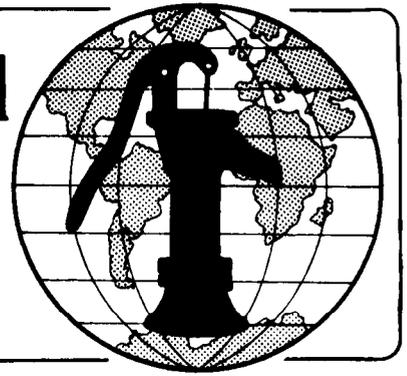


Water for the World

Methods of Controlling African Trypanosomiasis Technical Note No. DIS. 2.M.2



African trypanosomiasis, more commonly known as sleeping sickness, is a widespread health problem in many parts of Africa. Two types of sleeping sickness are common, Gambian trypanosomiasis transmitted by a fly living along river banks, and Rhodesian trypanosomiasis transmitted by one that prefers woodland savannah. Both types of sleeping sicknesses are fatal to man if not treated.

This technical note discusses methods of controlling the spread of the disease through various environmental and chemical means of controlling the flies. The procedures mentioned should be followed when adopting a control program for sleeping sickness.

Useful Definitions

HABITAT - A region or area where a plant or animal grows, lives, or is ordinarily found.

VECTOR - An animal or insect that transmits a disease-producing organism from one host to another.

Disease Transmission

Sleeping sickness, or African trypanosomiasis is caused by a blood-inhabiting protozoan and is common in rural areas of many parts of Africa. The disease is spread by tsetse flies, of which there are many different kinds. The tsetse fly that spreads Gambian trypanosomiasis lives along rivers in areas of high humidity and lush vegetation. The fly which transmits Rhodesian trypanosomiasis lives in a drier savannah climate as it prefers large open areas. Both types of flies feed on both man and animals.

The tsetse fly is a blood sucker. Sleeping sickness is transmitted when the tsetse fly bites a person or animal with the sleeping sickness parasite in

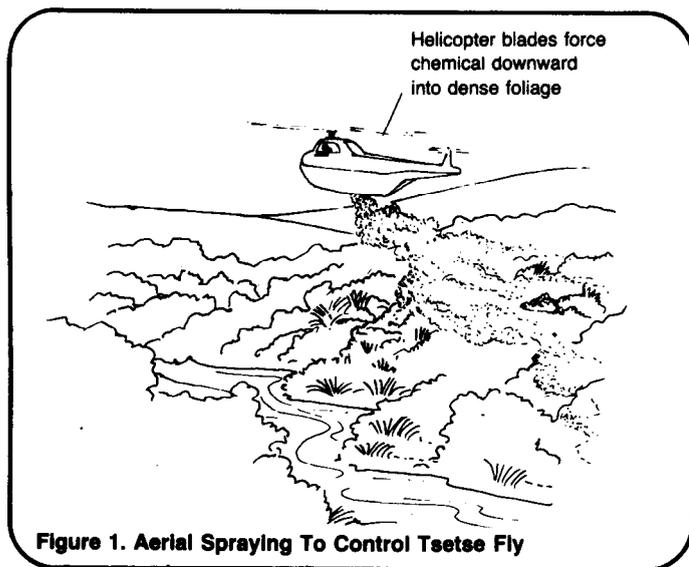
its blood. The parasites pass into the body of the tsetse fly, undergo development, and are passed on to a new victim through the fly's saliva when it bites again.

When a person is bitten by an infected tsetse fly, after two or three days the area around the bite swells. The swelling itches and becomes red and painful. After five or six days, a swelling with a red spot on top appears, indicating infection. Some people are greatly bothered by the symptoms, others will barely notice them. When the parasites are in the blood, the disease is treatable. Symptoms include fever, swollen glands and a swollen spleen. In the latter stage of the disease, the parasites have reached the blood vessels of the brain and heart and constant weariness is the symptom. Without treatment, the patient will pass into a coma and die.

