



Tsetse control: the next 100 years

Report of a meeting organised by the DFID Animal Health Programme

9-10 September 2002
Edinburgh, Scotland

Healthier livestock, wealthier people

The DFID Animal Health Programme

The research strategy of the UK Government's Department for International Development (DFID) is to generate new knowledge and to promote its uptake and application to improve the livelihoods of poor people. The bilateral component of the strategy is organised as research programmes covering agriculture, forestry, livestock and fisheries, managed by institutions contracted by DFID. The Animal Health Programme is managed by the Centre for Tropical Veterinary Medicine (CTVM), University of Edinburgh, Scotland, under the leadership of Professor Ian Maudlin.

The Animal Health Programme's mission statement:

Livestock are vital to the lives and livelihoods of two-thirds of the world's rural poor – close to 700 million people. But chronic endemic diseases and zoonoses constrain livestock productivity and endanger human health, thereby contributing to the perpetuation of poverty. Bringing together veterinary, medical and social scientists from the UK, Africa and South Asia, DFID's Animal Health Programme (AHP) funds research leading to better control of these diseases. Effective dissemination and uptake of AHP research findings can enhance the livelihoods and health of poor livestock keepers.

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A CD accompanies this report. See inside back cover

Preface

In Lome, Togo, in July 2000, the Assembly of African Heads of State and Government declared ‘...the year 2001 as the year of the control of tsetse fly, to mark the beginning of renewed efforts in the campaign for the eradication of tsetse flies in Africa...’ and went on to call upon the Secretary-General of the Organisation of African Unity (OAU) ‘to undertake all necessary consultations with a view to initiating...the Pan-African Tsetse Eradication Campaign...’ (see Annex). Thus was born PATTEC and an at times ferocious debate within the international tsetse and trypanosomiasis community.

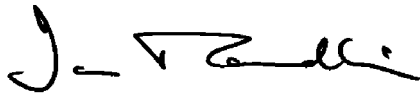
As manager of the DFID Animal Health Programme (AHP), I thought it might help if the protagonists in the debate on PATTEC could meet in an atmosphere conducive to rational and informed discussion. The response to this idea was encouraging, so the AHP went ahead to organise a meeting in Edinburgh in September 2002: ‘Tsetse control: the next 100 years’.

I believe the meeting was useful, since it allowed both the pro- and the anti-eradication arguments to be heard and debated along with other viewpoints from further afield, such as the experience in controlling Chagas’ disease in South America. In so doing, the meeting helped reunite the international tsetse and trypanosomiasis community, a vital step if major donor funding is to be committed to tsetse and trypanosomiasis control. John Kabayo of PATTEC, in his closing remarks, said ‘it (the meeting) was a good idea and came at the right time...Clearly we have the expertise and the knowledge to remove this problem...Everyone who wants to be involved is welcome...This is an international effort, to be built on what is already going on. There is room for everybody.’

Just 2 weeks after the Edinburgh event, at a meeting of the advisory group of the Programme Against African Trypanosomiasis (PAAT) in Nairobi, a significant breakthrough was achieved. A statement was prepared, unanimously supported by a cross-section of institutions, including PATTEC, stating that ‘the...tsetse and trypanosomiasis community is united in its resolve to reduce and ultimately eliminate the constraint of tsetse-transmitted trypanosomiasis in man and animals’ (see Annex). The word ‘eradication’, which some people find so inflammatory, does not



appear anywhere in the statement. In addition, the statement recognises ‘... the need to continue encouraging livestock producer-based practices against T&T’ and that, ‘in the case of human trypanosomiasis, disease management will continue to depend on disease surveillance, detection and treatment as the principal priority for the foreseeable future, with tsetse suppression as a complementary tool.’ Perhaps this more accommodating stance means that the tsetse and trypanosomiasis community can now present the unified front the donors want to see before they will once again invest in tsetse and trypanosomiasis control.



Ian Maudlin
Manager, DFID Animal Health Programme
Edinburgh, April 2003

Note:

In addition to organising the Edinburgh meeting, DFID–AHP commissioned a review to explore the issues raised by tsetse eradication in more detail. The results of this review are published as a companion volume to this report: *Tsetse eradication: sufficiency, necessity and desirability*, by Dr J.W. Hargrove.



Acknowledgements

Organising and running a meeting such as ‘Tsetse control: the next 100 years’ is a team effort and the team that made the Edinburgh meeting so effective and enjoyable has many members. I am grateful to them all. The staff of AHP worked hard, both before, during and after the event. Tam Dalyell, Father of the British House of Commons and a local Member of Parliament who has written about PATTEC in his Westminster Diary column in *New Scientist*, found time in his busy schedule to attend the scene-setting session. The meeting facilitator, Steve Jones, did an excellent job in finding areas of broad agreement where some, perhaps, thought there were none to find. WRENmedia, supported by the University of Edinburgh’s First Sound Department, skillfully produced high-quality edited sound recordings and transcripts of the highlights of the presentations and discussions, supplemented with interviews with key participants, and from these produced the excellent CD to be found at the back of this report. Simon Chater and Christel Blank, of Green Ink, Devon, UK and Keith Sones, of Stockwatch, Nairobi, together produced this report. But most of all I want to thank the 37 participants, who gave up their time to travel to Edinburgh from all parts of the globe and took full advantage of the opportunity provided by the meeting to air their views and to listen and respond to the views of others.

Ian Maudlin



A house divided

Selected quotes from the media and press releases before the meeting

‘...As a long-term solution, why not get rid of the fly?’

Guardian, 31 May 2002

‘...The endeavour is so ambitious and so counterintuitive that at first hearing it is hard to comprehend: the extermination of an entire, common insect species, the tsetse fly, by poison, deceit and the release from aircraft of billions of radiation-sterilised insects.

The cost and timescale are unknowable, but they certainly exceed billions of pounds and several decades...’

Guardian, 31 May 2002

‘...We are not saying we’re going to finish it tomorrow. What we’re saying is that we have to do something... It’s not acceptable that we suffer from a disease which can be stopped. If it takes us 100 years, we are going to do it...’

Guardian, 31 May 2002

‘A billion-dollar plan to use nuclear radiation to rid Africa of sleeping sickness is being condemned as a scientific fraud...The approach is an insult to scientists and public health practitioners...you will never wipe out the flies ...’

Sunday Times, 24 March 2002

‘...We regard the people who try to discourage us as totally unfair. They have no faith in our technical capacity...’

Sunday Times, 24 March 2002



‘...It is not only the money and the time. The job requires perfect coordination between a cold war-era nuclear agency in Vienna, sceptical donors...and 36 African nations, all of them poor, all struggling with other serious illnesses...and some in a state of armed conflict...’

Guardian, 31 May 2002

‘...SIT may appear to be an expensive option...
But it is the best choice of the technologies to achieve eradication of tsetse...I hope we could be rid of tsetse, perhaps within 100 years...’

ICPTV Newsletter, March 2002

‘...PATTEC should re-establish credibility by addressing reality and abandon SIT in the context of both human and animal trypanosomiasis. SIT is an inappropriate, unaffordable, unsustainable and irrelevant concept...’

Trends in Parasitology 17 (9), September 2001

‘...Africa is now ready to combat the tsetse fly...’

IAEA press release, 19 February 2002

‘...It stands no chance, even if they can find the cash...We think it is a crazy idea...’

New Scientist, 2 March 2002

‘...There’s a riddle in Africa that asks how you can eat an elephant – and the answer is in small pieces. This is how we will accomplish control of the tsetse, establishing first one fly-free zone and then moving on to another...’

IAEA press release, 19 February 2002

‘...Further discussion is required on the scientific and economic theory underlying the sterile-insect technique before it can be used as the basis of a \$20 billion pan-continental tsetse eradication programme...’

New Scientist, 13 April

2002



Essay

Tsetse elimination: sifting the arguments

By Simon Chater ¹

Truth, it seems, is the first casualty in scientific controversy, just as it is in war. This is certainly the case in the current controversy about how to combat the tsetse fly: both sides have made questionable assertions concerning the approach they favour; both have overstated their case while distorting or oversimplifying that of their opponents; both have brought politics or political correctness into play to bolster their entrenched interests or score cheap points; and both have used the media to trumpet their own ideas and heap scorn on their adversaries.

All this must stop if we are to get anywhere at all in ending the misery caused by what all, ironically, agree to be one of Africa's most persistent and deadly scourges. African countries cannot by themselves marshal all the resources required to eliminate the fly; they will need the help of the developed world; but the donor agencies that could provide that help are unlikely to do so for as long they receive conflicting messages on what is the best way forward. To control the tsetse fly, we must first control the tsetse experts!

In this essay, written at the invitation of DFID–AHP, I shall sift the arguments for and against the different approaches to tsetse elimination in Africa, focusing particularly on the sterile insect technique (SIT), since this lies at the heart of the controversy. My aim will be to get a clearer picture of what each side can and can't truthfully claim, in the hope that this will help in a small way to create the

'The focus on tsetse as a simple problem needing a simple solution has been lost.' –
Edinburgh participant

'For every problem in life there is a solution that is simple, direct and wrong.' –

H.L. Mencken

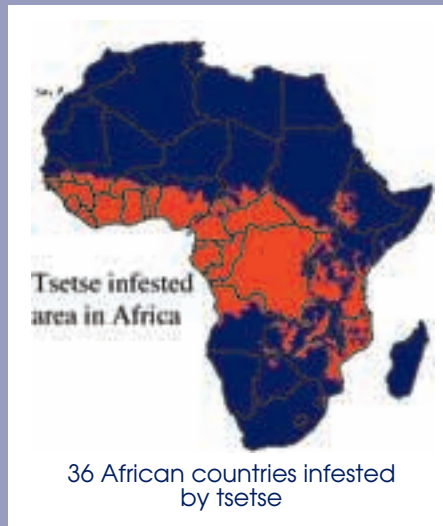
¹ Simon Chater has written extensively about African agriculture and is the director of Green Ink Ltd, the publishing services company that helped DFID–AHP put this report together.



Tsetse: bringer of diseases and poverty

The 22 species of biting insect known as tsetse fly (*Glossina* spp) infest a vast swathe of sub-Saharan Africa, bringing disease and early death in their wake. The fly is the vector of minute single-celled parasites called trypanosomes that invade the bloodstream of mammals, causing sleeping sickness in human beings and nagana in livestock (the two diseases are both referred to as trypanosomiasis). An estimated 0.5 million Africans are thought to suffer from sleeping sickness, some 315 000 of them in the Democratic Republic of Congo.

But the damage done by tsetse goes well beyond human and animal health. The fly is often called 'the poverty insect' – and for good reason: of the 36 African countries infested with tsetse, 32 are among the world's poorest, with



‘The tsetse fly still rules and wreaks havoc in about 10 million km² of Africa’s best pasture and agricultural land, condemning the wretched communities in its wake to death, chronic debility and perpetual abject poverty.’ –

John Kabayo, PATTEC Coordinator

per caput incomes below the World Bank ‘poverty threshold’ of US\$ 1 per day. The links between poverty and tsetse are of two kinds: the debilitating anaemia that is characteristic of sleeping sickness lowers human productivity in all walks of life, especially farming; and the presence of the fly prevents people from keeping productive breeds of cattle and other livestock species, which are, elsewhere in the region, a vital source of income for the poor.

common ground that can lead to consensus. I’ll begin by looking briefly at the views of those who oppose any kind of large-scale intervention to control tsetse, before examining first the record of conventional tsetse control, then the emergence of the SIT approach, and then the cases for and against the use of this approach to achieve the ultimate goal of tsetse eradication. Finally, throwing caution to the winds, I’ll try to form my own judgement on the best way forward.

