Trypanosomosis, Tsetse and Africa

The Year 2001 Report

Trypanosomosis is a parasitic disease caused by single-celled organisms of the Tryopanosoma genus. Trypanosomes, shown here, live in the blood of the host and cause anaemia.

Photo: Max Murray

What is Trypanosomosis?

Trypanosomosis is a parasitic disease caused by single-celled organisms of the genus *Trypanosoma* which affects both humans and animals. There are many species of *Trypanosoma*; most are specific to particular parts of the world and some only afflict particular animal species. There are widespread examples of tolerance to the parasite in both domestic and, especially, wild animal species.

What is the role of Tsetse Flies?

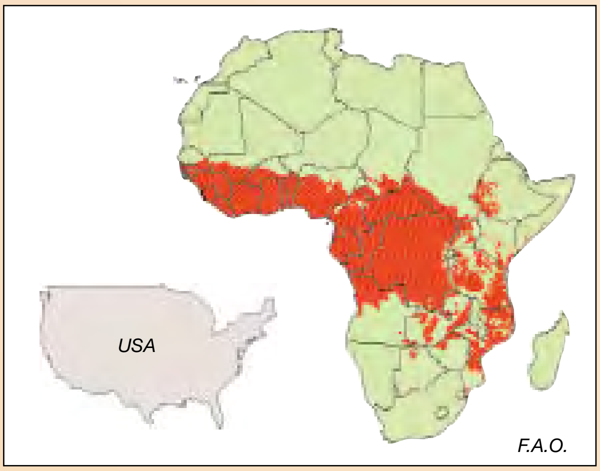
In Africa, the main trypanosome types are spread by several species of tsetse flies which tend to be specific to particular ecozones. Tsetse flies feed on the blood of a wide range of domestic and wild animals as well as humans and it is whilst feeding that an infected fly transfers the trypanosomes to its host. (See footnote)

What effect does trypanosomosis have on domestic animals?

Trypanosomosis in animals severely affects their productivity in several ways and if left untreated is often fatal. Not only does it reduce production in terms of milk yield, liveweight gain and work output but it also affects fertility, causes abortions and stillbirths and delays sexual maturity. Together these factors reduce herd productivity and offtake.

Although there are wide variations in the level of loss of productivity caused by trypanosomosis it is estimated that the cattle herd that does exist in the tsetse-infested areas of Africa would, overall, produce 20% more milk and meat if trypanosomosis could be eliminated. More importantly, potential herd size in areas affected by

The area of Africa affected by trypanosomosis, 10 million sq. km. is as large as the USA and contains the same human population. 45-50 million cattle and over 100 million other domestic livestock live in the regions of Africa affected by the disease.



Trypanosomosis is the most important and widespread disease affecting livestock production in Africa.

Cattle herds living in regions where trypanosomosis is endemic produce 20% less milk and meat.

In many parts of Africa it is not feasible for cattle to be kept because the risk of contracting trypanosomosis is so high.

trypanosomosis is only half the size it could be if the disease were not present.

How does the disease affect humans?

In humans there are two forms of the disease, commonly called Sleeping Sickness. The form found in west and central Africa causes chronic disease which may take several years to prove fatal; the form occurring in eastern and southern Africa is more acute and may take only a matter of months to run its course. The drugs used to treat early-stage human sleeping sickness were developed in the 1920's and the drug used to control the late stage itself causes death in 5% of treated cases.

What effect has trypanosomosis had on land use?

Ever since people have domesticated livestock in Africa, tsetse flies and trypanosomosis have determined the patterns of grazing and settlement. Nowadays, however, growing population pressure in the tsetse-free areas means that tsetse-infested areas need to be inhabited.

Where the trypanosomosis challenge is low it is still possible to practise limited mixed farming but where the challenge is high it is not possible to keep susceptible animals at all. For example, in the sub-humid ecozone of west Africa areas freed from River Blindness offer good potential for crop/livestock farming but the presence of tsetse flies inhibits this development.

In SW Ethiopia the lowlands are infested by tsetse flies and so most people live and farm in the highlands. Consequently there is high land pressure there, whereas in the fertile valleys and lowlands the population is sparse. Controlling tsetse flies and trypanosomosis would therefore enable the region's inhabitants to fully realise the agricultural potential of the lowlands leading to a more balanced land use and agricultural development pattern.

