



■ Malaria On the trail of the Malaria mosquito

In the highlands of Kenya, malaria is not active all the year round. But after long rainy spells, the disease reappears, killing many people. ICIPE researchers have recently developed a way to prevent this.

The small town of Kisii is a thriving trading post and has a colourful market. The surrounding countryside is hilly, green and fertile. The main pro-

blem for the people here is not lack of food, but diseases, of which malaria is the worst. In the area around Kisii there are several malaria epidemics every year. Thousands of malaria patients are cared for in the local hospitals. The doctors do their best with limited supplies of medicine, and the farmers try to prevent being stung by using mosquito nets.

Until recently, no one had asked where these malaria-carrying mosquitoes, the anopheles mosquitoes, came from. Might there not be a way to deal with the mosquitoes rather than with the illness? The ICIPE research scientist for insects, Francois Omlin, wanted to find out. He spent months travelling round the area, making notes on the landscape and the people. He took samples from ponds and puddles and found the answer: the problem was the puddles left by the brick makers! In recent years many farmers have star-



■ Editorial Solutions for today and ideas for tomorrow



The farmers in the Kenyan village of Kivaa , close to the Mwea Nature Reserve feel that caring for the environment is a luxury. They would love to get rid of the nature reserve and cultivate the land. It is the uncultivated land in the reserve that allows the tsetse fly to develop, and tsetse flies infect domestic animals with the deadly Nagana disease.

Our Eco-Trainers are now working with farmers to try to find a satisfactory way to help both them and the environment to cope with this situation. Working with farmers and park personnel, they are using natural ways to reduce the tsetse plague, placing fly traps along the edge of the reserve. This will have several benefits: the productivity of the farms will increase; the nature reserve will become more acceptable to the local community; and the biological diversity will be retained. But this latter benefit will only become of interest to the farmers when the tsetse fly no longer threatens their livestock.

Hans Rudolf Herren
President BioVision / Director ICIPE

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ted making bricks; the heavy soil around Kisii is ideal for this. But no one had realised the consequences. When the farmers dug out the clay, they left little hollows which quickly filled with water, and it was here that the mosquitoes bred so plentifully. When Francois Omlin took samples from these puddles he made an astounding discovery. There were far more anopheles mosquito larvae there than in the lakes and larger ponds. The reason was easy to find. The larvae's natural predators, for example mud fish and the other insects that feed on the larvae, live in the lakes and ponds, but not in the puddles.

Francois Omlin began careful research to find a biologically sound way of destroying the larvae. He discovered that when he spread an extract from the neem tree onto the water the larvae stopped growing. They either died or developed into crippled mosquitoes which did not harm humans.

Francois Omlin has turned his discovery into a simple treatment from which farmers can already profit. A sack is filled with neem powder and this oversized tea bag is then laid into the puddle. This gets rid of the danger. Together with BioVision, Omlin intends to pass this simple and effective method onto the brick makers and the farmers as quickly as possible. He hopes that the results will be seen soon, with fewer patients in hospitals and greater happiness in the faces of the people.



■ A sweeter life

Acacia honey from Kenya

It is pleasantly cool in the small hut. The white tiled floor is well scrubbed. One might be in a Swiss cheese-making hut. But impressions can be deceptive. It is not cheese but honey that is being produced here, and we are not in Emmental but in Mwingi, a village in Kenya. Rose Mbuti turns the machine efficiently to separate the honey from the comb. Staff at the ICIPE have shown her how to extract high quality honey from specially made combs. Last year the Mwingi honey farmers produced 21 tons of 'Eco-Honey'. This has nearly all been sold. Many other villages are now asking to have a small honey factory like the one at Mwingi. ICIPE did the research and found a product which has generated new income.

The Rumapark honey makers have also asked the Eco-Trainers for help. Their acacia tree honey is liquid and is produced in an area where there is little environmental damage. They get their honey by smoking out the bees, which leaves it with a strong taste of smoke and often kills the bees in the process. The Eco-Trainers have organised a course to teach the bee keepers more up-to-date methods. They can also learn about other bee products. The Lambwe bee keepers are now planning a Honey Day which will include collecting money to buy a honey extractor. This will enable them to produce their own goods like their Mwingi colleagues, and will give them more income.

■ An extra course in poultry keeping

Guarding poultry from thieves

The plague of tsetse flies causes terrible losses to livestock in East Africa. As a result, poultry keeping, which is normally no more than a sideline, is gaining in importance. But losses from theft and from disease are great, and egg production is low. BioVision Eco-Trainers are organising courses on protected poultry keeping. Woven hen houses and baskets for the chicks protect them from thieves at night, and regular feeding improves egg production. Emphasis is placed on disease prevention, for example inoculation against Newcastle disease. This is a one-off for BioVision staff. Their fight against the tsetse fly using traps is still their priority.