Large-scale intervention: should it be done, need it be done?

Surprisingly, in view of the suffering caused by tsetse, there are two groups of people who, for different reasons, believe that the case for large-scale intervention to eliminate the fly is a poor one.



The first group, most of whom work for first-world donor agencies and universities, argue that the fly *should* not be eliminated because it is the best protector of Africa's threatened forest and savanna ecosystems. Take away the fly, they say, and these lands will be cleared for crop and livestock production. This argument is partly true: Africa does have sparsely populated areas into which livestock and their keepers have moved only after tsetse have been controlled. But there is also evidence that the fly is no defence against encroachment when human population rises and land round the edge of these ecosystems becomes scarce:

people move in anyway. In other words, as pressures on the resource base mount, the protective role of the tsetse is becoming a thing of the past. These non-interventionists also lay themselves open to accusations of blinkered vision: they clearly set great store by conservation, but sometimes give the impression of ignoring the need to eradicate poverty and improve human health. They have even been branded – cheaply, I feel – as ‘ecological imperialists’.

The second group, also found largely outside Africa, favour ‘autonomous control’, by which they mean that there is no *need* for large-scale intervention because the tsetse problem will solve itself in the longer term. Their argument is that, as land is cleared for cultivation and the countryside gradually fills up with people and buildings, the fly, which needs shade, moisture and suitable host animals to survive, will find fewer and fewer suitable habitats. This group point to large areas of land, notably in northern Nigeria, that were infested a century ago but are now able to support sizeable populations of animals and people who are predominantly free of tsetse-transmitted diseases. These areas are, however, virtually treeless, and so a good deal less friendly towards the fly than areas retaining some tree or bush cover or adopting the agroforestry systems that are widely thought to represent a better future for African agriculture. The plausibility of the ‘autonomous control’ argument is further undermined by the fact that most of these areas were originally cleared of tsetse by large-scale spraying anyway, and by the mounting evidence that re-infestation occurs unless the cleared area is isolated from other infested areas. Disturbingly, there is also evidence that some tsetse species can adapt to new habitats (including highlands, agroforestry systems, woodlots and plantations), suggesting that the fly could eventually make an even stronger comeback than it has done so far. This group, then, can be accused of complacency, especially in the face of the latest data on disease incidence, which show that sleeping sickness is again on the rise.

‘There is a feeling among donors, particularly within Europe, that the tsetse fly has protected vast areas of Africa from environmental degradation. If we are going to get more money devoted to this problem, then we have to address those environmental issues.’ –

Martin Mitchell, Cooper Zimbabwe Ltd



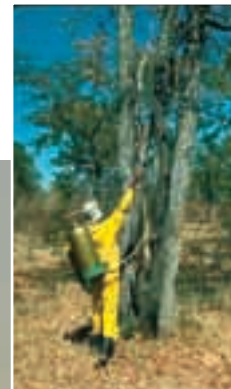
I should stress that neither of these two groups is wholly opposed to local, farm-based tsetse control, though members of the first group sometimes give the impression they would rather such control did not work very well!

Control and control for ever

People have developed and deployed a whole arsenal of weapons to control both the tsetse fly and the diseases it transmits. Unfortunately, none of these weapons, alone or in combination with others, has yet led to a lasting solution.

Early attempts at control were based on game hunting – killing the wild animals that host the fly. Besides being destructive, hunting doesn't work wherever there are domestic animals too, since the flies simply transfer their attentions. In addition, since different tsetse species have different feeding behaviour and some are more catholic in their tastes than others, it is difficult to know which and how many animal species to hunt. As a result, the emphasis in control efforts soon switched away from hunting to the clearing of large areas of bush, either by burning or with heavy machinery. However, clearing has to be repeated every 6 months if it is to remain effective. It also reduces biodiversity and, in the case of burning, releases carbon to the atmosphere while creating a pall of noxious smoke.

When DDT became available in the 1950s, control went chemical. Ground spraying of this now widely banned insecticide achieved excellent short-term results in controlling the fly, especially when combined with hunting, but raised serious environmental and human health concerns owing to its accumulation in the food chain and its damaging effects on fertility. Since the mid-1970s, aerial spraying with a new generation of chemicals – synthetic pyrethroids – has proved somewhat more acceptable, although there are still problems of toxicity in relation to aquatic life-forms. Whatever the chemical used, the effects of spraying do not usually last and treatments have to be repeated again and again to keep the fly out. Spraying can, however, be successful if it is part of a well planned and well implemented



Botswana: spraying can be successful

Following a 20-year aerial spraying programme in the 1970s and 80s, Botswana used targets (see below) to maintain control of the tsetse fly in the country's Okavango delta. When, in 1999, flooding made it impossible to service the targets, the fly re-invaded.

The government responded by adopting a new control strategy that combined the use of aerial sprays with drugs, traps and chemical barriers. A global positioning system (GPS) and a geographical information system (GIS) greatly improved the targeting and accuracy of spraying, reducing its damaging effects on fish. The traps, deployed in the epicentre of the re-infestation, served to monitor fly populations, with the resulting information being used to adjust the spraying programme.

An evaluation concluded that the operation had achieved in 3 months what had not been achieved in 10 years with targets: the fly's elimination from the delta. Large-scale control had proved not only feasible but also affordable, with costs amounting to only US\$ 270 per square kilometre. A major factor accounting for success had been the government's definition of a workable control strategy and its prompt action to implement the strategy over the entire project area.

control strategy that effectively integrates different components. A recent project in Botswana's Okavango delta provides an example. Yet even here, eternal vigilance will be needed to ward off the ever-present threat of re-invasion.

The weapons deployed at farm or community level have proved only somewhat more successful than those applied by large-scale projects.

Traps – tented structures that capitalise on the fly's attraction to dark colours and shady interiors – have a mixed record: they have the advantage of being relatively cheap and environmentally friendly, but they are ineffective at low fly population levels and hence can never eliminate the threat of disease entirely.

There seem to be as many trap designs as there are tsetse control specialists, each of whom makes exaggerated claims about his or her favourite model. Some designs require quite sizeable amounts of fabric and wire, making them attractive to thieves. And all traps require regular maintenance if they are to remain effective. The secret to success appears to lie in a participatory approach to deployment in which local people assume ownership of the traps and are trained in how, and more importantly why, to maintain them. Until recently, these conditions have seldom been met.



Traps: the benefits prove unsustainable in Uganda

In a community project at Busoga, in southeast Uganda, villagers deployed large numbers of tsetse fly traps and took responsibility for maintaining them. The project, launched in the mid-1980s, was highly successful at first: the incidence of sleeping sickness declined steeply and livestock productivity rose.

The traps then fell into disuse, because the villagers saw no need to continue maintaining them. Today, tsetse infestation and disease incidence are once again on the rise, though they have not yet regained their mid-1980s levels. The villagers have been unable to attract external funding to resume community-based control measures and have no plans to launch such measures using their own resources.

Traps: towards sustainability in Ethiopia

In southwest Ethiopia tsetse control is being implemented not in isolation but as part of a participatory local development project.

At the start of the project, in 1995, farmers and project staff worked together to install thousands of traps throughout the project area. Fly populations collapsed within 6 months and have not since recovered.

Farmers are now able to keep healthier and more productive livestock, whose produce has raised their incomes considerably. Some of the cash they earn is ploughed back into installing new traps and maintaining existing ones. An extensive programme of

community education and training, funded by the project, has ensured that farmers understand the need to continue maintaining the traps despite the near total absence of disease. A major need now is to build the local institutions that will perpetuate this knowledge and organise maintenance after the project is over.

‘If you only look at the vertical operation – killing the tsetse – then the achievement will be minimal. Tsetse control should be followed by wealth creation for the farmer.’ –

Getachew Tikubet, ICIPE–Ethiopia project

Targets, usually consisting of a piece of cloth soaked with an insecticide and baited with attractant odours, are an even simpler and, in the short term, more effective form of trap. Again, continuing maintenance is crucial to success, but has so far proved elusive in most projects. Targets are more expensive and difficult to



maintain than traps because the insecticides and baits have to be periodically refreshed, requiring continuing financial outlays that must be organised at village level. The successful use of traps has so far been restricted to situations in which the necessary cash and material resources can be made available, for example on private ranches or in well organised externally funded programmes.

Drugs have played an important part in preventing or treating animal trypanosomiasis and remain the farmer's main line of defence against the disease. However, all the drugs used at present are gradually running into problems of resistance on the part of the parasite, and no new ones seem likely to become available in the foreseeable future. Nor is there any early prospect of a vaccine against the disease, despite decades of research on this. Drug treatments for human sleeping sickness also leave much to be desired, but at least research in this field is slowly making progress.

Some farmers in tsetse-infested areas keep trypanotolerant animals. These are mainly West African dwarf breeds of taurine cattle, although this trait has also been found in larger, zebu breeds in East Africa. Trypanotolerant animals represent a better livelihood option than no animals at all, but they are not very productive of meat and milk and, because of their small size, are poor

Sleeping sickness: inching towards a better cure

The treatment of human sleeping sickness has long been costly, painful and risky: the only way of diagnosing the disease is to identify people who look as if they have it, collect spinal fluid from them and examine it under the microscope to detect the presence of trypanosomes; the cure is a course of injections with arsenical drugs, which frequently cause lesions round the site of injection; the drugs may also cause reactive encephalopathy, which currently kills around 7% of patients.

The World Health Organization (WHO) is conducting research to refine the existing treatment and develop alternatives. Researchers have found that some of the drugs already in use can be administered in lower doses, reducing the pain and risk of treatment while still effecting a cure. The researchers are also screening thousands of possible alternative drugs for their efficacy, but have come up with only one alternative so far – a cancer drug that is expensive and difficult to administer.



ploughers, unable to provide the draft power needed to expand crop production. These problems remain to be overcome despite more than two decades of research on trypanotolerant animals.

Farmers can keep more productive livestock provided they protect them with insecticides. These used to be too expensive and too difficult to use for all but the larger, more sophisticated farmers and ranch owners, but the advent of the 'pour-on' – small doses that go further because they are mixed with a spreading agent – has made them easier to apply, increasing their attractiveness to small-



holders. In turn, prices are likely to fall as more suppliers enter the market. And recent research has revealed the potential for lowering costs still further.



Why has the tsetse fly proved so impervious to conventional control methods? The fly is incredibly good at hiding, needing only a pocket of shade and a little moisture to survive. It is also much better than anyone had thought at crossing inhospitable terrain to get to a suitable new habitat. The result is

Insecticides: apply sparingly

Work in an on-farm tsetse control project in Zimbabwe suggests that not all animals in the herd – and not all parts of the animal – need be treated with insecticides.

