals that a majority of dairy farmers in Wareng District lack adequate information. The study proposes a framework for the delivery of livestock information that provides for information that is not only current but timely and real-time.

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INTRODUCTION

Agriculture is considered as a key ingredient to economic development the world over and scientists have done a lot of research in the field. These researches have yielded tremendous innovations leading to improved food production. However some parts of the world have not benefited from these innovations. More than one billion people remain undernourished in the world (FAO, 2005). A majority of these undernourished people are in the developing world where agriculture is the backbone of the economy. In most of the African countries, agriculture is the means of alleviating poverty whose incidence is debilitating with conditions that are too dehumanising (World Bank, 2008).

Agricultural production in developing countries is still below average despite concerted efforts to improve it. In Europe and the United States, agriculture is largely mechanised and almost everything is done with less manual activity (Riungu, 2010). Although developing countries have made advances in technology, the challenge is how farmers can benefit from these innovations. Transmitting information on livestock production has rarely been a priority for centralized extension services in developing countries. National agricultural extension services are designed for transmitting information on crops, while Livestock ministries are dominated by vets who are mainly concerned on animal health (Morton and Matthewman, 1996).

The good news is that agricultural players have been trying to devise ways to link farmers with the information they need to boost their yields. For instance, hundreds of scientists, political leaders, farmers and innovators met in Montpellier, France in March 2010 for the first Global Conference on Agricultural Research for Development (GCARD). This is an alliance comprising 8,000 researchers in 100 countries. The aim of the conference was to launch a global transformation in agricultural research and develop partnerships among those who have knowledge and those who need it. The ultimate goal of this conference was to create a system that communicates knowledge to farmers by linking science and innovation to their needs (Leahly, 2010).

Developing small scale livestock production is central to reduction of poverty especially in the developing countries. About 70 percent of the world's 880 million rural people who live on less than a dollar a day are partially dependent on livestock for their livelihoods (FAO, 2010). For more than 200 million smallholder farmers in Asia, Africa and Latin America, livestock are the main source of income. They mainly raise animals for subsistence. Some however sell part of their livestock produce. Most of these small scale farmers, however, face various difficulties. Many live in remote areas without electricity, roads and cooling facilities and are far from extension advice. Support systems are typically geared to large-scale producers or intensive production (FAO, 2005).

Compare this grim scenario to that which obtains in North America and Europe. Livestock farming in Netherlands is so advanced to an extent that robots are used to feed and milk cows. The robots do pre-milking including teat-cleaning and testing for mastitis (Mifugo news, 2009). Breeding is purely done through artificial insemination. Semen is harvested then frozen for future use. Embryo transplants are also very advanced. In Finland, the dairy industry is fully commercialised making it the leading exporter of semen to Africa and has the highest population of Ayrshire in the world (Anami, 2010).

In these developed countries, dairy production is concentrated in a few able hands; a trend which if allowed in the developing world will have dire consequences for the poor. However, smallholder dairy farmers need ways to remain competitive if they are to remain in business. In most of the European countries, use of satellite-based intelligence in what is called precision farming to establish the contents of soils that support fodder crops is common. This has led to well-developed fodder crops that yield maximum produce for the dairy farmers. Extension information services are well developed making farmers receive the information with ease (Mifugo News, 2009). The data available to the farmer is so abundant that the main problem is no longer finding the information but getting what is relevant quickly (Economist, November 7th – 13th, 2009).

In Africa, agriculture still lags behind yet about 70 percent of the continent's population depends on it for livelihood. Consequently, more than 200 million face food shortage. According to the 2008 World Bank report, three out of every four poor people in developing countries live in rural areas. Most of these people depend entirely on farming. Research shows that unless more investments occur in agricultural development, Africa will be unable to feed more than half of its population by 2015. The GDP per farmer in Africa has over the past two decades risen by less than one percent compared with two per cent in Asia and about three percent in Latin America.

