



ESAP Newsletter

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Ethiopian Society of Animal Production

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AFRICAN LIVESTOCK AT THREAT:

INTERNATIONAL WORKSHOP IN ADDIS DISCUSS STRATEGI PRIORITIES AND APPROACHES TO CONSERVE LIVESTOCK BREEDS FOR FUTURE GENERATIONS

Livestock breeds in Africa may follow the fate of breeds in Europe and disappear one after the other if breed loss cannot be stopped in the near future. According to the Food and Agriculture Organization of the United Nations (FAO), about one breed disappears every month. To discuss countermeasures and set priorities for action in Africa and elsewhere, a

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Workshop Participants

Courtesy Dr. Hoffman

Preparation of the State of the World's Animal Genetic Resources Repot: The Processes

(Misikire Tessema (Ph.D))

National Coordinator to SoW-AnGR, Ethiopia

1. Background

Agriculture is the backbone of most developing countries and countries with economies in transition wherein farm animals are the integral parts. Farm animals are sources of food, traction, manure, raw ma-

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EDITORIAL

This 3rd issue of the 2007 ESAP Newsletter is exclusively dedicated to the workshop held on Animal Genetic resources in Africa, on may 24-25 2007. It's a great attainment that ESAP was one of the main organizers of such a successful international workshop, as an output to be used as an important input on the Next Interlaken workshop on the coming September. Papers presented on the workshop and decisions made are summarized by the presenters and rappsots of the workshop so that it would reach the greater public through ESAP newsletter.

Hence, with the understanding that, the editors (Fanos Mekonnen and Tadelle Dessie on behalf of the 7th executive committee of ESAP) reserve the right to edit contributions and adapt them to the style of the ESAP newsletter, have prepared this issue and made it ready for readers.

The editors are also happy to include your comments, questions, suggestions and announcements you may have, provided they are relevant to the focus of ESAP newsletter. Please send any information for the next issue to

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Managing Animal Genetic Resources in Africa, The Workshop Executive Summary

Evelyn Mathias (Dr)

About 50 stakeholders in livestock keeping, breeding and management from nine African countries, Europe and India met in Addis Ababa, Ethiopia, to discuss the future of Africa's domestic livestock and poultry breeds and diversity. According to the Food and Agriculture Organization of the United Nations (FAO), the world is losing about one breed every month. So far breed losses have concentrated in developed countries.

But the changes triggered by the last century's rapid developments and accelerated by globalisation, trade liberalization and other factors have started reaching into the remotest corners in developing countries. The expansion of

high-yielding breeds and industrial livestock production around the globe increasingly threatens the more than 7000 locally adapted breed populations that have been developed by farmers and pastoralists for thousands of years.

To counteract such trends and conserve the world's domestic animal breeds and their diversity, more than 160 countries have over the past years compiled Country Reports, contributing to The State of the World's Animal Genetic Resources report developed under the leadership of FAO's Commission on Genetic Resources for Food and Agriculture. The report together with national and regional consultations forms the basis for two documents to be adopted in the First International Technical

Conference on Animal Genetic Resources, to be held in the Swiss city of Interlaken, on 1-7 September 2007: an "Interlaken Declaration", and a "Global Plan of Action for Animal Genetic Resources". The Interlaken documents will become the framework and points of reference for all international and national activities in the field of animal genetic resource management in the years to come.



Participants of the Workshop

Courtesy Dr. Sadana

The Addis Workshop gave African stakeholders in animal genetic resources management the opportunity to familiarize themselves about the Interlaken process and discuss and amend the Interlaken Declaration plus the most recent

version of the Strategic Priorities for Action. The latter has been prepared by the Friends of the Chair, a regionally balanced working group endorsed during the 4th Session of the Intergovernmental Technical Working Group on Animal Genetic Resources in Rome in December 2006¹.

The spectrum of Addis workshop organizers (see below) and participants - all stakeholders in animal genetic resources management including nine African National Coordinators on Animal Genetic Resources or their representatives, plus members of government, non-government, community-based and national and international research and development

organizations and institutions - is indicative for the

¹ These and other key documents can be downloaded from <http://www.fao.org/ag/cgrfa/cgrfa11.htm>

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AFRICAN LIVESTOCK . . . *Continued from page 1*

teamed together and organized the workshop "Managing Animal Genetic Resources in Africa: Strategies, priorities, livestock keepers' rights, and the way forward". It was held at the Institute of Biodiversity Conservation (IBC) in Addis on May 24-25 with the support from the FAO, the Hivos-Oxfam Novib Biodiversity Fund, Misereor and SwedBio.

Organized by the Ethiopian Society of Animal Production, IBC, the International Endogenous Livestock Development Network, the League for Pastoral Peoples and Endogenous Livestock Development, the LIFE (Local Livestock For Empowerment) Network and the Pastoral Forum Ethiopia (PFE), a local umbrella NGO working with the pastoralists and to advance pastoral right. The workshop brought a wide range of stakeholders together.

The Guest of Honor opening the workshop

Hon. Ato Beshir Ali Mehadi, chairman, Pastoralist Affairs Standing Committee (PASC) in the Federal Democratic Republic of Ethiopia House of Peoples' Representative. Participants included delegates from the institutions just listed plus FAO, USAID Ethiopia, the International Livestock Research Institute (ILRI), the Ethiopian government, as well as National Coordinators on animal genetic resources, civil societies and pastoral groups from several African countries and India. Dr. Tadelle Dessie, president of the Ethiopian Society of Animal Production (ESAP), in his well come speech to workshop participants said that this trend has raised international concern and the first international technical conference on animal genetic resources, to be held in the Swiss city of Interlaken in September 2007, will address it. "The conference will enable governments to identify, discuss and hopefully agree upon strategies to ensure the long-term sustainable management of animal genetic resources. And also a Keynote address was made by Dr Girma Balcha, Director General of Institute of Biodiversity. On his speech, Dr Girma remarked the SoW-AnGR important

The spectrum of workshop organizers and participants is indicative of the wide range of actors that need to get involved if measures to halt breed loss to be effective.

achievement for realization of efforts geared towards ensuring sustainable use, development and conservation of AnGR at national, regional and global levels.

