

## LIVESTOCK IN THE SAHEL AND WEST AFRICA

### Science and Technology: Responding to Future Challenges in the Livestock Sector

#### The role of science and technology in promoting the regional livestock sector

Research in West Africa has resulted in major advances in animal health. Most of the increased production of animal products in the Sahel and West African (SWA) countries is due to a steady increase in the number of animals (to meet the growing demand for animal products) but is ever more hampered by:

- ▶ Less total pastoral area due to expanding cultivation;
- ▶ Degradation of natural resources because of excessive use of forests, over-grazing and climate change;
- ▶ Population growth and heavy demand for land for cultivation.

Low livestock reproduction and productivity in SWA countries are due to a range of genetic, physiological, environmental and livestock management factors. Science and technology have an important part to play in promoting the livestock sector and can influence all the factors affecting animal productivity. Research has resulted in improved technology but the region's productivity is still low compared with developed countries. Cattle productivity by weight in West Africa in 2000 was estimated at 16 kg per carcass/animal a year, compared with 90 kg in France. The main obstacles for breeders using this improved technology are:

- ▶ Access to technology is difficult due to the inadequacy and inefficiency of extension and dissemination systems, especially for livestock breeders in areas far from research centres, which increases the cost of acquiring technology.

#### Science and technology must meet a number of challenges

1. Increase livestock productivity. For example, how to increase the capacity of the animal's rumen to digest cellulose-rich fodder? This innovation would enable the optimal use of large quantities of low-quality fodder (such as vegetal waste and natural pasture fodder) found in sub-humid and semi-arid areas of the SWA.
2. Improve animal product quality by complying with SPS norms.
3. Improve market access and competitiveness of products.



### Examples of scientific and technological contributions which improve productivity

#### Milk production

Use of good local milk-producing breeds such as the Azawak zebu (Niger) or crossing local breeds with exotic ones has helped increase milk yields from 1-2 litres per cow per day to 8-10.

#### Cattle meat

With selection and the addition of enzymes to feed, the food conversion rate in pigs and poultry has increased by 30-50%.

- ▶ Some technology, though very productive, is unsuitable to producers' life-style and social and economic environment.
- ▶ Research systems cope poorly with production and processing challenges for numerous reasons: institutional inefficiency, lack of long-term funding facilities, etc.
- ▶ The credit system is inadequate and unsuitable, making it impossible for some livestock breeders (who are capable of using better technology) to obtain it for lack of capital.
- ▶ Problems of access to profitable markets for meat products do not encourage significant investment in innovation.

## Lack of sovereignty in science and technology

### Low funding of livestock research

The lack of resources allocated to scientific research hinders development of technology to meet the needs of the range of livestock farming systems and the breeders themselves (Table 1). Sub-Saharan Africa spent \$0.72 on research for every \$100 of agricultural GDP in 2000, compared with \$0.80 worldwide and \$2.36 in developed countries.

This general lack of funding is aggravated by the small contribution of the private sector. Of the \$315 million invested in research in West Africa, Nigeria accounts for \$106 million and all other countries for \$211.1 million. Of this money, 99.1% is from the government and only 0.9% from the private sector.

### Scientific capacity insufficient for future challenges and issues

Strengthening capacities and human resources in research are vital to the future of the livestock sector, yet little attention is paid to research policy. This is a major concern because it causes a big shortage of skills in key domains that

**Table 1 – Funding allocation by research domain (2000)**

Domain	West Africa <sup>1</sup>	Southern Africa	East Africa
Total funding (millions of international dollars)	315.3	427.9	341.4
Crops (%)	45.3	49.5	43.0
Livestock (%)	17.5	20.7	22.0
Natural resources (%)	7.1	10.9	9.5
Forestry (%)	6.9	3.2	7.6
Social economy (%)	6.9	2.9	5.5
Fishing (%)	6.6	3.1	5.2
Post harvest (%)	6.1	6.4	2.6
Others (%)	3.0	3.3	4.6

<sup>1</sup> Burkina Faso, Côte d'Ivoire, Gabon, the Gambia, Ghana, Guinea, Mali, Mauritania, Niger, Nigeria, Senegal and Togo.

