Animal Recording for Livestock Development Experiences of the Swiss Agency for Development and Co-operation and of Interco-operation in India[1]

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1. Summary

The Swiss Agency for Development and Cooperation and Intercooperation support in their collaborative projects of livestock development in India various animal recording activities.

Evolved from the former Indo-Swiss Project, Kerala, the Kerala Livestock Development Board is running since 1977 a successful field progeny testing programme for sire evaluation and breed improvement in a crossbred cattle population. Indo-Swiss Project Andhra Pradesh is supporting the set-up of progeny testing schemes for buffalo and cattle. Through the former Indo-Swiss Goat Development Project in Rajasthan experiences were gained in recording of milk and body growth in goats to establish a selective breed improvement programme for the local Sirohi breed. Performance recording in goats is partly continued by two non-governmental organisations under the Intercooperation NGO Programme Rajasthan. In 1995 a milk recording scheme has been initiated in the Himalayan State of Sikkim to identify potential bull mothers and to select their crossbred male calves for natural service in remote villages.

Links between animal recording and livestock development projects in general, including the role of development agencies and their partner organisations are discussed.

The experiences show feasibility and usefulness of animal performance recording under conditions of small scale livestock holdings. Purpose and institutional environment need to be clearly defined; especially while looking at long-term perspective for assured continuity.

[1]Compiled for the Workshop on Animal Recording for Smallholders in Developing Countries, 20-23rd October, 1997 at Anand, India; this paper is an up-dated version of Groot, B. de; 1996; Experiences on Animal Recording in Bilateral Collaborative Projects for Livestock Development in India; compiled for the 30th Biennial Session of the Committee for Animal Recording (ICAR), 23-28th June, 1996 in Veldhoven, the Netherlands.

2. Introduction

The Swiss Agency for Development and Cooperation (SDC)[1] and Intercooperation (IC)[2] support animal recording activities within the context of their technical collaboration with India for improved livestock production and dairying. Though performance recording activities tend to be relatively small and simple as compared to equivalents in the industrialised world, there is a high degree of pioneering, especially in setting up field performance recording systems. Animal recording can play a significant role in making livestock programmes in developing countries more practical and farmer oriented. Objectives of this paper is to present experiences of SDC, IC and their partner organisations in animal recording activities and to put these experiences in the wider context of livestock development projects.

There are more of such experiences under similar conditions, but documentation appears to be limited and scattered. In India a first attempt to focus on exchange of information regarding animal recording at national level was made in a national workshop in 1993 (Maru, Itty and de Groot); a second workshop is planned for 1998.

3. Livestock sector India

India is endowed with an impressive livestock wealth of cattle, buffaloes, goats, sheep, camels and poultry which in numbers all represent a sizeable portion of the world population. A large part of this livestock is kept under traditional management with relatively low levels of input and low productivity. An increasing demand for animal products has triggered off significant developments in intensification and search for suitable technologies to enhance production. The potential of livestock for economic and social development in rural areas in India is well recognised and has attributed to a range of support programmes largely financed and implemented by local government and occasionally, non-government organisations (NGOs). There is a clear need for more farmer based organisations such as breeders' associations and cooperatives for providing technical inputs and services. Collection and better utilization of farmer based information is likely to play an essential part in such development.

Swiss bilateral assistance in the livestock sector in India started in the early sixties in Kerala with the introduction of crossbreeding and frozen semen technology in cattle. Since then, six more livestock projects were initiated in five other states, while in 1994 the Government of India requested SDC to extend its support for the elaboration of a new national

[1]Swiss Agency for Development and Cooperation, Ministry of Foreign Affairs, Government of Switzerland.

[2]Intercooperation, Swiss Organization for Development and Cooperation, P.O. Box 6724,3001 Bern, Switzerland is the implementing agency of SDC for livestock projects in India.

livestock policy. At present there are five livestock projects going on. Besides, there are livestock activities as integral components in four IC NGO programme. Over the years an evolution has taken place in the approach to livestock projects; from a limited technical 'crossbreeding' oriented approach to a programme that addresses improvement of the livestock sector as the integral part of any farming system. Policy analysis, farmer orientation, human resource development and institution building are elements which gained importance over the past. SDC continues its present involvement in and support to the livestock sector in India. Thereby, field performance recording and attention to management of information with the necessary human resource development are considered important aspects (SDC, 1995).

