

Cricket in the porridge

Several hundred people have started rearing crickets in Kenya and Uganda. This new phenomenon in Africa is providing the local population with additional protein and income. It is the result of a project called Flying Food, which now wants to spread cricket rearing to more African countries.

TEXT MARION DE BOO PHOTOGRAPHY SVEN TORFINN/HH

On the banks of Lake Victoria in Kenya stands an orphanage that houses nearly 100 children, mainly HIV orphans. For the past few years, Florence, the 72-year-old head of the orphanage, has been rearing crickets. The insects get dried, ground and stirred into the children's porridge. 'Thanks to this extra source of protein, the orphans are growing up healthier than they would on a menu of grain porridge alone,' says Phoebe Owuor. She heads the Flying Food project, a research programme about rearing crickets for human consumption. Owuor, a jolly lady of 56, is briefly in the Netherlands to raise new funding. 'Crickets convert green leaves into high-quality protein,' she explains. 'The insects contain valuable animal proteins that are important for babies and infants, as well as minerals such as iron, zinc and folic acid, which are indispensable for pregnant women. For poor women farmers in Africa, this project is a fantastic way of

feeding their own families better and making a bit of extra money. They can sell the surplus on the market and use their earnings to give their families eggs, fish or a little meat, and to pay school fees.'

IN THE WILD

In Africa, rearing insects as food is a new idea, but one or two generations ago, people in the project area used to catch and eat wild crickets and locusts. 'That makes acceptance easier,' says Erwin Beckers of Wageningen Food & Biobased Research. 'Around Africa there are about 1800 different species of insect on the menu, but they are all caught in the wild.' Since early 2013, Beckers has been involved in the project Flying Food, a public-private collaboration involving 12 partners, among them the Netherlands Organization for Applied Scientific Research, TNO. When TNO departments were merged with Wageningen University & Research recently, >





A cricket rearer in Kenya checks his crates of crickets.

45 TNO staff moved to Wageningen, including Beckers' entire research group. Beckers: 'Even before the merger, we had a lot of contact with Wageningen experts, because Wageningen has a lot of expertise on insects and livestock systems. Flying Food's first five-year plan was rounded off in June 2018, and we are now working jointly on a new masterplan to establish this new agro-food chain for the production, marketing and consumption of crickets in other African countries.'

PROTEIN DEFICIENCY

Flying Food's primary objective, according to Owuor, is to combat protein shortages and improve health among the local population. 'In rural Africa, people eat a lot of carbohydrates, such as cassava and millet. Children benefit especially from a diet containing more animal proteins, but these are scarce and expensive.' The project also aims to stimulate employment opportunities and economic activity in rural areas, so as to reduce migration to big cities and to Europe. It could also help to strengthen the economic position of



'Thanks to cricket protein, the children are growing up much healthier'

women: four out of five cricket farmers are women, most of them from extremely poor families numbering between five and fifteen people, with a family income of 200 dollars a year at the most. That income can be doubled with the earnings from crickets. 'In rural Africa you often see the land being worked by women, but it belongs to men, who take the harvest to market and pocket the profits,' says Owuor. 'Women do not own land, but you need very little space to rear crickets. Feeding and taking care of them takes no more than half an hour three times a day, and women can fit that in around their other tasks. The important thing is for

the women to get hold of the money themselves. Because rearing crickets is a relatively new phenomenon, men are not getting involved much at all. They don't see any business potential in it.'

COLD NIGHTS

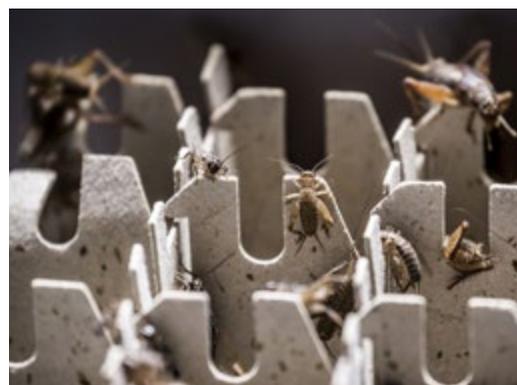
Meanwhile, in Kenya, over 400 people have taken courses run by trainers taught by Dutch experts. And about 100 of them have gone into business. In Uganda too, about 100 small businesses have started up, also along the shores of Lake Victoria. 'The crickets there are growing much slower than expected, however, probably because the nights are just a bit too cold there,' says Beckers.

The crickets are kept in crates, which must be well-ventilated, but hermetically sealed because there are so many predators at large: snakes, mice, rats, spiders and lizards are all crazy about crickets. Dutch companies such as Kreca EntoFood, Venik and NGN have a lot of experience of rearing insects. They produced the first cricket crates, which are now being copied locally.

No one knows exactly what African crickets eat in the wild, but a successful feed has been developed in the project. If the farmers have a bit of land, they can grow their own green fodder such as maize and leafy vegetables. Two kilos of cricket feed produces about a kilo of crickets, says Becker. 'That is a much higher conversion factor than you usually get in livestock farming. For beef you can easily need five to seven kilos of plant protein to produce one kilo of animal protein.'

THIRTY CRATES

The crickets turned out to grow slower in Africa than they did in controlled indoor conditions in the Netherlands. So farmers need to rear a lot of crickets if they are to establish a commercially viable business. Beckers: 'We have therefore developed a rearing set of 30 crates. You can get about 1500 crickets into one crate. Ten crates are used for the eggs from which the next generation of parent crickets is hatched, and the other 20 crates of crickets are harvested. When the last crate is empty, the first new one is ready for harvesting.' The mature insects are blanched in hot water. Sometimes they are eaten whole as a deep-fried snack.



The crickets are fed on vegetables and specially developed cricket feed.

But most of them get dried and ground up. The cricket meal can be used in doughnuts, pancakes, cakes, scones for schoolchildren and above all, as a protein-rich supplement for babies and infants.

A set of 30 crates produces four to five kilos of crickets per month, and one kilo of crickets raises about six dollars. A startup microloan of 600 dollars to purchase crates, feed and breeding pairs must first be paid back over three years. According to the business plan, that leaves 200 dollars a year. Beckers: 'We would also like to further develop the market, but at this stage of the project the supply is simply too small to be able to promote the consumption of crickets widely.'

REARING BREEDING PAIRS

As the project progressed it became clear that for reasons of hygiene it was best to process the crickets for marketing at a central location. It also emerged that many farmers find it hard to hatch the eggs and rear the young crickets. So now a selected group of farmers concentrate on rearing the breeding pairs. To avoid inbreeding, as much breeding material as possible is exchanged between villages. One and a half years ago,

the project almost went under when disease suddenly broke out, killing many crickets. Beckers: 'Little is known about diseases among crickets, and nothing at all in Africa. But a Wageningen PhD graduate who has specialized in this happened to be in Kenya at the time and she identified it as a bacterial disease. The bacteria in question occurs in wild crickets and had probably got into the system at an earlier stage and caused the slower than expected growth in the crickets.' Research in Wageningen has shown that the bacteria is not transmitted from the mother to the eggs. Beckers: 'If you disinfect the eggs, you get a new generation of healthy crickets. We must develop a protocol for this.' All in all, it is obvious that hygiene in the production system poses a challenge. There are a lot of research questions here, which need to be answered before the system can be rolled out further, says Beckers. 'Besides, Kenya is one of Africa's frontrunners: from 2020, it will no longer count as a developing country, according to Dutch authorities. The impact of rearing insects might be even bigger in countries with even faster growing populations.' ■

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