Africa is not the only continent facing problems in agricultural production. In Eastern Europe, rural households have too little land or too few animals to provide a living. In Asia, agriculture has been slowly developing especially in countries like China which have food surplus. In 2008, agricultural growth was 3.5 times more effective in reducing world poverty levels than expansion in other sectors (World Bank, 2008). According to the Business Daily dated March 25, 2010, 642 million still go hungry in Asia. In India, agricultural growth both in crops and animal husbandry has cut poverty twice as fast as other sectors. This is because the poor are mostly rural who spend more than half of their household budgets on food. Indian agriculture has performed poorly compared to China.

Theoretical framework

Diffusion of Innovation Theory

In view of the fact that diffusion of extension information to the farmer from the extension workers is an aspect of the study, the Rogers Theory of Diffusion of Innovations was examined with a view of establishing its applicability to the study. Diffusion is a social process in which subjectively perceived information about a new idea is communicated and rests on the premise that a new idea, practice or object has perceivable channels, time and mode of adoption by individuals or organizations (Rogers, 1983). Diffusion has also been defined by Rogers (1995) as the process by which an innovation is communicated through certain channels over time among members of a social

group. In other words it is a special type of communication where messages are concerned with new ideas. According to Rogers and Scott (1997) (cited in Minishi – Majanja and Kiplang'at, 2005), the paradigm of diffusion research has its roots in rural sociology research of the 1940s. The key study that influenced its growth was the investigation of the diffusion of the hybrid corn seed among Iowa farmers in the United States of America by Ryan and Gross. Rogers and Scott (1997) observe that the findings of that study had far-reaching implications beyond agricultural innovations.

Innovation-Decision Process Theory

This is the most appropriate theory from the many theoretical perspectives relating to overall concept of diffusion (Meta theory) (Rogers, 1995). This is based on time and five distinct stages;

1. Knowledge - learn about innovations.
2. Persuades so as to get the merits of the innovation.
3. Decide to adopt the innovation.
4. Implement it.
5. Confirm that the decision to adopt was appropriate decision.

Diffusion will result out of these stages. This theory implies that for innovation to be accepted, they must be understood first. And for the theory to be understood, it takes a lot of persuasion so that the clients get the merits of the innovation. These persuasions are in form of messages offered by the livestock extension officers. After the farmers have understood the message clearly, the next stage is adopting the innovation after which it is implemented and later re-evaluated to confirm whether the adoption was appropriate.

This theory is relevant to the study in that extension personnel always influence how livestock farmers take in new innovations. The extension personnel seek to guide the dairy farmer to make desirable decisions. There must be a communication relationship between the extension officer and the farmer. The two-way information exchange fits into the decentralized diffusion system which has the client as a partner. Some of the adopters serve as change agents for other adopters. This means that they can assist one another even when the change agent is absent. If this happens then the extension information service is deemed as effective. The change agent must therefore always endeavour to do the following:

- (i) Develop a need for change by altering their behaviour, assess client's needs and help create new needs.
- (ii) Establish an information exchange relationship; empathize with client's needs and problems.
- (iii) Diagnose the problem by understanding the client's needs. It is important to understand the client's needs thoroughly.
- (iv) Create intent in client to take action in behaviour change, or apply technology.
- (v) Translate an intent to action; behaviour change according to needs.
- (vi) Stabilize adoption and prevent discontinuance. This is reinforcing messages to clients that have been adopted.

Materials and methods

The study adopted a survey research which was found to be appropriate to the study because of the large population involved. The respondents as well as the key informants were interviewed. The data was collected from primary and secondary sources. Primary data was from the dairy farmers and the key informants. Secondary sources were sourced from documents in the Ministry of Livestock and from other stakeholders in the livestock industry.

