

DFID ANIMAL HEALTH PROGRAMME

SAVING LIVES ~ SECURING LIVELIHOODS

Animal Health Research funded by DFID and its predecessors has been committed to alleviating poverty for decades and has been a key player in major research breakthroughs which have secured the livelihoods and saved lives of livestock keepers in Africa and Asia. Since 1995 the DFID Animal Health Programme (AHP) together with the other DFID Research programmes, in particular with the Livestock Production Programme (LPP), has been implementing research whose outputs will directly impact on the lives of poor livestock keepers. This period has seen a transformation in the type of research undertaken, which has been made possible by the willingness of the tropical livestock disease research community to reorient and redirect its efforts. The poor are now targeted even more explicitly than before and research also focuses on initiatives that will yield fruit within a shorter period of time so as to be able to achieve impact relatively rapidly, working towards the Millennium Development Goals.

The time lag between a research breakthrough and widespread impact can be several decades. Looking back beyond 1995, the last decades have seen some major achievements spearheaded by British scientists funded by DFID. A selection of these is illustrated on the AHP timeline on page 6.

The period which elapses before major impact occurs can be quite long. Rinderpest, the virulent epidemic disease that is estimated to have killed 90% of Africa's cattle in the 1890s, is expected to be eradicated by 2010. However, the first step towards this was taken at the end of the 1950s with the development of a vaccine by British scientists in Kenya, which enabled the disease to be very effectively controlled during the 1960s and early 1970s due to mass vaccination campaigns. As Africa's veterinary services declined, the disease reappeared in the 1980s and an eradication campaign was started using a new heat-stabilised vaccine, funded predominantly by the EU and hosted at FAO. Recently the AHP has contributed towards this goal by funding the development of a diagnostic kit and a marked vaccine which makes it possible to differentiate between vaccinated and infected animals, a vital distinction in the final stages of an eradication campaign. Another project with a long gestation period was the development of a vaccine for a major worldwide tick-borne disease, tropical theileriosis. This was developed largely by DFID-funded scientists and is now widely used across the tropics from Morocco to China. Supported by DFID's Rural Livelihoods Department, since 2001 the AHP has funded a project to develop a vaccine for the

serious tick borne disease, East Coast Fever.



Threatened by diseases carried by their livestock: Maasai pastoralist children caring for the family goats in Tanzania, in an area where brucellosis and tuberculosis are endemic.

Recent successes.

Since 1995, DFID-funded science has also been at the forefront of new techniques to control tsetse flies in the African continent, in particular in the development of environmentally friendly techniques that can be used by farmers. Recent work promises massive cost reductions, making tsetse control accessible to the poor – this is described on page 3 below. Lastly, since 1995 AHP has invested some 15% of its core budget on work aimed at improving human health, as discussed on the next page.



SAVING LIVES

Developing new methods for controlling deadly diseases transmitted to poor people by their livestock



AHP research combines three key elements: researchers studying disease with epidemiological studies on livestock and on people, thus influencing policy and leading to appropriate measures for disease control in the livestock reservoirs so as to prevent people becoming infected.

Photos: Clockwise from top: scientists working in the DFID-equipped veterinary laboratory at Sokoine University of Agriculture in Tanzania, girl with sleeping sickness and cattle which are carriers of this disease in Uganda.

Poor people inevitably suffer more health problems, linked to poor nutrition, risky work, difficulty in reaching medical services and lack of money to pay for them. Their animals are also likely to be less healthy; poor livestock keepers have few resources to purchase inputs for them, little spare labour to allocate to them and lastly often have to choose between buying medication for their family or their animals. They have poor access to veterinary services and to animal health knowledge. There is a group of little publicised, but ubiquitous, diseases which combine both these effects, killing and maiming both poor people and their livestock. These are the 'zoonotic' diseases, which can be transmitted from animals to people. The best known and most feared is rabies, some others are bovine tuberculosis, brucellosis, sleeping sickness and various tapeworms. AHP research has provided evidence of the way these diseases both target the poor and ensure that it is the poor who are least likely to be diagnosed and treated, thus often dying unnecessarily of a treatable condition. Some, like bovine tuberculosis and sleeping sickness particularly affect active adults, whose death often deprives their family of its main breadwinner. In the case of rabies, it is mainly children who die. All these three diseases are fatal if not treated correctly and promptly, treatment is expensive, so it is the poor who die. Some other zoonotic diseases are less dramatic in their effects; they tend to cause debilitating illness and are also often incorrectly diagnosed and left untreated. Examples are brucellosis, which in the tropics is usually confused with malaria and illnesses of varying severity caused by tapeworms. **Over the past ten years the DFID Animal Health Programme has undertaken research on all these diseases, studying their incidence, impact and risk factors for both humans and their livestock. This research has changed policy, saved lives and put these diseases on the international agenda by demonstrating that they can be particularly cost-effectively dealt with. It has also shown that these diseases particularly affect the isolated rural poor.**



