

Indigenous knowledge and Conservation and utilization of Animal Germ plasm

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The heightened public awareness about the need for conservation of biological diversity and associated knowledge system in the recent past thanks to CBD and to some extent Desert convention, has largely remain restricted either to wild life or crop biodiversity conservation. Only in the last COP 11, has some serious notice been given to the cause of animal germ Plasm conservation. Even in this case, the role indigenous knowledge plays in generating incentives for conservation and utilization of germplasm has not been appropriately appreciated . Since in some cases, the erosion of knowledge about local breeds is even faster than the erosion of breeds per se, it is suggested that member governments initiate urgent steps to systematically evolve national, regional and global plans of actions for conserving indigenous knowledge and its utilization's across sectors, socio-cultural classes and communities in different parts of the world.

1. Context of Conservation:

1.1. Local communities particularly the pastoralists have conserved indigenous livestock breeds for thousands of years through a very careful evaluation and crafting of socio cultural and economic institutions. These institutions are often informal and invisible but are not insignificant.

1.2. These institutions provide sanctity for breeding goals (so as to avoid in breeding) quarantine mechanisms to prevent diffusion of diseases and pests, incentives for maintenance of breeding males and rules for maintaining appropriate genetic distance between breeding populations. It will be difficult if not impossible to conserve in-situ animal diversity without understanding and invigorating local institutions and embedded knowledge systems. Even for ex-situ conservation and utilization , to access knowledge without understanding and respecting local institutions may not be easy. The informal breeders association have to be legitimized and strengthened in various ways.

1.3. The conservation goals for germ plasm have to be made compatible with the goals for conserving pastures and other resource niches of specific breeds. This will require incorporation of concern for common property resource management,

emergency fodder feed , water and health availability and generating niche markets wherever possible for specialty livestock products.

1.4. The utilitarian logic is forceful and often provides motivation for conservation. However, the strength of this force can itself be the reason for neglect of those breeds whose place in the modern breeding programmes is either not clear or nor secure. Therefore, just as cultural heritage sites are preserved as a global human heritage, some of the rare and endangered domesticated breeds may need incentives for local communities to conserve these even on immediate non-utilitarian ground. Although in the long term even these breeds may provide genes for unique traits. In any case, the knowledge system will provide the indigenous heuristics of selection, breeding, maintenance and utilization which are unlikely to emerge only from the formal breeding discipline.

2. Requirements of a viable long term strategy:

Five important dimensions to be kept in view while evolving viable strategy are:

- 2.1. Indigenous knowledge has technological and institutional dimensions. One cannot be conserved without other. Technology is like words and institutions, the grammar.
- 2.2. Indigenous technological knowledge helps in understanding the interactions among site, specie, season and socio cultural institutions around different breeds. Disruption in one link in the chain can disrupt the entire socio ecological system making conservation of breeds very difficult.
- 2.3. Local communities conserve breeds through thumb rules or indicators which are combined with criteria of evaluation of breed performance (the decision criteria can also be referred as heuristics) . These indicators of breed selection , pasture allocation, product quality ,herd performance, environment (temperature, wind, storm, rain, etc.) provide useful clues about historically evolved thumb rules or heuristics about genetic variation, selection, management and growth. These indicators can also help in community based eco system health monitoring so that the linkage between habitat and breed conservation is not ruptured.
- 2.4. While men may have been responsible for breeding in many species, it is invariably the women who have maintained and managed the livestock and developed variety of their products. Gender dimension of knowledge system is extremely crucial and its neglect can thwart the entire mission of conservation.
- 2.5. Consumers of livestock products provide one of the most powerful pull for research resource allocation for conservation and utilization of germ plasm. Consumer preferences for niche products and other attributes of local breeds will have to be molded so as to generate commonality of interests between consumers, producers and conservators of germ plasm. Even the existing variability in cheese, yoghurt, meat, wool and other products has not been adequately embedded in the local knowledge systems so as to provide extra value to the consumers of specialty products.