The main instruments for data collection were interview schedules and document review. This was because most of the smallholder dairy farmers are either illiterate or semi-illiterate hence other data collection instruments like questionnaires could not be appropriate. Interview schedules were also easy to translate as the interview was conducted. Interviews provided adequate data which is not possible to get using other data collection instruments. It was also possible to clarify on the questions so that the interviewee could give relevant responses. Interviews were also flexible and in the case of smallholder farmers with various levels of education, questions were adjusted accordingly.

Findings

The study sought to find out the kind of information required mostly by dairy farmers for their dairy production. The information sought was on types of feeds, disease control measures, breeding and 'others' option to allow farmers to state other information they need. The findings of the study revealed that the information needs of the smallholder dairy farmers in Wareng are diverse.

Table 1 summarizes the main types of information the farmers need for their dairy production. It also shows the number of farmers who need particular type of information.

Table 1 indicates that the majority of the smallholder dairy farmers mainly require information concerning the types of feeds for their animals. It was found that breeding information is required by a substantial number of farmers. It is also evident from the table that not many farmers require information on disease control measures. This could be because they are well versed in disease control measures like dipping and hoof trimming. The other information was on the latest technologies especially information technology and market information like auction days etc.

Extension information services provided to the smallholder dairy farmers

Further to the question on information needs of the smallholder dairy farmers they were asked to indicate how frequently they obtain this information. The extension information services offered were mainly about feeds, breeding, health and general livestock support services. These are the categories of information farmers said they needed most.

When the smallholder dairy farmers were asked if they receive regularly the information they require most, the answers were mainly in the negative. Seventy nine (75%) stated that they do not receive the information they require regularly. Twenty six farmers (25%) said they receive the information they need regularly. This group of farmers was satisfied with the extension information provided. But a majority of the respondents said the extension information services are inadequate or in most cases non-existent.

The farmers were asked to state the reasons for lack of extension. Thirty seven respondents (40%) said they do not receive extension information because there are no livestock extension personnel. Twenty three respondents (30%) said extension office is far away and they could not reach it. Fourteen respondents (18%) did not know where to get extension services. Two respondents (5%) gave others as reasons which included lack of radio, irregular visits by extension personnel and lack of time to attend barazas or field days, visits and demonstrations. One farmer said information came from Kass FM, a Kalenjin vernacular radio station that at times broadcasts agricultural information where agricultural/livestock specialists are invited to speak.

The answers provided reveal that a majority of the smallholder dairy farmers had never been visited by extension staff. This is the reason why they stated that there are no extension workers. An average number claimed that lack of extension information services was due to the extension offices being far from them. Some said they did not know where to get information. This means that they may not even know that such information is provided. A small number of respondents were of the view that even if the extension workers are available they rarely visit them, because they target well established large scale farmers.

Other reasons included lack of use of the mass media like radio, TV, lack of time to attend functions where extension information is provided, among others. It can be noted from the answers given that the smallholder dairy farmers do not fully benefit from extension information services offered by the Ministry of Livestock Development. There is an almost total lack of extension workers on the ground. Even in situations where information is provided the content of such information seems not to be satisfactory to them. The availability of livestock extension workers when dairy farmers required was questioned. The extension workers target the educated because their teaching materials are not translated into local languages and yet the majority of the farmers are illiterate.

Source of extension information services

For the 29 farmers (28%) who indicated that they regularly receive extension information, they were asked to state the sources of such information. The options provided range from extension workers, fellow farmers, consultants/private specialist and own reading. Table 4.2 shows the results as provided by smallholder dairy farmers. indicates that the majority of farmers who receive extension information services get it from the extension workers. These are mainly the staff of the Ministry of Livestock Development, particularly those of the Department of Livestock Production. This means the extension personnel are an important source of information to the farmers. Some of the farmers who receive extension information attributed it to their fellow farmers. This means that there is an exchange of information among the farmers themselves. None of the farmers indicated consultants or private specialists as their source of information. A few of the farmers indicated that their source of information is their own reading. This means that there are some farmers who read on their own. A few of the farmers gave other sources of extension information as agro-chemical companies and farmers training schools.

