
Summaries

Many recording organisations in developed countries have shown that the participating farmers are able to increase productivity and genetic merit of their animals and raise the quality of their produce. They have shown that animal recording helps farmers in decision making and optimising use of their existing resources, increases the value of their animals and their produce, and improves the overall income of their farms.

A very few organisations in developing countries, however, have established and sustained animal recording systems. Many constraints that the developing countries face make it difficult for them to develop and sustain animal recording systems. However, there are a few organisations in developing countries which have shown that the development of animal recording systems in developing countries could be very rewarding. They have shown that it could help farmers in increasing productivity and genetic merit of their animals and that it could be a very effective management tool to help farmers in decision making.

Considering the importance of developing animal recording systems in developing countries, ICAR decided to organise a workshop at the National Dairy Development Board, Anand in India and invited some selected persons from developing countries who are actually involved in animal recording in developing countries. Each invited person made a presentation of animal recording situations in their country in the workshop. All participants also discussed various aspects of animal recording in developing countries. A brief summary of the significant efforts made by some selected countries in developing animal recording systems, the constraints faced by the developing countries, the discussions that took place among participants, and the recommendations emerged from the discussions is given below:

A brief description of the milk recording efforts made by eight countries one each from Asia and Europe and two each from Sub-Saharan Africa, North Africa and Middle east, and Latin America is given below highlighting in each case the purpose of milk recording, institutions and operating systems, and management and sustainability of programmes. Eight countries have been selected only for the purpose of describing the different animal recording situations in four continents. This does not mean that successful animal recording programmes are not being carried out in other developing countries.

1. Introduction

2. Animal recording organisations in developing countries

2.1 Brazil

The official pedigree and milk recording are the responsibility of the Ministry of Agriculture, Provisioning and Agrarian Reform (MAAR) which has delegated its responsibility to breeders associations. The main milk recording organisations have been the Holstein-Friesian Breeders Associations in several states, the Brazilian Zebu Breeders Association and the Brazilian Breeders Association. All associations send their data files to the National Dairy Cattle Research Centre of the Federal Research Organisation (EMBRAPA) which estimates breeding values and publishes sire summaries. The important milk recording organisations include: Parana Holstein-Friesian Breeders Association in the state of Parana ; an Extension Programme run by the School of Agriculture ESALQ in the state of Sao Paulo; a milk recording programme initiated by MAARA with co-operatives; a crossbreeding experiment conducted by EMBRAPA/FAO/UNDP etc. (Madalena, 1997). The milk recording programme implemented by the Parana Holstein-Friesian Breeders Association in co-operation with the Federal University of Parana is the largest programme. In 1995 it provided milk recording service to 385 herds covering 17 176 cows. The organisation has 32 recorders and one supervisor. Recording is done on two normal milking per day. Fat, protein, lactose and somatic cell counting are done at a central laboratory. Data are processed for herd management and certification of yield of individual animals. Farmers pay for the services offered by the association. The government does not provide any financial support.

2.2 Egypt

The Animal Production Department, Faculty of Agriculture, Cairo University in 1989 started a research project financed by IDRC, Canada to establish a 'Pilot Cattle Information System in Egypt' to provide information to farmers for management of their herds. Extension workers of Animal Production Sector, Ministry of Agriculture and Land Reclamation (MALR) acted as recorders and staff and postgraduate students as supervisors. Data were collected based on once a month visit by extension worker to each farm. Monthly reports were produced by the Animal Production Department and sent to each farm. To encourage farmers to join the programme, the Department also started offering a package of technical service on cost like feed, veterinary service, pregnancy diagnosis, treatment for infertility cases etc.. Most of the participating farmers are small farmers with animals less than 5. April to October season is very hot with temperature reaching 42°C. In July when floods come in Nile River the humidity also rises. The area get almost no rain.