4. Animal recording within projects

A schematic overview of animal recording activities under different projects is shown in table 1. Specific experiences of each of the schemes are elaborated in the following sub-headings.

4.1 Kerala Livestock Development Board

For sire evaluation and breed improvement a field recording scheme was started in 1977 by the Kerala Livestock Development Board (KLDB) under the erstwhile Indo-Swiss Project Kerala. Designed as a field progeny testing scheme, crossbred cattle bulls are evaluated based on milk production performance of daughters in farmers' herds. Breeding policy is to improve milk production of the crossbred cattle population in Kerala State, limiting exotic inheritance of mainly Brown Swiss and Jersey to around 50% and establishing a synthetic breed, Sunandini. Over the last 20 years more than 600 bulls have been evaluated, for each of which about 1 500 test inseminations were carried out in order to assure availability of 50 complete first lactation recordings. Annually the best 3% of the first lactation cows are selected as potential bull mothers and continue to be inseminated with semen of top bulls. Suitable bull calves from these elite cows are purchased by KLDB and raised for selection of breeding bulls (KLDB, 1996, Chacko, 1994).

The field milk recording in Kerala is done in herds that mostly consist of 1-2 cows; farm households keep cows as an additional source of income besides horticulture and crops or non-farm activities. This causes significant difficulties in running the field recording system. It attributes to a reduction in the statistically explainable proportion of variation in information and may cause unreliability in tracing of parentage. Other problems are long generation intervals due to late maturity and substandard reproductive performance of crossbred bulls. Nevertheless, there is evidence of significant progress. From 1983 to 1995 the average standard milk yield in first lactation of field recorded animals increased from 1 480 to 2 100 kg (3.42% annually; KLDB, 1996). Though better management and probably

Recording Scheme	Activities	Results
Indo-Swiss Project, Kerala, later on Kerala Livestock Development Board (KLDB)	Milk recording in crossbred cows for progeny testing and purchase of bull calves. Started in 1977. Annual enrolment 2 000-3 000 cows.	Enrolled over a period of 18 years 54 222 cows for recording and completed 36 743 lactations. 613 bulls have been tested, while 951 bull calves were purchased from farmers. Programme provides genetic basis for the cattle breeding programme with an annual production of 2 million doses of semen and over 50% coverage of the cattle population in Kerala State.
Animal Husbandry Department Andhra Pradesh (AHD) supported by Indo-Swiss Project Andhra Pradesh (ISPA)	Milk recording scheme in buffaloes and crossbred cattle, both for progeny testing. Started respectively in 1987 and 1990. Annual enrolment 2 000-2 500 cows.	Enrolled over a period of 8 years 17 235 cows for recording and completed 9 501 lactations. Most of these are records of buffalo dams (8 892). 102 Buffalo and 28 crossbred bulls have been put for testing. The programme is yet to start its evaluation for selection of sires for future breeding bulls.
Indo-Swiss Goat Development Project (ISGP) in partnership with the Animal Husbandry Department Rajasthan.	Recording of milk production in goats and body growth of offspring, with the purpose of selection of superior bucks for natural service. Scheme started in 1988 and lasted till 1993. Annual enrolment 2 000 does with offspring.	Enrolled over a period of 5 years about 5 000 goats in 500 herds. Data available of 4 041 completed lactations. Information was used for purchase of around 200 breeding bucks.
KVK-Vidiya Bhavan Society and BAIF Rajasthan with support of the Intercooperation NGO Programme Rajasthan.	Both NGO's started field recording of milk production and body growth in local goats in 1992. Annual enrolment together 1 500-2 000 does with offspring.	Schemes are running satisfactory and information is regularly processed, but unfortunately no consolidated reports were available at the time of preparation of this paper. Information used by organisations for monitoring of field activities and for interaction with farmer groups on selection of breeding bucks.

Indo-Swiss Project Sikkim (ISPS)	Recording of milk production in crossbred cattle for selection of bull calves to be purchased for rearing as future breeding bulls for distribution to less accessible villages that are not provided AI services. Proposed annual enrolment 500-1 000 cows.	Programmes designed in 1995 and presently in first stage of implementation.