It can be deduced that extension workers are a major source of information to the farmers, followed by fellow farmers and finally self-reading. This is because the extension workers are the main disseminators of information during field days, barazas, agricultural shows, exhibitions among others. The fellow farmers who act as source of

information include the focal farmers chosen during extension service provision. Most of these farmers offer their farms to be used as model farms for demonstrations of the latest technologies.

Challenges encountered while accessing information

The respondents were asked to state the challenges that they encounter when looking for information from the extension workers. A number of challenges were given which are shown in table 3.

Table 3 reveals that to most farmers, extension office is located too far from their farms. Sometimes, the table shows, the extension staff are not cooperative and thus do not attend to them as required. The officers, for instance, may fail to answer farmers' questions or do so rudely. Sometimes the extension agents are too busy doing their own things at the expense of disseminating information to the farmers. There were also other factors that made the provision of extension information a challenge to the farmers. These included the duration of learning being short hence farmers failing to learn much. Most farmers said they do not receive any information at all while some said information given is of little value to them. The extension personnel should ensure that the information given meet farmers' needs.

The farmers were concerned that extension services are poor yet the government provides funds for them every year. They challenged the government to streamline the extension services department to ensure farmers receive information they need regularly. Surprisingly, some farmers did not know that Ministry of livestock Development exists and thought it was a department under the Ministry of Agriculture. They stated that they do not feel the presence of the Ministry of Livestock Development like the Ministry of Agriculture. The farmers said the Veterinary Department only acts when major outbreaks of diseases occur but is hardly available when farmers need it to address other issues.

Discussion of findings

Table 1: Type of information needed, by smallholder dairy farmers (n = 105)

Type of information needed	Number of farmers	% of total
Type of feeds	48	46
Breeding	36	34
Disease control measures	15	14
Others	5	6

Table 2: Source of extension information services for farmers (n = 29)

Source	Number of farmers	Percentage of total (%)
Extension worker	20	69
Fellow farmer	5	17
Own reading	2	7
Other sources	2	7

Table 3: Challenges encountered while accessing information (N =105)

Challenge	Number of farmers	Percentage of total
Extension office far away	32	31
Others	29	27
Un-cooperative extension staff	19	18
Extension staff busy doing other things	16	15
Information given is of less value	9	9

Information needs of smallholder dairy farmers in Wareng District

It was found that the information needs of the smallholder dairy are varied. Most of the dairy farmers needed information on breeding, health, dairy feeds and dairy management techniques. It was found out that a majority of the dairy farmers needed information on feeds. They wanted to know more on availability of dairy feeds and their usefulness. A substantial number of smallholder dairy farmers wanted information on breeding especially artificial

insemination. Information on disease control was also needed by the smallholder dairy farmers. Other information needs identified were marketing information like auction days, financial management information etc.

When the farmers were asked to list their information needs in order of priority, the majority preferred breeding information. It is an indication that smallholder dairy farmers require more information on breeding (Table 4.10). Thirty eight percent of the respondents gave breeding information as their top priority. Information on dairy feeds was also given prominence by a majority of the farmers. Thirty five percent of the respondents placed dairy feeds information as their priority. This shows that knowledge in breeding and dairy feeds is in high demand. The extension workers should therefore focus on these subjects. Breeding and feeds go hand in hand because a good breed requires quality feeds for it to produce more milk. Smallholder dairy farmers make decisions in their day-to-day lives that may affect the productivity of their dairy cows. They are however aided by the amount of information, knowledge and technologies available to them. Health information and dairy management techniques are given least preference by the farmers, according to the study. This means they either do not need much information on these issues or do not clearly understand them. One would have thought that health information or disease control would be top priority. However, it ranks far below breeding and feeds indicating that they are either met or farmers believe in traditional health information.