The spectrum of workshop organizers and participants is indicative of the wide range of actors that need to get involved if measures to halt breed loss to be effective. The importance of livestock keepers in the conservation and development of animal genetic resources has been overlooked for a long time. But without their genuine involvement and recognition of their needs, rights and responsibilities, valuable breeds and their genes will be lost, especially in marginal areas.

For thousands of years, farmers and pastoralists have been active livestock managers and in the process created more than 7000 locally adapted breed populations.

This amazing diversity has allowed humanity the exploitation of a wide range of ecological niches and is crucial for coping with changing environments that present new stresses and production challenges. Until now, indigenous societies - among them many pastoralists - continue to act as custodians of breeds with important genetic traits, often in the face of considerable odds. In many instances their livelihoods depend on these animals.

Although livestock keepers' role in the sustainable management of livestock diversity has now become widely acknowledged, the era of farmer/pastoralist- or community-led management of animal genetic resources is probably heading towards its end - unless the livestock keepers get the support they need to continue this role. Faced with shrinking grazing land, limited access to services and adverse policies, growing numbers of pastoralists and small-scale farmers are losing their livelihoods. Enhanced demands for livestock products and trade liberalization have triggered the expansion of high-yielding breeds and industrial livestock production around the globe. Ani-

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The Workshop Executive Summary

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 wide range of actors and institutions that need to collaborate if measures to halt breed loss to be effective. Especially livestock keepers need to get more closely involved in future conservation efforts. Their key role in the development and maintenance of animal genetic resources has been overlooked for a long time. But it is increasingly recognised that without their genuine involvement and recognition of their needs, rights and responsibilities, many valuable breeds and their genes will be lost, especially in marginal areas.

Based on the workshop discussions and their experience in livestock and genetic resources management, the Addis participants issued the following résumé, stating the way forward.

THE WAY FORWARD

Recognizing

- the interdependence of countries on issues related to the management of animal genetic resources,
- the need to ensure access and sharing of benefits

Preparation of the State... *Continued from Page 1*

materials, investment, cash, security, foreign exchange, and social and cultural identity. Meat, milk, egg, honey, live animals, and skins and hides are prominent sources of animal protein and cash income. Manure is used to fertilize crop fields and as fuel. Farm animals are profitable areas of investment. They serve as insurance and play important roles in cultural and social ceremonies of the local communities.

arising from these resources,

- the significance of animal genetic resources for livelihoods, cultural practices, and sustainable management of the environment,
- the establishment of national focal points and the establishment of national legal frameworks,
- the progress made in the State of the World process,
- the increased collaboration between all stakeholders,

We recommend the following

1. Livestock Keepers' Rights that have been discussed since 2003 now have to be adopted into the official agenda of the Commission on Genetic Resources for Food and Agriculture.
2. Implications of patenting and other forms of intellectual property rights on the sustainable management of animal genetic resources need to be investigated.
3. The Global Plan of Action will be recognized and is in accordance with the Convention on

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Farm animals sub-sector is one of the input suppliers to the manufacturing sectors and major source of foreign currency earnings. In Eastern and Central African (ECA) countries, for example, the sub-sector contributes about 35.4% of the total volume of agriculture. The contributions of the sub sector to the total agricultural GDP in Ethiopia, Kenya and Uganda are 33%, 30% and 7.4%, respectively. Similarly, its contribution to cash



Dr T/ Birhan G/Egziabher giving closing remarks.

Courtesy: Dr Getachew Gibru

AFRICAN LIVESTOCK . . . *Continued from page 3*
 mal genetic resource management has turned into the almost exclusive domain of scientists and corporations and some countries have started patenting animals and genes.

As a result of these and other developments, many locally adapted livestock breeds are becoming extinct, or are losing their distinct identity. This trend has raised international concern and the first International Technical Conference on Animal Genetic Resources, in the Swiss city of Interlaken, in September 2007, will address it. The conference will enable governments to identify, discuss – and hopefully agree upon – strategies to ensure the long-term sustainable management of animal genetic resources.

Preparations for Interlaken started about a decade ago with the development of the first report on The State of the World’s Animal Genetic Resources under the leadership of FAO’s Commission on Genetic Resources for Food and Agriculture. More than 160 countries submitted Country Reports contributing to The State of the World report, and many individuals and organizations provided inputs. In Ethiopia, IBC coordinated the Country Report preparation that in-

involved many stakeholders from government, NGO and research, Oxfam and ILRI among others. The State of the World and the national and regional consultations that went along with it provide the basis for two documents to be adopted in Interlaken: an “Interlaken Declaration”, and a “Global Plan of Action for Animal Genetic Resources”. The Interlaken documents will become the framework and points of reference for all international and national activities in the field of animal genetic resource management in the years to come.

The workshop in Addis gave African stakeholders in livestock development the opportunity to familiarize themselves with these documents and discuss strategic priorities and actions to manage Africa’s animal genetic resources while learning about each others needs, concerns and strengths. It is hoped that the implementation of the actions will follow the example of this workshop: Only if all stakeholders – from government and research institutions to networks of non-government and community-based organizations – genuinely collaborate will we be able to conserve at least part of the breeds and their genes for future generations.

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 income of the smallholders is so significant that in Ethiopia, for example, it accounts for upto 87%. On the other hand, subsistence of the pastoral communities is entirely based on livestock and livestock products.

The fate of production and productivity of indigenous farm animal genetic resources (AnGR) has mainly been left to depend on the scarce and ever-declining marginal and commonly used lands. Provisions of health facilities and services are far below the required minimum. They are left to undergo untraceable levels of in- and crossbreeding. And yet, depicted as "low performers", indigenous farm AnGR have been pushed to gradually give way to other "best performing" geno-

types. Replacements of indigenous breeds of farm AnGR, mainly of dairy cattle and their crosses, have been pursued for decades. In Kenya, for example, commercial dairying has been conducted in the last 10 decades using progressively increasing numbers of fewer exotic breeds and their crosses while the same has been conducted since 1940s in Ethiopia.

