Motivation and incentives to keep a breed

Livestock keepers may continue using and maintaining their breeds for a number of reasons – mostly for livelihoods. In some cases there may be a sense of custodianship. More frequently, however, they (can) only continue if there are sufficient economic incentives. Furthermore, and perhaps most important, the survival of many local breeds is bound to the survival of the production systems and ecosystems in which their keepers live.

SURVIVAL OF TRADITIONAL PRODUCTION SYSTEMS AND ACCESS TO NATURAL RESOURCES

Livestock keepers have developed their breeds to fit a specific set of circumstances (climate, vegetation, parasites, diseases, management system, etc.), and to fulfil certain functions (to provide food, labour, etc.). Their livestock production relies on access to grazing land, feed and water sources. If those resources are removed – fenced off as private ranches, converted to cropland, overgrown by scrub, gazetted as nature reserves or made inaccessible by political boundaries – then the ability of these livestock keepers to maintain their breeds plummets.

So access to grazing land and natural resources and the survival of the traditional production system are key to the survival of many breeds. That does not mean preserving production systems without changes. Indeed, changes are necessary if livestock keepers are to make their way out of poverty. Ways need to be found to enable smallholder farmers and pastoralists to continue managing their breeds in a way that conserves the genetics but improves their standard of living. In Nepal, for example, Baruwal sheep and Sinhal goats depend on a traditional transhumant production system. Sheep in this mountainous area are used for carrying loads, so there may be opportunity for combining migratory sheep and goat raising with ecotourism (Ghimire *et al*., 1998). In Peru, stock raising communities have been able to combine the use and development of the Criollo sheep and other local livestock with efforts to address social and poverty-related issues (Flores *et al.,* 2007).

SENSE OF CUSTODIANSHIP

In some cases, traditional livestock keepers continue to keep their breeds despite a lack of economic incentives. They feel a moral obligation, regard their animals as sacred, or believe that the animals provide certain ritual functions that cannot be transferred to exotic animals. Examples abound in the literature:

Alpaca herders in the Andes say that "in the same way as we nurture alpacas, they nurture us" or "the day the alpacas disappear, the world will disappear" (Vásquez, 1997).

The trypanotolerant Muturu cattle in southern Nigeria are often kept in a semiferal state

PHOTO CREDIT: MARIA WURZINGER

Ankole cattle are kept by Bahima pastoralist in Uganda

and provide barely sufficient milk to nurture their calves. Nevertheless, traditional doctors take small amounts of milk for medical purposes. The breed is also necessary for the death rites of community members – corpses are rolled into the hides and the meat is consumed at the ceremonial feast (Rege *et al*., 1994).

Although the lifestyle of the Bahima pastoralists, who created the giant-horned Ankole cattle breed in Uganda, has changed dramatically over recent decades, they are still willing to keep these impressive animals (Wurzinger *et al*., 2008).

In India, the Raika believe that they were made by God for the specific purpose of taking care of camels, and they feel responsible for the animals' welfare. This prevents them from selling their herds even when they no longer generate a profit and may even have become a burden.

In the Lao People's Democratic Republic, indigenous chickens are important in traditional weddings, at which bride and groom share an egg as symbol of love and solidarity (Bouaham *et al*., 2007).

ACCESS TO APPROPRIATE SERVICES

Livestock keepers need support services of various kinds: veterinary services, market infrastructure, transport, security and conflict resolution, communication, education and health services. Providing these services is difficult for governments because of low population densities and the inaccessibility of many rural areas.

It is often down-to-earth things that can help make services appropriate for pastoralists and smallholders. Examples include the employment of female extension workers to work in areas where livestock are mostly kept by women, and the development of vaccines that do not require constant refrigeration, are easy to administer and are packaged in small batches so that they can be easily transported to difficult-to-reach areas and administered by trained community vaccinators.

Pastoralists' mobile lifestyle adds another problem for the provision of services for both humans and animals. It is a challenge for governments to design services that suit such conditions: many do not even try, but attempt instead to persuade pastoralists to settle. This clash in approaches inevitably leads to mutual suspicion and conflict. To support pastoralism, it would be better to design services that cater to a mobile lifestyle. Successful models already exist – mobile schools (IIRR, 2004; Pailwar and Mahajan, 2005) and clinics, training of paraveterinarians from among pastoralist communities (Catley *et al.*, 2002; IDL Group, 2003) and so on. More such initiatives are needed if pastoralism is to remain a viable livelihood option for the Earth's vast rangelands, and if the breeds that pastoralists maintain are to survive.

Extension and animal health care services for small-scale keepers need to consider that smallholders and pastoralists may have limited and irregular access to cash, and little regular income. Under such conditions, it makes more sense to optimize costs and labour rather than to raise production (Tung, 2005). This means proposed improvements of the livestock systems need to be low-cost, scale-independent and fit in with the local conditions – the simpler a technology and the easier it can be adapted, the higher the probability that farmers will use it (Riise *et al.*, 2005; Thomsen, 2005). For these reasons, and mortality being a major problem, livestock keepers are often eager to have their animals vaccinated, but only against diseases they regard as a problem (e.g. Farooq *et al.*, 2000). Priority setting and participatory epidemiology techniques can make valuable contributions to obtaining this kind of information.

Helping keepers of traditional breeds to raise awareness of the importance of their breeds and to make them known through information materials, exhibitions and other public-relations measures can motivate new keepers to "adopt" such breeds.

