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# Africans manage livestock diversity

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After decades of development debacles with alien breeds, scientists and developers have at last come to appreciate the vast animal genetic resources that ordinary farmers and herders have developed through the ages, especially in the South. Today, all over the world, rural people keep about 4,500 breeds of domestic animals of more than 40 species. Based on a global overview of ethnoveterinary literature (Martin et al., forthcoming), this article summarises some findings on the local knowledge, management, and use of livestock diversity that has made possible the development and maintenance of 'living gene banks' of special animal breeds in Africa.

As many as 150 reported varieties of cattle, 60 of sheep, and 50 of goats are currently found in Africa. There is also considerable (but less well documented) biodiversity in horses, donkeys, mules, chickens, pigs, and dromedary camels.

## Stock records

African stockraisers typically have a rich knowledge of multiple aspects of animal husbandry, including a practical, working knowledge of genetics. Many pastoral and agropastoral peoples keep detailed mental or oral livestock stock records. Indeed, any 10-year-old child of the Bororo pastoralists of Niger can easily identify the pedigrees of all the animals in his/her own and nearby families' herds. This is because an animal's ancestry is typically encoded in its name, and names are never changed when animals are sold or exchanged. Like the Bororo, Twareg herders of the Sahara Desert keep close track of their camels' pedigrees via permanent names for individual animals. These names reflect maternal ancestry. Rashaida camel breeders trace their racing and riding animals' pedigrees back at least seven generations.

## Traditional institutions

Throughout Africa, stockraising peoples have indigenous social institutions for sharing, lending, or exchanging breed-stock. For example, the Sebei in Uganda practice *namanya*, in which households may borrow or exchange a heifer in a contract that can extend over three generations. In this arrangement, the recipient family cares for the heifer in return for her first-born plus the use of all the milk

from her and her progeny. At the contract's conclusion, an equivalent animal is returned to the donor household. While Sebei explanations for *namanya* centre on social, charitable, and labour-saving concerns, and on spreading the risk of losing animals, this mechanism has the added benefit of bringing fresh blood into family herds. For this latter purpose, Samburu and Turkana pastoralists of Kenya form 'stock friendships' in which friends exchange animals.

For at least 150 years, Lesothans and Western Zambians have used a similar institution, *mafisa*, expressly for genetically improving their cattle. They place a number of their cows in the herd of another family with superior bulls. After several years, the cows and their progeny return home; but in the meantime, in recompense for the stud services rendered and the cows' care, the host family enjoys the use of the milk.

## Stockraiser logic

Virtually every long-time stockraising society has developed one or more distinct livestock breeds to suit its particular environment and animal-product needs. People often have multiple breeding goals for a given species, however. Still, the first consideration is sheer survivability. A number of overarching selection criteria can be identified in this regard, of which disease resistance is perhaps the most salient.

For example, eastern and southern Africans have developed the Sanga family of cattle, which are resistant to a major infectious disease, East Coast Fever, and to the ticks that carry it. Similarly, West Africans have developed many dwarf breeds of cattle, sheep, and goats that resist blood parasites and other common diseases. And whenever Fulani pastoralists

of the Sahel migrate into a new area, they always buy some local bulls and rams with the express purpose of enhancing their herds' adaptation to local diseases and other stresses.

Another critical breeding criterion is adaptation to conditions such as temperature, insolation, precipitation and mineral resources. Even seemingly simple features like coat and skin colour may be important in such regards. It is probably no accident that Bunaji cattle, developed by the Nigerian Fulani, have a pure-white coat and a black skin. These characteristics allow Bunaji to graze under far higher ambient temperatures than European cattle.

Other common criteria for selection are the ability to walk long distances in search of water, to resist periods of water and forage scarcity, and to be a good mother. The latter includes battling predators on behalf of progeny, paying close attention to new-borns and weaklings and, in poultry, devoted brooding.

Additional selection criteria relate to animals' particular production roles. An example is the D'Man sheep of Morocco. Developed by oasis dwellers as a meat animal, D'Man frequently produces twins, triplets, quadruplets, and even quintuplets. On the other hand, Somali pastoralists have developed a non-twinning dairy goat breed so as to ensure more milk off-take for human, rather than kid, consumption.

## Religion and animal selection

Religious and cultural considerations also figure in stockraisers' development or maintenance of special strains or types of animals. For instance, Nigerian Hausa keep some unique types and colours of naked-neck and frizzle-feathered chickens because these birds are associated with spirits in local Bori rituals. Along with be-

havioural traits such as fierceness and good mothering, these physical qualities are required for the proper performance of rituals in which the birds are sacrificed to the Bori spirits. Apart from these religious considerations, many of the same qualities improve survival rates and production in Africans' free-range systems of poultry management.