In 1994, the university transferred the project to 'Centre for Studies on Dairy Cattle Information Systems' which carried out the activities that the department was doing. The centre has enrolled some 364 herds and 4 604 animals. A National Dairy Herd Improvement Programme (NHIP) has been proposed to be established for milk recording and genetic

evaluation of animals. A Technical Co-operation Programme between MALR (represented by CISE) and FAO was also initiated in 1996 to plan for establishment of National Dairy Herd Improvement System.

The official performance recording in dairy cattle, sheep and goats has been implemented in Greece for the last fifty years by the Ministry of Agriculture with the primary purpose for the genetic improvement of animals and secondary to provide management and technical information to farmers. Presently, the programme is being carried out by the Direction for Inputs to Animal Production, Ministry of Agriculture and its five regional Animal Genetic Improvement Centres namely Drama, Thessaloniki, Karditsa, Ioannia, and Athena. The Agricultural Universities in Thessaloniki and Athena help in analysis of data and producing feedbacks for the farmers. They also provide technical advise on feeding, breeding and selection of animals. The official method of milk recording is A4 - once a month two time a day. Milk is measured volumetrically. The individual animal data with samples for measuring milk fat, protein and lactose content are sent to nearby Animal Genetic Improvement Centre. The agency responsible for milk recording and genetic evaluation of animals is the Ministry of agriculture and the financial support also comes from the Ministry of Agriculture. Farmers do not pay for the service, on the contrary till 1993 the government gave considerable premium to farmers to join the recording and genetic improvement scheme. The government is thinking now to involve the co-operative organisations for milk recording under the supervision of the Agricultural Ministry.

2.3 Greece

The first official milk recording in Kenya started in 1949. The scheme was named as East Africa Milk Recording Service. Its operations were confined to large herds. The main objective of the scheme was to provide information for management of farms. This scheme was closed in 1970. However in the same year a new scheme called Kenya Milk Records (KMR) was started to provide milk recording service to farmers. Milk yields of individual cows were recorded by farmers daily on official milk sheets and sent to the central office weekly. Official recorders visited the farms bi-monthly intervals to take milk samples for butter fat test and to check whether the recording rules were followed. The central office supplied feed back on lactation certificate, herd and breed averages and butterfat test results. KMR faced financial problems and dissolved in 1994. The livestock farmers set up the Dairy Recording Service of Kenya (DRSK) in 1994. This the current organisation which is providing milk recording service to farmers. Till June 1996 DRSK had recorded 10 492 cows in 120 herds with an average herd size of about 88 animals.

2.4 Kenya

2.5 India

Three totally different types of organisations, one, dairy co-operative organisations promoted by the National Dairy Development Board (NDDB), second, a semi-government organisation (the Kerala Livestock Development Board (KLDB) and third, a non-government organisation) the Bharitya Agro Industries Foundation (BAIF), have developed and sustained more or less similar milk recording and genetic evaluation programmes in different parts of the country.

2.5.1 NDDB

NDDB has initiated its Dairy Herd Improvement Programme Actions (DIPA) in six districts in Gujarat; in Mehsana district for Mehsana Buffaloes, in Kheda district for Murrah buffaloes and in Sabarkantha, Baroda, Panchmahals and Surat districts for Murrah buffaloes and crossbred cows. These all programmes were initiated with the purpose of milk recording of daughters for progeny testing of bulls. The other components like feeding and management of animals have been integrated into the programme of progeny testing of bulls.

The DIPA programme in each district is implemented by the respective district co-operative milk producers' unions. These dairy co-operative unions are owned and managed by farmers representatives. At the village level, these unions have independent village dairy co-operative societies owned and managed by farmers' representatives. The village level dairy co-operative society buys milk from farmers and supplies it to the district co-operative union. The society buys cattle feed from the union and sells it to farmers. It employs an inseminator and provides AI service to farmers. Semen doses are supplied by the union. The union also provides emergency veterinary service directly to farmers. The DIPA programme is integrated into the several activities of union and village dairy societies. The union collects milk from each village, processes it into milk and milk products, generates revenue through sell of products and pays to dairy co-operative societies for the milk supplied by them. These unions do not get any assistance from the government.