5.2.3 Range of extension information services provided

After enquiring about information needs of the farmers, they were further asked whether they regularly get it. The majority indicated that they do not get information as regularly as desired. Only 25 percent indicated that they regularly receive the information services they need. The rest (75%) stated that they do not get it regularly. This portrays a negative picture in the provision of extension services by the Ministry of Livestock Development. The smallholder dairy farmers felt that extension information services were inadequate. Farmers were told to list the information requirements provided and they mentioned breeding, feeds, health/disease control and dairy management techniques.

For the farmers who stated they do not get enough extension services, they were asked to state the reasons for this. Forty seven percent cited absence of extension workers while 30 percent of the respondents said the extension office is located far from their farms and could not access it. Irregular visits by the extension personnel were also cited as the reason for insufficient information. Awareness on the existence of extension information services was also found to be low. Some farmers said they do not know where to get the services. The other reasons given for missing extension information are lack of radio and time to attend barazas, exhibitions, shows and demonstrations. From the foregoing discussion it is evident that the extension information services offered are less than what the farmers expect.

Importance of the use of information to the smallholder dairy farmers in Wareng

The farmers were asked if they could apply the information provided. Sixty two percent answered in the affirmative. This group found the information beneficial. Thirty eight percent of the respondents said they could not use it because it was not relevant and that the extension officers did not take time to explain to them the importance of the information to their dairy farming.

It is likely the extension information was in a language that farmers could not understand. It is also possible that the extension workers did not take time to clearly explain new concepts. There should be enough time for teaching farmers new technologies and ideas. Teaching should also be interactive giving farmers a chance to seek clarifications where necessary.

A small percentage of the respondents found the information completely unsuitable. This implies that the information could not be of any use at all. This happens in situations where the bulk of the information presented is meant for crops other than livestock. Dairy farmers would therefore find that information irrelevant.

The study also sought to find out whether the smallholder dairy farmers always rely on information in their dairy farming. A majority of them (81%) said they do. This is a big percentage showing that the farmers value information. It was revealed in the study that 19 percent of the respondents said they do not rely on information at all when doing their dairy farming. This is a sad situation because without information, nothing will come out of their dairying. In order to improve production, you need information to achieve better animal husbandry.

The respondents who stated that they need not rely on information in their dairy farming gave a variety of reasons. Top among the reasons was the assumption that they were well conversant with what they needed to do with their livestock. This is not entirely true as there can never be an end to information needs and knowledge because dairy

farming is dynamic like any other modern enterprise. Surprisingly, some said they have no use for information. This is unbelievable as there can never be a time when there is no need for information. Information is always required because no activity can be transacted without information hence the slogan “information is power”.

Challenges encountered by the smallholder dairy farmers as they access information in Wareng District.

Provision of extension information services was found to face a number of challenges in Wareng District. The respondents were asked to state these challenges:

- Rude and arrogant extension staff
- Extension office being far away
- Half-baked information
- Lack of enough extension personnel
- Short learning time
- Difficult language
- Use of technical terms

The challenges encountered by Wareng farmers in their bid to get information were varied. The major problems include lack of enough extension personnel. The Ministry of Livestock Development has few extension officers. The available extension personnel are stationed at the district headquarters and a few at the divisional headquarters but hardly at the locations or sub-locations. This means the rural smallholder dairy farmers do not get the services offered by the extension personnel. Other challenges mentioned by the smallholder dairy farmers included the fact that extension personnel at times were uncooperative. At times the farmers found the extension personnel too busy to attend to them. One farmer remarked that he was told to ‘take your constant problems to the minister.’ Another challenge was the location of the extension office. At the Division headquarters which in most cases was far from the smallholders. Extension offices should be at the location and sub-location levels. Another problem was that the information provided was at times of less value i.e. half-baked. The extension personnel should be doing further research or liaise with the researchers so as to give farmers quality information. Another challenge was the language of instruction. The farmers were mainly illiterate hence could not understand English or even Kiswahili. Most extension information was given in English or Kiswahili which many did not understand.