3. Organizational requirements for a viable strategy

- Establishment of a knowledge network using multimedia technologies (electronic, textual and oral) having nodes at different levels and among different communities as well as formal scientific and technical institutions to help document, disseminate, experiment in indigenous knowledge in real time. The Knowledge Network will enable breeders to have access to the communities with whom they may like to exchange information or material. It will also help in linking investors, innovators and entrepreneurs who may be interested in developing specialty breeds or products.
- Successful examples of indigenous institutions working well in conserving diversity and knowledge systems will be pooled and shared among various nodes of knowledge network.
- Material and non-material incentives will need to be provided to individuals as well communities conserving different breeds particularly the threatened ones so that (a) genetic erosion does not take place due to economic hardships, (b) breeders association are enabled to keep record of breeding experiments and experiences in a systematic manner, (c) exchange of germ plasm is arranged to augment local breeds in the light of changing zoo-climatic parameters, (d) the individual breeders as well as informal community leaders are honoured at various national and international fora for their contribution to conservation.
- The information system like DAD-IS should incorporate not only the indigenous knowledge of different breeds but also contact addresses, indigenous selection criteria and descriptors along with the restrictions if any that a local community may like to put on the use of name or material of the specific breeds.
- Just as farmers rights have been advocated and agreed upon in the Commission on Plant Genetic Resources, a similar undertaking with much more pluralistic and pragmatic institutional arrangement needs to be agreed upon by the member governments for recognizing indigenous animal breeders rights.

4. Operational strategy for conservation and utilization:

- 4.1. Conservation during emergencies: The natural as well as human made disasters have played a significant role in erosion of genetic diversity and associated knowledge system. In the event of such disasters, institutional arrangements have to be created for rehabilitation of the elite breeding traits through improved access of affected local communities to ex-situ germ plasm collection as well as related knowledge. The linkage between in-situ and ex-situ conservation policies will imply close coordination and partnership between formal and informal breeders, community leaders and planners.
- 4.2. Linkage between Convention on Biological Diversity and International Convention to Combat Desertification . CBD as well as ICCD emphasize that knowledge, innovation and practices of local communities should be used for wider application for sustainable use of biodiversity through their involvement and approval ensuring equitable sharing of benefits. It is important therefore to develop material Transfer Agreements, Protocol of prior informed consent not only of nation states but also the local communities.

- 4.2.1. The rights of the communities to germ plasm and its use for improving productivity of various breeds have to be interpreted in the light of TRIPS as well as CBD and ICCD. There is a need to specify various incentive measures that could be used to generate reciprocity among provider of germ plasm as well as receiver of the same. It is important to ensure that resources do trickle down to the communities themselves. Arrangements will have to be made to ensure that trust funds or other such conservation funds are set up to encourage conservation and local value addition in the germ plasm and its products.
- 4.2.2. The Article 16 of Desert Convention needs to be combined with Article 8 , 10 and 15 of CBD.
- 4.2.3. The implications of Article 16 G implying exchange of information on local and traditional knowledge ensuring its adequate protection and providing appropriate share in the benefits to local communities in an equitable manner and at mutually agreed terms need to be carefully drawn. It is most necessary that capacity of local communities to make informed judgments about fair and equitable exchange is created through a special capacity building fund under the undertaking on animal genetic resources.
- 4.2.4. Each member country should while drawing upon national legislation providing protection to the improved breeds ensure that the claimants of protection declare their acquisition of indigenous germ plasm and knowledge around it in a 'lawful' and 'rightful' manner. The former refers to the legal propriety while the latter relates to moral propriety.
- 4.2.5. The provisions of Article 19 and 20 of Desert Convention dealing with capacity building, education, public awareness and financial resources could be operationalized by building organic links between DAD-IS and knowledge network around it. The goal of promoting alternative livelihoods through innovative ways of using local resources has to be particularly emphasized.

5. Documentation of indigenous knowledge through participative structures.

5.1 The descriptors used in the animal gene bank have to be modified in consultation with indigenous animal breeders and other experts so as to incorporate various parameters such as:

- Criteria of selection among and within different breeds across different spatial and cultural boundaries.
- The etymological roots of the names of different breeds so as to understand the significance of selection and selection pressure.
- Understand the rules evolved by different communities to maintain breed characteristics with or without socio cultural and religious institutions.
- Inventorize a whole range of marks and features that are used to discriminate the elite vs. non-elite within a breed with detailed description of each mark or feature.
- Recognize the variability in uses of different livestock parts justifying variability in breeding and management practices.
- Document the implications of changes in the agro climatic conditions on the breed performance and therefore, the search for new or innovative selection criteria within an indigenous breed.