It seems that, because tsetse flies need big visual clues to home in on their hosts, they seldom bite smaller, younger animals but head instead for the bulkier adults. And because the fly seeks shade by flying into overhung areas, most bites on animals are below the knee. Once aware of these behaviours, farmers can make big savings by applying their insecticides selectively.

These findings need testing with other tsetse species and in a broader set of conditions than those found in Zimbabwe. If they are verified, the challenge will be to spread farmer awareness of this control strategy more widely. The key to this will probably be the farmer field school (FFS), an institution that empowers farmers to take decisions on the basis of their observations of ecological principles. First developed by the Food and Agriculture Organization of the United Nations (FAO), the FFS has so far been applied mainly to integrated pest management (IPM) in crops, but it is now being tested on livestock problems too.





‘What we all know is that barriers do not work.’ –
Burkhard Bauer, FITCA, Kenya

that, in most of the areas sprayed under large-scale projects, the fly population has recovered to its former level within a few years of treatment. Scheme after scheme has suffered in this way, right across the continent. Attempts to prevent re-invasion by blocking the fly’s access to treated areas with chemical barriers have

met with little or no success. The barriers – usually long lines of targets – tend to be too ‘leaky’ to be fully effective, even from day one. And they become even leakier with time, as the trained staff and other resources needed to refresh the insecticides on a regular basis are seldom available.

The need to repeat conventional control methods apparently indefinitely to keep the fly at bay led in the 1980s to increasing frustration with the whole business of tsetse control. ‘Control and control for ever’ became an unpopular strategy in the minds of African leaders, who demanded a more cost-effective approach that would not repeatedly drain the national coffer, exhaust the patience of foreign donors and create increasing disillusion in the farming community. This is why, when the idea of eradicating the fly was first mooted in the mid-1990s, the seed fell on fertile ground.

Towards a final solution?

The e-word has generated more heat than light in the debate about tsetse, so let me be clear what I mean by it: the total and permanent extinction of a species in the wild. I will *not* use the word eradication in the loose sense of elimination from a specific area only.

If the fly is so robust, how come eradication is now on the agenda? Flash-back to the 1950s, when the United States Department of Agriculture (USDA) developed a powerful new technique

‘We have to accept that, to attract the attention of African Heads of State, an “eyecatcher” is essential. “Control” is not eye-catching, whereas “eradication” is. It’s a catchword that mobilises funds.’ –

Joseph Ndung’u, KETRI, Kenya



for dealing with the screw-worm, a serious parasite of mammals, including human beings, in the warmer parts of the Americas. One of the first peaceful applications of nuclear physics, the sterile insect technique (SIT) involved breeding millions of male insects in captivity, irradiating them with cobalt-60 to make them sterile, then releasing them from the air to mate with existing populations, which gradually die out as a result. Once it had proved successful against screw-worm, the technique was taken up by the Vienna-based International Atomic Energy Agency (IAEA), which saw its potential for solving the tsetse problem once and for all.

For SIT to eliminate an insect in a given area, the sterile males must ‘flood’ the local population, outnumbering them by about ten to one. For this reason the technique was seen as potentially

most useful at the tail-end of tsetse control projects, as a means of mopping up the residual population once pyrethroid sprays (and/or other methods) had done their work. This strategy would help to contain the technique’s

relatively high costs, since fewer insects would have to be raised and sterilised in captivity.

Despite SIT’s obvious killing power, pilot projects with the technique in Nigeria and Tanzania during the 1970s proved unsuccessful, as also did a larger-scale field trial in Burkina Faso during the 1980s. The areas covered by these projects were not isolated from other infested areas, so although the fly may have been eliminated in the project area, re-infestation occurred just as it does when conventional spraying alone is used. However, in 1994 a fourth project was launched, this time in Zanzibar – a tsetse enclave cut off from others by the sea. This project successfully eliminated the island’s single species of fly. Armed at last with this success story, IAEA set about finding allies to support an Africa-wide tsetse eradication project.

By this time IAEA was a member of the Programme Against African Trypanosomiasis (PAAT), an international cross-sectoral alliance that was attempting to forge consensus on the way forward for tsetse control. Faced with a worrying rise in the incidence of sleeping sickness, PAAT had made little progress beyond assembling a useful database of the available literature. When PAAT dragged its feet over the further testing of SIT, its pro-SIT members decided to form a breakaway group that later became the Pan-African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC). This group decided to take the case for SIT to the highest political level in Africa – the Organisation of African Unity (OAU).

‘SIT is the only technology that has an efficiency pattern in which efficiency increases with decreasing target density.’ –

Udo Feldmann, IAEA

‘Being against SIT doesn’t mean being against control. SIT doesn’t have a proven track-record against tsetse.’ –

Hans Herren,
Director General, ICIPE



Zanzibar: a success for SIT

The elimination effort in Zanzibar was preceded by a substantial investment in local staff and facilities. Tanzania's Tsetse and Trypanosomiasis Research Institute (TTRI), based at Tanga on the mainland, sent scientists and technicians to IAEA's laboratories at Seibersdorf, in Austria, to learn the techniques for mass rearing flies. By the early 1990s, the TTRI had become the world's largest tsetse rearing facility, producing around 70 000 sterile males a week.

Aerial releases began in 1994, targeting the most heavily infested and inaccessible regions in the south of the island first, before extending to the north. Since September 1996, not a single tsetse fly has been caught in the traps established to monitor fly populations. Use of the SIT technique was suspended in late 1997.

Zanzibar has now entered the post-tsetse era. Live-stock production is increasing, with the emphasis on dairy farming and goat rearing. And larger and more productive cattle breeds are promoting crop production through the provision of draft power.



The group's lobbying was successful. At its 36th Ordinary Session, in July 2000, the OAU gave its blessing to PATTEC's proposal to eradicate tsetse from the entire African continent, urging member states to act collectively to 'render Africa tsetse-free within the shortest possible time'. The target time-frame has since been set at 100 years.

The OAU's dramatic declaration attracted a great deal of press coverage, bringing the issues raised by tsetse eradication to the attention of a wider public. Opinions, both lay and expert, were sharply divided: scepticism over the feasibility and desirability of eradication as an objective was mixed with admiration for the boldness of vision and unanimity of political will demonstrated by Africa's leaders (see p. 1). Both sides in the debate began using the media to publicise – and sometimes to overstate – their case.

In November 2001, the FAO and the IAEA both passed resolutions in support of PATTEC. A meeting held in 2002 made progress in forging a common approach between PATTEC and PAAT, healing the split that had occurred earlier. The two programmes have now invited others to join them in what they believe to be a historic opportunity to address what they see as humid Africa's single biggest development challenge.

Those in favour

On the face of it, the idea of eradicating the tsetse fly is an attractive one. The 'case in favour' rests on several plausible arguments.



It is certainly true that the PATTEC proposal represents a victory of sorts over the muddle and uncertainty that have bedevilled conventional tsetse control. Now is the opportunity, say the proposal's advocates, to forge the systematic approach whose lack has been a major cause of past failures. For the first time in the history of tsetse-transmitted diseases, a situation has arisen in which all the available resources, and all the willing and able players, can be effectively deployed in a concerted international effort to solve the tsetse problem once and for all.

What is more, Africa's leaders have demonstrated the political will that is vital for success. Their decision to embark on PATTEC is a strong expression of the importance they attach to tsetse-transmitted diseases. In the words of one of the campaign's most persuasive advocates, 'They will be cracking the whip and ensuring that the job is done'. Because the PATTEC Plan of Action is Africa's official policy statement on tsetse, it deserves support by external donors, representing a real opportunity to implement a project that, for once, is not donor-driven.

How would the project work in practice? PATTEC and PAAT have been working together to forge what they believe to be a credible strategy for implementing the proposal. Following the achievement in Zanzibar, the plan is to concentrate first on zones of infestation that are isolated from other tsetse populations, thereby limiting the potential for re-invasion. Within this framework, priority would be given to areas of high population density and/or high agricultural

'The criteria selected by PAAT and PATTEC suggested situations where you might expect the greatest benefit. I think those criteria have been well debated and are fairly robust.' –

Peter Holmes, Chairman, PAAT

'We have a war on our hands, but we aim to fight it one battle at a time.' –

John Kabayo, PATTEC

potential, so as to maximise the early benefits of elimination. Areas close to those already cleared would also get early attention, to consolidate the gains made and to lower the risk of re-invasion. Scarce resources would be targeted on those tsetse species with the highest 'vectorial capacity' – in other words, the ones most likely to transmit the disease. The two obvious priorities are *Glossina morsitans*, which is widespread across Africa, and *G. pallidipes*, common in East Africa.

Given funding, this plan can be implemented within the target time-frame of 100 years, say its supporters. One pro-SIT specialist claims that, if effectively combined with other approaches, SIT could eliminate the fly from most of the priority areas identified by PATTEC within the next



Latin America sets an example

The pro-eradication camp point to the successful campaign against Chagas' disease in Latin America as an example that Africa could emulate.

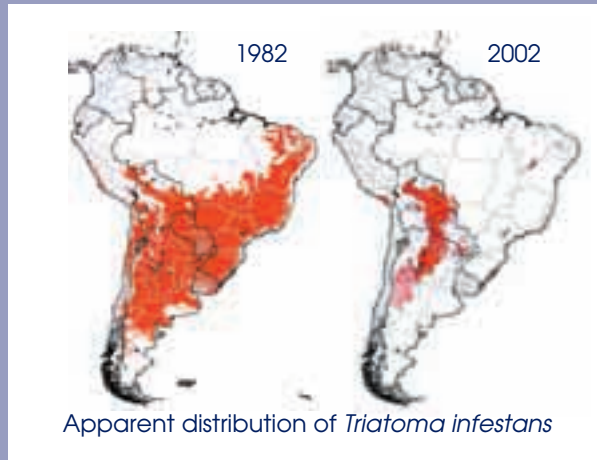
Chagas' disease is similar to African trypanosomiasis but is spread by different insects, *Triatoma infestans* being the chief culprit. In just 10 years since it was started, in 1991, the Southern Cone programme to control this species has driven it back to a belt of remote forested land straddling the frontiers of Brazil, Bolivia and

Argentina. In the same period, the number of cases of Chagas' disease recorded annually in hospitals has halved, from around 1800 to below 900. The economic benefits have been well above forecast, with a rate of return of around 35% in Brazil and 64% in Argentina.

The key to success has been political commitment at the regional, as well as the national, level. It was recognised that Brazil would not be able to eliminate the insect if Paraguay, Bolivia, Argentina and Uruguay did not. Eradication, not control, became the goal of the project because it was realised that no other approach would bring a lasting solution.

However, there are some crucial differences between the Latin American and African cases. First, efforts could be effectively targeted on a single insect species, *Triatoma infestans*, compared with the multiple species of tsetse that must be tackled in the case of trypanosomiasis. Second, the insect lives in the cracks of walls in people's houses, making it relatively easy to find (it was destroyed through

house-to-house spraying, not the use of aerial spraying and SIT). Lastly, although the area of infestation is comparable – 6 million square kilometres as against 8–10 million for tsetse – the number of countries whose activities have to be co-ordinated is far fewer, merely five.