For effective implementation and control of DIPA programmes uniform rules and procedures have been evolved. Under each programme some 15-20 bulls are put to test every year. To generate roughly 100 completed records, about 2 000 semen doses of each bull are distributed in selected villages. Each union selects 30 to 35 villages. All breedable animals of the selected villages are ear-tagged with plastic ear tag with eight-digit unique number. Semen doses of bulls put test are distributed in the selected villages in a way that maximum number of bulls produce their progenies in each selected village. All events of AI, pregnancy diagnosis, calving and monthly morning and evening milk recording are recorded through the information system developed for this programme (DIPA-MIS). Project monitoring reports as well as estimation of breeding values of bulls and recorded progenies are produced using DIPA-MIS. Most of the farmers in these villages are small farmers having 1-5 animals. About 20% of them will be landless and the rest following mixed farming systems. These villages are

in hot and dry climate with moderate rainfall . Some of them have irrigation facilities. Every year about 40 bulls are put to test and about 2 500 animals are put under recording.

The DIPA programme is implemented by the respective dairy co-operative union and managed by a Management Committee represented by the union and the NDDDB. NDDDB provides full financial support for first five years. After five years each union carries out the DIPA programme from its own internally generated funds. Farmers are not charged for any service provided by the union under DIPA programme. Each union has also created a corpus fund for this programme. Each DIPA programme now meets its expenditure from the interest earned out of the investment of the corpus fund and does not depend on any external agency for funding. For the long term participation of farmers in the programmes, the programme needs to be reoriented from its present emphasis on progeny testing of bulls to performance recording and use of information for both extension and planning.

KLDB, a fully Kerala State Government-owned company formed in 1976 integrating the Indo Swiss Project, has been implementing milk recording and genetic evaluation of bulls through progeny testing since 1977. The programme was initiated and funded by the erstwhile Indo Swiss Project. The purpose of the scheme is to estimate breeding values of bulls on the basis of performance of their daughters and to use the top 10% of bulls for the production of the next generation of breeding bulls. Every year 40 bulls are put to progeny test. Some 1 500 test inseminations are carried out to obtain at least 50 complete first lactation records. Inseminations are carried out by the AI centres manned by the department of Animal Husbandry and the cattle improvement assistant of the Dairy Development Department. On an average 2 000 animals are registered every year for recording their first lactation yield. Milk recording is done once a month morning and evening by unemployed youth and/or workers of the nearby village co-operative societies. Supervision of milk recording is done by supervisors of KLDB. So far 614 bulls have completed their test mating. Since 1984 some 21 061 cows have been enrolled for milk recording of which 16 124 cows have completed their first lactation records. The average standard first lactation yield of daughters completed their lactation in 1996 was 2 2.5.3 BAIF 192 litres. The average increase in milk production has been 3.72%. Most of the farmers are small farmers with 1-5 animals. In coastal areas the climate is hot and humid, in mid land it is hot and sub-humid and in high land it is cool and dry. All farmers are mixed farmers The whole programme is managed by KLDB and funded by KLDB and the Government of India. Farmers do not pay any thing for the service provided by KLDB.

