



## STATE OF THE WORLD 2011 Innovations that Nourish the Planet



### State of the World Brief Series

## Chapter 14. Improving Food Production from Livestock

### Key Messages

- The world's poor face unprecedented challenges in maintaining livestock food systems that meet their changing nutritional, economic, and environmental needs.
- Innovations in livestock feed and disease control, as well as climate change adaptation strategies, are improving the quality of livestock food systems.
- Improved yields and efficiency are bringing higher incomes to livestock keepers and making the expansion of animal-source food production more sustainable.

### The Problem

Livestock herders, as well as small-scale farmers who mix crop production with raising livestock, are facing unprecedented challenges. Over the next 25 years, the developing world will demand more and more animal-source foods, including milk, meat, and eggs. Already, up to 1 billion people worldwide rely on farm animals for their livelihoods. Meanwhile, water scarcity, climate change, and new technologies are likely to significantly alter small-scale farming systems.

More than 70 percent of emerging diseases are transmissible between people and livestock, and the increasing occurrence of animal disease in tropical countries is hindering trade in animals and animal products. Human incursions into relatively virgin ecosystems are helping pathogens encounter new hosts, and changes in climate are helping to spread the range of diseases.

### Innovations/Solutions

A variety of mechanisms are helping livestock keepers in the developing world to cope with current and emerging challenges and to meet rising demand.



(Bernard Pollack)

Examples of Innovation Include:

**Better feeding strategies.** Researchers are developing livestock diets that are more energy rich and that support higher levels of milk and meat production. Feed crops and feed blocks produced from crop residues and agro-industrial byproducts are becoming more widely available. In western Ethiopia, women have increased the productivity of their small animals by setting up and running sheep-fattening cycles, since larger numbers of healthier animals fetch higher prices. In India, farmers are trying to improve the quality of their feed—for example by using grass, sorghum stover, and brans—to produce more milk from fewer animals.

**Healthier animals.** Integrated animal-disease control has succeeded in places where the scale and profitability of farming justify high managerial and technical inputs. The development of teams of community-based animal health workers is a promising innovation in many poor livestock-keeping communities. DIVA vaccines allow disease control officers to differentiate infected from vaccinated animals, and traditional knowledge has improved disease surveillance. Somali and Maasai herders in East Africa are now accurately recognizing symptoms of Rift Valley fever, such as high abortion rates.

Table 14–1. Livestock, Livelihoods, and the Environment

Sector or Resource	Contribution or Impact
Production	Developing countries produce 50 percent of the world’s beef, 41 percent of the milk, 72 percent of the lamb, 59 percent of the pork, and 53 percent of the poultry. Mixed crop/livestock systems also produce close to 50 percent of the global cereal. Growth in the industrial pig and poultry sectors will account for 70 percent of production in South America and Asia. These systems will create the need for more grain as feed (which will account for more than 40 percent of global cereal use in 2050).
Value of production	Milk has the highest value of production of all commodities globally. Apart from rice (which is second), meat from cattle, pigs, and poultry is next in order of importance. In the least developed countries, the industry has around \$1.4 trillion in livestock assets, excluding the value of infrastructure or land.
Greenhouse gases (GHGs)	Livestock contribute 18 percent of global GHG emissions (25–30 percent of the methane and the nitrous oxide and 30–35 percent of the carbon dioxide).
Carbon sequestration	Due to the area occupied, rangelands can be a global sink of a roughly similar size to forests. However, there is a real need to research how this large potential can be tapped through technologies and policies.
Water	Some 31 percent of global water use for agriculture goes to livestock, but with projected demand for livestock products, agricultural water use may need to double due to the increased need for feed production. Rangelands could be the source of significant regional increases in water productivity.
Nutrients	Globally, manure contributes 14 percent of the nitrogen, 25 percent of the phosphorus, and 40 percent of the potassium of nutrient inputs to agricultural soils.
Deforestation	Extensive cattle enterprises have been responsible for 65–80 percent of the deforestation of the Amazon. Some 400,000–600,000 hectares of forest a year are also cleared for growing crops, like soybeans, mostly to feed pigs and poultry in industrial systems and to provide a high protein source for concentrates of dairy cattle. However, this is changing due to enforcement and incentives by the Brazilian government for farmers and the retail sector.

Source: Herrero et al.

**Coping with climate change.** To adapt to the effects of climate change, such as drought or floods, some farmers and livestock keepers are using seasonal weather forecasts to help plan their agricultural cycles. Thousands of herders in Kenya’s arid and drought-stricken north can now purchase insurance policies for their livestock, based on a new program that anticipates, through satellite imagery of grass and other vegetation, whether drought will put their animals at risk of starvation. Payments to livestock herders and others for environmental services—such as maintaining populations of wild animals and other forms of biodiversity, or storing

carbon—represent major opportunities to help poor households diversify their livelihoods and increase their income.

### Looking Ahead

The speed of global changes in human demographics, resource use, technology, public perceptions, and other factors means that food production systems, including livestock, will inevitably change as well. As demand for high-value livestock products increases, feed crop production will become more economical; better methods of processing and conserving feeds will be developed; and greater movements of feed from rural to urban producers will occur. Farmers now have access to better cows, feeds, and vet services, which along with national policy support are enabling incomes, food provision, and informal milk markets to flourish.

Good examples exist around the world of creative ways to adapt to the pace of these changes in a sustainable manner. Technical and institutional changes in the non-livestock agriculture sector will reduce people’s reliance on livestock for their subsistence. Stronger financial institutions will reduce the need for pastoralists to store their capital in livestock. Greater access to inorganic fertilizers could reduce the need for farmyard manure, and thus the number of animals on farms. And improvements in roads, mobile phone connections, and other rural infrastructure will bring markets closer to producers.