

Losing Livestock, Losing Livelihoods

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More than half of the world's people are dependent, at least in part, on keeping livestock for their livelihoods. They include some 70% of the world's rural poor: 640 million subsistence farmers, 190 million herders and more than 100 million landless people in landless households.¹ Many of these people live in fragile, marginal environments that are unsuitable for crop production and can only sustain people through keeping livestock. Making a living on marginal lands has always been difficult owing to a range of challenges including poor soils, erratic rainfall and extreme temperatures. But pastoral livelihoods are becoming more and more untenable owing to new pressures.

Total number of breeds and those at risk

In recent years, much grazing land has been lost because of urbanisation, conversion to agricultural land and industrial use. Pasture land has been turned into nature reserves without much thought for the peoples whose livelihoods are cut off by them. Resettlement activities (sometimes a consequence of the conversion activities mentioned above) are exerting further pressure on pastoralists. Education, health and veterinary services all reach pastoral people less often than other poor communities in developing countries. Development efforts have commonly concentrated on the promotion of exotic breeds and crossbreeding than on improving local breeds. This shortcut bypassed the poor and often caused the disappearance of local breeds. Opportunities to work with local communities to improve their livelihoods and security through enhancing local breeds have not been given attention that is urgently needed.

The rise and fall of livestock diversity

During the ten thousand years of agricultural history, 40 animal species have been domesticated and many thousand breeds have been developed. But during the last century around 1000 breeds (15% of the world's documented livestock and poultry breeds) have disappeared, 300 of these in the last 15 years². A further 2000, around 35%, are in danger of extinction³.

Farm animal breeds are disappearing at an alarming rate and the situation is urgent. Preventing further losses and conserving local breeds is not a romantic or nostalgic adventure – it is a must. With the loss of all these breeds of animals, humans lose an important resource; we lose the ability to respond to unforeseen animal diseases, changing and variable environments, and natural disasters. But most importantly we are endangering the food security, not only of those dependent on these breeds, but of us all.

Jargon buster

A “species” is defined as a group of animals whose members freely mate with each other and produce fertile offspring. A “breed” is usually a group of animals with definable and identifiable external characteristics that distinguish it from other groups within the same species. The term “local breed” is used for breeds that are the result of centuries of selection and use by ethnic and social groups living in confined habitats. “International” or “modern” high-performing breeds are those produced through very intensive selection for one or few production traits in a relatively short period.

Why the loss of breeds?

There are many reasons for the high rate of loss of breeds including the promotion of high-yielding breeds, natural disasters and human conflicts. Livestock keepers in the South usually keep a mix of species breeds that are adapted to local conditions. By contrast, farms in North America and Western Europe rely on a few species and breeds, commonly bred from very few males selected for maximum yield. The combination of intensive selection and the use of techniques like artificial insemination have made it possible to produce large populations of genetically similar, high-performing animals of the same breed, but at the expense of their genetic diversity. For example, Holstein-Friesian cattle have expanded to the point that they make up 60% of European and 90% of North American dairy cattle. It has been predicted that by 2015 the genetic diversity within this breed will correspond to that of only 66 animals. These ‘international’ breeds have been steadily pushing aside local breeds, which is why 38% of European breeds are now facing extinction⁴.

Over the past few decades, the improvement of local breeds by crossing them with such international breeds has met limited success in the South (see box over page). In some cases, crossbreeding has increased yields, but problems have also arisen. Crosses may have higher production potential but may be less well adapted to the local climate and management conditions than the original local breed. Besides, smallholder and herders often keep their animals for a number of different purposes (see below), and the crossbreds often fail to perform in these other areas. The introduction of crossbred animals has also frequently had a negative impact on the role of women by increasing their workload while the cash income ends up with the men.

Percent of Livestock breeds at risk by region

In most Southern countries, industrial livestock production systems for pig, poultry and dairy production have been introduced and promoted. Local production systems are viewed as a sideline, in spite of their considerable economic importance for the rural poor. In India, for example, 80% of livestock products originate from farms keeping 3 to 5 animals on less than 2 ha of land⁵. But government support is given predominantly to large milk and poultry farms⁶. Export opportunities almost always receive precedence over domestic needs. While a few Southern countries, like Argentina, have done well at least from a macro-economic perspective from exporting livestock, more often the results have been disastrous from the local perspective. In 1995, Mexico concluded a trade agreement with Australia and New Zealand on sheep and sheep products. Consequentially, prices fell dramatically and sheep production in Central Mexico was abandoned (see p 13). Many local breeds that had already been largely displaced by crossbreds became extinct.⁷

The value of local breeds

Local breeds are usually well adapted to the local environment. Some have even adapted to the harsh conditions of marginal environments and have learnt to cope with heat, water shortages, fodder scarcity and diseases. For example, one of the most economically damaging livestock diseases in Africa is trypanosomiasis. While the modern cattle which are widely used for meat and milk production have no resistance to this disease, at least sixteen local cattle breeds, including the N'dama, tolerate it.