Nowadays, the total area infested by tsetse flies is estimated at 10 million sq. km.

Footnote: Mechanical transmission of trypanosomes occurs in *Trypanosoma* species for which tsetse flies do not play a vital role in their life-cycles. These species predominantly affect camels *(T. evansi)* and equines *(T. equiperdum)*.

Tsetse flies transmit trypanosomes from one host to another as they feed.

Animals affected by trypanosomosis become morbid and lose condition. Without treatment the disease is often fatal.

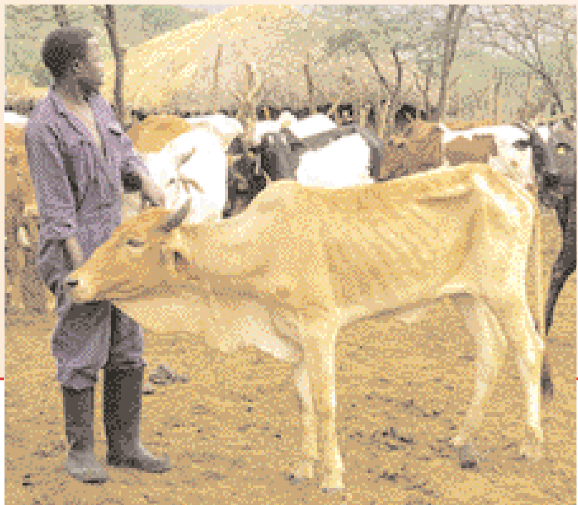


Photo: Peter Stevenson

Photo: Bill Snow

Some breeds of cattle such as the West African N'Dama are tolerant to trypanosomosis. However, even they succumb to the effects of the disease in high challenge situations.

How many farm animals live within this 10 million sq km?

Between 45 and 50 million cattle as well as at least 100 million sheep and goats are estimated to live within this area. Most of them live on the margins of fly belts where the trypanosomosis challenge is lower; in large areas it is not possible for farmers to keep susceptible livestock types at all because of the disease. In west Africa there are estimated to be 10 million trypanotolerant cattle. The more disease tolerant small ruminants are widespread.

What is the degree of risk to the human population?

Although 260 million people live within tsetse-infested areas only about 55 million are considered to be at risk from contracting sleeping sickness. This is because only two strains of *Trypanosoma* are human-infective and these tend to occur as epidemics in particular ‘focus’ areas, e.g. the northern shore of Lake Victoria and the Luangwa Valley in Zambia. Current thinking links the appearance of foci with areas of civil unrest and nowadays there are major epidemics in southern Sudan, Angola and the Democratic Republic of Congo.

How many people contract sleeping sickness each year?

There are no accurate survey data on a continent-wide basis for the number of people contracting sleeping sickness annually. However, the World Health Organisation’s prediction for the year 2001 is nearly 100,000 people and it is thought that currently the number of new cases is increasing by about 10% per year. WHO’s estimate for the resulting number of deaths is 35,000 - 40,000 per year, i.e. over 100 deaths per day.

Source: Geoff Hide

The chronic form of human sleeping sickness is confined to western and central Africa.

Source: Geoff Hide

The acute form of human sleeping sickness is confined to eastern and southern Africa.

WHO estimates that there are 100,000 new cases of sleeping sickness annually. The patient here is being treated at Dondo, Angola.

Currently it is not possible to make a vaccine against trypanosomosis.

The value of lost milk and meat production due to trypanosomosis in Africa is estimated at $2.75 billion per year.

What is the relationship between animal trypanosomosis and sleeping sickness?

The East and West African forms of sleeping sickness differ significantly. Domestic and wild animals act as a reservoir of infection for the East African form but it is only when there is a combination of high levels of infection in cattle and enhanced levels of cattle/fly/man contact, such as occur during times of civil unrest and displacement, that serious outbreaks of sleeping sickness occur. Although the West African form has been identified in wild and domestic animals, particularly pigs, it is still considered that man to man transmission by tsetse flies is the most common infection route.

Is there a vaccine against trypanosomosis?

The parasitic single-celled trypanosomes have an outer protein ‘coat’ and, when attacked by the host's immune system, can transform this coat through a ‘wardrobe’ of about 1000 alternative proteins. A vaccine stimulates protective immunity by mimicking the key antigenic structures of a disease organism and to be effective against trypanosomes it would have to contain antigens to all 1000 proteins. Currently it is not possible to produce such a vaccine and it is generally accepted that one is unlikely to be forthcoming in the near future.