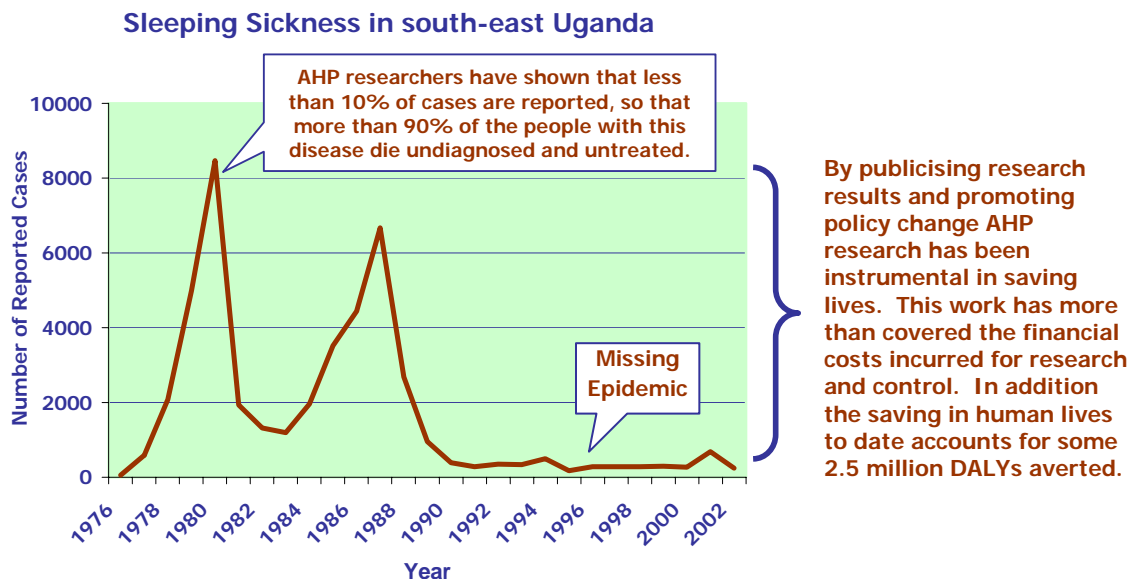
Case Study – Acute Sleeping Sickness in Southeast Uganda

“Take him home, give him some Paracetamol, your brother is dying of Slim.” Words often heard in Uganda, Tanzania, Zimbabwe... A relative scoops up an ill sibling, he is thin, his mind has been wandering and he has had uncharacteristic outbursts of rage, now he is just increasingly sleepy. It is clear to all that he is dying. They went to the local clinic three times, paid for malaria treatment twice, sold their goat to get help from the local healer and now paid to go on the bus to the hospital 57 kilometres away. The goat is now gone and no-one knows where to find the money to pay for the Paracetamol... Or how his sister who does a lot of the farming is going to prepare the land on their shamba for this year's crops if she has to care for him as he slowly slides into coma...

This story is a common one. But the patient is not dying of AIDS. He has a treatable disease, sleeping sickness, once common in colonial times and thankfully controlled, but which is now again reaching epidemic proportions in many parts of Africa. In eastern Africa, where the acute form of this disease prevails, research funded by the Animal Health Programme has demonstrated that cattle are the main source of infection, proving that more than 80% of cattle are infected. The drugs to treat the disease are toxic, the best way to control it is by injecting cattle with a drug that prevents the disease. By the mid-1990s AHP researchers had convinced the government of Uganda to implement a policy of treating cattle in areas at risk and around new outbreaks of the disease in people. The approach has since been refined to specifically treat cattle coming into new areas and bringing the disease with them. Recent AHP-funded research has also contributed two key elements to the fight against this disease and advocacy for its control;

- the first evidence-based estimate of the burden of the disease, measured in disability-adjusted life years (DALYs) lost due to a disease which is the standard used in human health to quantify the burden imposed by a disease;
- development of a method for estimating how many patients die undiagnosed for each patient found and treated; this showed that previous estimates were far too conservative, in fact for every patient found twelve, like the man described in the box above die unnecessarily, of a treatable condition, often they and their families also suffer the ignominy of their being considered AIDS patients.

