Recognising that complex challenges within livestock science require an interdisciplinary approach, Iain Wright, Director of ILRI, describes the importance of investing in ‘upstream’ and applied research to increase food security and reduce poverty.

With over 30 years’ experience in conducting and managing R&D, how does your background assist in your current roles?

My first degree was in Agriculture and I have always been glad I studied this field! Agriculture covers both biological and socioeconomic disciplines and so, in addition to biology, I have an understanding of economics, farming systems and business management. I later moved into research management, which equipped me with the skills to build and manage multidisciplinary teams. I have always been interested in livestock, having been brought up on a mixed crop-livestock farm in Scotland. It was therefore natural that my PhD was in Livestock Nutrition, and my early research career focused on beef cattle nutrition in Scotland.

My research interests have continually evolved. Initially I investigated the effects of nutrition on cattle reproduction, including basic research on how nutrition affects reproductive endocrinology, grazing systems and their effect on biodiversity, and the ways in which policy influences livestock systems. In the early 1990s I started collaborating with researchers across Europe, which gave me a broader understanding of European livestock and farming systems, and from 1997 I worked on research projects in Central and South Asia.

Is there a memory from this time that particularly stands out?

One of the defining moments of my career was my first visit to Central Asia where I worked on a UK-funded research project in Kazakhstan and Kyrgyzstan. The Soviet Union had recently broken up and the Central Asia Republics had become independent. I was brought into the project as the ‘livestock expert’ but soon realised that my technical livestock expertise was not relevant. The immediate research challenges were economic, social and political, caused by the dramatic, simultaneous collapse of these systems.

This highlighted the importance of setting research in a sociopolitical context and the need for an interdisciplinary approach to solve the complex problems of agricultural research for development. Over the years I have worked in Europe, Asia and Africa, managing a number of multidisciplinary research teams. I was also the Business Development Manager of a research institute in the UK and CEO of a small consultancy company, from which I gained business skills I find very useful as a research manager.

How do you effectively balance your time across your different positions?

This can be a challenge! As a director and member of the senior management team, I spend about 20 per cent of my time on institutional issues. Another 20 per cent is devoted to representing the International Livestock Research Institute (ILRI) in Ethiopia and to heading our campus in its capital, Addis Ababa, which has over 200 staff. Finally, about 60 per cent of my time is dedicated to leading the Animal Science for Sustainable Productivity programme, which counts 110 staff and has an annual budget of US $17 million.

Therefore, I have to prioritise how I divide my time and try to deal only with things that require my attention. I don’t micro-manage and I delegate authority and responsibility to the lowest level possible.

What are the priority research areas at ILRI, and to what extent do you help coordinate associated actions?

The priority for ILRI’s research is to maximise livestock productivity to increase food security and reduce poverty in a way that does not harm the environment or human health. We need to invest more in what we call ‘upstream research’. This means harnessing the power of new biosciences such as genomics, immunology, vaccinology, etc. to develop novel approaches that improve animal health, breeding and genetics, and carrying out applied biological and socioeconomic research. As the manager of an applied research programme working on animal health, breeding and feeding and livestock systems, I play a key role in ensuring that the links between the upstream and applied research are in place, and that scientists from different fields work together.

Could you describe the negative impacts of livestock on the environment?

There is a lot of negative press about livestock, but much of the criticism is the result of gross generalisations. Many argue that we should stop raising livestock because they harm the environment. Yet people don’t argue in the same way about banning cars. The answer is to reduce the environmental impact of livestock by making their systems more efficient, in the same way as car manufacturers are making their vehicles more efficient. There are certainly negative environmental impacts of livestock, from intense water use to the emission of greenhouse gases, but not all livestock systems are the same. If, for example, we removed all livestock from the rangelands...

Applied research helps to:

- Enhance understanding of the livestock systems that need improving
- Tailor new approaches to different systems and contexts to understand what is likely to work where, when and how
- Ensure that the interactions of livestock with the environment and human health are taken into account
- Improve understanding of livestock-social interactions, such as gender implications
of the world, which cover almost one-third of the land surface, recent research suggests that greenhouse gas emissions from other species, including insects, would replace that produced from livestock. So when people say livestock harm the environment, we have to ask the question: compared to what?

We are also obtaining new data to suggest that the ability of rangelands to capture carbon may in fact be greater than the emissions from these systems. If we did remove livestock from the rangelands we would also plunge millions of people into poverty and probably starvation.

How can the system be made more efficient?