How much damage is caused to livestock production by trypanosomosis?

A recent economic analysis of the tsetse and trypanosomosis research programme [1] estimated that losses to livestock production due to trypanosomosis are worth $2.75 billion per year. In addition there are also significant losses to crop production.

How can a livestock disease affect crop production?

Freedom from trypanosomosis affects crop production in three ways:

- Higher cattle populations increase the availability of suitable animals for ploughing and cultivation. In addition, healthy animals are able to plough more land than unhealthy animals.
- Better soil fertility through an increased supply of manure.
- Better access to markets through the adoption and use of cattle-drawn carts.

(1) DFID-funded Tsetse and Trypanosome Research and Development since 1980, Vol. 2 - Economic Analysis. Nov. 1999

Photo: Reto Brun

Konso Tsetse Control Project, Ethiopia

	Before Project	*With Project*
Cattle Mortality due to Trypanosomosis	*16%*	*4.8%*
Calf Mortality	*58%*	*0%*
Abortion	*20%*	*0%*
Area ploughed per day by a team of Oxen	*2.86 pe-ota**	*4.99 pe-ota**
Work days per oxen per week	*2.3*	*6.8*
Weight Gain per oxen (Farmers' perceptions)	*25*	*57*
Value per ox	*367 Birr*	*800 Birr*
Milk yield per day	*606 ml*	*1180 ml*
Butter yield per milk container	*188g*	*336g*
Average herd Packed Cell Volume	*23%*	*31.7%*

Source: Gemechu Gedono, FarmAfrica

* Pe-ota - Land area measurement

Photo: Chris Martin

Families using draught animals are able to cultivate twice as much land as families relying on hand cultivation.

The conversion by animals of waste crop materials into manure is one of the factors that makes mixed farming a sustainable system of low-input farming.

Photo: D. Elsworth

Ploughing Freedom from trypanosomosis not only increases livestock numbers in an area but also benefits the overall health of cattle. Together these factors enable farmers to spare animals for ploughing and increase each animal's strength and stamina to pull a plough. A DFID study of draught animal power [2] observed that families with access to draught animals are able to cultivate twice the area and thereby produce more crops than families relying on hand cultivation.

Improved nutrient cycling and better soil fertility Crop/livestock farming is generally accepted as being one of the most sustainable means of farming in low-input systems, primarily because it embodies an efficient means of nutrient cycling. In arable systems crop residues are often wasted. In mixed systems, however, using them as feedstuffs not only provides carbohydrate, fibre and protein to sustain animals but also results in manure which, when incorporated into the soil, is a source of readily available nutrients for growing crops.

Draught animal transport The inability of farmers to transport their heavy produce to central markets leaves them in weak selling positions. The opportunity to use animals, particularly cattle and donkeys, to access such markets puts them in a stronger selling position and also enables them to transport heavy inputs, such as fertilisers, back to their farms. The ability to use animal-drawn carts also brings social benefits to isolated rural families.

Photo: D. Elsworth

175 million rural dwellers in tsetse-infested areas live on less than $150 per year

Removing trypanosomosis would increase their incomes by $17 per year

Has the value of these indirect benefits been estimated?

The recent economic study [3] estimated that increased use of draught animal cultivation, better nutrient cycling and better access to markets would increase crop production with a value of $1.75 billion per year.

And what would be the total benefit of eliminating trypanosomosis?

The total increase in crop and livestock production would be worth $4.75 billion per year if trypanosomosis could be eliminated from the continent. This is equivalent to $17 per person living in tsetse-infested areas - a significant sum for the 175 million people who exist on an income of less than $150 per year.

How would the elimination of trypanosomosis affect the livelihoods of rural dwellers?

In the areas where tsetse flies have been controlled and the risk of trypanosomosis thereby eliminated, uninfected animals would no longer be at risk and therefore would not need prophylactic drug treatment. Animals undergoing therapeutic drug treatment would stand a better chance of full recovery. Within a year the productivity of livestock herds could rise to that of herds living in areas where trypanosomosis is absent.

