POSITION PAPER 2010

RAINFED LIVESTOCK NETWORK

Anchored by the Foundation for Ecological Security
2010

Breed Development and Promotion

Conserving India's Indigenous Livestock Breeds

Position Paper from the Rain-fed Livestock Network on critical issues affecting India's traditional livestock rearing systems

Summary

India's genetically diverse livestock and poultry populations are a product of its traditional livestock systems. The importance of the diversity of India's domestic livestock goes beyond its food production function since it plays a vital role in supporting livelihoods of millions of rural poor, especially in rain fed areas.

Policy-makers and programmes have consistently overlooked these traditional systems in favour of industrial-production systems using exotic and cross-breeds. The Rain-fed Livestock Network believes it is time to create an enabling environment through the right policy frameworks that would strengthen livestock diversity and take into account the needs and priorities of poor livestock keepers, pastoral communities and their institutions. Strengthening the livestock information base; an area neglected in the past, is vital to make informed decisions on breed conservation and promotion. The Network believes that the strategies evolved must have specific, regional focus and the policies and programmes must be developed by involving the communities concerned to ensure their success.

Indigenous Livestock— A Gradual Erosion of Traditional Systems

Diminishing Significance

Animal genetic resources used for food and in agriculture are an essential component of the biological basis that sustains world food security (FAO 2010[1]). India is one of the 12-mega biodiversity centres of the world. It has a rich repository of diverse domestic breeds of domestic animals and birds—cattle, buffaloes, sheep, goats, pigs, equines, camels, yak, mithun, chicken and ducks. Indigenous communities, especially pastoralists; who traditionally

[1] FAO 2010, Breeding strategies for sustainable management of animal genetic resources, FAO Animal Production and Health Guidelines, No. 3., Rome.

rear livestock, created over the centuries a range of breeds with specific characteristics adapted to their environmental conditions (NAAS, 2001[2]). Before independence, these communities were largely responsible for selecting or choosing the livestock that suited their requirements. These communities thus played an important role in developing domestic animal diversity and more importantly, stewarding livestock breeds with important genetic traits. However, post-independence, a number of exotic livestock were introduced under different schemes with accompanying subsidies in the name of 'development' without going into the intricacies of local requirements.

Moreover, these communities have been typecast as backward, ignorant and even primitive and their contributions grossly undervalued. Yet studies have demonstrated that these communities created highly evolved systems for managing livestock and the genetic resources they embody. Due to their in-depth knowledge on special quantitative and qualitative characteristics (disease resistance, ability to walk long distances, production potential, protection against predators and so on) they created breeds capable of sustaining themselves even in harsh environments. This diversity in animal genetic resources plays a crucial in adapting and developing agricultural production systems, increasing the resilience of India's food supply systems. However, this knowledge base, the tactics and skills of these communities remains invisible and unacknowledged and so needs to be studied by researchers and policy makers (Rollefson 2005[3]).

Role in Rural Food Security and Livelihoods

Statistics reveal that resource-poor small and marginal farmers and landless labourers own 71% of cattle, 63% of buffaloes, 66% of small ruminants, 70% of pigs and 74% of poultry in India [India country Report 2003[4]]. The importance of this domestic animal diversity goes beyond its food production function and plays a vital role in supporting livelihoods of millions of rural poor. Livestock provide food, transport and valuable draught power and their wastes are used as manure and fuel. Most importantly, in rural economies livestock act as cash, are considered potential savings and an insurance against crop failure.

[2] Policy Paper 14, Conservation and Management of Genetic Resources of Livestock, National Academy for Agricultural Sciences, 2001

[3] Indigenous breeds, local communities: Documenting animal breeds and breeding from a community perspective, Lokhit Pashu-Palak Sansthan and Ilse Köhler-Rollefson, 2005

[4] Country Report on Animal Genetic Resources of India, Department of Animal Husbandry & Dairying Ministry of Agriculture Government of India, 2003

There is a strong relationship between of poverty and a high degree of genetic diversity– both of livestock and crop plants. The plausible reason is that the presence of a variety of species and breeds strengthens rural food security as households can continue to access different food sources in different seasons, even in bleak environments. They can therefore manage risk more effectively and make use of a diverse range of outputs with flexible allocation of labour. However, there is strong evidence showing the gradual erosion of livestock and crop diversity worldwide and thus a powerful argument that the poor are being further impoverished and their food security still further undermined (Marrakech 2005[5]).

Inestimable Loss of Genetic Resources

In India too, statistics reveal that local races and breeds of livestock are declining and some are on the verge of extinction. Blench (2001[6]) points out the causative factors such as, development interventions that give preference to high input -output breeds developed for favourable environments, emphasis on a single productive trait, inappropriate breeding or breeding strategies, technical changes where machines replace work animals, inadequate cryopreservation equipment, economic and environmental changes and political instability. A combination of these factors is responsible for loss of valuable animal genetic resources.