Because of the above replacements, not only the indigenous farm AnGR and indigenous production systems but also indigenous knowledge and skills of the local communities of those countries that have for centuries been running sustainable production systems as well as the cultures are being threatened severely. If the indiscriminate distribution of the "best performing geno-

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Managing AnGR in India: Strategies, Priorities and Livestock Keepers' Rights

D. K. Sadana

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Introduction

There is a growing realization all over the world that conservation and judicious utilization of all forms of genetic resources are of paramount importance for the continued survival of human race. However, there is a continued threat to livestock breeds and ecosystems caused by human activities and economic pressures. In the recent past, man has been depleting, damaging and even manipulating this wealth for short-term gains, unmindful of perilous consequences and oblivious of the needs of the future generations.

India has several recognized breeds and, fortunately, many well defined populations literally in all the species of importance to the farmers and rural populace. By now, the country has some fair understanding of the status of livestock diversity and more recently certain schemes have been initiated for conservation of the resources. Strategies and priorities are delineated in this paper in two steps: (i) Characterization and (ii) Conservation of AnGR in India.

India's Livestock: Biodiversity and Role India possesses more than 7% i.e. 1/14th of the world's livestock diversity in the area which is only 1/40th of the total land area of the world. In terms of diversity, the country is endowed with several breeds of cattle (30), buffalo (10), sheep (42), goat (20), poultry (18), camel (4), horse (6), pig, donkey, mithun, and yak besides several species and types of birds including geese, ducks, pigeons, and doves. In addition to the above defined breeds, there are about a hundred strains termed as lesser known breeds which, after proper assessment, would qualify as breeds, thus raising India's proportion to 10% or 1/10th of the world's livestock diversity. The range of the livestock is outcome of thousands of years of deliberate selection, exposure to a range of natural conditions, and farmer level selective breeding. Indian farmers, for centuries, have continuously modified the genetic material available to them by following simple but meticulous breeding

schemes passing from generation to generation. These rural technologies are still being followed. Apart from physical and biological adaptation forced by the environment, the economic, cultural, religious and survival factors have also played a role in developing this diversification. Different livestock breeds were adapted to diverse local conditions, for instance, India has sheep breeds that are adapted to the harsh summers of the West Indian desert, and others that can survive the equally harsh winters of Himalayan tracts. There are cattle breeds, which thrive in the humid hills of the Western Ghats, while other breeds do well in the driest regions of Rajasthan and Gujarat. Furthermore, livestock rearing in India has occupied an important position in cultural and socio-economic aspects of the people and continuously contributes to the growth of the economy. The livestock sector has been one of the few leading growth sectors in rural India over the past five decades of post-independence and its contribution to the GDP has increased from about 5% in 1980-81 to about 10% recently (1997-98). Livestock farming is a major source of supplementary income for 73% of rural households. There is less inequity as regards the livestock holding than the land holding. Livestock sector has also been a great source of employment as it engages 8% of the total labour force in the country. This sector has another important advantage as almost 90% of rural women are engaged in livestock rearing. As a source of manure and draught power, the indigenous cattle provide a clear support system for millions of small farmers, this aspect is irrespective of per animal milk production. There is a wide range of breeds and population groups available in each of the major species viz. cattle, buffalo, sheep, goat, pigs, camel, horse, yak, mithun and poultry which have the capacity to sustain themselves in the local milieu in spite of the shortages and harsh conditions. Hardier breeds, in general, have lower growth and milk production potential, but are better adapted to less favourable environments. Some livestock breeds have the capacity to sustain them-

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types" into different parts of developing countries and countries with economies in transition were to continue at the current pace, the gene pool of the local AnGR as well as the associated indigenous knowledge would then be lost in the near future before they are even fully understood and described. Other factors that contribute for rapid genetic erosion of indigenous farm AnGR and indigenous knowledge that are associated with production systems are human population growth, lack of appropriate policies and strategies, conflicts, natural calamities

such as drought and diseases as well as privatization, commercialization of production and market liberalization that have been introduced by many of the above countries without concurrent adjustment in policy, institutions and legal frameworks.



Prof. Mosi and Dr. Kassahun chairing a discussion

Courtesy: Dr. Getachew Gebru

According to the Food and Agriculture Organization of the United Nations (FAO), the world is losing about one breed every month. So far breed losses have concentrated in developed countries. But the changes triggered by the last century's rapid developments and accelerated by globalization, trade liberalization and other factors have started reaching into the remotest corners in developing countries. The expansion of high-yielding breeds and industrial livestock production around the globe increasingly threatens the more than 7000 locally adapted breed populations that have been developed by farmers and pastoralists for thou-

sands of years.

Information on breeds diversity, population size and distribution of domestic animals in developing countries and countries with economies in transition are scanty and, if available, are on limited breeds only. Under such circumstances, it is difficult to estimate the status and trends of populations as well as diversities of farm AnGR, which are important for better use, development and conservation indigenous farm animals.

2. Processes of SoW-AnGR Report Preparation

Eventual recognition, at the important global forums and institutions, of the fact that many countries have indigenous animal species and breeds that could potentially contribute far more to food and agricultural production than they are currently contributing and meet much wider human needs served as an impetus to the need for the preparation of the First Report on the State of the World's Animal Genetic Resources (SoW-AnGR) for Food and Agriculture.

As the result, FAO and its Intergovernmental Commission on Genetic Resources for Food and Agriculture (CGRFA) instituted the preparation of the First Report on the SoW-AnGR, through a country driver process. As per its mandate and having passed through different steps and processes for about one and half a decade, the FAO then come up with the Draft Report of the First Report on the SoW-AnGR in 2006.

Assessment of farm AnGR base, challenges, opportunities and existing capacities to the use, development and conservation of the resources as well as assessment of future capacity building areas that could be built upon the existing international plans of actions, programs and strategies agreed by member countries appeared as the pillars for the preparation of the Report.

The report on the Sow-AnGR is a compilation of Country Reports that have been prepared by member countries. Preparation of the report is an important achievement for realization of efforts geared towards ensuring sustainable use, development and conservation of farm AnGR at national, regional and global levels. Major ob-

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jectives of the Country Reports are to:

✦ analyze and report on the state of farm AnGR: status and trends of the resources, and their current and potential contribution to food, agriculture and rural development; assess the state of the country's capacity to manage its farm AnGR in order to identify priorities for future capacity building needs; and identify the national priorities for action for better use, development and conservation of farm AnGR.