Source: [www.asti.cgiar.org/pubs-africa.htm](http://www.asti.cgiar.org/pubs-africa.htm)



**Table 2 – Human resource allocation by research domain**

Domain	Burkina Faso (Sahel)		Ghana (coastal country)		Nigeria	
	FTE <sup>1</sup>	%	FTE	%	FTE	%
Crop production	43,8	21,39	202,3	45,78	406,4	36,67
Animal production	32,2	15,72	37,8	8,55	220,8	19,92
Soil and water	46,6	22,75	50,4	11,41	64,1	5,78
Other natural resources	20,1	9,81	6,1	1,38	29,9	2,69
Post harvest	4,6	2,25	45,2	10,23	132,1	11,92
Others	57,5	28,08	100,1	22,65	255,1	23,02
Total	204,8	100	441,9	100	1108,4	100

1. FTE = Full-time equivalent

Source: [www.asti.cgiar.org/pubs-africa.htm](http://www.asti.cgiar.org/pubs-africa.htm)

enable better understanding of problems, discovery of hidden potential, speedy removal of obstacles to improving production, and tackling new problems of disease arising from intensive production and issues concerning food safety.

Disciplines poorly represented in the region as a whole and in individual countries are:

- ▶ Molecular biology
- ▶ Genomics
- ▶ Biotechnology
- ▶ Bioinformatics
- ▶ Social and economic sciences

There are also few livestock experts in national research facilities (Table 2).

### Low regional scientific capacity

Insufficient capacity to identify diseases such as bird flu is a good example of the situation.

A recent survey of laboratories in the ECOWAS region monitoring the quality of veterinary medicines (VM) (J. Boisseau, July 2005) showed that:


- ▶ Not all member-countries have a laboratory equipped to monitor the quality of VMs.
- ▶ Only seven laboratories are able to monitor the quality of veterinary pharmaceutical products.
- ▶ Only two laboratories can monitor the quality of animal vaccines.
- ▶ Consequently, a network is needed to initially link these nine laboratories.

**What policies to adopt in order to strengthen the contribution of science and technology the promotion of animal sectors in the SWA?**

#### National level

1. Define and implement coherent training policies, focusing on human resources in domains that are lacking but necessary to improve animal productivity and product quality. Institutional and administrative surveys of trends in the livestock industry can be used as a basis of such training policies.
  - ▶ Revise/adapt training courses at centres and universities to take account of users' requests and the livestock sector's priorities.
  - ▶ Provide training grants in under-represented domains to attract students.



- 
2. Develop and implement coherent recruitment and career-advancement policies.
  3. Introduce Research and Development (R&D) programmes for the main production systems for which a country has comparative advantages so as to better target the main ways to boost scientific capacity.
  4. Encourage links between R&D and users of technology.
  5. Promote sustainable public and private financing mechanisms of R&D in the livestock sector.

#### **Regional level**

1. Strengthen regional cooperation in livestock sector R&D.
  - ▶ Create/strengthen quality-control veterinary labs according to comparative technological advantages and encourage specialisation.
  - ▶ Strengthen regional livestock R&D centres (CIRDES, ICT) by focusing on their specialisation and complementarities, promote regional integration and avoid duplication.
2. Promote the growth of R&D networks on strategic regional aspects of livestock (pastoralism, trade policies, sector policies, processing and product quality).
  - ▶ Strengthen competitive funding in regional livestock R&D.

Photos: Jean S. Zoundi. World Bank;  
Curt Carnemark ; UNESCO: Dominique Roger.

April 2007 – Layo J. Marie Moncet

**For more details, please refer to the complete document:  
“The Future of Livestock in the Sahel and West Africa: Potentials  
and Challenges for Strengthening the Regional Market”,  
available on SWAC website: [www.oecd.org/sah](http://www.oecd.org/sah)**



#### **SWAC/OECD**

2 rue André Pascal – 75775 Paris Cedex 16 – France  
Tel.: +33 (0)1 45 24 19 82 – Fax: +33 (0)1 45 24 90 31  
Website: [www.oecd.org/sah](http://www.oecd.org/sah)  
Contact: [SibiriJean.ZOUNDI@oecd.org](mailto:SibiriJean.ZOUNDI@oecd.org)