'If we do not seize the opportunity to make use of what we know, then we will condemn millions of people to diseases, poverty and avoidable suffering.

This is not ethical.' –

João Carlos Pinto Dias, Head,
Brazil's national eradication programme



20 to 25 years. Tackling the stronghold of tsetse – the densely forested interior of Central Africa – will present a more difficult challenge, but more experience in the use of SIT should eventually ensure success even here.

Economists tend to like the idea of eradication since, although expensive, it would avoid the recurrent costs incurred by conventional control. They also point to the economies of scale associated with large projects. Back-of-an-envelope calculations by one PATTEC supporter suggest that trypanosomiasis is causing losses to agriculture worth US\$ 4.75 billion a year and that eradicating the disease would increase annual incomes by an estimated US\$ 20 per caput – well worthwhile for someone living on less than US\$ 1 per day.

The environmental case for SIT is that the technology is not only clean in itself but will also, in the long term, obviate the need for recurrent spraying (although it could lead to a short-term increase in spraying because of the increased chances of successful elimination). The environmental

‘No one seems to look at the continuing presence of tsetse as an environmental hazard itself. Because of competition for tsetse-free land, this creates problems of land erosion, and so on.’ –

John Kabayo, Chairman, PATTEC

case for eradication, as opposed to SIT, is rather more difficult to make and consists of standing opponents’ objections on their head: the pro-eradicationists claim that the continuing presence of the fly is itself an environmental hazard because, by ruling out livestock and crop production in infested areas, it intensifies competition for non-infested land. This argument appears specious, since there is no *a priori* reason why intensification need be accompanied by degradation of the resource base. In fact, there are well documented cases of ‘more people, less erosion’.

Lastly, the supporters of PATTEC make a strong, indeed irrefutable, moral case for SIT-based eradication. Why, they ask, should Africans continue to suffer from a serious, deadly disease when a solution is within reach?



Those against

Opponents of the PATTEC plan argue that it will cost a lot without necessarily delivering what it promises: in other words, it probably won’t succeed in eradicating the fly. Let’s take the cost aspect first.



Paradoxically, despite its legendary resilience in the wild, the tsetse fly is difficult to rear in captivity. For the purposes of reproduction, the fly is what is called a *k* strategist, having few but well tended young with good survival rates. Unlike other insects, which may lay hundreds of eggs at a time, female tsetse flies produce a single larva about once every 10 days. This behaviour greatly lengthens the time it takes to build up the millions of flies needed for SIT and prolongs the period over which females have to be fed. The result is that a very substantial investment is needed in infrastructure and staff to operate a rearing programme on a scale large enough to make SIT a practical proposition.

A related argument here is that the SIT approach will have to be repeated for each vector species of tsetse fly. In the case of the pan-African project, that's 22 species – a far cry from the single species eliminated in Zanzibar. Although it makes sense to concentrate first on the common vectors such as *G. pallidipes* and *G. morsitans*, it will ultimately be necessary to tackle *all* the others.

This is because, in the case of tsetse, eliminating one vector species creates niches for others. One campaign in South Africa, for example, successfully eliminated its two principal vector species, only to find some years later that two others had taken its place. Dealing with multiple species of tsetse means that the already high costs of the rearing programme will escalate.

Added to these cost considerations is a lingering suspicion that the technology simply will not work. There are two major concerns here.

'It's not true that tsetse exists in isolated pockets in Africa.

There will always be the potential for re-invasion.'

Sarah Randolph, Oxford University

First, while SIT may be efficient at mopping up residual populations in a given area, it is as susceptible as conventional spraying to the problem of re-invasion from contiguous areas. This is evident from three of the four projects in which SIT has been tried out in Africa – Tanzania, Nigeria and Burkina Faso. In all three cases, tsetse populations are now well on their way back to former levels. Pro-eradicationists try to get round this unfortunate fact by stressing that priority will be given

to isolated areas – these feature prominently in the Plan of Action developed by PATTEC. But how widespread are such areas in Africa? Most specialists believe that, if you take into account the fly's prodigious flying powers, very few areas truly fall into this category and those that do exist are mostly rather small. Ethiopia, for example, has a few riverine pockets of tsetse infestation in the highlands; and there are a few other off-shore islands similar to Zanzibar. Once these have been

'We have a whole series of national and regional initiatives, but I see something missing: who is going to organise research and training?' –

Chris Schofield, ECLAT



cleared, SIT will face the same limitations as conventional spraying in tackling the huge, ill-defined and overlapping environments of the African mainland.

Second, even if an area could be sealed off and re-invasion prevented, how good is SIT at eliminating *all* the individuals of a given population? And how can we ever be certain that the last fly has succumbed? Models have suggested that populations can recover from densities as low as one fly per 1000 square kilometres, a level so low that traps become a poor indicator of whether or not flies are present. Protected areas such as national parks or forest reserves poke a particularly large hole in the case for attempted eradication. The chances that a few flies will survive SIT are greatly increased in areas where there is an abundance of wildlife and plentiful shade. Even a small thicket can harbour the necessary numbers to support recolonisation of a large area once the project is over.

A further set of arguments falls under the heading of logistics and institutional capacity. Tsetse-infested Africa is a huge area, estimated at 8 to 10 million square kilometers or three times the size of the European Union. Marshalling the resources needed to eradicate the fly in each of the

'I firmly believe that, on biological grounds, eradication of tsetse throughout the continent of Africa is not possible. I don't think it's even necessary to achieve the alleviation of poverty and the development of agriculture that's essential to Africa.' –

Sarah Randolph, Oxford University

36 countries involved is as complex as it is costly, requiring coordination between nations that are poverty-stricken, plagued by disease and hunger, and, in some cases, subject to political instability or even armed conflict. Lack of funding over a prolonged period has severely weakened the government veterinary and agricultural services that would be responsible for eradication. And many infested areas are remote, served by few roads, bridges or airports, making access difficult.

Even the economic case for eradication is far from water-tight. Opponents argue that the full benefits – that figure of US\$ 4.5 billion a year – would not be felt for many years – up to 100 in those areas treated last – and that in the meantime plenty can go wrong in the course of implementation, nibbling away at the healthy cost/benefit ratios calculated by pro-eradication economists. If re-invasion were to occur over wide areas, the benefits of using SIT might even fail to cover the costs. Other approaches to the problem, such as local control using drugs or insecticides, have much better cost/benefit ratios, primarily because the high rearing costs of SIT are avoided.

The environmental case against eradication, like that against control, rests primarily on the arguments against livestock production. Although the champions of livestock development will



deny this, the ruminant species commonly grazed extensively by smallholders and pastoralists – cattle, sheep and goats – are associated in some people’s minds with soil compaction and erosion, the pollution of watercourses and the impoverishment of vegetation. Although, as explained earlier, livestock and their keepers will move into new areas anyway once pressures on the resource base rise beyond a certain point, there are ecologically sensitive areas from which many feel they should continue to be excluded. The Okavango delta of Botswana is a case in point – it remains to be seen how much this unique environment will suffer as a result of the incursion of livestock now taking place following tsetse elimination there. If livestock pioneer the use of new areas cleared of tsetse, crops will often not be far behind, especially in the wetter zones, where they will bring further radical changes in the vegetation and biodiversity of the landscape. Beyond the obvious practical concerns over livestock and crops, there are more theoretical environmental objections: eradicating any species may be considered inherently undesirable because it reduces biodiversity, impoverishing our world; it may have adverse consequences in the rest of the ecosystem, placing other species at risk; and it may entail the loss of natural beauty – though even the proponents of this argument acknowledge that the squat, brown tsetse fly, with its aggressive looking proboscis, is no giant panda!



There are sensible alternatives to the relentless drive towards eradication. The most practical is to enhance and extend control at farm level. This has the advantage of being a demand-led approach in which farmers, not governments, do the work and bear the costs. The range of options is broad and can be tailored to individual circumstances. It should certainly include the application of insecticides to livestock as pour-ons, given recent promising experiences with this approach. It could also include the use of traps and targets, provided farmers can be motivated to maintain them, and the selective use of drugs and trypanotolerant animals, with an emphasis on improving their efficacy and productivity respectively. Recent research in Kenya and Tanzania suggests that, for zero-grazed animals, a simple net round the cattle enclosure may be sufficient to protect against the fly. These and other on-farm approaches could be complemented by conventional large-scale spraying if this is still needed.

Perhaps the most convincing argument against SIT-based eradication is that there are other, more pressing priorities in rural Africa. Scarce money for development would be better spent on meeting basic human needs such as the provision of drinking water, roads, schools and clinics.



(Some of these measure will help to reduce the incidence of sleeping sickness anyway: the provision of drinking water in village centres, for example, will keep women away from riverine thickets.) Human diseases other than sleeping sickness, such as AIDS, TB and malaria, are equally, if not more, deserving cases for funding, with much to be achieved through established low-cost approaches such as training local community health workers. Even within the livestock sector, there are other approaches to livestock development that could yield greater returns, such as improving dry-season feed supplies and increasing marketing opportunities for poor producers. The price-tag attached to eradication – some US\$ 20 billion – is well in excess of current aid budgets for other comparable development tasks, even when allocated across the entire century over which the objective is to be achieved.



Kenya: net gains for dairy cattle and their owners

Dairy smallholders participating in a project in the Busia District of Western Kenya are testing a novel yet low-cost solution to the problems posed by tsetse and other biting flies.

Borrowing from success in malaria control, netting impregnated with synthetic pyrethroid insecticide is erected round farmers' zero-grazing units. Flies zooming in on their bovine targets hit the netting and drop dead. Because the insects usually attack at low level, the netting need be only 1 metre high.



The benefits reported by farmers are impressive: milk production is up, because the cows spend less energy swishing their tails to keep off the flies; veterinary bills are sharply down; and milking the cows takes less labour, since the milker can dispense with the extra pair of hands needed to keep the cows peaceful by swatting away the flies. The benefits are even spreading to nearby herds grazed extensively, whose owners say that tsetse populations are falling.

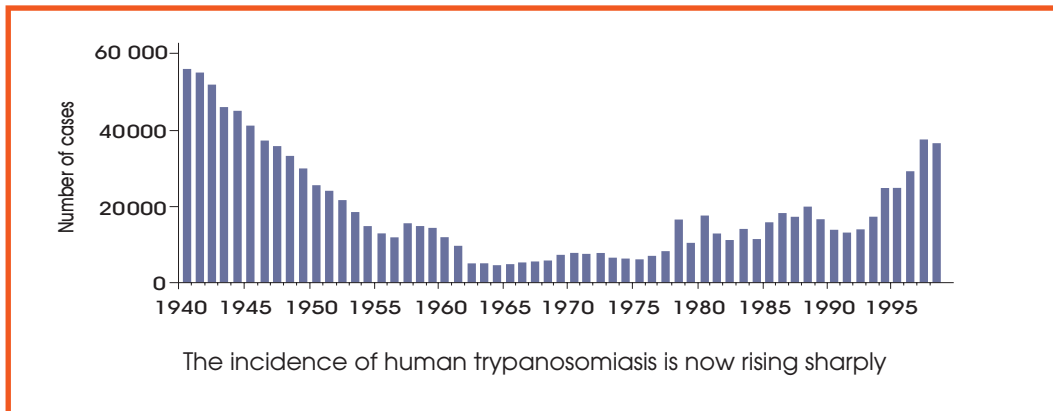
Tsetse infestation has held back the development of smallholder dairy production in Western Kenya. Farmers have been unwilling to risk investing in expensive crossbred cattle when the chances of losing them to trypanosomiasis are so high. This simple, low-cost solution looks set to change all that.