As part of the SoW-AnGR preparation process, FAO organized, consequently, an international workshop that was held between 11 and 15 December 2007 at its Head Quarter (Rome). The major objective of the workshop was to present the Draft Report and its Strategic Priority Actions (SPAs) for review and negotiations by the National coordinators and Policy makers of member countries, and representatives of relevant institutions that were invited to the occasion.

For the better use, development and conservation of the livestock sub-sector, farm AnGR should be integrated and mainstreamed into overall national, regional and global level policies and strategies in such areas as resources assessment, survey and characterization, use and development, conservation, capacity building, empowerment of local communities and women, investment, industrialization and settlements, and resettlements. Such integration and mainstreaming of farm AnGR issues can be achieved by addressing the SPAs wisely which are the eventual goals of preparing Country Reports. These are indicated clearly in the FAO's Country Report preparation Guideline that has been sent to member countries. Because of this, the FAO has compiled the strategic priorities (SPs), dividing into national and international level SPs.

In order to promote better use, development and conservation of farm AnGR, there are multitudes of priority areas to the developing countries and countries with economies in transition. The priority areas include:

- conducting comprehensive inventory and characterization of AnGR including, bio-geographic distribu-

tion of breeds, including trans-boundary resources and indigenous knowledge

- developing appropriate breeding and conservation policies, legislations, regulations and procedures
- devising wise and sustainable mechanism for trans-boundary resources management
- capacity building
- securing sustainable source of fund and mobilizing it adequately
- cooperation between stakeholders at national, regional and global levels
- developing strong and reliable information system on farm AnGR and related issues
- raising public awareness
- diversifying animal products
- raising sanitary and phytosanitary measures
- encouraging incentives for quality and organic products
- incorporating farm AnGR issues into policies and strategies of such sectoral areas as overall agricultural production, environmental management and conservation, poverty alleviation, gender, and population and development
- understanding, describing and making better use of traditional knowledge and cultures
- reviewing and initiating incorporation of farm AnGR issues into the curricula of all learning levels
- developing genetic improvement initiatives, infrastructures, and restructuring of the involved institutions
- formulating policies and legal frameworks on animal movements within and between countries, disease control mechanisms and markets and marketing of farm AnGR and their products
- encouraging and assisting community based conservation and establishing, when necessary the ex situ conservation, particularly the gene banks

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- devising effective mechanisms for prevention, resolution and management of conflicts, early warning and crisis management systems for man made and natural calamities
- appreciating and acting collectively taking into account of clear differences in such areas as financial, scientific, man-power and technical endowments existing between countries, and lobbying national, regional and international relevant institutions and markets to favor, through their policies, the better use, development and conservation of farm AnGR.

3. Status of the Processes

The draft SPAs of the SoW-AnGR Draft Report are compilations of priorities from the country reports of member countries and were meant for negotiations. Negotiations on the SPAs started at the workshop that was organized by the FAO and was held between 11 and 15 December 2006 in Rome, but are still ongoing. Some of the points of intense negotiations at the workshop to which no consensus were reached were the needs of some regions to merge international and national level SPs into one and the opposition by others, particularly by representatives from developing countries and countries with economies in transition, who opt for the importance of leaving them as they were compiled by the FAO (as the national and international level SPs), the importance of indicating sources of funding to the SPs by some regions and the oppositions by the others (particularly the representatives of the European Region) who want to leave the whole financial issues to be negotiated at the Interlaken, and the importance of attaching specific actors to each SP. At the workshop, there existed even the feeling from some regions, particularly from representatives of developing countries and countries with economies in transition, that even the draft SPAs compiled by the FAO do not fully reflect their respective regions, thus, complicating the negotiation processes further. Because of such differences of interests and levels complications in negotiation processes, therefore, establishing a committee (Friends of the Chair) that will be comprised of rep-

representatives of different regions of the world was to be suggested. Thus, the FoC has been established and was mandated to workout on the SPAs further and come-up with clean version of the SPAs, particularly giving due emphasis to those issues that were controversial during the negotiations at the FAO workshop.

The Friends of the Chair (FoC) conducted its meeting between 26 and 27 March 2007 in Switzerland. Consequently, the Chair of the FoC has released its consolidated version of the SPAs.

4. The Next Steps

Reviews of the consolidated SPAs of the FoC indicate that some of the controversial issues that were raised by representatives of countries of most developing countries and countries with economies in transition and were not resolved at the FAO workshop are not well attended. Against the wills of representatives of most developing countries and countries with economies in transition, the SPs that were classified into national and international level SPs in the FAO original version have now been merged into one. In the FoC version, actors to the stated SPs are not attached. Moreover, issues that are associated with funding are not dealt the FoC meeting, probably leaving them be negotiated at the Interlaken (as was suggested by representatives of the ER during the FAO workshop) and/or are waiting the decisions of the Commission on Genetic Resources for Food and Agriculture (CGRFA) which will meet in June 2007.

Realization of the objectives of preparing the SoW-AnGR Report requires setting of clear and better focused SPs at the outset. Therefore, different regional exercises that are geared towards discussing the above & related issues, and come up with solutions that will help the negotiations and/or workable SPs such as workshops were expected to be conducted as part of the whole process before the Interlaken Conference. and one of such workshops was conducted between 24 and 25 May 2007 in Addis Abeba, Ethiopia on "Managing Indigenous Farm Animals in Africa: Strate-

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Designing and implementing

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(Hagman and Drews, 2001).

Despite the importance of community-based management (CBM) of FAnGR (and the recognition that communities have different needs, perceptions and preferences regarding livestock), hardly any systematic or comprehensive observations on, nor support and incentives for, traditional breeding systems and practices exist. The lack of indigenous livestock characterisation data, combined with inadequate economic analysis regarding existing strategies/policies (largely based on the use of exotics), has limited the ability of government and development agencies to support the implementation of such CBM programmes. Also, the modalities for implementing a CBM approach are not well understood, although many of the elements needed for its realisation can draw upon known principles of other types of participatory natural resource management (including that of plant genetic resources). Emphasis needs to be placed on integration of systematised indigenous knowledge into a scientifically-based conservation and sustainable use strategy with goals which match the production system. This is the basis for the empowerment of local communities and for improving their analytical, technical, managerial and organisational skills, enabling them to be self-reliant with regard to the sustainable management of FAnGR.

