

THE TSETSE FLY



The tsetse fly and the trypanosome parasite it carries have kept from tropical Africa the agro-economic revolution that occurred in the Middle East around 4,000 B.C.

— John Brady, 'Seeing Flies from Space', *Nature*, Vol. 351, 1991

NO CONTINENT remains dominated by one livestock disease to the extent that Africa is by trypanosomiasis, known as sleeping sickness when it occurs in people. The parasite that causes this disease is transmitted to people and animals by the tsetse fly (pronounced tet' see). Found only in Africa, these flies occur in 38 countries south of the Sahara Desert, 22 of which are among the most underdeveloped in the world.

The presence of the tsetse fly and the disease it causes over an area the size of the continental USA largely accounts for Africa's ruminant livestock productivity being only one-seventieth that of Europe and America. Thirty per cent of Africa's 160 million cattle population and comparable numbers of small ruminants are at risk from this disease.

This fly also jeopardises the lives of 55 million people. Every year some 250,000 to 300,000 men, women and children are left to suffer and die because their illness goes undiagnosed and untreated. And every untreated, undiagnosed infected human and animal creates a new host for each uninfected tsetse fly. Because livestock infected with trypanosome parasites are a source of further tsetse infection, better control of the disease in livestock would help improve control of the human disease. The World Health Organization estimates we are now in the midst of one of the largest epidemics of sleeping sickness in this century. Dr. Michaleen Richer of the International Medical Corps has said the prevalence of sleeping

sickness has risen by more than 15 percent. 'This is an epidemic of really catastrophic proportions,' Richer added. The IMC, U.S. Centers for Disease Control and Prevention, CARE and other organizations are in the midst of a major effort, which began in 1997, to identify people infected with sleeping sickness and contain the epidemic. But the organisations say their efforts could take years.

THERE ARE altogether 23 species of tsetse flies. Some live in tropical rain forests, some in the riverine gallery forests and others in the savannah woodlands of Africa. The tsetse fly is one of very few insects that bears fully grown larvae (one every nine days) rather than laying eggs. Both sexes feed exclusively on the blood of vertebrate animals, including cattle, sheep, goats, pigs and horses. And both sexes transmit deadly disease.

Records indicate that Africans have fought against sleeping sickness as far back as the 14th century. In the early years of this century, sleeping sickness was considered the number one public health threat in the tropics. An outbreak of sleeping sickness that peaked in 1901 killed four million people in Uganda alone.

Although it will be impossible to eradicate tsetse flies from Africa in the foreseeable future, fly populations—and thus disease incidence—can be reduced by use of tsetse targets and traps, bush clearing and insecticide spraying, and periodically treating domestic animals with 'pour-on' chemical treatments. Several research organisations are working to improve these vector control techniques.

Scientists at the Africa-based International Livestock Research Institute are working to improve control of the disease itself or of the parasite carried by the fly that causes the disease. Trypanosomosis is arguably the most important livestock disease on the continent, costing Africa up to \$5 billion annually. It is a 'wasting' disease, causing deterioration in health and productivity over months or years before finally killing an infected animal.

Milk, not meat, is a main food in Africa. The untimely death of a milking cow on a small farm has large and sometimes tragic consequences because the milk provided by a single cow meets the basic nutritional needs of many households. Keeping a cow also allows very poor farmers to enter the cash economy with sales of surplus milk. The small regular cash income pays for grain, farm inputs, medicines and school fees.

For millions of people in Africa—including small-scale farmers who depend heavily on their cattle, sheep and goats to feed and care for their families—prospects for better human and animal health will very much depend on whether or not scientific research can find ways to control the tsetse fly and its deadly parasitic cargo.

Scanning electron micrograph of a trypanosome, the parasite that causes trypanosomosis, a wasting disease that afflicts people and their livestock.



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