2.5.2 KLDB

2.5.3 BAIF

BAIF is a non government organisation which takes up developmental programmes with the focus on income generation activities and improvement of quality of life of rural population. Crossbreeding of indigenous cows with semen of exotic bulls of Holstein and Jersey breeds has been one such activities of BAIF covering some 7 000 villages distributed over 7 states in the country. Crossbreeding programme initiated in Ahmednagar district in the state of Maharashtra is the oldest crossbreeding programme initiated by BAIF. BAIF has initiated milk recording and progeny testing of crossbred bulls in 143 villages of the Ahmednagar district. The farmers in this district are small farmers. The climate of the district is hot and dry. The main purpose of the programme is to increase the average productivity of the crossbred cows of the Ahmednagar district through progeny testing of crossbred bulls. AI services to farmers are provided by the employees of BAIF. They collect information on AI, PD and calving. For carrying out milk recording in 143 villages, 10 permanent and 10 contractual recorders have been employed. Milk yields are recorded fortnightly morning and evening alternate fortnights. Random checking of milk yields and fat testing in 2nd, 5th and 8th month of lactation are carried out by supervisors. The average first lactation yields of crossbred progenies was 2 671±60 kgs. The entire programme is managed by BAIF and funded by BAIF and supported by the government of India.

2.6 Morocco

Dairy record keeping in Morocco is a government programme controlled and fully funded by the Ministry of Agriculture. It is basically for genetic improvement of animals. The dairy recording started in 1968 by one public management company. The service was extended to public and private farms which later resulted in the formation of four herd books one each for Holstein, Friesian, Red and White, and Tarentaise at the Ministry of Agriculture. From 1973 to 1985, the recording was limited to public and a few private farms covering some 120 herds and 5 000 cows (mainly Holsteins and Friesians). In 1985 the recording was extended to all farms referred to as "nursery units" which received subsidies for each selected animal to reduce heifer importation. Now, the number of these "nursery units" is about 390 with 11 000 cows which represent about 9% of the total pure breed dairy cows. In general, the recording is used for genetic improvement only, and the farmer does not receive any feedback for herd management. Agents of the Ministry of Agriculture weigh milk yield and take a sample for fat test once a month. Some 15 000 cattle have been registered in the herd book between 1985 and 1995. A progeny testing programme was also initiated in 1989. It started with 30 bull calves from which, in 1995, 10 bulls were selected. In 1992, 1995 and 1996, 18, 16 and 16 bulls were put under test.

The project on performance recording of dual purpose cattle was started in 1990 by the Universidad Central de Venezuela with the financial support of IDRC, Canada with the objective to define traits to be measured in dual purpose cattle - milk and beef, to develop methodology for field recording appropriate under tropical climate and to develop appropriate software to provide information to participating farmers.

2.7 Venezuela

The number of farms participated in the programme varied from 12 to 20 over the year with cows between 1 552 and 3 077. Initially milk and cows were actually weighed by project technician during his monthly visit to the farms with the help of farm worker, but later this was done by farm workers themselves. During monthly visits, the technician supervises the records collected by farmers, does some direct recording like weighing of calves, discusses the previous month report and the future work programme with the farmer. The software developed for the programme provides a variety of information on the performance of individual animals and also for the whole herd. It also provides a specific action list for the farmer. Every six months farmers also get estimated breeding values for their animals.

The programme was entirely implemented by the university staff with the assistance of IDRC, Canada in the first four years. Later, the programme was partly funded by the participating farmers and partly by the university.

Presently the Zimbabwe Dairy Services Association (ZDSA) provides milk recording services and carries out genetic evaluation of cattle in the country. ZDSA is governed by a ZDSA council consisting of representatives of all stakeholders in the dairy industry such as the government, producers, processors, and the Zimbabwe Herd Book (ZHB). ZDSA and the government (Dairy Services) have made an undertaking to operate in a 'joint' venture in administering the milk recording services. The main purpose of the programme is to carry out performance recording of animals and provide information to farmers to manage their farms.

2.8 Zimbabwe

The participating farmers have two options; one is fully supervised by ZDSA and second is an owner sampler option. For the fully supervised herd option a milk recorder of ZDSA visits the farm ten times in a year. During his visit herd owner or he himself extracts data on all events and records on specially designed input formats. He records an individual cow milk yield and collects milk samples. The collected milk samples and formats are sent to the central office of ZDSA by courier. The milk samples are analysed for butter fat, lactose, total solid and somatic cell counts and results are transmitted electronically to the data processing centre. All formats received from the field and the results from the central laboratory are processed by the data processing centre of ZDSA. The reports are sent to the participating farmers within ten days. For the owners' sampler option, the only difference is that milk recording is done by farmer himself.