In short, given the high costs and risks of failure associated with SIT-based eradication, other approaches that make use of simpler, more proven techniques seem better suited to Africa.

The flies have it

While the arguments rage, the statistics on fly populations and disease incidence get worse and worse. In the 1960s, when the results of the first attempts at chemical control were published, it was thought that sleeping sickness had been conquered. But as the fashion for chemical control began



‘We’re dealing with a deteriorating situation. I don’t think that’s been stressed enough. What are the costs going to be of not intervening?’ –

Martin Mitchell, Cooper Zimbabwe Ltd

to wane in the mid-1970s, so the incidence of the disease started to rise again – a trend that accelerated sharply during the 1990s. About half a million of Africa’s people are now thought to be infected, 100 000 of whom die of the disease every year.

So what does the future hold for tsetse control? If there is to be any movement forward, the trading of insults must stop and the debate must get down to some rational discussion of the real issues. For all the heat generated by the eradication-versus-control controversy, you’d think the two concepts mattered. But for practical purposes the difference between them in the short term will be purely semantic, since elimination can only be achieved sequentially, area by area, species by species.

‘Let’s not get bogged down in eradication versus control. It’s all about the same problem.’ –

Peter Holmes, Chairman, PAAT



What is really at stake are the resources devoted to different approaches. The multi-faceted nature of the tsetse problem creates hot competition for funding among different R&D interest groups. The PATTEC initiative, with its strong bid for political backing, has made other groups feel left out in the cold. Human health professionals are worried that PATTEC's claims of an easy and final solution to the tsetse problem will divert resources away from their efforts to improve the lot of human sufferers of sleeping sickness. Similarly, livestock researchers worry that the increased use of SIT in large-scale projects will subtract from promising lines of research on on-farm control.

These fears have now been partly allayed. In response to the barrage of criticism they have received from the rest of the tsetse community, SIT's supporters have softened their language, adopting a more gradualist and inclusive approach. At a meeting of PAAT's advisory panel, held a few weeks after the Edinburgh meeting, a statement was issued recognising the continuing importance of treating human sleeping sickness and of encouraging livestock producer-based on-farm control practices, with both elements being combined in a cross-sectoral approach (see Annexes, p 47). It is to be hoped that, in response, the conventional control camp will recognise the potential value of SIT in certain narrowly defined circumstances.

'I think what's so important today is seeking broad consensus. Almost every speaker has agreed that the way forward is to identify priority areas where we can start. We have criteria that I believe most people in this room would sign up to.'

Peter Holmes, Chairman, PAAT

And this is the crux of the matter. For PATTEC must get real in terms of what it can and cannot expect to deliver through the use of SIT. The development of a Plan of Action is a step in the right direction, but the plan's over-reliance on putative isolated areas of tsetse infestation shows that the truth has not yet been faced. It is that SIT can do little more than mop up residual tsetse populations, possibly not even entirely eliminating these; it certainly cannot prevent re-infestation – the problem that has plagued all previous control attempts.

I conclude that, instead of devoting large sums of taxpayers' money to SIT, it would be better to spend smaller amounts on strengthening conventional control. I see two areas of conventional control in which improvements would really make a difference and which therefore deserve further research: helping livestock producers develop and refine their on-farm control practices, primarily through the use of insecticides and nets; and making traps and barriers more effective by building the local institutions needed to ensure their long-term maintenance (these institutions might follow, or at least learn from, the models available for village water committees). As regards



implementation, I feel the emphasis needs to be on developing and executing a coherent overall strategy that effectively combines aerial and ground-based interventions, as in the Botswana case. There will also be a need to build in and extend the findings of on-farm and community-based research on technical and institutional innovations, since if these prove successful and can be widely adopted they might greatly reduce the need for aerial spraying. To gain support for large-scale control, it will be vital to create the political conditions conducive to success.

That is not to say that the energy and vision of PATTEC should be dissipated. The campaign has already re-injected a welcome sense of urgency into the flagging international effort to control tsetse. It can and should continue to serve as a platform for identifying priorities, raising funds, organising projects and co-ordinating them across national frontiers; it should not be allowed to push a technology that is held in deep suspicion as being both expensive and ineffective; but it should be encouraged to try that technology out in the few clearly defined conditions in which it stands a chance of succeeding. Those highland Ethiopian enclaves might make a good starting point.

Author's acknowledgement:

I have drawn heavily on the presentations made at the Edinburgh meeting and am grateful to all the participants for their many telling points and arguments. I am also grateful to Keith Sones of Stockwatch, Ian Maudlin of DFID–AHP and Richard Markham of Green Ink for their helpful comments on my draft. Any remaining faults of fact or interpretation are, however, mine.

Simon Chater



Highlights

From the discussion sessions

This section gives excerpts from the discussion sessions at the Edinburgh meeting. Additional points made in interviews with the participants, also recorded during the meeting, are shown *in italics*.

1. Is tsetse control a high priority for Africa?

Burkhard Bauer *‘If we want to reduce poverty in Africa we have to address this problem.’*

Charles Mogotsi *‘The unique thing with tsetse and trypanosomiasis is that it not only affects the lives of ordinary rural people, it affects other aspects relating to cattle, land. It is a problem that cuts across the wide spectrum of human life. It’s important that it should be dealt with and be given the prominence that it deserves.’*

John Hargrove *‘It is not simply a question of “Here is a problem which needs to be solved and therefore we will do it.” There are many, many problems in Africa that need to be solved and there is a finite amount of money available and we need to think a) what problems are we going to attack and b) that we use the most cost-effective technique to do it.’*

Chris Schofield *‘Although it’s true that the numbers for AIDS, malaria, TB are very, very high, this is possibly not the most effective way of dealing with resource allocation. I would do it by saying ‘What can I do?’ At this moment I do not know how to deal with malaria in Africa. I do not know how to intervene against tuberculosis. I do not know how to stop the AIDS pandemic. But I do know how to stop Chagas’ disease in America and I am associated with people who I believe can stop sleeping sickness.’*



Hans Herren *‘I think it is a priority issue which needs to be dealt with. And I think it’s because Africa lacks energy. And I think that farming needs energy both from the human side and from the animal side. And tsetse does affect basically the power available both from humans and animals in order to support agricultural production. And we agree with this very strongly, that tsetse is keeping development in Africa down.’*

Chris Schofield *‘The chief thing in human health is hunger. So agricultural production, which is affected by trypanosomiasis, is key to hunger. And sleeping sickness also affects agricultural production, so the health element shouldn’t be neglected in either case.’*

Martin Mitchell *‘We’re dealing with a deteriorating situation. I don’t think that’s been stressed enough. If we don’t do something, what are the costs going to be of not intervening? I think we should address ourselves towards that.’*

2. Tsetse eradication or control?

Willy Wint *‘What difference does it make over the next 10 years if we accept “eradication” as a concept or not? Eradication is a long-term aim that needn’t concern us now.’*

Peter Holmes *‘If we believe total eradication can be achieved, it is clearly going to take many, many years. And there are questions as to whether tsetse will ever be totally eradicated from Africa. What we do believe is that we can eradicate tsetse from socio-economically important areas of Africa to provide the greatest benefit.’*

Chris Schofield *‘People confuse control with eradication. In Latin America, eradication is the end point of control – the point at which you can stop spending money on sustainable control. Inevitably control activities get suspended sometimes (e.g. in Argentina now, with the collapse in its economy). No one is proposing one single control approach. Those working with tsetse and trypanosomiasis are fortunate to have the luxury of choice of technologies, not just SIT. So tailor a package to suit the particular situation.’*



- Sarah Randolph* ‘I think control in selected places and large parts of Africa is what’s necessary, but that doesn’t necessarily mean eradication. . . . It’s not true that tsetse exists in isolated pockets in Africa. There will always be the potential for re-invasion and re-colonisation of evacuated areas.’
- Hans Herren* ‘We need to be clear about eradication versus control or slow elimination, because that’s not the same thing. And why it’s important is because of the investment being made. In many countries, in Ethiopia – how many millions are they spending on mass production facilities? So we are making a lot of investments up front for something when we don’t know whether it will work or not. We can use models. There are many ways of having a better idea where to go, what to do.’
- Peter Holmes* ‘We must continue to work towards consensus. We should focus on the common ground which, I believe, is significant. It has taken a long battle and there are many competing interests, as we know, internationally. But we have momentum. Let’s really build on that. Let’s see government priorities within Africa. They have to raise it on their priority lists as well. Let’s not get bogged down in eradication versus control. It’s all about the same problem. It’s all about addressing the same issues. Let’s move forward in these priority areas and start to get on with it.’
- Philippe Vialatte* ‘Eradication as an over-arching objective, like poverty eradication, makes sense, but still we are going to be talking about control, talking about the various technical possibilities. There is no silver bullet, as you say, so let’s utilise the best technique where it fits.’
- John Kabayo* ‘Eradication for us is a target, the end result we hope to achieve and I don’t think there is any disagreement there. We propose in our strategy that each country should undertake some action and not have to ask for outside help, and that we should take a bit at a time that we can handle, a bit at a time. And that is the philosophy that is advocated in our Plan of Action. And we believe that we can do it even faster if there is help from outside.’
- Alex Shaw* ‘Where I don’t agree is with the word eradication. WHO does not use the word eradication. We are in danger of using “bad science” if we have that as a goal.’



Let's take a European example: the first big breakthrough in vaccination and so on had to do with rabies – a very nasty disease. Rabies has not been eradicated from Europe. There is no pan-European eradication campaign for rabies, as far as I know. Control is not a cheap or unpleasant solution. It's a way of describing what our objective is. And I would dearly love to see this become an elimination programme rather than an eradication programme.'

Burkhard Bauer

'In the medium term I should say that in most areas what we should aim at is control, reduction of the problem to a level where it is possible to keep animals, keep better performing animals, and get higher productivity. And, in the long run, we may have techniques which are sufficiently effective for eliminating the tsetse.'

Assefa Mebrate

'We want to go for elimination of the problem because we can't continuously ask the people to do the same thing again and again for generations. Is there commitment on the side of the farmers? Sure there is. They are the ones who have the problem, otherwise we wouldn't be worried.'

William Shereni

'There have been huge successes and failures in tsetse control in Africa. Governments ask what has been achieved so far. I am worried that governments will get tired and that we would be fighting a losing battle.'

David Bourn

'I think the PATTEC programme is a long-term vision. This is what they have said. They haven't put a time-frame on it. And in order to get there, there are going to have to be a series of starting points where control programmes begin and gradually expand to fill wider and wider areas. And maybe, in due course, there will be local elimination of tsetse, which would be great. But I think that is a more realistic, honest approach, rather than selling the idea that we can achieve eradication even in the short term. It's not possible.'