In human terms therefore the first beneficiaries would be the existing owners of these animals. It is a common misconception that simply because people own livestock they are not amongst the poorest members of society. For many people, especially those who do not own any land, livestock products can be their sole source of income. Whilst animals may be regarded as a capital asset it is often difficult for livestock owners, especially pastoralists, to convert their 'capital' into income. Poverty is a result of a lack of income rather than a lack of capital.

The livelihoods of livestock owners are also vulnerable as they depend on their livestock remaining alive - dead animals are neither an asset nor do they produce an income. Freeing areas from trypanosomosis removes one of the threats to livestock and hence improves the security of their owners' livelihoods.

(2) DFID and Draught Animal Power. A Review of Past Activities and Future Priorities. March 1999

(3) See footnote 1

The increased availability of cattle in areas freed from the burden of trypanosomosis would enable their use for transport.

For many people livestock represent their only source of income and act as a capital reserve. As such, trypanosomosis not only threatens their livelihoods but also their capital and security.

Photo: ILRI

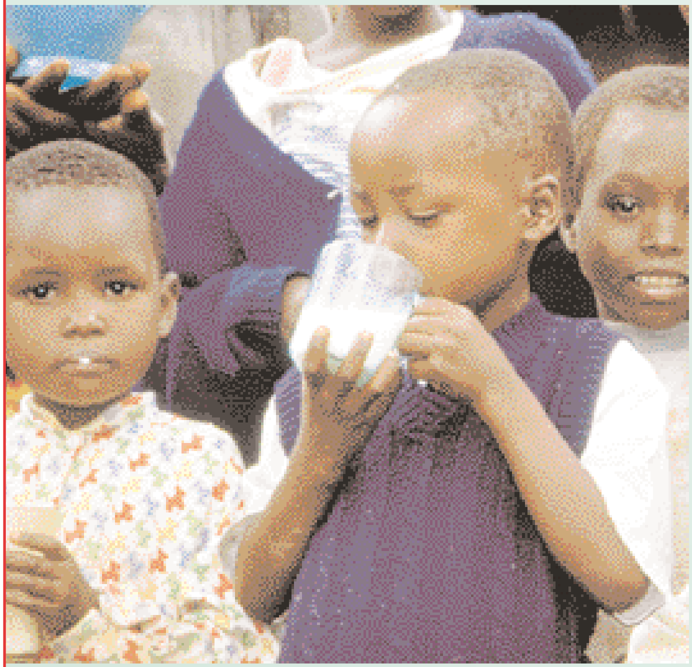


Photo: FarmAfrica

An increased supply of milk and meat resulting from the control of trypanosomosis would enable all consumers to benefit from a more varied and nutritious diet. This would particularly benefit growing children.

And what would be the long-term benefit?

Over time there would be fewer abortions, better calving rates and better calf survival which together would mean that cattle densities could eventually equate to those in tsetse-free areas. This would lead to higher productivity and inevitably lower prices for meat, milk and other livestock products as well as live cattle. This would have two consequences. Firstly, milk and meat would become more affordable for all consumers; this would allow poorer families, and particularly children, to benefit from a more nutritious, varied and interesting diet. Secondly, lower cattle prices would enable poorer farmers to purchase cattle and so secure the benefits of mixed farming. The most important aspect of this is that they would be able to cultivate their fields using draught animals rather than by hand.

So as milk and meat prices would fall farmers won't receive all the benefit from controlling trypanosomosis?

That's correct. The benefit from controlling trypanosomosis would be shared between livestock owners who are able to produce more and all consumers for whom food would become more affordable.

Would the same also apply to crops?

Yes, the increased arable areas that farmers would be able to cultivate as a result of introducing draught animals and the benefits of mixed farming would increase production and inevitably reduce prices of some commodities. However, prices of export crops would be largely unaffected as their prices are determined on a global basis.

The combination of the increased arable areas that can be cultivated by farmers and the reduction in the value of staple crops may stimulate farmers to diversify into

Photo: Rudi Schippers

The increasing use of draught animals for primary cultivation would allow farmers to diversify into growing crops that could be sold to provide a cash income.

Drugs protect more animals against trypanosomosis than all the other methods combined.

The veterinary drugs used against trypanosomosis were developed in the 1950's; no replacements are planned.

35 million doses of drugs are used annually to protect cattle from the effects of trypanosomosis.

alternative crops which could be sold to provide a cash income.