Putting such FAnGR management scheme into practice, requires the establishment of a participatory process that involves:

- a. the identification of breeds within communities and their importance
- b. assessment of the risk status of the breeds and causes of loss of diversity (in its widest sense)
- c. a survey of breed characteristics, livestock-keeper preferences, management practices, etc.
- d. the identification of economically important/priority traits for livelihood maintenance

- e. the realisation of market studies to identify opportunities for harnessing possible unexploited consumer demand for priority indigenous breed genotypes, as well as improved market access and commercialisation
- f. an analysis of the current policy framework and the impact of potential incentives and mechanisms for conservation and sustainable use
- g. based on the above findings, the participatory design and implementation of a conservation and sustainable use programme, and
- h. capacity strengthening and institution building for programme implementation, monitoring and evaluation of livelihood impacts (the latter requiring particular consideration of gender issues, given the im-



Courtesy ILRI-BMZ Project team Kenya

portance of women in livestock management and child nutrition.

ILRI's research on FAnGR involved phenotypic (breed surveys) and molecular genetic characterisation (genetic diversity, evolutionary relationships & implications) and economic valuation (methodologies, trait/breed values & implications). Recently (since 2004), considering the need to work closely with re-

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gic priorities, livestock keepers' rights and the way forward".

The theme of the workshop covered various issues that are associated with sustainable use, development and conservation of farm AnGR as well as the rights of livestock keepers which are critically important for sustainable use, development and conservation of farm AnGR in developing countries and countries with economies in transition. Most importantly, the workshop discussed on the draft FAO and the FoC versions of the SPs, fundamental differences between the two SPs, further issues of controversies, and the way forward. The important outcomes of the workshop will further be summarized and submitted to concerned national, regional and international bodies that will play decisive roles in shaping up of the SPs and the success of the First Conference on Animal Genetic Resources to be held between 01 and 10 September 2007 in Interlaken,

Switzerland.

In the mean time; the FAO, along with its partners, will



Participants of the Workshop

Courtesy: Dr. Sadana

continue to spearhead its multidirectional activities further that are decisively important for the realization of the Interlaken Declaration.

Upcoming Event

15th Annual Conference of ESAP Postponed by One Month

It's to be recalled that the 15th Annual conference of ESAP was to be held on 5-7 of September 2007, just couple of days before the long awaited Ethiopian millennium. Thinking that this might not be convenient for members and participants the executive committee of ESAP has decided to postpone the conference by one month. Hence the 15th annual conference of Ethiopian Society of Animal production will be held on 4-6 of October 2007.

Managing AnGR

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selves under specific conditions like high altitude (e.g. Yak, Mithun, Changthangi Goat, Bactrian Camel), saline-conditions (Garole sheep, Chilika buffalo, Andaman goats), and desert conditions (Tharparkar cattle, Jakhrana goat, Marwari sheep). In general, the native breeds are better adapted to the local agro-ecological conditions of the region and are capable of producing on almost zero input system.

Step I - Characterization of Indigenous Breeds

The breeds are characterized based on their phenotypic traits by measurement of body biometry, pro-

duction and reproduction traits in field surveys; and by molecular genetic means by assessing the breed specific patterns of allelic frequencies. Information on majority of the breeds has been collected and documented. The parameters cover breed diversity (list and features of strains), population numbers (based on sample survey), locations and extent of habitat, major threats etc. Lack of temporal changes in these aspects hinders the designing of any strategy for conservation. Breed's qualities that make them unique have variously been recorded. The breeds which are sharply

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declining in numbers or are on the verge of extinction can be identified by comprehensive surveys. These surveys will also reveal the extent of genetic variability including rare variants which can be protected and conserved. Characterization of more than half of the defined breeds has been completed by the concerted efforts of various agencies viz. ICAR, SAUs, AH Depts., NGOs and other organizations.

Under the Phenotypic Characterization, data on demographic and geographic distribution of the breed is collected by conducting sample survey in 60 randomly selected villages in the breed tract using 3x4x5 scheme of NBAGR [3 districts, 4 Strata in each district, 5 villages in each stratum]. For Genetic Characterization, blood/DNA from a minimum of 50 unrelated purebred animals are examined using FAO recommended 25 pairs of micro-satellite markers (as guidelines) to elucidate breed patterns and genetic distances.

Step II - Conservation of Indigenous Breeds The indigenous breeds are capable of thriving under low input and poor management conditions, but little organized efforts have been made to improve the genetic potential of these populations. The admittedly low levels of production of the indigenous breeds is offset by their ability to thrive on less feed and fodder of low quality than crossbred cattle. The native breeds are better adapted to the local agro-ecological conditions of the region and are capable of producing on almost zero input system. For these reasons, the indigenous breeds need to be conserved. Moreover, the long-term sustainability of breeding efforts may squarely depend on the continued availability of the genetic variation.

Broadly, there are two means of conservation: in situ and ex situ. Most appropriate means of conservation is in the form the animals existing in nature (in situ) and providing support in the same direction. However if the population is too small (critical), ex situ conservation must be utilized to save the breed from extinction. India has embarked on both in situ and ex situ conservation schemes. Major benefits are expected from the in situ conservation for the simple reason that the animals continue to live and perform, and can adjust themselves with the changes in the input system or

the environment. Strategies presently undertaken for conservation are narrated below.

In-Situ Conservation Strategy: Under the Network Project on Animal Genetic Resources, in situ conservation schemes have been initiated for 10 breeds including Tharparkar cattle, Magra sheep and Beetal goat. Explicit efforts have been made to select males from superior dams in farmer's conditions and making wider use of the selected best bulls, and also preserving their semen. In addition, a few Gaushalas are also carrying out the task of conserving and improving local cattle breeds.

In situ conservation has been initiated for 10 breeds

Cattle	Tharparkar, Vechur
Buffalo	Toda
Sheep	Magra, Nilgiri, Chokla, Kilakarsal
Goat	Surti, Beetal
Horse	Spiti

GeneBank Strategy: Semen from indigenous breeds (numbering 22) has been cryopreserved at two locations (including one at NBAGR, Karnal as the nodal place) for use in future.