Joseph Ndung'u

'We need to recognise that science is becoming mixed with politics. Firstly, we should stop criticising every word in the Africa (PATTEC) declaration and move towards the end objective. Secondly, we have to accept that to attract the attention of African Heads of State an "eyecatcher" is essential. "Control" is not eyecatching, whereas "eradication" is. It's a catchword that mobilises funds



and that is already happening. Thirdly, we now need to mobilise international funds to balance local efforts.'

3. Use of the sterile insect technique

Sarah Randolph 'We need to identify what we're debating. If that is eradication, does that necessarily include the sterile insect technique (SIT)? Because SIT needs investment here and now – and if we're going to be able to achieve it without SIT then we shouldn't be making that investment.'

Assefa Mebrate 'There is too much focus on SIT. African Heads of State recognise that whatever technologies are appropriate will be used.'

Hans Herren 'Being against SIT doesn't mean being against control. SIT doesn't have a proven track-record against tsetse. SIT takes money, attention and people away from other, effective, control methods. People are confusing control and eradication. Those promoting SIT do not fully understand IPM.'

Joseph Ndung'u *'Lambwe valley was a very, very serious focus of sleeping sickness for many, many years until we went in with the technologies that were geared towards clearing tsetse flies through control. And we used the target technology to do that. By 1994 we had attained 99% control of the tsetse fly but we could not get rid of the 1% of the flies that persisted. Therefore, whenever we stopped the control activities, the fly numbers would still go up. Hence the need now to change our main focus towards eradication, so that we can stamp out that problem once and for all . . . In this particular area we would like to use SIT to eradicate the fly, because there is always that residual population that is in thickets that we cannot get access to and therefore we shall not be able to wipe it out using the conventional technologies.'*

Udo Feldmann 'SIT has a unique efficiency pattern. It's most efficient at decreasing density of target populations. Therefore it is to us obvious that, in certain conditions, SIT would play a role. But we are not saying SIT would be used in any situation, in each habitat, and so forth. What we are doing is developing it to a stage whereby it's available when it's needed.'



- Burkhard Bauer ‘What we all know is that barriers do not work. I happened to be on an evaluation mission to Burkina Faso a fortnight ago. We were first there to implement a large-scale SIT programme over 3600 square kilometres, which was technically successful but, as it turned out, was re-invaded by tsetse from adjacent areas despite efforts to maintain the area safe by using barriers.’
- Rajinder Saini ‘We know there is confusion, generated by the simple fact that we have promoted silver bullet solutions to solve this problem. But, more worrying is that we should not give false hope to our politicians, who have shown the political will to solve the problem. We know that integrated vector and disease control is the way forward, so let us spend time trying to find solutions to this problem without giving false hopes.’
- Udo Feldmann ‘We are not suggesting SIT is the silver bullet approach. It is just one tool of many tools and we are often advising people that in their situation SIT is *not* feasible. Anything else would be nonsense.’

4. Other methods of tsetse control

- Hans Herren *‘In Ethiopia, for example, thousands of traps have been deployed in huge areas, with the result that, within a 6-month period, the tsetse fly population had basically collapsed down to a level where the traps were trapping maybe one fly every month or every other month. So that it is not zero and it will never be with traps unless we keep deploying them for years and years. But I think that’s not really the objective of an integrated approach to tsetse management, where we want to control the population to a level which is no longer an issue for the farmers in the given region.’*
- David Bourn ‘I believe there is already a huge amount of control going on in Africa, not by governments but by farmers, who are removing wildlife and removing habitat, using drugs to treat their livestock. And what we need to be thinking about is how we can enhance that and extend that indigenous autonomous control that’s happening. And if we don’t recognise that that’s a major factor controlling the disease we are in danger of going off the track and developing techniques that are really superfluous to requirements.’



- Kwaku Agyemang* ‘Use of trypanotolerant livestock is one option in the integrated approach to the problem. They are also very resistant to some important diseases, so that even when there is no tsetse they will still be useful and competitive.’
- Kwaku Agyemang* ‘Our focus at the International Trypanotolerance Centre (ITC) is to see how we understand the factors that contribute to the stability of this trait. And from that time on, incorporating elements of productivity and also disease resistance into this stock. What we don’t want to happen is indiscriminate crossbreeding, which will in the long run erode the genetic purity of trypanotolerant livestock.’

5. Economic issues and priorities

- Alex Shaw* ‘The losses in human life are very high, but because sleeping sickness is a location-specific disease, it is very cost-effective to intervene.’
- Burkhard Bauer* ‘Benefits are always accumulated in high human population density areas. But how do you justify a blanket coverage to eradicate tryps if the prevalence is something of the order of 5–8%.’
- John Hargrove* ‘We are only really concerned about tsetse flies if they cause a disease risk and with quite a number of the tsetse flies it is quite clear that they are of minimal risk. Even some of the species that are a problem in one part of Africa are not really much of a problem in another. And one wonders whether it is justified to spend, it might be millions, might be billions of dollars, on eradicating specific populations of flies when in fact they cause a very small problem and when the money may much better be used, for instance, in the fight against AIDS and also in the fight against malaria and in the provision of water and good sanitation.’
- Francis Oloo* ‘Farmers have to see the benefits and you have to focus where there are economic returns. All of us know that tsetse flies are not uniformly distributed like squares in an arithmetic book. You will pick up really small patches where the effort must go, and in those areas we have seen farmers take responsibility, with no extra support from government or anyone else. After that you can see production up and you can talk of sustainability built into the economic system of the farmers themselves.’



Glyn Vale ‘When we think about cost/benefit ratios, we shouldn’t always think on these great global scales in the first instance but rather on much smaller areas like, for example, 25 000 square kilometres in the southern Rift Valley of Ethiopia, where tsetse control can be done very, very cheaply. The invasion problem is not really a problem. And it would be very effective and bring enormous benefits.’

David Bourn *‘Hard choices have to be made about prioritisation. Whether one should be thinking about improved extension services, improved animal nutrition or even more widely in terms of better primary education, primary health care. Governments are going to be constrained by the money, the people that they have got, the staff that they have got. And trypanosomiasis may not be the most important priority in some areas.’*

6. Economic arguments relating to the sterile insect technique

Sarah Randolph ‘We can almost certainly achieve great things with tsetse and trypanosomiasis control so long as we don’t factor in SIT from the start.’

John Hargrove ‘The problem with SIT is having to commit yourself to spending all that money before you know whether eradication could be achieved using the alternative techniques.’

Udo Feldmann ‘We are not saying that SIT should be used in all situations. That is obvious. In the same way I find it ridiculous if somebody says from the beginning to exclude SIT. This would be very bad technical advice. Because SIT happens to be the only technology that has an efficiency pattern where the efficiency increases with decreasing target density. And this can be, under certain conditions, a very powerful tool. With regard to cost-effectiveness... you can waste a lot of money if you don’t reach your objectives.’

John Hargrove ‘There is a very strong feeling amongst a large body of people with a lot of tsetse experience that SIT is not necessary, it may not be sufficient and, from a cost point of view, it may not be desirable to use it.’



- Sarah Randolph* ‘I don’t think SIT is a suitable proposition for Africa. Nor do I think biologically it will result in eradication of tsetse populations. I don’t think it’s a practical proposition because of the enormous infrastructure of the facility that you would need to produce sterile insects, for which Africa is not geared up.’
- Joseph Ndung’u* ‘In the short term it (SIT) can be seen as expensive. In the long term it becomes cheaper because once a facility has been used for addressing one fly belt, you can use the same facility again to address another fly belt, and so on.’
- Hans Herren* ‘It’s a waste of money, it’ll take years and years and I think that other means will actually prevail in the meantime. I just feel sorry for the money we are going to be spending on trying to do something which I think from the beginning the real tsetse experts will tell you has a very low likelihood to succeed.’

7. Environmental issues

- Martin Mitchell* ‘Certainly there is a feeling among donors, and particularly within Europe, that the tsetse fly has protected vast areas of Africa from environmental degradation. If we are going to get more money devoted to this problem then we have to address those environmental issues.’
- John Hargrove* ‘I think that the whole issue has been fought on the wrong battle-grounds. An enormous amount of money was spent on seeing what damage was going to be done by the insecticides in the aerial spraying programme (in Zimbabwe). Shortly after flies had been removed from that area, however, at that point people moved in and every single tree was burnt where it stood. I asked one of the farmers why they were removing every single tree. The answer was, “We’ve been told by the District Administrator that, in 2 years, if there are any trees left, we’ll lose our land.” That’s the sort of issue that’s not addressed by people at the time an eradication programme is carried out.’
- Kwaku Agyemang* ‘There are areas where, because of tsetse, not only are animals unable to be grazed but people can’t farm there either. People are restricted to farming on some piece of land – the fallow period is zero. And people spend a lot of time



trying to get something out of marginal lands that shouldn't even be used for farming.'

John Kabayo

'No one seems to look at the continuing presence of tsetse as an environmental hazard itself. Because of the continuing competition for tsetse-free land, this creates problems of soil erosion and so on. I believe, if tsetse was removed and the disease was removed, there would be a tendency to stock fewer of the animals responsible for erosion. All the PATTEC programmes that we write will have a land use component. We will also address environmental questions.'

Hans Herren

'Farmers have a certain number of animals, head of cattle – never mind how big or small they are – because it's their bank. And I think many other things will have to change in order for people to say, "My cows are healthier, I'm going to have fewer.'"

Wyn Richards

'Our studies in Zimbabwe showed that land that has been vacated has had a chance to regenerate as a result of new land becoming available.'

Burkhard Bauer

'I just want to give you an example of what is happening due to demographic pressure despite the presence of tsetse. WHO had a huge programme to control river blindness in the Volta system in West Africa. They succeeded in controlling the river blindness. The tsetse was still there. People started entering, and were even encouraged to enter these areas, despite the presence of tsetse, and they were removing a lot of vegetation. So much of the area has been reclaimed despite the presence of tsetse. So I would be a bit careful of saying that removal of tsetse will decrease the pressure on land. The pressure on land is there anyway. And if there is lack of land, people will move into areas which are presently infested by tsetse.'

Assefa Mebrate

'Our plan (in Ethiopia) was to have the regional government prepare a land use plan and legalise it to enforce it as much as possible. If we don't have a plan, we don't know what is going to happen where, and there is no way of assessing the impact of what happens after eradication. There has to be a standardised method for doing environmental studies. Our suggestion was for



the biologists to go out and identify indicator species, to find out if there is going to be adverse environmental change when it happens. Otherwise it will be very difficult to assess impact.'

Joseph Ndung'u 'It is good to do land use planning, but also to ensure that our governments put it into policy. At the present time very few African countries can tell you that this is our land use policy. Therefore, if you are going to embark on very aggressive eradication programmes, we have to ensure that our countries also will co-operate with land use policies that they can enforce.'

David Bourn 'Land tenure itself is a vitally important aspect in all this, and people protecting their assets. This is an issue that is ongoing in many countries at the moment and until that is resolved, detailed land use planning and implementation is going to be a big problem.'