The farmer collects samples and fills up formats and sent them to the central office for processing. For smallholders a special group recording scheme has been evolved. It is a modified form of the owners' sampler option. Owner sampler herds are tested every month, with milk recorders visiting them four times a year. On the test day all cows milk yields are recorded every milking. Samples are collected for each cow. All relevant information of all cows is recorded in a single format. All formats and samples are sent to the central office of ZDSA for processing. The genetic evaluation of animals is carried out by ZDSA using the BLUP sire model methodology. Some 23.9% of the total 410 large herds and three smallholder groups with a total of 129 cows are participating in the performance recording programme. All these herds are in a central plateau. It has a temperate climate. The mean summer temperature is 27°C during day and 16°C at night and the mean day time winter temperature 18°C. Humidity is low for much of the year. It has very favourable climate for dairy production.

The entire programme of performance recording and genetic evaluation of animals is done by the ZDSA. ZDSA is governed by a ZDSA council representing all stakeholders of the dairy industry. ZDSA meets its cost by charging farmers partly for their services, by levies from the dairy industry and by the contribution from of the government. Technical assistance for the programme has been received from the Canadian International Development Agency (CIDA) and the Netherlands Royal Cattle Syndicate (NRS).

3. Constraints for animal recording

The main constraints pointed out by many persons involved in animal recording in developing countries include the following topics.

3.1 Low awareness of benefits of recording

Low awareness among farmers about benefit of recording is a limiting factor in many developing countries. Several reasons have been given why farmers pay less attention to recording efforts; two important reasons among them include: low productivity of animals and small herd size. As productivity improves or herd size increases or both happen, farmers pay more attention to animal recording and look for information to improve productivity of their animals. The farmers who have participated in performance recording in Zimbabwe, Kenya, Venezuela or Brazil are large farmers and have comparatively high producing animals mostly Friesians. On the other hand the milk recording systems developed and sustained for many years by KLDB, BAIF and NDDB in India were all for small farmers and they all were initiated for the genetic improvement of local buffaloes or crossbred populations. Those who are implementing animal recording programmes for smallholders in developing countries find it extremely difficult to motivate farmers to participate in such programmes. Chacko (1997) points out this as one of the limiting factors for extending milk recording. He says: "the farmers are yet to find a use for records and this makes the milk recording programme not a welcome one, but an

imposed hazard". Nevertheless, through implementation of their milk recording and genetic evaluation programme, the average standard milk yield in first lactation in crossbred cows increased from 1 480 to 2 100 at an annual rate of 3.42% between 1983 and 1995. In the programmes implemented by the producers' co-operative organisations in India, it was realised that a report produced for an individual farmer who has just one or two animals may not be that informative to him, but when a report is produced for the whole village co-operative covering all participating farmers and their animals, it becomes very informative to him. He compares his performance with other farmers in the village and tries to adopt practises followed by the farmers having better performing animals. These organisations even give incentives to farmers to make them participate in milk recording programmes.

Bachmann (1997) points out that organisations with technical know-how and finance are a prerequisite to take up breed improvement programmes in developing countries. In developed countries animal recording activities had been initiated by farmers' co-operatives or breeders' associations with support from the respective governments. Even in developing countries some effective animal recording systems have been developed and sustained perhaps because they have been initiated by right organisations and interested people. The success of the milk recording programme implemented by KLDB is because a separate organisation was set up with the technical and financial assistance of the Swiss Agency for Development and Co-operation. Similarly the successful implementation of DIPA programmes by NDDB was because these programmes had been implemented through powerful farmers' co-operative organisations and technically and financially supported by NDDB. In Zimbabwe the government formed a separate organisation the Zimbabwe Dairy Services Association (ZDSA) to provide milk recording services and carries out genetic evaluation of cattle in the country. ZDSA has been given complete freedom to operate and is partly supported by the government. In many developing countries there are no organisations providing animal recording services to farmers and carrying out genetic evaluation of animals. Often some interested people from agricultural universities initiate milk recording programmes, but such programmes either remain confined to providing services to a very small group of farmers or die in absence of continued finance support.