In addition, there is limited or sketchy data available on performance of indigenous breeds under field conditions. In addition to this, quantitative data on economic viability of various breeds is not available. Indigenous traditional knowledge (ITK) plays an important role in management of Animal Genetic Resources (AnGR) but these have not yet been documented. Quantitative information on disease resistance and draught capacity is also missing. Use of Improved AnGR is now considered a primary element in country's strategy for enhancing productivity. Improved male breeding stock are produced at some Government Livestock Farms and used to improve farmers' stock under different

[5] Conservation of indigenous livestock: Sustaining biodiversity for current and future generations, CGIAR System Research Priority area 1, Marrakech, 2005

[6] Blench, R.M. 2001. 'Till the cows come home' -why conserve livestock biodiversity? In: Living off biodiversity: exploring livelihoods and biodiversity issues in Natural Resources Management. I. Koziell & J. Saunders eds. 113-147. London: IIED.

schemes. However, the improved AnGR produced at Government Livestock Farms are not adequate to meet the requirements of Indian farmers (India Country Report, 2003).

Revitalising Indigenous Livestock Breeding and Development Strategies

After considering the consequences of decades of ill-applied practices stemming from flawed policies affecting Indian livestock, three broad areas require urgent attention.

i.] Enabling Policy Framework to Strengthen Livestock Diversity

Many Indian states lack appropriate state-specific breeding policy that take into consideration local agro-ecological settings and community requirements. In states where such policies do exist, the focus is more on maximising production, than enhancing the productivity of local breeds to optimal levels. Experience has shown that these strategies have had a limited outreach and mainly benefit resource-rich farmers who have the capacity to provide crossbreds with the high levels of inputs that sustain such breeds. Breeds and cross-breeds introduced in most of the country's rain-fed areas have been subject to a number of intense stressors such as periodic feed and water shortages, diseases, climatic extremes and lower-capacity husbandry. The development strategies have also failed because extension work and communications focused solely on technical issues and were directed only at men. This strategy totally ignored the wider farming systems and the major role played by rural women in animal husbandry activities.

Devising an appropriate livestock development strategy in rain-fed areas that takes care of the need and priorities of poor livestock keepers and pastoralists:

- Livestock breeding and development strategies must be designed taking into consideration the different agro-eco-climatic zones and livestock production systems. It is essential to account for major differences in the production environments when identifying genetic resources that could benefit livestock keepers and communities the most.

- The needs of livestock keepers with respect to all the uses of livestock in their production systems must be given adequate attention. Livestock in low to medium-input farming systems are commonly multiple-purpose, whereas genetic improvement in production and high-input farming systems focus on one (or at most two) primary outputs.

- A long-term sustained initiative, where local livestock keepers can participate and improve locally adapted livestock under different production systems, must get adequate attention. Experiences with livestock development strategies clearly point that no sustained, long-term plans have been made to improve native breeds. When any attempts were made, they were discontinued after some time and so did not bring about desired outcomes. Most programmes have been limited to ex-situ conservation and improvement with limited participation of local livestock keepers.

- The model system should be an open nucleus breeding system – especially in the case of small ruminants. State breeding policy must have a mechanism that integrates conservation, genetic improvement programmes and livestock development with *in situ* community-based conservation and promotion approaches.

ii.] Inventory, Characterisation and Monitoring of Animal Genetic Resources

Using breeds as the main indicator of total animal diversity misses out the important contribution of diversity within breeds (for example, *Deccani* breeds). National and state authorities need to recognise the limitations of the concept of 'breeds' and ensure as much intra-specific genetic diversity is accounted for in strategies for inventory, characterisation and monitoring, as possible. Lack of database on native breeds (in the broad sense), their special traits, population size and tracts and regular monitoring of their performance indicators has seriously impacted the approach for conservation and promotion of animal genetic resources. Moreover, absence of breed-wise census has been a major constraint in determining the status of breeds in their respective tracts. Lack of realisation of the importance of genetic evaluation programmes in absence of proper standards for animal identification has led to conservation projects with a 'top down' approach and short-term goals. Most government breed conservation efforts focus; even now, on *ex situ in vivo* conservation. These farms are located in areas where the environmental conditions are dissimilar from the habitats in which most Indian livestock farmers manage their flock. The activities on such farms are executed without involving farmers. They rarely record performance of farmers' flock or herds and the efforts are not directed towards conservation. Till now, small ruminants have not received the importance that is due to them, even though they are an important source of livelihood

for the under privileged sections of society. Non-involvement of small livestock keepers in the activities has led to limited scientific understanding of breed composition and their traits. The wealth of information that pastoralists and smallholder farmers have about the history of their animals can lead to discovery of new breeds and strains. The shortcomings of the present methods make it difficult for scientists to determine whether animals belong to different breeds or represent ecotypes within a single breed.

