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Vernachlässigte Krankheiten

Small insect is a big problem for agriculture and health **Eradicating tsetse flies from Africa**

Von Naututu Okhoya

It has been more than six years since the last tsetse fly was seen in Zanzibar. Routine blood samples taken from cattle have tested negative for the trypanosome parasites that are spread by the flies. As a result, milk production has tripled, local beef production has doubled and the use of animal manure for crop farming has increased five-fold, according to the Ministry of Agriculture of the island, which is part of Tanzania. But elsewhere in sub-Saharan Africa, trypanosomiasis - the disease spread by the parasite and commonly known as sleeping sickness or nagana - is still widespread.

According to the World Health Organization (WHO), about 60 million people are at risk from sleeping sickness, with about 500,000 already infected.

This marks a resurgence. Thanks to systematic cattle health programmes and screening, Africa had virtually no new cases in the decades from the 1940s through the 1960s. However, because of budget cuts by governments and donor agencies, only 3-4 million of those at risk now are screened. Conflict zones and remote rural areas – where there is diminished control and greater movement of human and animal carriers – are registering the largest numbers of cases. In the zone between southern Sudan and Angola, including the Democratic Republic of Congo, sleeping sickness is the leading cause of death, ahead of HIV/AIDS, the WHO reports. Although early diagnosis of trypanosomiasis offers high chances of recovery, the lack of screening and care means that 80 per cent of infected people eventually die, while 3 Million livestock succumb annually.

Green deserts

Mr. John Kabayo, who heads the Addis Ababa coordination office of the Pan-African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC), says that the most challenging problem facing Africa remains rural poverty, which is intrinsically linked to food insecurity. "If you look at this disease," he told Africa Recovery, "you see that nothing has been more significant in the way it shaped the continent of Africa. It is because of tsetse that there are few horses in Africa, that we get a separation of crop and animal production, that there is no mixed farming."

Without draught animals, many African farmers have no means of transport or power to pull heavy ploughs. They continue to till the land with hand hoes. And since crop and livestock production are physically separated, Mr. Kabayo adds, soil fertility suffers from a lack of manure for fertilizing crops. No region of the world suffers the same animal health problem as the tsetse imposes on Africa. In Asia, an estimated 50 per cent of crop production benefits from the power of draught animals. In Africa, the rate is only 5-10 per cent. As a result, estimates the Food and Agriculture Organization, Africa may lose \$4.5 bn in potential crop production each year.

Some experts say that trypanosomiasis helps create African "green deserts" – 10 Million square kilometres of otherwise lush and fertile land that is not in production because of the tsetse fly carrier. This includes land in 32 of the world's poorest countries.

"It is no accident that the concentration of much of the world's most acute poverty is in regions of sub-Saharan Africa infested with tsetse," notes Mr. Quian Jihui, deputy director-general of the International Atomic Energy Agency (IAEA), which is centrally involved in many of Africa's efforts to eradicate tsetse flies through radiation-induced sterilization. "Allowing more Africans farmers to own livestock would have a profound impact on hunger and poverty in the continent," he says. "But that cannot be achieved without the elimination of the tsetse fly."

In launching the PATTEC campaign in October 2001, African leaders concurred. "Africa's most viable contribution to its expanding population and to the rest of the world in the new millennium is increased agriculture production," they said in a declaration. "The first step towards the development and realization of this dream is the removal of the trypanosomiasis constraint."

Mr. Kabayo cited four compelling motivations for the PATTEC initiative:

- considerable data and irrefutable evidence place trypanosomiasis at the root of Africa's poverty
- the success in Zanzibar demonstrated the technical feasibility of fighting the disease through the sterile insect technology (SIT) approach
- the limited possibilities of coping with the disease through established methods, as manufacturers are considering discontinuing production of the drugs now in use
- the trans-boundary nature of the problem requires concerted efforts by all affected countries, from Senegal to South Africa, to ensure cooperation, partnership and sharing of resources.

The one hope for eradication of the tsetse fly that seems feasible is the SIT method, IAEA Director-General Mohamed El Baradei told the UN General Assembly in November 2002. The IAEA, he said, supports the efforts of African governments to "implement their tsetse eradication campaign throughout the continent, with the expanded application of the radiation-induced sterile technique."

Fly sterilization

Under the SIT method, the tsetse population in a given area is first reduced by about 90 per cent using traditional techniques, such as traps and insecticides. Meanwhile, other male flies are raised and sterilized in laboratories by exposing them to short bursts of gamma radiation from a cobalt-60 source. These sterile flies are then released into the targeted area so that the remaining population gradually dies out. Governments are urged to identify "pockets" of infested areas in which they can systematically work to eradicate the flies and ensure sustained control to prevent reinvasion.

Aside from its demonstrated effectiveness, there are other compelling reasons for this method. To date, scientists have been unable to develop a vaccine for humans or cattle and the parasite is becoming increasingly resistant to existing drugs. Moreover, the drugs that prevent or treat the disease are highly toxic or difficult to administer.

Still, some scientists oppose the sterilization project, arguing that it will be costly, is not based on proven scientific theory or is simply unable to achieve the goal of eradication. According to Mr. Kabayo, "One source of opposition is really over semantics, that we use the word 'eradication' in our title. But this word is only to emphasize the ultimate objective."

Other scientists raise environmental concerns. They argue that the tsetse fly is part of the continent's ecosystem and that its removal would bring an explosion of livestock production and overgrazing. Mr. Kabayo calls this view a reflection of "ecological imperialism." He argues that the only reason people keep large herds is because of the trypanosome threat. Once it is removed, they will shift to fewer head of more productive species such as the Friesian cows now raised in Zanzibar.

Increasingly, African governments are acting on the problem, whether or not they have outside help. "In the past," notes Mr. Kabayo, "projects were foreign-driven. We found that was the wrong approach. As soon as foreign support was withdrawn, the projects collapsed, with no knowledge for continuity." The difference this time is that PATTEC is urging countries to include the goal of tsetse fly eradication in their national budgets.

Eradication campaigns already are under way in identified infested areas in Ethiopia, Botswana, Mali and Burkina Faso. Mr. Kabayo believes that with sustained commitment, they can make major strides towards the ultimate goal of tsetse eradication, along with the resulting benefits of improved health and agricultural productivity.

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