Chemical Control

Chemical control is the best method of achieving large-scale tsetse fly control. The two insecticides commonly used for tsetse fly control are DDT and Dieldrin. The use of these insecticides can have very great environmental effects. They should be used with great care. Both insecticides remain in the fatty tissues of animals and are poisonous for fish and the animals that feed on them.

Aerial spraying permits large areas to be covered with a fine mist. This type of spraying can be done by airplane or helicopter. Helicopters may prove better because they can enter the thick brush where the flies breed and because the insecticide is forced downward to the ground by the force of air from the propeller. See Figure 1. Helicopter spraying is generally quite expensive, however. One spraying every



tical for eliminating the tsetse fly or destroying its habitat. Generally, it is best to combine environmental change with chemical spraying. Some environmental methods should be considered.

- Large scale brush clearing. Clear the brush that tsetse flies prefer for breeding. The best approach is to clear brush to make a barrier between a fly-free and fly-infested zone. A brush-free patch of ground 200m wide is usually sufficient to inhibit the spread of the tsetse fly.

Clearing can be done mechanically or manually. The area should be sprayed and workers' bodies well covered before clearing begins. Plan land clearing as a part of an overall design for cropland development. In this way, any clearing will serve the dual purpose of preventing reinvasion of tsetse flies and providing new areas for suitable crop development.

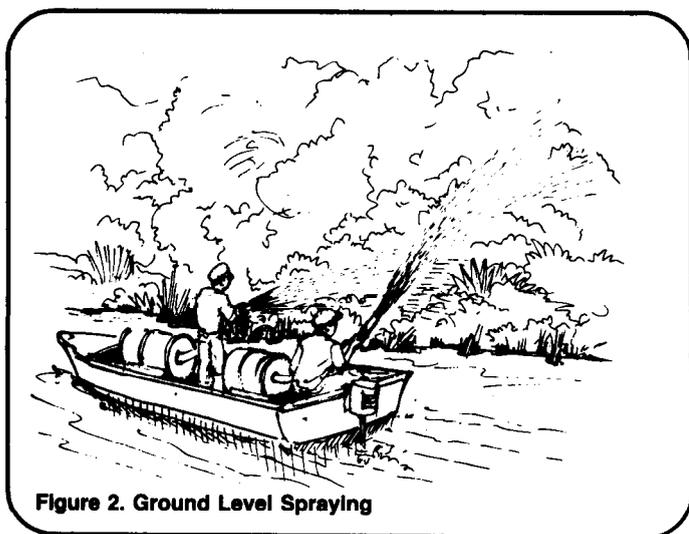
- Where new towns are being developed, plan to locate them far from the breeding places of tsetse flies. Since tsetse flies do not travel far from their habitat, this method should prove effective. Another possibility which would prove effective but is difficult to implement is the transfer of entire populations from tsetse-fly-infested zones to non-infested zones. In this way, people would be removed from the danger posed by the flies. The cost of such a scheme would be very high and the organization very complicated.

- Establish a health education program to inform people about the causes of sleeping sickness and the measures which should be taken to avoid infection.

The education program should be structured in such a way that people can identify the fly and its habitat; an awareness of the transmission of the disease is created so that people understand the link between the insect and the disease; and people understand the dangers of the disease and what individual and community efforts can be made to eliminate the tsetse flies and the disease. People should learn to avoid areas where tsetse flies breed and to cover the body well when forced to enter a tsetse-fly-infested area.

three or four months helps to reduce the fly population greatly.

Spraying can take place on the ground. Figure 2 shows a team of men spraying into thick brush along a river. Ground spraying is effective because heavily infested areas can be sprayed more often and more thoroughly. In some areas, combined aerial and ground spraying may prove the best



method. One spraying from an airplane or helicopter followed by a team of people hand-spraying riverside brush will prove very effective, especially where fly populations are dense.

Other Control Measures

Some environmental measures are available to fight the tsetse fly but they are not very effective or prac-