Ex situ Conservation (semen) initiated for 22 breeds

Cattle	Nagauri, Rathi, Kangayam. Punganur
Buffalo	Pandharpuri, Bhadawari, Terai, Kuttanad, Jaffarbadi
Sheep	Pugal, Bhakarwal, Garole, Malpura, Jaiselmeri, Gaddi, Karnah, Gurej
Goat	Black Bengal, Chegu, Gaddi, Parbatsari
Camel	Jaisalmeri

DNA Bank Strategy: DNA fragments have been preserved under cryogenic conditions from a total of 82 breeds. This has the advantage over storage of live cells as it is economical, occupies less space and there is no spread of diseases.

Somatic Cell Strategy: Somatic cell samples have also been collected and stored for a number of breeds.

A scheme has been initiated by National Dairy Development Board to conserve Rathi cattle of Rajasthan. Indigenous livestock are also conserved in some state livestock farms and certain Gaushalas (cow-herds maintained for religious reasons). Of a total of about 8000 Gaushalas in India, about 10% maintain sizeable

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herds of indigenous cows. Several of these Gaushalas are engaged in improvement of cattle and produce superior male calves for wider use. Outcome from in situ conservation schemes under field conditions will provide valuable guidelines for future conservation programmes appropriate for India and developing countries. In view of the long term benefits from the indigenous breeds and populations, additional efforts are necessary for wholesome conservation process with regional approach, covering wider areas and more breeds.

Identification of new breeds

Identification of new breeds is an onerous task that selects out the defined animal groups out of the hitherto described 'non-descript' populations. Emphasis put on identification of new breeds by the NBAGR has shown results. In East India, Chilika buffaloes have been identified as a unique population with its own special and valuable features including 'lake grazing' management. Banni buffalo is another new 'breed' found in the Kutch region of Western India with high milk production capacity (10 kg/day) and typical 'night grazing' management. In cattle, new populations identified are: Gangatiri, Tho Tho and Malnad Gidda.

AnGR and livelihoods

'Strength of AnGR' - an expression of the capacity of local breeds to survive harsh environment, shortage of feed fodder, heat tolerance, disease resistance - makes the most prominent feature of indigenous breeds that supports rural livelihoods in India, Ethiopia and developing countries. Rural livelihoods will be directly

strengthened by conservation, improvement and support to indigenous breeds.

Value Addition

'Value addition' in the products (and by-products) from indigenous breeds is by far the most promising factor with potentials to support their conservation. Demonstrated by several Gaushalas (cow-herds) in India, cow dung and cow urine have been developed into high-value products like manure, vermi-compost, 'Amrit-pani' ('nectar-water' - an organic fertilizer for fields prepared from 5 kg cow dung and sufficient for one hectare), soap, mosquito-repellant, and some medicines claimed to be effective. In view of the three US patents granted to cow-urine for its immunomodulatory properties, cow urine can be converted to more valuable products of wider use. Increased gain from the products and by-products would lead to increased demand for the indigenous breed animals, thus leading to their conservation.

Livestock Keepers' Rights

Against the backdrop of PPFRA (Plant Protection and Farmers' Rights Act of India), another Act to cater to livestock keepers' rights has been at the discussion stage ever since the issue was raised at the Sadri declaration in 2000 AD. Taking a cue from the Cornerstones (ilse@pastoralpeoples.org), the most salient features of the livestock keepers' rights are : (i) right to breed (ii) right to habitat (iii) right to pastureland (iv) right to ITKs (Indigenous Technical Knowledge), and (v) right to participate in policy making. Communities and tribals are taken to be the custodians of the indigenous breeds, but the mechanisms of 'equitable benefit sharing' are yet to be framed.

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source poor livestock-keepers based on the problems stated above, scientists at ILRI felt the need for a paradigm shift which prompted to re-model the Institute's research portfolio. The new operating research project entitled "Improving the Utilisation of FAnGR" has emerged with a focus on CBM, breeding strategies, in-situ and ex-situ conservation strategies.

CBM of FAnGR entails 'putting the last first' - research driven by needs and wishes of communities or livestock keepers. It allows livestock keepers to fully participate in the identification of problems, choice of solutions, breeding objectives, designing and implementation of a breeding programme, ownership and control of superior genotypes reflecting the real production environment. The importance of CBM for the conservation and sustainable use of the growing num-

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ber of threatened FAnGR has been increasingly recognised by the international community, as improving food security through the conservation/sustainable use of FAnGR depends on the ability of communities to decide on, and implement, appropriate breeding strategies (Hagmand and Drews, 2001; Wollny, 2003). Unfortunately, unlike in crop agriculture where participatory plant breeding (PPB) is now generally accepted and widely applied in many developing countries, livestock development remains primarily driven by imported technological packages, with very limited involvement of communities in their implementation (Rege, 2003).

Kaufmann (2003) notes that the traits considered in many characterisation activities have tended to reflect only partially those traits which are relevant in the respective production system, and that they neglect the decision and management options the livestock-keeper takes or has when making use of the livestock resources, and by which again s/he influences the respective actual expression of the traits. The implementation of community-level strategies can be facilitated by the use of farmer experimentation methodologies (CIAT, 2000). Groups of livestock keepers can be assisted to develop into cooperatives, associations or societies, important functions such as reviving and supporting traditional institutions can be fulfilled (Köhler-Rollefson, 2000). Additional advantages to community-level versus farm level approaches, can be understood in terms of the fact that management of communal resources (grazing land, watering points, etc) require a broader approach; collective responsibilities and sharing mechanisms can be addressed; and there are increased opportunities to enhance management (a crucial factor for success) and involve more stakeholders (required to address the complexity involved).

Research activities so far reveal that the development of FAnGR characterisation surveys together with FAnGR valuation techniques (for both marketed and non-marketed outputs), can provide information that is crucial to the design of breeding programmes and conservation strategies. Community-level livestock

extension work has also been successful in improving management practices in a cost-effective manner. Such activities have resulted in the availability of indigenous breed data, together with institutional linkages and capacity that facilitates the identification of potential partners, locations and priority breeds for establishing CBM of FAnGR case studies.