In Rajasthan, the Raika keep sheep breeds that can cope with the extreme climate. They keep several breeds at a time, in order to reduce the risks in the harsh environment of the Thar desert. Along with a hardy breed that ensures a minimum income in bad years, they keep a higher yielding local breed to increase their income in favourable years⁸. These carefully chosen breeds are the result of many generations of breeding work.

Although in extensive production systems hardiness and adaptation to extreme conditions have priority over production traits, local breeds can have a high production potential, worth improving. Early in the twentieth century, some Indian Zebu cattle (like

the Ongole, Gir and Kankrej) were improved in Brazil and Australia and today represent high quality meat or milk/meat breeds. In India itself, this development opportunity was almost completely missed. Some private initiatives like the Gir cattle breeding farm of the Sri Bubaneswari Pith in Gujarat show that milk production can be considerably improved. Other examples for especially productive breeds include the Nicobari chicken and Jamunapari goats in India⁹, and Sahiwal cattle in Pakistan¹⁰. In Ethiopia, a local goat breed was compared to crossbred animals with regard to productivity. The crossbreed grew faster, but also underwent higher weight losses when feed became scarce. The crossbreed produced more milk per animal, but not if related to body weight¹¹. The strength of local breeds becomes evident especially when all products, and not a single cash product, are taken into consideration. As early as 1970, a study in Botswana revealed that the overall productivity of multipurpose herds was almost double as high as the productivity of single-purpose beef cattle on ranches.¹²

Exotics - not such a great idea after all.

The Nguni cattle in South Africa is hardy and non-demanding. A crossbreed developed with government support needed management conditions that were unaffordable to small farmers. The project came back to the Nguni cattle that in the meantime had almost disappeared **1**.

The Indo-German goat project in Rajasthan, India, initially tried to introduce crossbreeds, but later concluded that the local Sirohi goat was superior in many regards **2**.

In Mexico, the Criollo pig is nowadays valued for its adapted feed demands as well as its meat quality, after it had been almost totally displaced by imported breeds **3**.

Operation Coq was a nationwide program instituted in the 1970s in Nigeria. Northern or northern-trained veterinarians determined that village birds were heavily disease-ridden and low-producing and should be substituted with exotics. But the alien cocks could not compete with the hens' indigenous suitors. Nor could they survive the village climatic and husbandry conditions **4**.

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2 Kropf et al. (1992). "A comparison of reproductive performance and milk production of Sirohi goats with Alpine and Toggenburg crosses". Paper presented at the Vth International Goat Conference, 2-8 March, New Delhi.

3 Anderson et al (1999). Conservation of Animal Genetic Resources. Long distance course. Wye College External Programme, University of London.

4 C McCorkle (1999). "Africans manage livestock diversity". *Compas Magazine for Endogenous Development* 2:14-15. ETC, Leusden, The Netherlands.

Local breeds fulfil many needs of smallholder communities with respect to draught and manure. Animals in the South tend to have multi-purpose use, and are not raised exclusively for yield. For example, draught animals are the most important source of energy for manure and rural transport. Some 300 million draught animals are used in Asia alone. Around half of the cultivated land in developing countries¹³ is farmed with draught animals.¹⁴ Other uses and benefits include food, fibre, fertiliser, fuel, cash income, savings accounts, employment, and the use of common property. Livestock keeping allows access to community-owned land. Many social functions such as dowries are tied to the herds and women are often those who use and develop breeds. The woman's role in the family changes dramatically when local breeds disappear. One consistent failure of modern livestock breeding programmes has been to recognise the multifunctionality of farm animals in traditional systems.

The gene pool that local breeds represent is also important, not only for the South, but also for improving or adapting animals in the North. One-sided selection for productivity has led to many important physiological functions being impaired. Turkeys and certain pig breeds often cannot mate naturally and depend on artificial insemination for their reproduction. Industrialised poultry breeds have lost some of their capacity for natural reproduction. Brooding capacity has declined and mothering instincts are compromised. Modern breeding has also led to a situation where livestock keepers are often no longer in charge of breeding decisions and reproduction. In Europe, consumer demand for eggs and poultry from free-range farms is high, but poultry raisers have problems finding suitable breeds. The reduced genetic variation of these international breeds greatly limits their ability to cope with new situations such as environmental change and diseases. As a result, disease resistance is now a feature much sought after by public and private livestock biotechnology research.