Similarly, Bodi agropastoralists of Ethiopia carefully breed cattle of many coat colours, with whom people identify themselves. "These animals are imperative for certain rituals and are indispensable to the Bodi society. Without such coat colours, it is doubtful that the Bodi could exist socially and culturally" (Fukui 1988).

Indeed, keeping genetic variability on tap is a wise long-term hedge against changing circumstance and need. As some of the foregoing examples have illustrated, local breeds and breeding strategies are not static and unchanging. Africans continue to adapt and refine their animal breeding today. At the same time, people endeavour to maintain traditionally prized traits and beloved breeds. But their efforts are under attack from many sides.

### Threats to livestock biodiversity

Nearly a third of the world's livestock breeds are currently at risk of disappearing, and the extinction rate now stands at about six breeds per month (NAO 1998). Even among Africa's nine traditional cattle breeds with resistance to blood parasites, all but three are endangered. A dismaying number of African breeds of sheep, horses, donkeys, and poultry as well as cattle have already gone extinct. This erosion in domestic animal varieties is all the more frightening when compared to cultivated plant species, which enjoy far greater genetic variation and which have many more surviving relatives in the wild.

Failure to pay greater attention to

stockraisers' efforts to maintain animal biodiversity is foolish in the face of recent research suggesting that, overall, indigenous breeds can be as, if not more, productive than imported ones. It is ironic that wider appreciation of local breeds has been accompanied by the realisation that this treasure trove of biodiversity is under attack by poorly thought-out 'scientific' methods of animal production and reproduction, and by market-oriented approaches to development.

According to some analysts, northern veterinary medicine has contributed to local breeds' genetic deterioration or near-disappearance. Veterinary extension efforts can weaken a hardy gene pool by keeping sickly and deformed animals alive until mating age. Veterinary medicine has also been implicated in the extinction of local livestock varieties on the grounds of disease eradication.

An instructive case is Operation Coq, a nation-wide program instituted in the 1970s in Nigeria. Northern or northern-trained veterinarians claimed that village birds were heavily disease-ridden and thus low-producing. The goal was to substitute all local cocks with exotics. Needless to say, Operation Coq was a resounding failure. The alien cocks could not compete with the hens' indigenous suitors. Indeed, they could not even survive village climatic and husbandry conditions.

Whether in Africa or elsewhere, a growing number of researchers blame the decline in livestock biodiversity on the high-risk, cash-based economies of the modern world. Traditionally, pastoralists exchanged livestock goods (meat, milk) and services (manuring, field clearing) for staple foodgrains from cultivators. The terms of trade in such transactions were much more equitable than those of the modern marketplace. Moreover, they were often flexible, such that herders, as well as farmers, were cushioned against

lean years.

But nowadays, stockraising peoples *en masse* may find themselves obliged to sell off their best animals just in order to obtain cash to buy foodgrain. This can leave whole ethnic populations of stockraisers with only inferior breedstock or with too few animals to continue in their profession. And when prime, young breedstock and even entire herds of unique breeds are sold for slaughter, their special genetic qualities may be lost forever.

In fairness, it should be noted that pressures to abandon indigenous breeds have not emanated solely from scientists and developers. Invading and colonising powers have been at work too. Such groups tend to prefer animals whose management and productive characteristics are already familiar to them. The military and cultural conquests of Islam, for example, have led to the repression of some local herd-animal breeds in favour of ones deemed 'better' in Islamic views.

### Careful analysis

For whatever reasons, the literature indicates that fewer and fewer stockraising peoples are able to maintain their traditional breeds or to cleave to their social institutions and cultural rules for mating, exchanging, and selling animals. Indeed, many are unable even to remain in their profession. The result is a concomitant loss in the knowledge and existence of the livestock biodiversity that people have so long husbanded.

Thus, any proposed interventions in people's management of livestock must first be carefully analysed in the context of interlocking - or sometimes competing - production and marketing systems, as well as the logic behind people's keeping certain species and breeds. This includes the social, cultural, and spiritual values of the animals for their keepers' families. At the same time, interventions must be considered in terms of the benefit to all humans of keeping these 'living gene banks' alive, along with the peoples who develop and manage them.

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Photo: Wolfgang Bayer

Fulani herders with cattle herd at overnight camp on farmer's field in Central Nigeria