Discussions with potential national partners have revealed that there is already some basic information available (e.g. regarding population statistics for selected indigenous breeds and the threats that they face). On-going studies are currently attempting to identify existing breeding practices, management re-



Courtesy ILRI-BMZ Project team Kenya

gimes and performance indicators, together with priority species/breeds for further study and specific geographical areas for intervention which make important contributions to the livelihoods of the poor.

ILRI has been coordinating an ILRI-BMZ-NARS project on "Improving the livelihoods of poor livestock keepers through community-based management of indigenous farm animal genetic resources in Africa" specifically implemented by NARS in Benin, Ethiopia and Kenya. This project presents a framework for identifying and testing potential solutions for improving the use of indigenous FAnGR, while also ensuring conservation of these unique genetic resources for future generations. A truly participatory and systematic approach has been used to mobilise communities and test alterna-

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 tive institutional arrangements in the management of indigenous livestock populations so as to improve the livelihoods of the poor. The project will also make recommendations for strategies/policies on conservation and use of FAnGR that are applicable in a wide range of developing countries.

6. Community groups are formed legally and registered with successful groups opening accounts as coops
7. CBM framework developed and interventions enumerated in a truly participatory way and implementation commenced.



Participants of the planning workshop held from 12-13 March 2007 at ILRI campus Addis Ababa, Ethiopia

Courtesy Dr. Markos Tibbo

The project accomplished:

1. Market and consumer surveys
2. Characterisation of production systems
3. Definition of communities breeding goals
4. Community proposed actions for safeguarding preferred livestock and poultry breeds/types
5. Capacity building of communities, enumerators, research technicians, and graduate students from the host countries (a total of 4 PhD and 12 MSc students) and also from Germany (2 MSc students) as exchange graduate students

Lessons learnt so far:

1. Participatory research methods allowed better understanding of farmers' perspectives, fostered active participation of farmers from all socio-economic categories;
2. Communities recognize different breed types and ecotypes of their livestock, which may be distinct from official breed classifications;
3. Farmers' perceptions of production constraints may need empirical verification, yet they provide sound basis for participatory on-farm research; and
4. Within the framework of the CBD, pre-

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paratory activities can be undertaken to arrange for "Prior Informed Consent" agreement with livestock-keeper communities as well as participating institutions with respect to FAnGR.

Another recently launched ongoing ICARDA-ILRI-BOKU project which is coordinated by ILRI is entitled "Designing community-based breeding strategies for indigenous sheep breeds of smallholders in Ethiopia". This project is implemented by NARS (Bako, Bonga, Debre Berhan, and Werer Agricultural Research Centres) in Ethiopia. This project rationale is based on empirical observations that past efforts on genetic improvement of livestock breeds in developing countries failed despite proven approaches (e.g. crossbreeding and within-breed selection) from the developed world, suggesting a need for new, more suitable methods for the developing world. This project, which is funded by the Austrian Development Agency, brings in new thinking and involves local communities and institutions in the design of breeding and implementation strategies. The project aims to develop and test community-based breeding strategies for resource-poor sheep owners in Ethiopia, working on four specific breeds (Afar, Bonga, Horro, and Menz) at four different locations linked to their corresponding research centres. This project will blend the needs and wishes of local farmers with the science of animal breeding in a sustainable way by building on the strengths of national and local institutions. Capacity building to improve the ability of communities to manage these breeding programs is a key aspect. Project outcomes will contribute to permanent and sustainable genetic improvements in indigenous sheep breeds, improved livelihoods of resource-poor farmers, better market supply and food security, and a framework for genetic improvement that can be replicated elsewhere within Ethiopia and beyond.

In three years time of the project the following *outputs* are expected:

1. Breeding goals defined in a participatory manner, one breeding program established

per breed;

2. A methodological framework for community-based breeding programs for smallholder producers, including institutional arrangements;
3. Impact assessment of the breeding system at individual, flock, community and national level;
4. Assessment, on a national basis, of the characteristics of the breeds managed by the breeding programs;
5. Better understanding of the constraints to market access by sheep keepers.
6. Capacity building embedded: 3 PhD (2 in Animal Genetics and Breeding and 1 in Agricultural Economics) and (2 MSc in Animal Breeding and Genetics),

Success indicators of the project:

1. Decentralized and participatory breeding program
2. Characterization of the breeds and their production systems available
3. Productivity improved; income increased (e.g. from culling, linking producers to market)
4. Linkage among stakeholders strengthened
5. Working ground for other interventions
6. Guidelines for setting up community-based breeding program
7. Attitudinal change
 - a. Breed improvement is NOT feed & health only!
 - b. Genetic improvement is NOT cross-breeding only!
 - c. Selection is technically and financially feasible when community is involved at all stages

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Conclusions

- Past efforts on genetic improvement failed to address the smallholder livestock keepers needs
- Proven genetic improvement approaches from the developed world not suitable for low-input production systems
- A need for paradigm shift in the way we handle FAnGR management issues in the SSA countries
- CBM approach of FAnGR can be used for designing conservation and sustainable use strategies

Way forward

FAnGR management for sub-Saharan African countries need to consider

- CBM of FAnGR for developing countries
- Incentives to produce, securing the resource base
- Increased use of existing local institutions
- Supporting access to markets
- Support development of breeding policies that favours indigenous FAnGR conservation and use
- Sensitization of policy-makers to community needs and facilitate the formulation and implementation of essential policy instruments

Preliminary investigation ...

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variables to differentiate typical from admix animals for female cattle but for the male animals classifying variables are coat colour, facial profile and perpetual sheath.

The preliminary information obtained calls for a much

more in-depth study into the level of admixing, and the perception of pastoral communities, as well as the interrelated factors that contribute to the prevailing threat on the Ethiopian Boran cattle. That will pave the way for genetic conservation and breed development through the development of in-situ and ex-situ conservation strategies for the Ethiopian Boran cattle.

The Workshop Executive Summary

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Biodiversity and caters for the specific needs and distinctive features of animal genetic resources. It may be necessary to develop a specific sui generis legal framework that is tailored to the special needs of animal genetic resources.