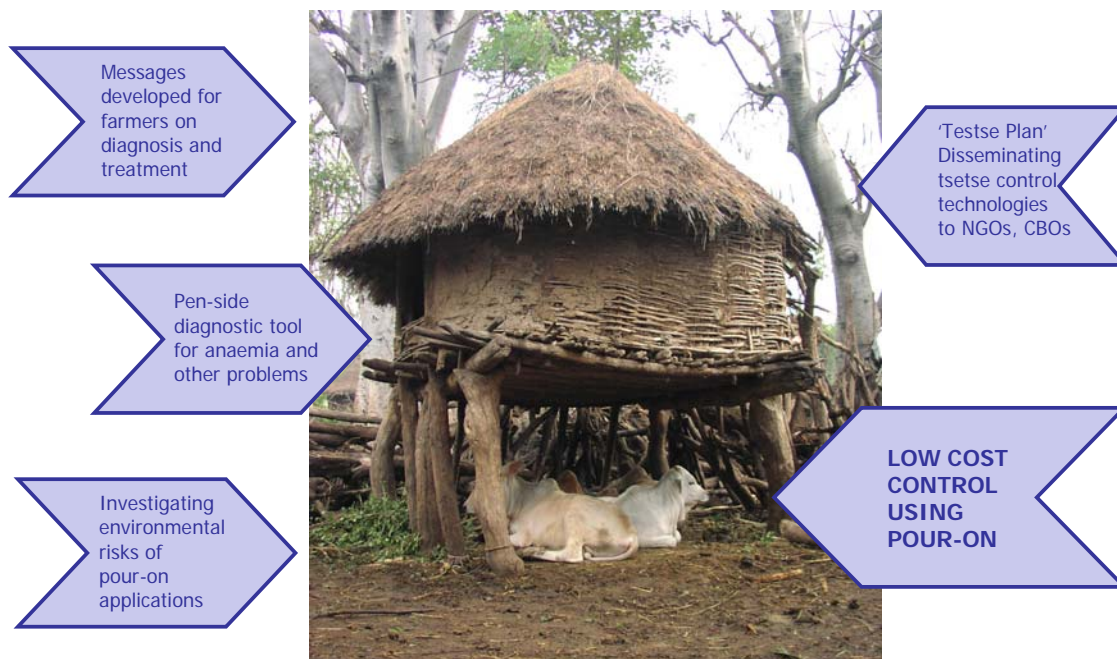
Research is also underway to estimate the financial costs to families affected by sleeping sickness. This knowledge has provided the basis for an economic analysis. As illustrated in the graph below, this work has played a major role in preventing an epidemic of the acute form of sleeping sickness in south-east Uganda.



SECURING LIVELIHOODS

Making tsetse and trypanosomiasis control accessible to the poor

Some 58 million poor livestock keepers live in the tsetse-affected areas of Africa. They have few options available to them to control or prevent trypanosomiasis – a disease which kills and debilitates, spread by blood-sucking tsetse flies that affects cattle and to a lesser extent sheep and goats. Many farmers who co-exist with tsetse simply avoid keeping cattle, thereby denying themselves access to a wide range of benefits including milk, meat, manure and draught power. Those who do keep cattle have, for close to half a century, relied on the use of a handful of drugs that can treat and prevent the disease. But after five decades of using the same products it is no surprise that drug resistance strains of the parasites have emerged. Meanwhile the capacity of many national veterinary institutions, extension services and tsetse and trypanosomiasis control departments has diminished over the last few decades. Few poor livestock keepers have access to any form of veterinary support or information, nor can they afford regular treatments or prevention for their animals, which typically cost \$1 – 2 each. The day to day responsibility for the control of tsetse and trypanosomiasis has therefore increasingly fallen on individual farmers, community based groups (CBOs) and non-governmental organisations (NGOs). Fortunately several DFID Animal Health Programme (AHP) funded research projects have addressed the problems facing these groups and significant advances have recently been made which will make tsetse and trypanosomiasis control easier, safer and more accessible and affordable.