PHOTO CREDIT: BEATE MILERSKI, GEH

Schwäbisch-Hällische pig has experienced a remarkable comeback in Germany, thanks to an active breeders' organization

INSTITUTIONAL SUPPORT

In the developed world, numerous endangered breeds have been brought back from the brink of extinction by timely intervention. Examples include the breeds "adopted" by non-governmental organizations such as Rare Breeds International, SAVE Foundation and national rare breed societies. The efforts and enthusiasm of a few dedicated breeders seem to be essential in the initial stages. In the long run, however, breed and breeders' associations are important tools for achieving the critical mass needed to conserve a breed. It helps if a breed has commercial potential. In the United States of America, for example, the survival of Randall cattle is the result of the efforts of a few individuals. When the number of animals and breeders increased, a breed association was formed. This, and the potential of the breed for low-input dairy and beef production, stimulated demand for the Randall and helped assure a market (Sponenberg *et al.*, 2007).

Breed associations for local breeds are rare in developing countries. Few examples are reported, mainly from South Africa. There, the Nguni Breeders' Cattle Society (Scholtz and Ramsay, 2007) has helped to preserve the Nguni breed. Key to this success was an emphasis on making the breed competitive rather than striving for uniformity and breed standards. Furthermore, in order to involve emerging communal farmers as stud breeders, the society developed a special recording scheme allowing registration of animals in the absence of written pedigree records. Another engaged South African association is the Damara Sheep Breeders' Society of South Africa (Du Toit, 2007).

PHOTO CREDIT: ILSE KÖHLER-ROLLEFSON

The Damara sheep were originally developed by the Himba pastoralists, but are now popular with farmers in South Africa

ECONOMIC INCENTIVES

Economic incentives will be necessary to promote the survival of many endangered and declining local breeds. Livestock keepers are likely to engage in conservation only if their efforts are rewarded. These rewards may include ensuring access to markets, creation of new and niche markets, and payments to livestock keepers for services, including subsidies for maintaining breeds.

Access to markets

Livestock keepers will invest in breeding animals for particular products (milk, meat, draught) only if markets for these are assured. Yet such markets are often far from certain. In many areas, security problems, corruption, quarantine restrictions, lack of roads and transport, inadequate communications infrastructure, and a lack of physical market facilities hamper trade and make regular supply of live animals and products difficult. There is also a lack of market institutions for livestock: animals are sold without being weighed; market information is scanty; quality grading is lacking; and there are few services such as extension and health services that might improve the quality of the marketed produce (Williams *et al*., 2003; KIT and IIRR 2008). Overcoming these problems would make it easier and more profitable for livestock keepers to market their animals and the products and services they provide.

Promoting niche markets

A promising avenue is to develop niche markets for specialty products from local breeds. It is often the production system associated with the breeds, rather than the breed itself, that results in higher prices (CR AnGR Bulgaria, 2004). Not only the genetic characteristics of traditional breeds contribute to the taste and structure of the meat, but also the vegetation consumed, a slow extensive production system, or special processing (Kuit and van der Meulen, 1999; Rook *et al*., 2004).

In Brazil, the Criollo Lanado sheep produces naturally coloured wool for which the industry pays a very low price. But when peasants were trained in spinning and weaving this type of wool, demand for it increased, and consequently the number of flocks rose (EMBRAPA, 2003). In Argentina, ponchos made from Linca wool can obtain prime prices (Cardinaletti *et al*., 2008). In India, designers created attractive items using black wool from the Deccani sheep; demand for these items is strong in Japan (Gopikrishna, 2008). In Rajasthan, Raika herders are exploring the possibility of marketing milk from their camels. Not traditionally sold, camel milk is proving a hit: it has anti-diabetic properties, and can be used to make tea, ice cream, sweets and other products. LPPS, a local non-governmental organization, has persuaded the Indian Government to permit camel milk to be sold, opening the way to commercialization of this product (Köhler-Rollefson *et al*., 2008). Awareness of the business potential of camel milk resulted in a steep rise in the prices of female camels within a short time span and put a stop to the sale of these animals for slaughter.

Payment for biodiversity and landscape maintenance

In Europe, it has become common for governments to pay livestock holders to herd their animals in certain areas so as to conserve the cultural landscape (see the section on *Agro-ecosystem services*). This has twin benefits: it conserves not only the landscape, but also the breed used to graze it. Because local breeds are well-adapted to local conditions, it makes sense to use these breeds rather than exotic ones. The payment for these services can make the difference between profit and loss for low-input production systems.

The European Union has also been supporting farmers to maintain breeds that are recognized as being endangered. Experience showed that such payments can halt breed loss. But because payments continued only as long as a breed's population was below a certain threshold size, they turned out to be a barrier to population growth. More recent European Union support aims to avoid this trap by promoting added values for rare breeds (Woolliams *et al*., 2008). However, breeds with limited market potential may continue to need financial and other support in the future (e.g. Brito *et al*., 2005).

SUPPORTIVE POLICIES

Policies need to provide a level-playing field for smallholder farmers and pastoralists: for example, through supporting the integrity of common property, guaranteeing livestock keepers' access to grazing land and water, and facilitating the provision of appropriate services and infrastructure to these keepers (e.g. Gupta, 1996). Livestock keepers themselves are in the best position to point out what regulations and policies can help them to continue maintaining threatened breeds.

Smallholder farmers and pastoralists are rarely represented in national and international decision-making bodies and can voice their concerns only with the help of outsiders. But as they are guardians of the breeds to be conserved, it is crucial these livestock keepers be given a voice in policy-making.

PHOTO CREDIT: GUADALUPE RODRIGUEZ

Tzotzil sheperdesses in Mexico breed and take care of their black sheep breed