The farmers were asked to give the language preferred and most choose vernacular. If vernacular language cannot be used then translations should be provided for farmers who are illiterate. The respondents were asked to suggest ways on which messages can be made understandable. A variety of answers were given including use of simple language, translation, use of less jargon, making the presentations entertaining etc.

Suggested solutions on the problems/challenges experienced in extension information provision.

The smallholder dairy farmers were asked to suggest what should be done to improve provision of extension information services in Wareng District. The suggestions put forward were diverse but all concerned the dairy sector in general.

The farmers proposed that the provision of extension information services be made more proactive. In this case the farmers suggested that the process of provision of extension information be organised in a manner that specific dates are fixed for field days, seminars, workshops and other training activities. This will allow them to prepare early for these events. Another suggestion was that the extension personnel should move with the times and incorporate information and communication technologies (ICTs) in the extension process. The mobile phone SMS services should be strengthened to disseminate more information. The National Livestock and Agricultural Extension Programme (NALEP) use SMS service to disseminate information to the farmers. When a farmer requires particular information he/she sends a short message and answers will be provided. The Ministry of Livestock Development should develop its website further to provide an interactive section where farmers can upload their problems and receive answers from extension officers.

The Ministry should register all the farmers in the district to make it easy to identify their information needs and respond to them accordingly. The extension personnel should work closely with the chiefs to register all the farmers and capture their information needs in a profile detailing the specific characteristics of the farmers. This way the extension personnel can disseminate the information effectively to the smallholder dairy farmers in the same way they disseminate to the large scale farmers. It was also suggested that demonstrations should be more frequent and ought to take more time. Farmers want to see practically what they are to apply in their farms and this can be

achieved through demonstrations. Extension personnel were asked to come out of their offices and visit farmers on regular basis. They should identify model farmers and make them focal learning points for the other farmers. Their farms should act as demonstrations units. The farmers requested that translation services be provided for the illiterate farmers.

There was a suggestion on the need to establish libraries at the district and divisional level and information materials availed for easy access by farmers. Booklets on extension should be stocked in these libraries. Announcements on upcoming field days should be posted at these libraries and at trading centres and other social places. Awareness campaigns on the provision of extension information services should be conducted at these libraries. The extension personnel should avail their contacts at the libraries and the chief's offices.

The farmers suggested that the content of the information presented during extension should incorporate modern farming methods and emerging diseases. More information on zero grazing, breeding and dairy feeds should be given more prominence. This is because modern dairy farming cannot be achieved without good breeds and enough feeds. It was suggested that visits should be done more regularly to enable farmers familiarize themselves with the concepts taught. Besides, more time should be provided for teaching new concepts.

It was also suggested that the government should step in and subsidise feeds and A.I services. Another suggestion is that the government should help farmers get good prices for their milk even when there is a glut and that farmers should always be paid immediately after they deliver the milk to the processors. It was suggested that the extension personnel should be trained in public relation to enable them handle farmers properly.

Many farmers said they were not aware of extension information services. This situation can be dealt with by informing farmers about upcoming trainings. There should also be effective mechanisms to monitor the training to ascertain whether farmers benefit from them.

Conclusion and Recommendations

The findings of the study indicate that the information needs of smallholder dairy farmers in Wareng are on types of feeds, breeding, health and market. When the farmers were asked to indicate the information they require most, 46 percent of them mentioned dairy feeds while 34 percent required information on breeding. Fourteen percent said they required general information on livestock. A few said their key information needs were on health, market and climate.

The findings reveal that the information needs of dairy farmers revolve around the dairy feeds and breeds. The farmers prioritise these needs because a good breed is paramount for the production of more milk and that cows must be well fed to produce more milk.