AHP-funded research projects working towards helping poor farmers to take on the burden of tsetse control

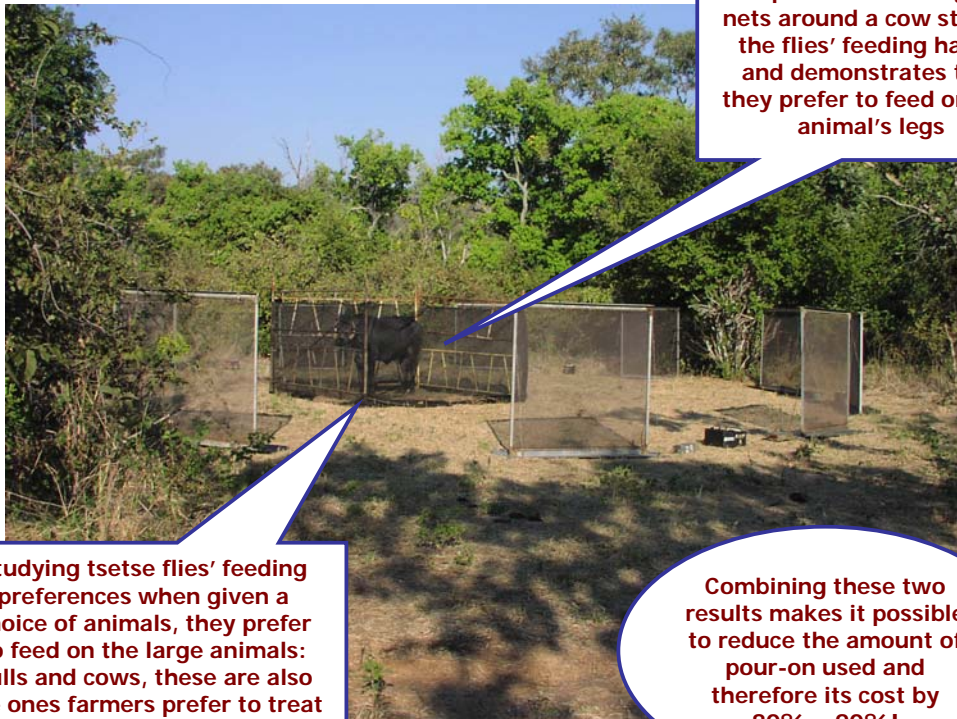
Photo: Draught oxen in Ethiopia ~ the presence of trypanosomiasis can make them 30% less efficient so that they are not hired out and their use is restricted to those rich enough to own them

Since 1995, five AHP projects have worked on different aspects of this problem. One has studied farmers' knowledge of the disease and their access to veterinary advice and products. It has developed an information package and studied which routes are the most effective for such messages to reach the farmer, concluding that schools and the radio perform best. Trypanosomiasis is very



difficult to diagnose, another project has developed a pen-side tool to test livestock for anaemia, a major symptom. This is accompanied by a diagnostic card which enables this disease to be differentiated from others with some similar symptoms. As mentioned above, with the disappearance of veterinary and tsetse control infrastructure, control is largely left to NGOs and CBOs. Another AHP-funded project has developed an interactive computer programme, *Tsetse Plan*, which helps to overcome these deficiencies by providing virtual expert assistance in designing and implementing tsetse control operations based on these technologies as well as providing highly practical assistance such as help with budgeting, drawing up shopping-lists and accounting.

Lastly, and most importantly, two strands of research, one looking at flies' feeding habits and the other at the environmental effects of the 'pour-on' technology have come together to produce a technology which will dramatically reduce the cost of tsetse control for farmers. 'Pour-ons' are formulations of a number of different synthetic pyrethroid (SP) insecticides that can be applied to livestock. These have been commercially available for more than a decade and some of these products have been shown to be highly effective against tsetse flies as well as ticks. There have been worries about the widespread use of these, firstly that by killing ticks they prevented young animals from being sufficiently exposed to local tick-borne diseases to become adequately immunised to these and secondly that there were risks of environmental pollution to dung. But for farmers, especially poorer livestock keepers, it was their cost that was the most prohibitive aspect. Over the last three years, AHP researchers have demonstrated that since flies feed mostly on the legs and mostly on the largest animals in the herd, 'restrictive application' of these products to the legs of cows, bulls and draught animals is effective in controlling the fly. **This implies a cost reduction of 80 – 90%! An economic analysis of the use of these products in Ethiopia showed a return in higher productivity and lowered livestock mortality of 8 to 1 for farmers using pour-ons at traditional application levels. Thanks to these AHP-funded studies, this can return be increased to somewhere between 10 and 15 to 1. Furthermore, while applying pour-ons still makes demands on farmers' time, it is the crucial cash component which is dramatically reduced, thus making it a viable option for poor farmers.**



Constructing the experiment – a ring of nets around a cow studies the flies' feeding habits and demonstrates that they prefer to feed on the animal's legs

Studying tsetse flies' feeding preferences when given a choice of animals, they prefer to feed on the large animals: bulls and cows, these are also the ones farmers prefer to treat

Combining these two results makes it possible to reduce the amount of pour-on used and therefore its cost by 80% – 90%!