8. Tsetse control is not the only issue

Mark Eisler 'We seem to be very focussed on PATTEC and priority areas – and that's fine – but I would say that I don't think tsetse flies are the problem at all. I think it's an animal health problem. Getting rid of tsetse is not necessarily going to improve animal health. Tryps is just one component of this problem and it is going to be addressed better by better vet care, getting farmers to use drugs better. These are arguably more important in the whole scheme of things.'

John Kabayo 'Eradication of tsetse doesn't mean that you stop promoting better animal husbandry. All these services will have to continue and, if possible, be strengthened. So activities should continue on all fronts.'

Burkhard Bauer 'I am worried about the narrow focus on tsetse and trypanosomiasis alone. We are talking about poverty first. The baseline is how do we reduce poverty in rural areas? Tsetse in some places may be the cause of poverty but sometimes it's the other way round – that poverty favours the presence of tsetse. Just by improving animal husbandry practices, you are likely to have a significant increase in income.'



Joseph Ndung'u *'The impression I have is that Kenya's commitment towards tsetse control and final eradication is going to grow even stronger, especially after the declaration by the Heads of State. . . . The only thing that we want to do in the future is to try and integrate other livestock diseases so that we can go into the communities with a full package of animal health.'*

Getachew Tikubet *'If you only look at the vertical operation, which is killing the tsetse, then the achievement will be minimal to say the least and it will also not be sustainable. So tsetse control should be followed by wealth creation for the farmer.'*

9. The way forward

Burkhard Bauer *'Instead of diverting too many efforts to too many species and subspecies, why can't we agree that we have species that have a high vectorial capacity. That is, *G. pallidipes* in East Africa and *G. morsitans* in West Africa. So let's have a focus there in order to really use scarce resources much more rationally.'*

Sarah Randolph *'We still have to be careful that we don't try to mix two incompatible approaches. If the longest journey starts with the first step, we need to be quite clear what that first step is. If we are talking about area-wide tsetse eradication, that's one step. If we are talking about local tsetse control, it's a different step. And you cannot take that first step unless you know what direction you are going to go in. We need to come to a decision.'*

Peter Holmes *'The criteria that were selected by PAAT and PATTEC suggested situations where you might expect the greatest effect, the greatest benefit for the cost. And it was no more than that. In terms of selection of international projects, I think those criteria have been well debated and are fairly robust.'*

Chris Schofield *'We have PATTEC, which is the co-ordinating organisation. We have a whole series of national and regional initiatives. But I see something missing. I don't see something that is going to organise the research. I don't see something that is going to organise the training. Now PAAT obviously has tremendous experience in this. But the difference between PAAT and ECLAT (South*



America) is that ECLAT is an executive organisation and it hands out funds for research workers and so on, and I don't think PAAT does that. Maybe it should. Or maybe there should be something else that can.'

- Hans Herren 'Where you do training and capacity building, that's where you also do research. Who says what, when and how things should be done should come from research. So where is the African ECLAT? There are many national and international organisations who have done a lot of work on tsetse and I think that maybe it's time to try and link them together into such a body.'
- Peter Holmes 'PAAT was created to do exactly what you are saying. It has spent a lot of time identifying research priorities and it's better to use what we've got.'
- Ian Maudlin 'One of the problems we have are the words "tsetse control projects". If you ask Burkhard what he is doing in Kenya now, he's not engaged in a tsetse control project, he's engaged in a much more holistic thing, which is to do with rural development. It would help if we just started from that and forgot about tsetse control projects. They may fit into rural development, but I think we have moved on from there.'
- John Kabayo 'We want to go away from diffuse and indeterminate projects which have no beginning and no end. We want a clear beginning and end within a specified time-frame. For each identified area that we want to work, there will be a project document developed that can describe all the steps from beginning to end for that area.'
- Martin Mitchell* '*The grouping we have together on tsetse at the minute is really either scientifically based or in some way linked to governments or institutions. I think alone we can't achieve the type of tsetse control that's necessary unless we get a much wider platform.*'
- Hans Herren 'I think it is time that the decision-making on what is happening is transferred more to the people who are suffering the problem. We need to expand the forum in which decision-making is done.'



Martin Mitchell ‘Today it was important that we mapped out the area of consensus and I think we really started to put a plan together. I think it’s very important that PAAT and PATTEC have come together in one forum, and that looks like the obvious lead body to move things forward. But I think it has to bring in other groups. I would encourage them to try and involve wider sections of the community as quickly as possible. . . . I think the private sector needs to do more and force itself to the forefront of the agenda.’

John Kabayo ‘What we (PATTEC) have still not done – and the proposal you made is a good one – is take the technical expertise that is available on the African continent and link it with the outside world. The proposal to organise this effort into an advisory system that can provide the required expertise to the whole initiative is a good one.’

Wyn Richards ‘We have currently a plethora of tools available for tsetse or trypan control, but their integrated role – which ones to use in which location, depending not only on the challenge but also on the institutional framework in the country at that particular place and time – I think that is a researchable area that could be funded rapidly to enable things to move on.’

Peter Holmes ‘A number of workshops have been organised to take forward the planning and operation of activities within the two priority areas and I think if we were to support that type of activity, and encourage donor support, that would be one way of moving forward over the next year.’

Assefa Mebrate ‘For me, the way to go from here is for PATTEC to develop procedures for addressing socio-economic concerns, environmental concerns, further developing and implementing criteria for selecting priority areas. Although we have agreed on broad issues, there is more to do.’

Udo Feldmann ‘I think we have moved ahead quite a bit and there’s substantial consensus between the different groups. The different positions are not that extreme or so far apart as we had assumed initially. If we identify the points we have in common and base our co-operation on common points, I think we can make a difference in a few years – which means creating fly-free zones where



sustainable agricultural development is possible and where poverty reduction will happen.'

- Joseph Ndung'u 'The PATTEC Plan of Action should be made available to as many interested parties as possible because I believe that, at present, not many of those present here have had a chance to see it. Secondly, that PATTEC should consider incorporating the opinions that have been presented here today in order to improve on that Plan of Action that was adopted last year. Thirdly, the possibility of advocacy on the way forward, which is going to include resource mobilisation by the member countries internally and externally.'
- Peter Holmes '*By signing up to PATTEC, African governments have shown a very high level of political will in tackling this problem. And this is a major achievement and they are to be congratulated. We must now take this forward and implement and build on that commitment and show activity and achievement and success.'*
- Hans Herren 'To get some sort of consensus, I think PATTEC needs to revise its document and parlance on this whole issue. Some people from here and others need to be getting together to go over this document and say what are we talking about here. It is clear that some of the approaches which PATTEC has been promoting, and which have been watered down but are still there, are just not in line with what sustainable development is all about – community involvement. And I think that's a key element to ensure sustainability. Eradication may be the result of a lot of activities at farm level or community level. And I think that's how, slowly, we may get there – or we may not get there. If we get to eradication, fine. But the documentation, which says 'eradication', has to be changed and changed in a very radical way. If not, I don't think that the donors will follow with money.'
- John Kabayo 'I must say I am really happy that this has happened. I thank everybody that has been involved in this. It was a very good idea and it really comes at the right time. If you flip back at the requirement for us to change the PATTEC document: nothing in that document, the Plan of Action, contradicts any view that has been expressed here today. If you read the document, community involvement is there. There is absolutely no conflict. What I



explained is still missing is an advisory system, which I think we should build on the advice we have received now. And there was also reference to the fact that so many people have not been involved. This is true, but this (plan) is 1 year old. This campaign has only just started, once the politicians are involved. We tried to get them involved and informed them of the problem and we are happy that they have responded in the way that they have done. Now the political chapter has been closed, we are opening the technical one now. So I am very happy to be in this technical forum, in this tsetse community. Clearly we have the expertise and the knowledge to remove this problem. There is nothing in our document which counters any proposals that you can put together today. Everybody that wants to be involved is welcome. So there is no question that anybody is being left out or deliberately uninformed about this whole thing. This is an international effort, to be built on what is already going on. There is room for everybody.'



The way forward

Points of broad agreement, areas for further discussion and next steps

Steve Jones, the facilitator at the Edinburgh meeting, was able to tease out a list of points on which the participants were in broad agreement, a list of areas which required further discussion, and a set of 'next steps'.

Points of broad agreement

- Tsetse and the diseases it carries are major problems in Africa and the situation is deteriorating in many areas, making it imperative to take action now.
- Eradication is the vision. Control is the operational strategy.
- The vision is pan-African, but we must start with priority areas.
- We should not get hung up on time-scales; 'the longest journey starts with the first step'.
- The first steps for 'area-wide' versus 'local' control will be different.
- Appropriate technologies should be used in priority areas where the best results are most likely to be achieved. SIT is only one of many possible approaches.
- Surveillance and treatment will continue to be essential first steps for controlling sleeping sickness.
- Thanks to PATTEC, international awareness of tsetse and trypanosomiasis has been greatly raised, which itself is no mean achievement.
- PATTEC could learn much from the public relations approach adopted by the Roll Back Malaria Campaign and would benefit from a strong slogan like 'Roll Back Malaria'.
- We need success stories that demonstrate good cost/benefit ratios, an impact on poverty, and positive environmental outcomes.



- Tsetse and trypanosomiasis control needs to be part of the bigger picture of integrated vector management, seen in the broader context of sustainable rural development. Effective marketing of livestock and livestock products is also important to ensure sustainability.
- Environmental issues need to be effectively addressed; land use plans and policies must be developed and enforced.
- Governance is a limiting factor: weak institutions, excessive decentralisation, lack of capacity and lack of commitment are all constraints. Training and capacity building are essential components of any campaign.
- The international tsetse and trypanosomiasis community must put a strong unified case forward if the donors are to be convinced of the need to invest significantly in tsetse and trypanosomiasis control and eventual elimination.
- Tsetse and trypanosomiasis control needs to be demand led, with participatory community involvement at all stages. We should build on what is already there, allowing indigenous and autonomous control of project activities.
- Up-to-date, reliable data are required to allow decisions to be made in relation to tsetse and trypanosomiasis control.

Areas for further discussion

- There is a need to agree on the selection criteria for priority areas.
- Objective criteria for selecting the most appropriate tsetse and trypanosomiasis control technologies are also needed.
- How can the problem of re-invasion be dealt with?
- Should tsetse control really be a priority?
 - We need to quantify operational costs and cost/benefit ratios
 - We need to calculate the costs of doing nothing
- What should be done about protected areas, e.g. national parks, reserves and forests?
- We need to standardise our approaches to assessing the environmental impact of projects and integrate these approaches into project design and implementation.
- We need to find a more inclusive way forward.