(De Groot, 1996)

Table 1.Overview of animal recording activities and results in different Indo-Swiss projects.

higher levels of feeding have contributed to increased lactation yields as well, Chacko et al (1985) estimated for the Sunandini population an annual genetic gain in lactation yield of about 20 kg.

4.2 Indo-Swiss Project Andhra Pradesh

The local partner organisation in the India-Swiss Project Andhra Pradesh (ISPA), the Department of Animal Husbandry (AHD), Government of Andhra Pradesh started in 1987 a progeny testing scheme for buffaloes in coastal districts of Godaveri and Krishna delta. The aim was to assess milk and fat production potential of buffalo bulls purchased from the Murrah breeding track in North India or raised in AHD farms, in order to identify superior sires for production of the next generation of breeding bulls. So far 8 batches of 10-14 bulls have been put for testing with minimum 2 000 inseminations per bull. Though completed daughter lactations are available for the first 2 batches, their number is small and affects the accuracy of any analysis. More than in cattle, the late maturity in buffaloes is apparent, causing long interval before results are available (AHD-AP, 1996).

In 1990, a second scheme was initiated by AHD for progeny testing of Jersey crossbred bulls in the southern district of Chittoor where cattle keeping is more dominant. As per 1996, test inseminations at the rate of 1 500 per bull are done for the third batch of 10 bulls and recordings of the first series of daughter lactations are getting completed.

Both schemes are implemented in herds with an average of 2-3 cows, concentrated in villages that are identified as progeny testing centres. ISPA support the schemes in conceptual aspects and development of facilities

for computerised data processing. In Chittoor, the project is involved in the establishment of a comprehensive district livestock development information system (AHD-NAARM-ISPA, 1997).

4.3 Indo-Swiss Goat Development Project

Following a negative assessment of the potential for introduction of crossbreeding with temperate dairy breeds, the Indo-Swiss Goat Development Project (ISGP) started in 1988 field performance recording of milk production and body growth of the local Sirohi goat breed in central districts of Rajasthan. The upper 25% of the population showed a performance of a similar level at what could realistically be expected from any crossbreeding effort, i.e. milk yields of 300-350 kg in 180 days. Next, a breeding programme was formulated for improvement of the Sirohi breed through selection of breeding bucks from an institutional nucleus herd and field herds, based on standard phenotypic characteristics, milk production of the mother and own body growth. For an annual production of 250-300 herds in 20 villages would be recorded consisting on an average of 8-10 lactating goats per herd. The top producing quarter of the recorded goats are selected as potential buck mothers, with ultimately, 10% of the bucks being used in the recorded herds for production of the next generation of breeding bucks (ISGP, 1993).

Innovative in the ISGP recording scheme, as compared to the other projects, was the degree of computerisation in management of the scheme, flexibility in recruitment of part-time recorders in consultations with farmers and structural feedback to farmers of annual herd performance statements.

The goat performance recording scheme continued till 1993, when Swiss collaboration was concluded. The partner organisation was not in a position to carry on with the programme.

4.4 IC NGO Programme Rajasthan

In association with ISGP goat development activities started in early nineties by two NGOs active in the southern part of Rajasthan. Between 1992 and 1996, both programmes recorded more than 2 000 animals each for milk and body weight. However, an evaluation revealed that the purpose of performance recording by these two NGOs was not entirely clear and understood which led subsequently, to a revision of the NGOs' recording activities (de Groot, Sharma, 1996).

KVK-Vidiya Bhavan Society introduced performance recording in order to evaluate performance of local goats in the southern district of Udaipur and to make a comparison with the introduction of improved Sirohi goats from the former ISGP working area in central Rajasthan. The recording scheme continues mainly as a monitoring tool for other goat related extension activities.

BAIF-Rajasthan started recording with the aim to evolve with local farmer groups an approach for a breeding programme, by which the responsibility for recording and buck selection is given to these groups.

4.5 Indo-Swiss Project Sikkim

Performance recording was introduced in 1995 as a component of the newly formulated breeding programme for improvement of dairy cattle production in this small East Himalayan State. Implementing agency is the Department of Animal Husbandry and Veterinary Services. Aim of the recording scheme is to identify bull mothers at farmer's level for purchase of bull calves that can be reared for herd improvement through natural services. The State has an extensive bull distribution programme to cover villages in remote areas. Artificial insemination is done only in limited areas that have reasonably good logistic access. Frozen semen of good quality crossbred bulls is imported from other parts of India (de Groot, 1995).