The farmers were told to provide the sources of their extension information. The sources provided are extension workers, fellow farmers and own reading. Most of the farmers stated that they understand the extension information given. Those who do not understand said the language is difficult. The farmers indicated that they do not receive extension information as frequently as they want. A majority of farmers indicated that they rarely receive any information. Those who receive information said they get after several months. Asked whether they can apply the information after being given, majority answered in the affirmative. Those who said they cannot apply gave the reasons for not doing so as lack of time and that the information was not relevant to them.

In summary, the extension information services provided to the farmers are mostly inadequate and fairly understandable. The farmers really value information and want to get more. Livestock farming, being the mainstay of most rural households, contribute significantly to the livelihoods of the farmers. Adequate information is therefore a requisite if the farmers are expected to improve their animal husbandry. The government should treat the provision of adequate information as a priority because the livestock sub-sector accounts for about 10% of the entire GDP and about 42% of the agricultural GDP (National Livestock Policy, 2008).

The key challenge given by the farmers is uncooperative extension staff. Another challenge is that extension office is located far from farmers. Besides, farmers said sometimes the information they get is not current. Another key impediment cited is absence of extension information services. Few knew that the Ministry of Livestock exists.

The farmers stated that even if they were to look for livestock information, they could not access it because the extension workers were in most cases not available.

A majority of the farmers also found English, the language of instruction, a challenge. This is because a number of the farmers are either semi-illiterate or completely illiterate. This group of farmers prefer vernacular for instruction. It was however interesting that when the farmers were asked whether they understand the messages as presented, majority said yes. Those who were unable to understand the information as provided said it should be presented in simple language or vernacular.

Recommendations

There were several suggestions given by the farmers and extension personnel on how best the provision of extension information services could be improved. The government was called upon to subsidize the prices of dairy feeds and breeding services so that majority of the farmers could afford. Extension workers should conduct more awareness campaigns so that farmers understand what they do. Farmers should also do value addition instead of just selling raw milk. It was also suggested that cottage industries be established closer to the farmers e.g. that of milk processing and animal feed processing.

There was a suggestion that extension personnel should spend more time teaching farmers as opposed to the one-day field days that they are fond of doing. The farmers also said they should be given a timetable of up-coming trainings well in advance to enable them prepare for them well. The extension workers were also encouraged to do more farm visits so that they could reach more dairy farmers. It was suggested that libraries be established at every Division. Extension workers were advised to device modern ways of passing information like e-mail or mobile messages.

It was also suggested that mass media be incorporated in the dissemination of information to farmers. It was suggested that model farms be established where other farmers can learn from. There was a call for extension personnel to be facilitated appropriately by providing enough vehicles for transport. The extension workers should be increased so that they cover all the small-holder farmers. Provision of credit facilities alongside extension information was encouraged so that farmers can adopt the technologies easily.

The extension personnel should be send for re-training more often so that they learn new trends in extension information service provision. Other than training in technical skills, they should also be trained on communication skills. This will enable the extension workers to do more than simply passing the messages and leaving farmers to implement through their own devices. They should be able to make farmers see the benefits of applying new practices. The extension personnel should avoid the teacher-school approach which at times is associated with arrogance in their contacts with farmers. Supervision and back-stopping was encouraged so that the provision of extension information services may be made more effective. The DLPOs were also asked to do more extension work instead of just sitting in their offices doing supervisory and administrative work. This is because some of the junior livestock officers tasked with disseminating extension information are not well-trained to properly interpret research information for the farmer. The level of training should be upgraded to conform to changes in livestock farming. The training levels are sometimes limiting in that the extension personnel know something about each farming method but not enough to be of any help to the farmer.

Smallholder farmers were advised to take dairy farming as a business so that they may get profit. Revival of the farmers training centres (FTCs) was encouraged. There was a suggestion that more livestock production manuals be produced and distributed to the farmers as their reference materials. There was also a suggestion to establish libraries at the district and divisional level. Some of the teaching materials like manuals and brochures could be stocked at these libraries.

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