- Documentation of folkloric knowledge and traditions associated with the peculiarities of different breeds and the stresses to which they respond or withstand.
- Cataloguing the innovations in using in (a) new or old ways , (b) new or old products of livestock and (c) from old or new breeds. Various combinations of different cells of a matrix combining `a`, `b` and `c` would generate a rich taxonomy of breeding and management goals. For instance, in parts of arid Rajasthan the hairs on the mane of the camel of a specific breed are used for making carpets which are supposedly used as filters in oil refineries because of high anti-corrosive property. This new use of new product for a new purpose may influence breeding goals and thereby generate niches for breeds which are particularly good in this regard.
- Every contribution in the database linked with knowledge network should be acknowledged and appropriately cited/sourced. The identity of the communicators as well as the developers of the knowledge must be carefully recorded in all cases where it is possible. The contemporary innovations must be distinguished from traditional knowledge. This is one of the most important contribution of the Honey Bee network and SRISTI aimed at drawing the attention of policy makers towards contemporary sources of creativity often ignored and masked under the category of traditional knowledge. The traditional knowledge is extremely important but equally important are the new innovations in defining new breeding goals, adapting old breeds to new habitats, generating new products from old by-products, new characteristics of old products from old breeds, etc.
- The knowledge of women should be distinguished from that of men so that appropriate institutional structures which are gender sensitive can be created to recognize unique contribution made by the women's ecological, technological and institutional knowledge of animal breeds.
- Unlike the crop land races, animal breeders have used a category called as, `non-descript' breed to characterize a very large population of livestock. This is an extremely unscientific way of dealing with variability in livestock breeds and efforts should be made to open this black box in close cooperation with local communities. The strong resistance to recognition of old but hitherto unacknowledged breeds should be diluted by demonstrating the strength and merit of different breeds and unique populations therein.
- The indigenous livestock breeders should have access to computers and formal scientific tools wherever appropriate so that best of the formal and informal science can be fused to generate incentives for conservation.

5.2. Community Participation in Designing and Implementing Global Strategy of Animal Germ Plasm Conservation and Utilization.

- The pastoral associations in different parts of the world should be asked to nominate a man or woman leader alternately from each of the specific breed management communities. The assembly of these leaders should be asked to nominate from each region representatives for global consultation. One should avoid the possibility of only intermediary NGOs and activists crowding the consultative platforms as was noticed during the negotiation for biodiversity convention. The breeders should have a direct voice in evolving mechanisms for

conservation and utilization of indigenous germ plasm. The criteria for participation should be the outstanding record in managing and conserving good breed animals even if in small hut sizes. The member governments should arrange for the translation from local dialects to the FAO approved languages and vice versa. These consultations should take place at regional, national and international level so that the knowledge network start getting created at these levels.

- The material transfer agreements and protocols for prior informed consents should be developed in these consultations before being ratified by the inter governmental panel. In the meanwhile, some ad-hoc measures should be taken immediately to ensure compliance with the provisions of Biodiversity Convention as well as Desert Convention.
- The respect for local languages in communication, cataloguing and evolving conservation policies needs to be stressed. This will imply local language interface which knowledge networks will create between DAD-IS and local nodes. Coalition against hunger and poverty set up after the IFAD sponsored conference on hunger and poverty in November, 1995 has agreed to support an initiative by SRISTI on establishing a Knowledge Network around sustainable technological and institutional innovations. Synergy can be established between these initiatives.

5.3.Linkage with Private Sector and Civil Society.

- Unlike the technological change in crop sector which was dominated by primarily the public R&D and interventions, the major changes in livestock sectors at least in Asia have come about either through interventions of cooperative, or NGOs (dairy sector) or private sector (poultry). The role of local cow protection and management groups in maintaining good breeding stock has also been worth noting. However, in most developing countries the breeders' associations have not been well established, supported or recognized. There is a need for forging close alliance between private, cooperative and public institutions on one hand and informal breeders' associations on the other hand to generate client driven conservation incentives.
- Private sector should be encouraged to pay a small tax on every package of livestock products to develop regional, national and international funds for conservation of knowledge and germ plasm.
- Special Fellowships should be provided to young boys and girls from among the breeding communities to learn modern ways of record keeping, cataloguing, characterizing in addition to the traditional ways so that a strong cadre of future leaders of conservation can be created. These fellowships will achieve far more than the huge sums that are spent every year on various international meetings and participation of many metropolitan NGOs and so called activists from north and south. Unless clear accountability is achieved in utilizing resources, the effort to create fund will suffer the same fate as is happened to the non-starter international gene fund for conserving crop genetic resources.
- It is important to recognize that unless domestic initiatives are taken up through national and civil societies contributions, international contributions are unlikely to flow. This is one area where global strategy for animal germ plasm

conservation must make distinct departure. It must learn from the mistakes of crop germ plasm initiatives.

6. The conservation of germ plasm will require creation of very active and appreciative peer group of outstanding animal breeders from the grassroots. Only excellence can recognize, respect, and reward the excellence of others. It is for this reason that the Knowledge Network must initially aim to network outstanding communities, individuals and associations which have achieved significant results in documenting knowledge or conserving genetic diversity or both.