How can trypanosomosis be controlled ?

There are three main strategies for controlling the disease. The first is to use drugs to combat the parasite itself. The second strategy is to use animals that are inherently tolerant to the effects of the disease and are able to remain relatively productive even when infected (see P4). There are about ten million such cattle, mostly in west Africa, but in other regions they have not been widely adopted, mainly because they are not as large as the preferred Zebu-type cattle. The third strategy is to control the vector of the disease, the tsetse fly. The advantage of this strategy is that, in some areas, it could be possible to completely eliminate the disease rather than merely control it.

How widely are drugs used and are there problems when using them?

Farmers can use either prophylactic drugs to protect animals from infection or therapeutic drugs to kill the parasites once they have infected an animal. The drugs currently in use were developed in the 1950's but, whilst they proved to be very effective when first introduced, resistance is now becoming a significant problem in many parts of Africa. Another problem in using the drugs is that they are quite toxic and the margin between a safe and lethal dose is small. Despite this, it is estimated that farmers use 35 million doses per year at a cost of $1 each. It is estimated that about 10 million cattle are protected from trypanosomosis through the use of these drugs.

Although drug treatment protects more animals from the disease than the combined total of all other methods, the problem of increasing levels of resistance and the fact that no new drugs will reach the market in the foreseeable future together create a potential dilemma. Consequently the policy of the Programme Against African Trypanosomiasis (PAAT) is to encourage other methods of controlling the disease so that the life of the currently used drugs can be extended.

Photo: Chris Martin

Photo: D. Elsworth

Prophylactic and therapeutic drugs currently protect more cattle from trypanosomosis than all the other methods combined. However, there is an increasing problem of drug resistance.

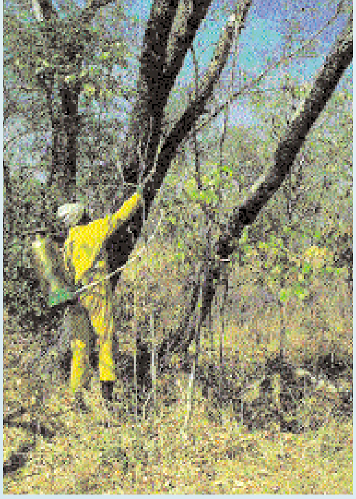
Tsetse control appears to be a good strategy for combating trypanosomosis. What techniques have been developed?

Ground Spraying In the post-war period tsetse control using the newly-developed residual insecticides was introduced, mainly in the form of spraying around tree trunks and rocks in whose shade flies habitually rest. This proved effective and large areas of South Africa, Nigeria and Zimbabwe were cleared of the tsetse fly and remain so to this day.

Sequential Aerosol Technique (SAT) A later development was spraying contact insecticides from the air in a sequence of 4 or 5 sprays separated by 10-15 days. This sequence kills all young adults before they are able to reproduce. The insecticide is delivered in aerosol format which enables extremely low rates of application to be used. This technique involves flying just above treetop height between dusk and dawn in order to take advantage of cooling and falling air to carry the spray mist down into the tree canopy where tsetse flies live. SAT has been successfully used in Somalia, Zimbabwe, Zambia, Botswana and South Africa.

Traps and Targets In the 1970's concern arose over widespread usage of persistent insecticides for tsetse control. Consequently, research into more environmentally benign forms of tsetse control was initiated based on concepts first developed in the 1920's. The outcome was odour-baited traps and targets. These devices use synthetic chemicals that imitate ox odours to attract tsetse flies from a wide area and their shape and colour then encourage flies to land on them. With traps the flies then enter a non-return enclosure where they perish; with targets the surface on which they land is impregnated with insecticide which proves fatal. These

Photo: Reg Allsopp



In ground spraying a persistent insecticide is sprayed onto shaded rocks and tree trunks - favoured resting places of tsetse flies.

Photo: P. Stevenson

Targets (left) and traps (below) mimic the visual and odour characteristics of tsetse fly hosts.

Photo: P. Stevenson

Photo: Reg Allsopp

The very small droplet size used in aerial spraying enables extremely low rates of insecticide to be effective against tsetse flies.

Ground Spraying proved very effective in Nigeria in the 1970's.

Aerial spraying is most effective in flat areas.

Targets and Traps are environmentally-friendly techniques for controlling tsetse flies.