One key way to reduce the environmental footprint of livestock is to increase productivity per animal through better feeding, breeding and health. The higher the level of productivity per animal (i.e. greater yield) the lower the environmental impact per kilogram of meat or milk produced and the same amount of product can be produced from fewer animals. This is a key element of reducing the negative impacts of livestock. It also increases global food supply and income for farmers.

ILRI’s 2013-22 strategy aims to provide livestock research for improved food security and poverty reduction. Does it differ from previous initiatives?

The strategy is an evolution of what ILRI has been doing for many years. One of the main differences from our previous initiatives is that our 2013-22 strategy explicitly commits ILRI to influencing decision makers – from farms to boardrooms and parliaments. By this we mean we will provide compelling scientific evidence that smarter policies and bigger livestock investments can deliver significant socioeconomic, health and environmental dividends to poor nations and households.

With whom are you collaborating, both nationally and internationally, to conduct your research?

We collaborate with many different partners. We work with research institutes and universities in developed countries, tapping into cutting-edge research areas such as animal genetics. We work very closely with our sister CGIAR (formerly the Consultative Group on International Agricultural Research) Centres though the CGIAR Research Programs (CRPs) and with national research institutes and universities in the 20+ countries in which we work.

Over the past five years, we have been working more closely with development organisations such as NGOs and government ministries and agencies for a number of reasons. Firstly, it provides a route through which our research findings can be taken up by a much wider group of organisations and reach large numbers of farmers and others involved in the livestock sector. Secondly, this collaboration helps us to focus on problems that are important on the ground, and we can work with our R&D partners to co-develop solutions. We will need to work more closely with the private sector in the future as it is becoming more important in

Early successes

Three examples of achievements based on ILRI’s research:

New policies in Kenya regulate the activities of approximately 30,000 small-scale milk vendors who formerly operated illegally due to concerns over safety of the unpasteurised milk that they supply. The revised policy allows these traders to operate more efficiently, at a larger scale, and thus significantly reduces transaction costs. Estimates of annual benefits to the Kenyan economy are approximately US $33.5 million, with nearly half of that accruing to producers, many of whom are women.

New varieties of crops have been bred not only for increased grain yield but also for improved nutritive value of the crop residues (straw and stover) that are fed to animals. For example, new varieties of sorghum and groundnut have been released in India that lead to improved animal performance when the crop residues are fed to livestock, without affecting grain yield.

ILRI’s research on the impact of classical swine fever, especially in North East India, provided evidence resulting in the Government of India declaring a national programme for the control of the disease.
delivering inputs and services to livestock keepers in developing countries and in the marketing of higher volumes of animal products.

Where do you foresee the next developments occurring?

The livestock sector offers significant opportunities for applying new bioscience technologies to help solve the challenges of increasing food production. For example, new approaches are being developed for the production of vaccines for diseases that kill animals or reduce production by their millions, and there may be ways of altering the genetic makeup of animals without using genetic modification techniques.

However, these technologies will not be of benefit unless we understand where and how they can be applied and so we will continue to invest in research on understanding the livestock systems we are targeting and on the delivery mechanisms through which they can reach farmers (though national extension systems, development programmes and the private sector). Training and capacity building will be a key element. We need to ensure that we increase agricultural productivity in a way that is sustainable from environmental and socioeconomic perspectives.

Further to this, what are your hopes for the future of your research?

The past three to four years have seen a resurgence in political interest in agricultural R&D, prompted by the food crisis in 2008 when the price of many food commodities significantly increased and there was political disturbance in some countries. Global leaders suddenly realised that food security could not be taken for granted and that there had been gross underinvestment in agricultural development for the previous 20 years. We have now seen a large increase in agricultural spending – the CGIAR annual budget has grown from $500 million to $1 billion – which is critical to feeding a global population that will have reached over 9 billion people by 2050. I hope the political commitment to support this effort will persist.

I have always been an applied scientist and it is important to me that the results of research have impact on the ground. This was as true when I was a young postdoctoral scientist in Scotland as it is today. I am proud of the fact that some of my research in the 1980s on beef cow nutrition formed the basis for much of the material that was produced by the advisory services in the UK. I hope that the research we carry out in ILRI today and in years to come will improve the lives of poor livestock keepers in developing countries. We not only owe it to the taxpayers in the West who fund our research but, more importantly, to the millions of poor people who depend on livestock for their livelihoods.

**Dates for the diary**

This year ILRI will be celebrating 40 years of livestock research. It has a number of events planned and will also contribute to existing events

- ILRI will be holding a side event at the World Food Day event in Ames, Iowa in October
- The Institute will be organising special sessions at the All Africa Conference on Animal Agriculture in Nairobi in October
- It is planning a number of promotional events at its regional and country offices, culminating in a high profile two-day event in Addis Ababa in November