■ A smaller harvest, but more income

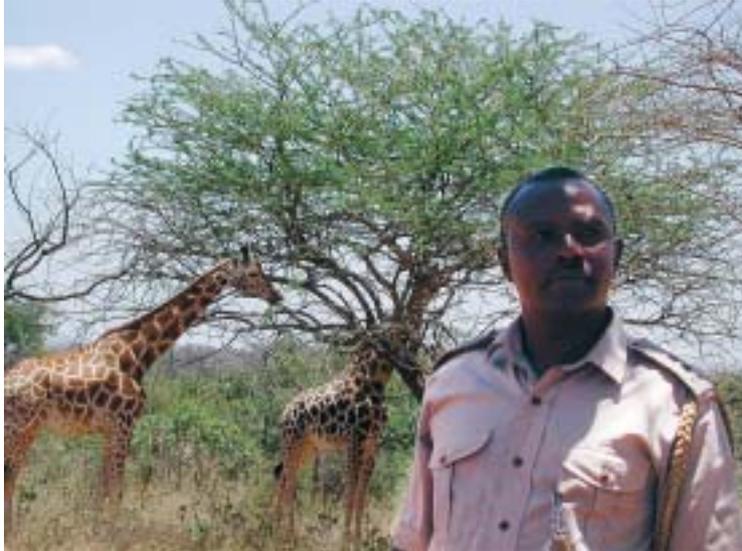
Mangoes from integrated production

In the small village of Maragwa in central Kenya, about fifty farmers live by producing mangoes. But as in so many places in Africa, there is a lot of disease and there are insect pests. Fruit flies and blight destroy a large part of the harvest. Until a short time ago the farmers used pesticides. These were expensive and polluted the rivers. With the help of the ICIPE the farmers have now changed to a more holistic method of production. Pesticides are no longer permitted but organic agents are used, such as onion juice and extracts from the neem tree. Tom Kameri proudly points to his 1,200 mango trees, 'Of course the harvest is smaller, but the production is cheaper and the quality is good'.



Organic farming must be learned. The Eco-Trainer shows how it goes.

■ A day in the life of **Cheruiyot Kipkorir,** **Manager of the Mwea National Reserve**



Some days, when I get up at 6 o'clock in the morning, there is a zebra peering straight at me through the window. It always makes me happy, because I otherwise am quite alone in the Mwea National Park in Kenya. I start work at 8 o'clock, when I meet the other game wardens in my office. There are 13 of us; I am the manager. I coordinate their timetable, and decide where they should go on their rounds and anything else that needs planning. The most important part of our work is patrolling the park. Farmers quite often try to get in and steal wood or poach. Both are strictly for-

bidden. Four weeks ago we found a man cutting down trees. He wanted to make fence posts for sale. We handed him over to the police and he got three months' jail. There are higher penalties for poaching, but we get less of that, though there is much to poach here. We have elephants, zebras, giraffes, antelopes, monkeys and a lot of other animals. My dream is to reintroduce the hippo. Until the 1970s we had a few hippos in the Mwea National Park, but they disappeared. They were killed. I would also like to have more tourists here, but camping is no fun with the tsetse fly. Together with

BioVision and ICIPE we want to put out mosquito traps. I am convinced that these will solve the problem.

Ever since I was a child I wanted to be a game warden. I grew up in Kericho and I always watched the antelopes. They were my favourite animal for a long time. And I wanted to find a job where I could be close to them. I did my training as a game warden, and have been one for 14 years. They move us every few years. The Mwea Park is my sixth place. In my view the Mount Kenya National Park is the most beautiful, but this one comes close. It's small but I love it.

There is one disadvantage to this life; I see my family very rarely. But my children come here in the school holidays and they enjoy life in the park. I watch them when they observe the animals, just as I used to do. Then I think, surely one of my sons will become a game warden one day. At least I hope so.

Erik Thurnherr



The uncultivated land of nature reserves allows the tsetse fly to develop and infect domestic animals with the deadly Nagana disease.

■ Care for the environment and for farming **Together against the Tsetse plague**

Africa's national parks and nature reserves cover between them an area of about 900,000 square kilometres, about 21 times the size of Switzerland. And yet these reserves are home to only a small proportion of Africa's animals and plants. For example 70 per cent of Kenya's wild animals live outside the reserves, in farming areas. The Kenya Wild Life Service (KWS) is the department responsible for protecting and preserving the fauna and flora. Their newest joint project involves the conflict between conservation and farming. Eco-Trainers, researchers, game wardens and farmers are working together to defeat the deadly Nagana disease that is spread by the tsetse fly, using sustainable and natural methods such as traps.



On the 4th of April 2003, Dr Hans Rudolf Herren was honoured in Los Angeles, together with two other scientists, Doctor Yoer Margalith and Sir Richard Doll. They received the Tyler Prize of US\$ 200,000. Dr Hans Herren was honoured for his exceptional achievements in the area of the environment, and in particular for his fight, using biological, inexpensive and environmentally-friendly methods for the control of insect pests and disease vectors in Africa. Herren's research, the Tyler Prize Committee spokesman emphasised, has led to a reduction in the use of pesticides and

■ The Tyler Prize **Hans R. Herren honoured with American award for environmental science**

is making a considerable contribution to a healthy environment.

The Tyler Prize is one of the best-known accolades awarded to outstanding personalities in the field of environmental research. It has been awarded every year since 1973. Earlier recipients have included chimpanzee researcher Jane Goodall and the discoverer of the ozone hole Paul D. Crutzen. The sole Swiss Tyler Prize winner to date was the climate researcher Hans Oeschger who died in 1998.

Hans R. Herren feels honoured to be included with such illustrious scientists. He is particularly pleased that his

work for the environment has been recognised through this prize. Until now he has been mainly honoured for his fight against starvation, for example in 1995, when he received the World Food Prize. But Dr Herren's interests have also always been directed towards the environment. The methods he has developed to eradicate pests are always environmentally-friendly, seeing nature in the round, and using methods which are compatible with the environment.



■ Natural resistance to viruses **A new beginning for Manioc**

The roots of the cassava (manioc tubers) are the staple diet of the poor in Africa. The leaves are eaten as vegetables. During the 1980s, Africa was invaded by the mosaic virus, which affects the cassava and weakens the plant. The leaves crumple up and the tubers do not develop. Many farmers gave up growing manioc. Today there are a few virus resistant varieties. At the ICIPE in western Kenya, varieties suitable for the region are tested and propagated. BioVision Eco-Trainers then take the virus-resistant cassava plants to farmers in the villages so that they can plant them out in their fields.



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