Low literacy rate in developing countries is often mentioned as a limiting factor in implementing performance recording. If farmers cannot read computer outputs sent by recording organisations, they cannot make use of information provided in the outputs. Some simplified systems will have to be developed if reading and interpretation of results would be a problem. The information that recording organisation provides to farmers must also be relevant to them for their day-to-day operations and for planning of their future activities. Analysing local situations and advising farmers

3.2 Lack of right organisations for animal recording

3.3 Lack of technical know-how

need special technical skills. In developing countries often trained people may not be available. Developing recording systems also needs expertise in information technology which also may not always be available locally.

3.4 Lack of finance

Lack of finance is frequently mentioned as the most critical factor for initiating and sustaining animal recording systems in developing countries. Many recording programmes have been closed for want of financial support.

4. What ICAR can offer to developing countries

4.1 Appropriateness of Animal Recording organisations

On the experiences of implementing animal recording programmes in developing countries three basic principles could be arrived at on whether an animal recording programme would succeed or not: (i) Whether it provides the information or service important to farmers; (ii) whether the operating system developed meets the purposes important to farmers; and (iii) whether there is an institutional environment which ensures that the operating system functions at its best.

4.1.1 Information or service important to farmers

Any animal recording organisation must work towards providing information or service important to farmers. If animal recording systems are developed for purposes which are important to organisers or to governments or to any other external institutions other than farmers, howsoever noble the purposes could be, such organisational efforts would not last long. Many programmes initiated by governments or universities for the purpose of progeny testing of bulls have failed when they did not consider to include a component of providing information for improving management, feeding and health care of farmers' animals. For example the Official Milk Recording Services (ROPL) run and financed by the Ministry of Agriculture and Breeding (MAC) between 1956 and 1994 in Venezuela for the purpose of progeny testing of bulls. Some organisations like KLDB and some co-operative organisations in India have set up milk recording schemes for the purpose of progeny testing of bulls and have run them successfully for a number of years. In case of KLDB, it is because very dedicated people were involved from the beginning and it received technical and financial support of the Swiss Agency for Development and Co-operation. In case of the DIPA programmes, the success is because these programmes were implemented by very large dairy co-operative organisations providing a variety of technical service including AI, cattle feed, health care etc. and were technically and financially supported by the National Dairy Development Board. The very fact that these co-operative organisations are now putting more emphasis on generating information at the village dairy co-operative society level covering all animals of the participating farmers, explains that for the long term sustainability of the programme farmers must get information important to them, it would not be enough that they collect information for estimating breeding values of sires. When farmers find the information or service

important to them they would not mind paying for it and implementing organisation then can charge for their service and generate funds for their organisations. In other words, when the organisation ensures that it provides the information the farmers need, it also ensures its long term sustainability.

Although, the type of organisations which implement animal recording programmes and the traits they measure may be different in different countries, the operating system followed is surprisingly similar. The main components of the operating systems are: identification of animals by applying a plastic ear tag having a number readable from a distance; collection of initial information on birth or age of animal, reproduction and lactation details if any available etc.; collection of individual animal information on AI, pregnancy diagnosis and calving; registration of new born with necessary pedigree details; visit of official recorder once a month to farmer's place and record individual animal's milk yield and or body weights and collect milk samples for testing of fat and other components like protein, lactose, somatic cell counts etc.; forwarding the collected data to a central data processing centre which analyses data and sends feedbacks to farmers on monthly basis; the data processing centre also creates databases of all animal records and estimates breeding values of all animals at a regular interval of time and publishes the results. Some time all these functions are done by a single organisation like the DIPA programme implemented by the dairy co-operatives in India or different functions by different organisations say breeding factions by one organisation, data collection and extension activities by other organisation and data processing by third organisation. Systems of multiple organisations is found in many countries like in Kenya, Brazil, Zimbabwe etc. The success depends on how efficiently these services are provided by different organisations to farmers. More co-ordination between different functions is ensured when all activities are carried out by a single organisation than when they are implemented by different organisations. Single organisation, however, is not able to employ people of different skills required for the variety of activities to be carried out and therefore the quality of service provided by it may suffer.