4.6 Animal Recording and (Livestock) Development

As development agencies, SDC and IC focus in their livestock projects in India on a wide range of issues; animal breeding is one among others. Improved livestock production and animal productivity shall contribute to the achievement of project objectives like creation of income and employment opportunities. With the smallholders as target population, projects have to deal with the resources available at these farm levels, including livestock. Though there is a large number of breeds in India, more than 80% of India's livestock population are of local, 'non-descript' types. Therefore, improving livestock resources and their management means for the smallholders first of all improvement of their herds. Breeding as the improvement of a particular breed is for many farmers of second priority. Subsequently, purpose of animal recording as part of livestock development projects varies.

One purpose of animal recording arises from the need to know production and performance levels in order to be in a position to plan any livestock development activities. In addition, field recording at farmer's level can be seen in livestock development projects as an extension tool to establish regular contacts with farmers and perhaps, even to explore alternative small scale breeding schemes, e.g. at village herd level. Finally, animal recording is an integral part of any breed improvement programme.

The size of the herd for recording, as well as type and frequency of recording depend then on the purpose. For a situation analysis recordings over a limited period can be sufficient. In the case of extension and for exploration of small scale breeding schemes and interventions, more regular and consequent recording is required, although, one should be aware about its limitations in terms of contributing to a genetic herd improvement. A well organised recording scheme adopted to a representative breeding scheme has been chosen.

The above mentioned points concerning animal recording in livestock development projects lead to different perspectives and ask for an appropriate institutional environment. Project internal set-ups may be sufficient to organise animal recording for study/analysis purpose. For extension services, field level organisations with strong interactions with livestock holders are required; in India, often NGOs do this type of work in a confined area. Organisations with respective know-how and finances are a pre-requisite to take up breed improvement programmes. Further more, such organisations require freedom and flexibility in their operational functioning; that proved to be crucial for running breeding programmes in a sustainable manner. Today, ways and means have to be found in India to better integrate other actors than the Government into breed development activities by promoting e.g. breeders' associations.

4.7 Project related conclusions

The field progeny testing scheme of the KLDB is one of the most acknowledged efforts of breed development in India, though its focus is on the establishment and improvement of a new synthetic breed, Sunandini. Three factors were crucial in implementing this programme: creation of sound technical know-how, setting up of an innovative institutional structure and following clear objectives and schedules under a long-term perspective. Today, there is not only a functional animal recording scheme but its results underline the genetic progress made in this new population in Kerala.

Besides the collaboration with KLDB, the direct contribution from SDC\IC's livestock development projects to the improvement of breeds through animal recording has been limited. As development agencies, SDC and IC don't see breed improvement per se as a direct objective for their activities, but they support livestock organisations to enable them to take up livestock development including implementation of breeding programmes and animal recording systems. In this regard, the beginning of animal recording in the Indo-Swiss Project Sikkim mainly focus on exploring opportunities in establishing an appropriate and lasting institutional environment.

The lack of a strong and dedicated institutional environment, including human as well as financial resources, led to the discontinuation of the goat recording activities by the partner organisation under the ISGP in Rajasthan. The continuation by NGOs in Rajasthan is done, partly with a changed objective. Their impact to breed development in Sirohi goats is small but the NGOs are instrumental in trying out new extension and alternative village based breeding models.

The experience in ISPA from animal recording, especially when looking at data quality and analysis is somehow mixed. Till today, the data is not used in an integrated manner for herd improvement which also indicates

unclear objectives and perspectives in the overall breeding programme of the partner organisation. The project clearly detected that breeding activities including animal recording and data management have to be set into new and more adapted and sustainable organisational and institutional structures (ISPA, 1995; AHD-NAARM-ISPA, 1997).

5. Final conclusions

The experiences presented here show feasibility and usefulness of animal performance recording under conditions of small scale livestock holdings in a developing country. Essential is that the purpose of such schemes should be clear in the context of a well defined livestock production improvement programme. Priority and care has to be given to establish an adequate institutional structure for animal recording which have to be in conformation with recording purpose and programme perspectives. In encountering the technical problems more adaptive research and technical training is required. The bias on low expectations from animal recording under less advanced conditions often overlooks the decades of numerous efforts that went into western equivalent used for reference.

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