The Sterile Insect Technique is able to reduce target insect numbers to zero.

Treating cattle with insecticide is a cheap and effective technique.

techniques minimise the use of insecticides and are suitable for community projects.

Sterile Insect Technique (SIT) This technique is based on the biological features that tsetse fly males actively seek out females for mating and that females mated by sterile males produce no offspring. By increasing the proportion of sterile to fertile males through weekly introductions of large numbers of artificially reared and sterilised males, eventually fly numbers fall to zero. This environmentally benign control measure has proved to be extremely effective in eliminating other insect species such as the New World Screwworm in North and Central America and should prove equally effective in large-scale integrated tsetse fly control programmes.

Insecticide-treated Cattle A further development of the target concept is to use domestic animals, invariably cattle, as ‘live’ baits. The animals are covered with a persistant insecticide so that when flies land on them they absorb a lethal dose. The insecticide may be applied through dips, by spraying or by using a ‘pour-on’ formulation. This ‘live-bait’ technique has been shown to be economic and effective in several regions of Africa and research is being carried out in order to further refine the technique and examine its environmental impact.

Would these techniques be effective in all tsetse-infested regions of Africa?

These techniques have proved effective in the woodland and savannah regions but they have not been used extensively in the thickly forested regions of coastal west Africa and equatorial central Africa. The difficulties of access inhibit ground-based systems and the depth and density of the vegetation make it difficult for aerially delivered insecticide to penetrate to the bottom layer of vegetation which tseste inhabit.

The Sterile Insect Technique involves the artificial rearing and systematic release of sterilised male tsetse flies from light aircraft.

Photo: IAEA

Tsetse flies die once they have landed on an animal covered with an insecticide.

Photo: Peter Stevenson

Tsetse Fly Life Cycle

Mating

Larviposition

Burrowing larva

Pupae: light=young dark=old

Adult emergence

There is quite an 'armoury' of tsetse control techniques, which is the best?

Each of the techniques has its own advantages and disadvantages. All are more appropriate to certain scenarios than to others. For instance, it is difficult to use SAT in hilly countryside, the 'live bait' technique requires a threshold density of cattle to control tsetse flies and ground spraying is reliant on good logistical support and access. Targets and traps are environmentally friendly techniques for preventing re-invasion of flies from outside a cleared area and the SIT is most economic once fly numbers have been reduced using lower-technology techniques. Consequently there is no one overall 'best' technique.

However, there will always be a preferred technique, or combination of techniques, for each scenario depending on project size, fly species present, topography, cattle numbers, access, etc.

If there is not a 'best' technique then is there a cheapest technique?

In terms of tsetse control programmes the most important criterion is effectiveness rather than cost *per se*. Within each individual project area there will be some techniques which will be more appropriate and effective, others less so or completely inappropriate. Cost should only be a factor in deciding between appropriate and effective techniques.

Nowadays it is considered that rather than campaigns being based on just one tsetse control technique, an integrated approach using a combination of techniques, and supported by the use of trypanocidal drugs, is likely to be the most effective strategy for combating trypanosomosis. For example, tsetse fly numbers could be suppressed by targets, live baits or SAT and followed by SIT in order to eradicate the tsetse fly population completely.

Tsetse control sounds very expensive.

That's true, but it must be remembered that costs should not be seen in isolation but in relation to the benefit that will flow from them. It has been estimated that if it were possible, it would cost $20 billion to control trypanosomosis throughout Africa. Although that seems to be a lot of money, it must be set against the $4.75 billion worth of agricultural production that is being lost

Agricultural produce worth $4.75 billion is being lost each year as a result of trypanosomosis

each year because of the disease and the effect it is having on the livelihoods of poor people in the afflicted regions.

If an area is freed from tsetse flies won't they just fly back in from uncleared areas?

Indeed they may and this poses a significant problem. Zimbabwe has faced the problem of re-invasion from Mozambique for many years and found that a barrier using targets has proved effective. However, the barrier needs to be at least 8 km wide and contain 32 targets per linear km, and is therefore quite costly to install and maintain. A 'rolling programme' avoids the need for specific barriers.

Some tsetse control projects, usually those at the margin of the tsetse fly ecological habitat, have only suffered minimal re-invasion after periods of up to 15 years.