4.1.2 Operating systems meet the purposes important to farmers

An organisation with technical know-how and fiancé is a prerequisite for development of effective animal recording organisations in the country. In a big country such an organisation should take up the responsibility of promoting animal recording organisations in the country. In a small country such an organisation can itself take up the responsibility of implementing animal recording services. In many developing countries recording activities have been initiated by agricultural universities. Universities usually have technical skills, but they do not have funds to carry out such activities. Hence, animal recording activities initiated by universities either get closed after sometime or they remained confined to

4.1.3 Promoting organisation

very small area. When animal recording services are initiated by producers' co-operatives or by developmental institutions or by breed organisations, they are able to expand their activities. Such organisations, however, need to be supported with technical know-how and initially with funds. The promoting organisation can provide the technical know-how and fund. It can also take up the responsibility of giving training to their staff. They may also help in estimating breeding values at the national level and publishing sire summaries of all bulls used in the country.

4.2 Role of ICAR

4.2.1 Providing standards and guidelines

As the operating system followed for implementing animal recording services is very similar across many developing countries, ICAR can prepare standards and guidelines for milk recording, dual purpose (milk and meat or milk and draft) or multipurpose recording, recording for certain additional traits, quality of data, genetic evaluation of animals in small herds etc. specifically for developing countries.

4.2.2 Develop guidelines for initiating and structuring national animal recording systems

ICAR in conjunction with FAO should develop guidelines for initiating and structuring national animal recording systems and circulate them to governments of all developing countries. Such guidelines should list down the broad principles that should be followed in initiating animal recording programmes which should include: all recording programmes must provide information or service important to farmers; the recording systems should be designed in a way that while it serves the primary purpose of providing information to farmers, the data collected is also used by breeders for genetic improvement of animals, by governments and planners for developing national livestock development programmes, and by consumers for ensuring quality control of livestock products; description of all components of the operating system; establishment of an organisation for promoting animal recording in the country or delegating this responsibility to some existing institution; all animal recording services should be provided through promotion of farmers groups, dairy co-operatives, breeders associations etc. and not by the government; government funding will be necessary to initiate and possibly to sustain; animal recording organisations must charge for their services and work towards recovering full cost over a period of time etc.

4.2.3 Training and consultancy for developing animal recording organisations

ICAR can organise training programmes in animal recording for field level extension staff, country co-ordinators, university and ministry of agricultural personnel from developing countries at a suitable place of one of their member organisations in developing countries. The training should cover practical aspects of animal recording including management advise, data processing and interpretation of results. ICAR can also provide consultancy services for developing animal recording programmes in developing countries.

ICAR can establish regional networks of institutions and people in Asia, Sub-Sahara Africa, North Africa and Middle East and South America. The people from different countries participating in regional networks can exchange ideas, methods and experiences on animal recording. ICAR can also organise regional workshops for promoting animal recording activities.

4.2.4 Establishment of regional networks

ICAR can start a news letter specifically for developing countries.

4.2.5 ICAR News letter for developing countries

ICAR can develop a home page on Internet to provide all information on animal recording in developing countries. Such a page could be updated regularly to provide all new information collected by ICAR.

4.2.6 Homepage for animal recording information in developing countries

K.R. Trivedi