4. The Interlaken Declaration is a starting point to implement the Global Plan of Action. It is a springboard for discussions on the need for and mechanisms of a global and legally binding instrument for the sustainable use of animal genetic resources.
5. The Friends of the Chair (FoC) document is a

good step towards reaching consensus on unresolved issues. However, the comments made during this workshop need to be considered. Furthermore, the Strategic Priorities for Action (SPA) need to be separated into international and national-level SPAs.

6. Financing is critical for the success of the above and the implementation of the Global Plan of Action. Therefore a financing mechanism needs to be discussed during the meeting of the Commission on Genetic Resources for Food and Agriculture at Interlaken.

Designing and implementing community-based farm animal genetic resources management in sub-Saharan African countries

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Why managing farm animal genetic resources crucial?

Livestock in some sub-Saharan African (SSA) countries contributes, on average, 35% and up to 80% of agricultural GDP (Delgado *et al.*, 1999; Staal *et al.*, 2000). More than 70% of the rural poor of the world depend on livestock as a component of their livelihoods (LID, 1999). Livestock production to a greater extent relies on indigenous farm animal genetic resources (FAnGR), hitherto not much has been done in terms of their improvement, and traditional practices are threatened by pressures of economic development. Well over a quarter of these unique resources are believed to be at risk of loss (FAO, 2000). Loss of genetic diversity reduces opportunities to improve food security. Genetic erosion in FAnGR is much more serious than in crops because the gene pool is much smaller.

FAnGR information is the basis for conservation and sustainable use and the information on diversity helps to design cost-effective conservation & utilisation strategy; to prioritise which breed/population/gene to conserve; to make informed decision by policy makers, and to assist breeding policies formulation. Components of management of FAnGR include understanding (identifying, characterising and documentation), conservation and utilisation based on priorities, approaches/strategies, and policies. There is an urgent need to conserve these FAnGR through concerted efforts of all stakeholders according to the SSA countries livestock farming, socio-economic, and socio-cultural circumstances.

Reasons for past failures to effectively use and conserve these FAnGR are lack of knowledge by policy-makers regarding the important contribution of FAnGR to the livelihoods of the poor; ineffectual institutional arrangements to enable livestock-keepers to manage these resources; and lack of policies and in-

centives supporting their use and conservation. Despite very few success stories, reasons for failures in genetic improvement programmes in the SSA countries among other are:

- Breeding programs have been too complicated as regards logistics, technology and requirements of resources without considering the infrastructure available
- Indiscriminate crossbreeding
- Lack of analysis of the different socio-economic and cultural roles that livestock play in each situation
- Lack of comprehensive approaches to design simple, yet effective breeding strategies in low-input production systems
- Absence of genetic improvement programs in most of the SSA countries

Demand for livestock products in SSA is set to double in the next 20 years (Delgado *et al.*, 1999) and poor livestock-keepers and their indigenous breeds have the potential to play a prominent role in this. One key way for reducing poverty, food insecurity and attaining sustainable agricultural development is improving the livelihoods of poor livestock-keepers through reducing livestock mortality and increasing productivity and production. The potential is considerable due to the increasing human population growth, urbanization and increased demand for meat and milk in SSA. However, to attain such livelihood improvements the conservation and sustainable use of livestock diversity is a requirement, as animals of different characteristics, and hence outputs, suit differing local community needs and agro-ecosystems. The Convention on Biological Diversity advocates an *in-situ* approach to conservation and sustainable use, and putting this into practice requires interventions at the community-level

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Preliminary investigation into genetic admixing in Ethiopian Borana cattle

A call for measures to conserve the genetic potential of Borana Breed

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Population fragmentation due to habitat isolation results in a loss of genetic variation by decreasing genetic diversity, while genetic dispersion as a result of animal movement produce genetic variegation, which makes the genetic study of the Ethiopian Boran cattle interesting. In addition, because of the breed's several genetic merits, the Ethiopian Boran cattle have been the focus of considerable scientific curiosity and development interventions for the last few decades. But limited works have been done regarding the conservation and development of the Ethiopian Boran breed.

Although information on the level of genetic introgression of the Ethiopian Boran cattle is not well documented, there are concerns that the breed is threatened by habitat loss and genetic erosion. Preliminary assessment into the level of admixing at a ranch in Yabello area shows that this is indeed a concern, and much more magnitude of admixing could be observed at the community level given the mobility pattern as well as the significant impact of the recurrent drought.

Data were collected on physical morphology of the Boran cattle at Didy Tuyra Ranch, Oromia Regional sate, and were analysed using univariate analysis. The animals at the ranch were maintained for the production of dam source to supply to Abrenosa ranch that produce crossbred in-calf dairy heifers. During the study animals at the ranch were randomly selected and then subjectively categorized into two groups-typical Borana and admix, upon their arrival in the corral for physical measurement. The physical measurements taken were adopted from ILRI/DAGRIS format (Facial Profile, ear shape, orientation and length, horn shape, orientation, and length, hair type, dewlap form, Naval flap, perpetual sheath, hump shape and orientation, coat colour and pattern, body length,

height at withers, chest girth and body weight).

The relationship between body lengths, a height at withers, chest girths is positive and high, and is also highly correlated with actual body weight and body fat proportion. There is also a high correlation of body length, height at withers and chest girth with that of lactation yield as result of the high relationship of these variables with animal body condition. Therefore, large animals (like the typical Borana) have high production performance than admixes. Average live body weight of Borana cattle, reported to be 338Kg for animals of greater than 3 years, is lower than typical Borana and higher than the admixes. The typical Borana is superior to admix in all linear body measurement except horn length. The result shows that the large body dimension of typical Borana, which is important to most production parameters such as meat and milk production.

The high significance difference between typical and admix Borana cattle for all linear measurements except ear length, at Didy Tuyra ranch, shows that there is a high degree of admixing of Borana breeds even at ranch level which may make the speculation that the degree of admix reaches at its climax at pastoralists level. The pure Borana accounts only 22 % of the herd and the rest are admix of different forms, which calls for urgent measures to be taken to conserve the genetic potential of Borana Breed.

Male animals are more homogenous than females, because bulls are intensively selected for mating while the variability between typical and admix females is high due to their purchase from local market to serve as a dam sources so that the probability of admixing and heterogeneity if high. Horn shape, orientation, dewlap size, facial profile and naval flap are important

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