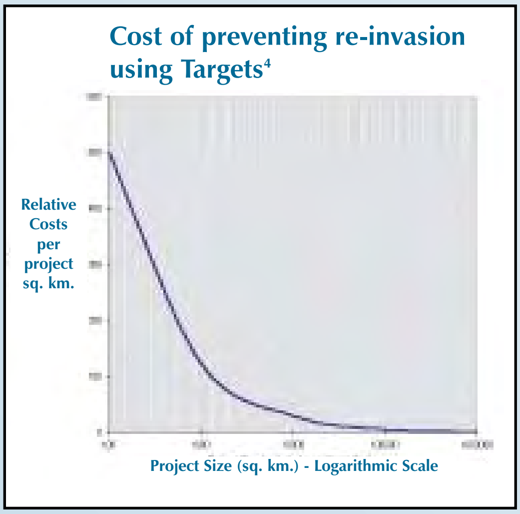
Are there other ways of preventing re-invasion?

The most economically effective means of preventing re-invasion is to design project areas such that outside the boundaries there are no tsetse flies. Thus project boundaries should take advantage of natural barriers, i.e. the sea, large lakes, areas that are too hot or too cold for tsetse flies and areas from which they have already been cleared.

Feasibility of Control

(Including technical, organisational, environmental and economic factors)

Project Size / Structure	*Sterile Insect Technique*	*Sequential Aerosol Technique*	*Ground Spraying*	*Traps & Targets*	*Insecticide-treated Cattle*
0.5-1.0m km² (Nation / Region)	✔✔✔✔✔	✔✔✔✔	✔✔	✔	✔
100,000 km² (Province / Nation)	✔✔✔✔✔	✔✔✔✔	✔✔	✔	✔
10,000 km² (Province)	✔✔✔	✔✔✔✔✔	✔✔✔	✔✔✔	✔✔
1000 km² (District)	✔	✔✔	✔✔✔✔	✔✔✔✔✔	✔✔✔✔
100 km² (Village group)	✗	✔	✔✔✔✔	✔✔✔✔✔	✔✔✔✔✔
Under10 km² (Village)	✗	✗	✔✔✔	✔✔✔✔✔	✔✔✔✔✔



The cost of preventing re-invasion through the use of targets is prohibitively high for small projects. For such projects eradication is not a feasible objective.

Does this suggest that small projects are not feasible?

The smaller the project area the higher is the relative cost of preventing re-invasion. For projects of less than 5000 sq km it has been suggested that a strategy of eradication is neither technically nor economically feasible. Instead a long-term strategy based on both controlling the tsetse population and the use of trypanocidal drugs is the only alternative. It is this on-going cost that renders small projects less economically viable, and probably less sustainable, in the long-term than larger projects.

Surely there is a place for projects managed by the community, such as a whole village or group of villages?

There has been a lot of encouragement for this concept and several such projects have been initiated, mostly using traps and/or targets. However, to date, many have failed for a variety of reasons and those that are continuing have not yet proved to be technically, organisationally or financially sustainable. Consequently, at present, there are no models for community-managed projects on which a policy and extension programme could be based.

After tsetse control programmes in Zimbabwe using DDT, wildlife populations had recovered to their original levels within less than ten years.

Photos: Ian Grant

Photo: Knight Agricutural Services, UK

Tstse flies are susceptible to very low rates of insecticide application. Higher rates of application are used every year by UK farmers against insect pests.

The OAU declared 2001 as the Year of Control of the Tsetse Fly

Surely the very use of insecticides in Africa is a bad thing?

The effect on the environment of wide-scale tsetse control has been extensively studied, especially in Nigeria and Zimbabwe. The general conclusion of those studies is that whilst the populations and health of the bat, bird, lizard and insect species studied did suffer to some extent in the short term after less than 10 years they had all returned to their previous levels[5] of health and populations. Fish and soil fauna were barely affected.

The minimal impact of tsetse control on the environment can be partially accounted for by the very low insecticide application rates involved. With ground spraying only the tsetse resting sites were sprayed and with aerial spraying the use of modern spraying technology which delivers the insecticide in a mist enables very low application rates to be effective.

For tsetse control programmes in the future it is therefore evident that the techniques to be used can be selected on the basis of their efficiency and cost rather than on their perceived impact on the environment.