Strengthening the livestock information base to guide informed decisions on breed conservation and promotion:

- Active involvement of livestock keepers in the process of inventory, characterisation and monitoring of animal genetic resources can provide valuable inputs that could greatly assist in advancing breed development programmes.

- Identification of breed lines (indigenous breeds) that give 'optimal production' needs top priority. Breed improvement and management projects should work towards increasing productivity in the low producing animals to the optimal levels identified. The policy should not be to 'maximise production,' but to 'optimise' it in a manner that is sustainable for the given resource base. This strategy must be supported by uniform genetic evaluation programmes at the state and national levels.

iii.] Recognition and Support to Pastoralists and Small-Scale Livestock Keepers and their Institutions in Conservation of Animal Genetic Resources

Organisations and institutions in the community and access to household and community-level resources and their management strongly influence decisions concerning animal genetic resources. In order to fully appreciate the multiple roles of locally adapted livestock, the value they provide and their development potential, the involvement of small-scale livestock keepers is crucial in livestock development and planning. Most programmes aimed towards strengthening livestock systems usually treat small-scale livestock keepers as mere recipients of some perceived benefits without recognising the value of traditional knowledge systems that they embody. The lack of coordination and convergence between various government departments and research institutions that aim to strengthen rural livelihoods has further exacerbated the situation.

Steps to Strengthen Livestock Systems of Small-Scale Livestock Keepers

- Strengthen community institutions and their associations (breeders or livestock keeper's societies), which determine the agenda for livestock development.

- Strengthen capacities and knowledge sharing among small-scale livestock keepers located in different regions. This helps strengthen their capacity to adapt to changing environmental, economic and social contexts.

- Validate and recognise the traditional knowledge systems of livestock keepers and their practices, which have helped them to establish livestock production systems that optimise on available local resources, both spatially and temporally.

- Strengthen access to natural resources (grazing areas, feed and water) of the livestock keepers and support them in improving their production systems. The small-scale livestock

keepers and pastoralists depend significantly on the common property resources and forests to meet their requirement of fodder, feed and water. Hence, access to grazing land and natural resources and the survival of the traditional production systems are crucial to the survival of many breeds.

- Provide focused healthcare, free insurance and subsidies for endangered and declining local breeds and ensure access to markets and support by creating new, niche markets for their breeds and its products.
- Involve communities suitably for research, creating awareness, monitoring and so on, when promoting collaboration between different institutions. These network platforms, which could be either area based or breed-specific, should aim to strengthen coordination amongst various government departments, research institutions and non-governmental organisations (NGOs) and community based organisations (CBOs) and keep the interests of traditional livestock keepers at the core of their work.

RLN- Piloting Action Research

The impact of India's official policies and livestock development efforts that focused almost exclusively on cross breeding local breeds with exotic breeds, are now apparent:

- The crossbreds are rarely successful with small-scale livestock keepers because of many factors including high input costs.
- Even in cases where inputs could be provided, there are considerable problems with fertility and the performance of later generations of crossbreds drop significantly.
- These specialised breeds cannot fulfil the multi-functional role of indigenous livestock.
- The indigenous breeds have over time become diluted and many are on the verge of extinction, according to India's country report on animal genetic resources.

There is a good deal of circumstantial evidence to suggest that improvement of local breeds through selective breeding, combined with better animal healthcare facilities and improved market access can achieve better results for the livelihoods of livestock keepers, while minimising genetic erosion and loss of breeds. However, in order to make a conclusive case, concrete data is currently unavailable.

In view of the above RLN has initiated a pilot project that aims:

- To better understand the role and potential of indigenous livestock breeds in food production, rural livelihoods, and environmental services by collecting systematic data sets.
- To make visible and to empower the livestock keeping communities that continue to act as guardians of India's domestic animal diversity.
- To contribute to a re-orientation of government breeding policies so that they support the conservation of biodiversity with improved rural livelihoods.

Contributors- Collaborators

R.K.Sethi, CBRI; **B. K. Joshi,** NBAGR; **D. K. Sadana,** NBAGR; **S.K Singh,** CIRG; **N.Kandasamy,** Retd. TANUVAS; **V. K. Singh,** CSWRI; **A.R. Sirothia,** MCVS; **Ramesh Bhatti,** Sahajeevan; **Vishnu Sharma,** Retd. SDC-IC; **Nivsarkar,** NDDB; **C.K Rao,** Intercooperation; **Hanuvant Singh Rathore**, LPPS; **Raika camel and sheep keepers** from LPPS project area

RLN- Network

Kamal Kishore
Coordinator, Rain-fed Livestock Network

K. Bhavana Rao
Core team member representing WOTR

Rahul Chaturvedi
Core team member representing FES

Vasant Saberwal
Core Group member from Ford Foundation

Ilse Kohler-Rollefson
Core group member from LPPS

RAINFED LIVESTOCK NETWORK

Anchored by

FES
FOUNDATION FOR ECOLOGICAL SECURITY

Supported by

FORDFOUNDATION