Next steps

- Although it is recognised that PATTEC is an African initiative, there is a need to link technical expertise in Africa with that beyond the continent to enable the entire international tsetse and trypanosomiasis community to provide expertise and advice.
- PAAT is well placed to support PATTEC, e.g. by co-ordinating research and providing advocacy for resource mobilisation.
- Institutional competition and territoriality have created difficulties in defining a way forward: we need a change of attitude if we are to serve PATTEC better.
- If African countries want donor support for tsetse and trypanosomiasis control, these activities need to be included in Poverty Reduction Strategy Papers (PRSPs) (government responses to UN poverty reduction targets) and on the agenda of the New Economic Partnership for African Development (NEPAD).
- Decision support tools need to be developed to facilitate objective selection of the most appropriate technologies and approaches in any given situation.
- PATTEC needs to formulate sound project documents to attract donor support.
- A holistic approach is needed in which tsetse and trypanosomiasis fit into the bigger picture.
- The PATTEC Plan of Action should be made widely available. At present, relatively few people have had the opportunity to see this document.
- PATTEC should consider ways of incorporating a wider diversity of opinions into any revised Plan of Action.
- PATTEC needs to formulate a clear reply to the points made by the UK Secretary of State for Development, Clare Short, in her written answer to a parliamentary question (see Annex).
- PATTEC need to devise an effective communications strategy, perhaps following the example set by the Roll Back Malaria Campaign.



Annexes

Decision on proposal for the eradication of tsetse flies on the African continent

Assembly of Heads of State and Government
Thirty-sixth ordinary session/fourth ordinary session of the AEC,
10–12 July 2000, Lome, Togo

Decision CM/2152 (LXXII) ADD.2

The Assembly:

1. TAKES NOTE of the report presented by the Government of Uganda, and COMMENDS the effort undertaken to highlight the problems caused by tsetse flies in Africa;
2. COMMENDS those African countries that have initiated the application of the sterile insect technique (SIT) for their pioneering effort;
3. RECOGNISES the seriousness of the problem as one of Africa's greatest constraints to socio-economic development severely affecting human and livestock health, limiting land use, causing poverty and perpetuating underdevelopment on the continent;
4. URGES member states to act collectively to rise to the challenge of eliminating the problem through concerted efforts in mobilising the necessary human, financial and material resources required to render Africa tsetse-free within the shortest time possible;
5. ACKNOWLEDGES the trans-boundary nature of the problem, WELCOMES the establishment of the Pan-African SIT Forum as a mechanism through which sustainable area-wide tsetse eradication can be achieved and CALLS UPON the Secretary General to provide support to the Pan-African SIT Forum.
6. DECLARES the year 2001 as the year of the control of tsetse fly, to mark the beginning of renewed efforts in the campaign for the eradication of tsetse flies in Africa;
7. REQUESTS the Secretary-General to undertake all necessary consultations with a view to initiating the campaign from all possible partners and seek their support and co-operation in the implementation of the Pan-African Tsetse Eradication Campaign. The Secretary-General should submit an annual progress report to the OAU summit, through the current Chairman.



UK parliamentary written answer

Friday 18 January 2002

CAROLINE SPELMAN (Meriden): Asked the Secretary of State for International Development if she would make a statement on the Pan-African Tsetse and Trypanosomosis Eradication Campaign.

Answer:

CLARE SHORT: DFID recognises that trypanosomiasis is a major constraint to human health and to the livelihoods of poor livestock keepers throughout many parts of Africa. We have made considerable investments (over £37 million) to develop methods to control the disease in livestock and we support the World Health Organization in its efforts to control sleeping sickness in humans.

The long-term goal of the Pan-African Tsetse and Trypanosomosis Eradication Campaign is to eradicate tsetse fly from the continent. It is a complex and ambitious programme that would require many billions of dollars to implement, and is founded on as yet unproven scientific and economic theory.

Our analysis – shared also by the European Commission – is that it will not be possible to eradicate flies from Africa. The aims of the Campaign are laudable, but we do not believe that they are achievable.

Our strategy is to promote methods for controlling the tsetse fly and preventative and curative methods of treatment that can be readily implemented by poor people themselves. We have programmes of support with the Inter-African Bureau of Animal Resources of the African Union, and with the Food and Agriculture Organization of the United Nations, to promote the sustainable animal health services that provide poor people with the means to control tsetse fly and the diseases it carries.

Where the political will for control exists, and where there are clear social benefits, a regional approach to tsetse control may be justified. Such large-scale programmes would, however, be best handled through multilateral channels such as the European Commission, and not by bilateral agencies such as DFID.



Statement by the PAAT community

This statement reflects the consensus reached at the Eighth Meeting of the Panel of PAAT Advisory Group (PAG) Co-ordinators, 24–25 September 2002, Nairobi, Kenya. The meeting was attended by representatives from the international organisations that have a mandate to participate in PAAT (AU–IBAR, FAO, IAEA and WHO), from tsetse-affected countries, from national agricultural research systems, from advanced research institutes and from other relevant international institutions (ILRI, ICIPE, CIRAD and IFAD).

Following the decision of African Heads of State and Government, the broad Tsetse and Trypanosomiasis (T&T) community, as represented by the Programme Against African Trypanosomiasis (PAAT), is united in its resolve to reduce and ultimately eliminate the constraint of tsetse-transmitted trypanosomiasis in man and animals.

The PAAT community believes that progress towards the final objective is best achieved through concerted efforts towards intervention, in a sequential fashion, with the focus on those areas where the disease impact is most severe and where control provides the greatest benefits to human health, well-being and sustainable agriculture and rural development (SARD).

It is recognised that the scale and impact of trypanosomiasis in man and animals varies between African countries and that progress towards the ultimate objective will also vary.

It is also recognised that, in the case of human trypanosomiasis, disease management will continue to depend on disease surveillance, detection and treatment as the principal priority for the foreseeable future, with tsetse suppression as a complementary tool. Tsetse intervention strategies need to be developed as a component of longer-term human trypanosomiasis prevention measures.

In animal trypanosomiasis, tsetse intervention has a key role to play in the effective control and eventual elimination of the disease. A significant stage in achieving this objective is the creation of tsetse-free zones through the integration of appropriate and environmentally acceptable technologies, including the sequential aerial technique (SAT) and SIT as economically justified. In this context the PAAT community supports the outcome and the associated joint press release resulting from the PAAT–PATTEC harmonisation workshop, held in Rome, 2–3 May 2002. The workshop identified criteria for selecting priority areas for joint international action. Governments, international and funding agencies are also encouraged to apply these criteria.



The PAAT community also recognises the need to continue encouraging livestock producer-based practices against T&T wherever the diseases present themselves as a problem.

In order to more effectively combat the diseases, both in man and animals, and their vectors, further concerted efforts are needed with a view to developing and implementing joint field programmes for sleeping sickness and animal trypanosomiasis interventions.

In this regard, it is opportune to consider the refinement of T&T intervention policies, and to enhance synergies and complementarities among all concerned international agencies and governments.



List of participants

Name	Affiliation
Agyemang, Kwaku	ITC
Bauer, Burkhard	FITCA (Kenya)
Bourn, David	ERGO (UK)
Budd, Len	Consultant
Codjia, Victorin	DVS (Benin)
Eisler, Mark	University of Glasgow (UK)
El Feki, Shereen	<i>The Economist</i>
Feldmann, Udo	IAEA
Hargrove, John	Consultant
Hendrickx, Guy	AVIA–GIS
Herren, Hans	ICIPE
Hirst, Sally	<i>Trends in Parasitology</i>
Holmes, Peter	PAAT
Jones, Steve	DFID (UK)
Kabayo, John	PATTEC
Mattioli, Raffaele	FAO
Maudlin, Ian	DFID–AHP (UK)
McDermott, John	ILRI
Mebrate, Assefa	PATTEC
Mitchell, Martin	Cooper Zimbabwe Ltd
Musiime, Jotham	AU–IBAR
Ndung'u, Joseph	KETRI (Kenya)
Oloo, Francis	FITCA (Kenya)
Peeling, Dil	DFID (UK)
Randolph, Sarah	DFID (UK)
Richards, Wyn	DFID–LPP (UK)
Rivers, Bernard	AIDSPAN (USA)
Saini, Rajinder	ICIPE
Schofield, Chris	ECLAT
Shaw, Alex	Consultant
Sones, Keith	Consultant
Tikubet, Getachew	ICIPE
Torr, Steve	NRI (UK)
Vale, Glyn	NRI (UK)
van den Bossche, Peter	ITM (Belgium)
Vialatte, Philippe	EU
Wint, William	ERGO (UK)



List of acronyms

AHP	Animal Health Programme (DFID, UK)
AU	African Union (formerly OAU)
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement (France)
CTVM	Centre for Tropical Veterinary Medicine (UK)
DFID	Department for International Development (UK)
DVS	Directorate of Veterinary Services (Benin)
EC	European Commission
ECLAT	The Latin American Network for Control of Triatominae
ERGO	Environmental Research Group Oxford
FAO	Food and Agriculture Organization of the United Nations
FITCA	Farming in Tsetse-controlled Areas (Kenya)
IAEA	International Atomic Energy Agency
ICIPE	International Centre for Insect Physiology and Ecology
ICPTV	Integrated Control of Pathogenic Trypanosomes and their Vectors
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
IPM	Integrated pest management
ITC	International Trypanotolerance Centre
KETRI	Kenya Trypanosomiasis Research Institute
LPP	Livestock Production Programme (DFID, UK)
NEPAD	New Economic Partnership for African Development
OAU–IBAR	Organisation of African Unity – Inter-African Bureau of Animal Resources
PAAT	Programme Against African Trypanosomiasis
PAG	PAAT Advisory Group
PATTEC	Pan-African Tsetse and Trypanosomosis Eradication Campaign
PRSP	Poverty Reduction Strategy Paper
SARD	Sustainable agriculture and rural development
SAT	Sequential Aerial Technique
SIT	Sterile insect technique
T&T	Tsetse and Trypanosomiasis
TTRI	Tsetse and Trypanosomiasis Research Institute (Tanzania)
UN	United Nations
WHO	World Health Organization



Credits

Graphics: *36 African countries infected by tsetse*, courtesy of the Environmental Research Group Oxford Limited (ERGO) and the Trypanosomosis and Land Use in Africa (TALA) Research Group, Department of Zoology, University of Oxford, page 4;
Apparent distribution of Triatoma infestans, courtesy of the Latin American Network for Control of Triatominae (ECLAT), page 15;
The incidence of human trypanosomiasis is now rising sharply, courtesy of Ian Maudlin, DFID–AHP, p.21.

Photos: Reg Allsop: pages 6 (below right) and 8; DFID–AHP: page 7; Dave Elsworth: pages 6 (above), 10 (below) and 19; IAEA: page 13; ILRI/Dave Elsworth: page 10 (above); Ian Maudlin: pages 1, 9 and 16; Keith Sones: page 20 (below); TCD Botswana photo archive: page 6 (below left); Sue Welburn: page v; WRENmedia: pages 11 and 20 (above).

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CD: WRENmedia

CD and how to use it

The CD complements this report. It was prepared from the presentations made during the opening sessions of the Edinburgh meeting, from sound recordings made during the discussions which followed and from interviews recorded individually with some of the participants.

The CD offers the user not only sound and pictures but also more flexibility than this printed report. For example, the user can choose whether to select highlights from the discussion according to specific topics, or whether to see them in chronological order as they were recorded on the day.

Please note: this CD makes extensive use of audio. If you do not have a sound card, or if you wish to print the information, you can view the contents as pdf files. Simply click on the pdf button or browse to the pdf folder.

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2. Type D:\STARTpc.EXE (where D is the letter of your CD drive) and press Enter
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