A few breeds tended by pastoralists and other livestock-keeping communities in the South have played a key role in the development of successful commercial breeds in the North. For example, the Booroola gene, responsible for prolificacy in Merino sheep, originally comes from the Garole sheep raised in India and is also found in an Indonesian breed¹⁵. Another breed of great interest to breeders around the world is the Red Maasai sheep of Kenya. It is resistant against *Hameonchus contortus*, an endoparasite affecting the sheep industry in Australia, New Zealand and other parts of the world.

With the advent of genetic engineering, the importance of local breeds to commercial breeders promises to increase. Local breeds, which have been maintained for centuries by pastoralists and farming communities, are now the focus of attention of many scientists in the hope of selectively using certain desirable genes. This means that corporate interests are starting to prey on community resources. For example, the International Livestock Research Institute (ILRI) in Nairobi has joined the Africa Bioscience Initiative that will systematically search the continent's livestock for useful

genes could be genetically engineered into commercial breeds. The fact that the Doyle and Syngenta Foundations are involved and that this initiative has strong political backing is cause for great concern.

The rights of livestock keeping communities

Seeds and livestock breeds have been exchanged, traded and sometimes stolen during most of the history of agriculture. There was no need to discuss the rights of farmers or pastoralists, as the genes remained accessible to all. There were attempts to monopolise Merino sheep or the rubber tree, but there was no patenting. While plant genes have been patented for many years, the patenting of animal genes has only started. But with the expansion of patent law systems, we need to find effective means of protecting the rights of farmers, pastoralists and livestock keeping communities to make their own breeding decisions.

The use of Boran and Tuli cattle from Zambia and Zimbabwe in Australia is just one example. In this case embryos from these African cattle were taken for cross-breeding into Australian breeds without permission. The commercial gain for Australia has been estimated at \$800 million per annum. Furthermore, Australia has been selling the crossbreeds and embryos on the international market, in particular to Argentina. Zimbabwe and Zambia have received nothing in return¹⁶.

The conservation and development of local breeds is a task of growing importance. It is essential to acknowledge the contributions of pastoralists and other traditional livestock-keepers in conserving livestock genetic diversity.

The United Nations Food and Agriculture Organisation (FAO) has taken steps to address the issue of the disappearance of livestock diversity. Since 1988 it has established gene banks in Africa, Asia and Latin America, published a World Watch List for Domestic Animal Diversity, and established a database on livestock breeds. Over several years, a global State of the World report is being prepared. India is making efforts to develop a People's Biodiversity Register, but livestock breeds are not systematically included. Such registers are double-edged swords, with the potential to provide written evidence of prior art in biopiracy cases, while at the same time supplying handy information to biopirates.

Documentation of the achievements of pastoralists and other traditional livestock keepers is necessary but not sufficient in itself. Their rights have to be protected and their production systems must remain viable. The UN Convention on Biological Diversity (CBD), ratified by 180 countries, includes clauses for the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. But the CBD only offers mechanisms for bilateral exchange between two countries only. Agricultural genetic resources with their often multi-country origins are better regulated by a multilateral system. The FAO has been appointed with this task.

One slight ray of hope for such a treaty on animal genetic resources is the adoption of the FAO International Treaty on Plant Genetic Resources for Food and Agriculture in November 2001. It is hoped that this treaty, when it comes into force after being ratified by 40 members, will facilitate the conservation and exchange of plant genetic materials. The right of farmers to save, exchange and develop seeds is described in the Preamble to the Treaty and responsibility for their implementation is passed on to member states. In October 2002, the FAO Commission for Genetic Resources for Food and Agriculture discussed the possibility of negotiating an international treaty on animal genetic resources along similar lines as the so-called 'seed treaty'.

Conclusions

As certain genes found in Southern breeds are being targeted by the international livestock industry, it is high time to address the question of the associated rights. And as breed diversity has drastically diminished in recent decades, how can livestock genetic diversity be preserved? Both questions are closely linked to the livelihoods of pastoralists and livestock keeping communities. How can their breeds and their livelihoods be developed?

We need not only to secure the rights of pastoralists and communities to multiply, exchange and develop breeds, but also to recognise their economic, social and cultural rights. Access to grazing land should receive high priority and traditional grazing rights must be safeguarded. Nature reserves, which have often removed all farming and livestock, need to reconsider providing grazing rights to local communities. Development organisations also need to recognise the importance of local breeds and should focus on their sustainable management instead of uncritically adopting exotic breeds.

For a more detailed discussion of the issues affecting livestock keepers, their animals and their communities, see "Securing Tomorrow's Food - Promoting the sustainable use of farm animal genetic resources", by the League for Pastoral Peoples (2002). The publication can be downloaded in PDF from www.pastoralpeoples.org/lpp/publications/securing.htm or the entire document is also available at www.grain.org/docs/securing-tomorrows-food-lpp-en.pdf

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