

What Makes Livestock Conservation So Different from Plant Conservation?

GENEBANKS

In the area of genebanks, it appears that developed countries perceive the value of conserving their plant genetic resources while developing countries do not yet appreciate the value of conserving their livestock genetic resources. Establishing a genebank for animals involves long-term storage of semen, embryos or tissues in liquid nitrogen. Costs to collect, cryoconserve and subsequently reconstitute animal germplasm are many times greater per preserved genome than costs to collect, store and subsequently use seeds. Perhaps for that reason, we have no initiative for livestock germplasm comparable to the Global Trust Fund for preserving plant germplasm. And while Norway is completing construction of a seed vault carved out of solid rock inside a mountain in the Arctic as a 'fail-safe' back-up facility for plant genebanks around the world—a vault that will open in 2008 and help ensure a secure and reliable supply of genes of plants, including all of our major crop species, into the distant future—the global community has been much less prepared to make the investments needed to safeguard its livestock heritage. This despite the fact that it generally takes much longer to create a livestock breed than to create a plant variety—for some breeds it has taken centuries—and that it is clearly a global responsibility to ensure that all key resources for food and agriculture are maintained.

WILD ANCESTORS

With the exception of the wild boar (*Sus scrofa*), the ancestors and wild relatives of major livestock species are either extinct or highly endangered as a result of hunting, changes to their habitats, and in the case of the wild red jungle fowl, intensive cross-breeding with the domestic counterpart. In these species, domestic livestock are the only depositories of the now largely vanished diversity of the wild ancestors. This is a major difference from crop species, in many of which the wild ancestors are commonly found at the centres of origin and represent an important source of variation and adaptive traits for future breeding programs.

GENE FLOWS

In contrast to plant genetic resources, where genes have moved largely from South to North as industrialized countries search for disease-resistance and adaptive traits to be incorporated into new plant varieties, movements of livestock germplasm from South to North have been rare in the past century. Over the last four to five decades, gene flows via both live animals and their semen or embryos have accelerated from North to South, propelled by globalization and the commercialization of animal breeding.

PUBLIC AWARENESS

Whereas public awareness of the significance of conserving the world's plant and wild animal genetic resources is fairly high, awareness of the need to conserve livestock genetic diversity at the policy level tends to be low. One result is grossly inadequate characterization of local breeds. A second is that development of livestock genetic resources is left largely to the commercial sector, which focuses on international high-performance breeds. A third is that people's use of livestock genetic diversity to secure their livelihoods and nutritional health, and the potential to improve on this traditional strategy, is largely unacknowledged in policy areas, international agendas and the work of international and non-governmental organizations.

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FARMER INVOLVEMENT

In traditional production systems, most breeding and development activities are 'participatory' in the sense that decisions regarding the seeds to save for planting and the animals to retain for breeding are made by farmers rather than professional plant and animal breeders. However, the intensification of crop agriculture has brought about institutionalized and centralized seed production sectors dominated by publicly funded firms. The animal breeding sector is far less centralized and institutionalized and direct involvement of farmers in animal breeding remains substantial.

INSTITUTIONAL CAPACITY

Perhaps the most significant difference between the crop and livestock sectors involves institutional capacity for genetic resource management. Many institutions in the seed sector already maintain extensive collections of plant genetic resources and actively contribute to the development and release of plant varieties. Institutional capacity for the conservation of livestock genetic diversity is limited, with only a few national *ex situ* collections existing, mainly in developed countries. It therefore appears we shall have to substantively enhance global capacity for conservation and better use of these resources, as well as promote new institutional models and collaboration among public institutions and between public institutions and private farmers.