(4) Data: Barrett J., 1997. Economic Issues in Trypanosomiasis Control, NRI Bulletin No. 75, Natural Resources Institute, University of Greenwich, UK

(5) Douthwaite, R.J. and Tingle, C.C.D. (1994) DDT in the Tropics: *The Impact on Wildlife in Zimbabwe of Ground-Spraying for Tsetse Fly Control*, Natural Resources Institute, Chatham, UK.

ORGANISATION OF AFRICAN UNITY

DECLARATIONS, STATEMENTS AND DECISIONS ADOPTED BY THE THIRTY-SIXTH ORDINARY SESSION OF THE ASSEMBLY OF HEADS OF STATE AND GOVERNMENT

10-12 July, 2000, Lomé, Togo

DECISION ON PROPOSAL FOR ERADICATION OF TSETSE FLIES ON THE AFRICAN CONTINENT

The Assembly:

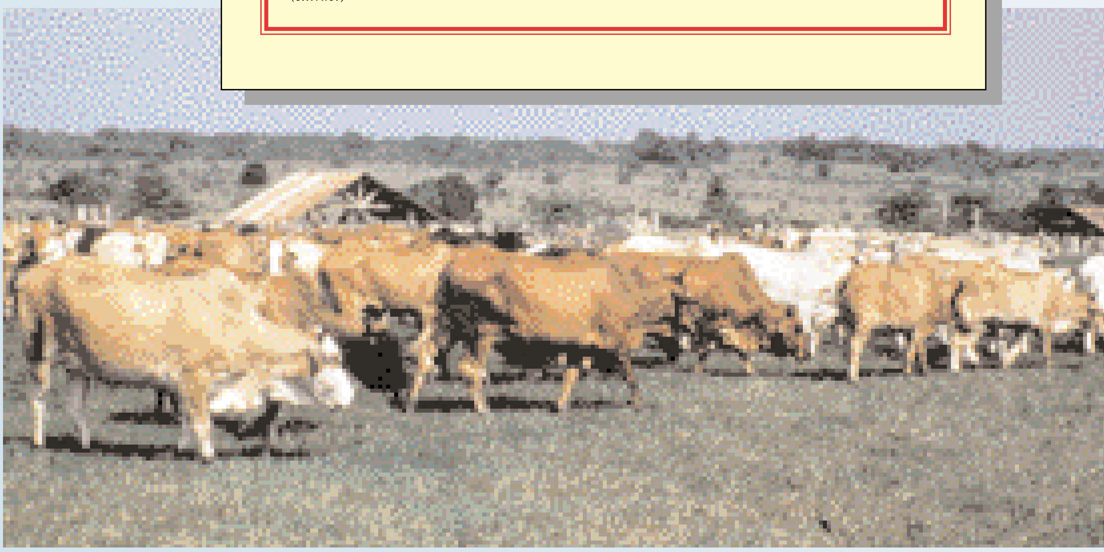
RECOGNIZES *the seriousness of the problem as one of Africa's greatest constraints to socio-economic development severely affecting human and livestock health, limiting land use, causing poverty and perpetuating underdevelopment on the continent;*

URGES *Member States to act collectively to rise to the challenge of eliminating the problem through concerted efforts in mobilizing the necessary human, financial and material resources required to render Africa tsetse-free within the shortest time possible;*

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;*

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.*

(extract)



Freedom from trypanosomosis would allow farmers to consider upgrading their cattle to more productive breeds.

Photo: Max Murray

Trypanosomosis, Tsetse and Africa has been written for the non-specialist reader and as a complement to *DFID-Funded Tsetse and Trypanosome Research and Development since 1980*. This publication is in three volumes and provides a comprehensive review of the subject:

Volume 1 Scientific Review

A critical review of DFID-funded research and development based on a series of case studies relating to recent developments in Zimbabwe, The Gambia, Kenya and in the fields of the Trypanosome and Remote Sensing and Geographical Information Systems. Each case study includes a comprehensive list of references.

Volume 2 Economic Analysis

This volume supplements the scientific review and not only assesses the economic value of the global research programme but looks forward to widespread application of the techniques which the research programme has developed. It paints an economic picture of an Africa freed from the burden of trypanosomosis as well as outlining a route by which this might become reality.

Volume 3 Summary of Projects

This volume contains a detailed project-by-project summary of the work which DFID has supported in this field since 1980. Each project

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