

## Some Media Articles on ICIPE

1. New Scientist, 10.10.98
2. Africa News Service, 11.3.99
3. The Washington Post, 21.10.95

## 1. Cashing In on Hunger

### **Biotechnology's Bid to Feed the World is Leaving Less Profitable Techniques Starved of Funds**

*New Scientist, October 10, 1998, BYLINE: Fred Pearce*

THE rush to promote genetic engineering as a solution to world food shortages is undermining crop research in the developing world, claim leading agricultural scientists. Governments, the World Bank and other funding bodies are withdrawing their support for biological pest control and switching to genetic research, they say.

This summer, Monsanto, the world's largest supplier of genetically modified seeds, appealed to African heads of state to back genetic engineering as a solution to the world's food problems. It also launched an advertising campaign claiming that biotechnology offered the best hope of achieving sustainable food production.

But Hans Herren, director of the International Centre of Insect Physiology and Ecology in Nairobi and a leading expert on fighting crop diseases, told a meeting at the Overseas Development Institute in London last week that these claims are diverting essential funds from traditional pest control: "We shouldn't be driven by this unproven technology when there are many more efficient solutions to food problems."

Other experts take a similar view. Jules Pretty, director of the Centre for Environment and Society at the University of Essex, warns: "Biotechnology is much more sexy with donors at the moment and other research will get squeezed out."

Herren accuses agricultural researchers at UN agencies and the World Bank of joining a commercial bandwagon that is halting potentially more useful crop research. He is particularly critical of the UN's development and agricultural agencies and the Rockefeller Foundation, one of the world's largest private funders of agricultural research for the developing world. "Half of Rockefeller's agricultural money now goes to biotechnology," says Herren.

Many of the 16 research centres run by the World Bank-backed Consultative Group on International Agricultural Research, to which Herren's own institute is affiliated, have also switched from traditional research. "When I visit agricultural research institutes, I find the biological control lab half empty with broken windows, and the taxonomy lab derelict, but the biotechnology lab will be brand new with all the latest equipment and teeming with staff," Herren adds.

Herren's views carry weight. A decade ago his work helped to save Africa from famine caused by a South American mealy bug that was devastating the cassava crop. It threatened disaster for 200 million Africans, until Herren found a Paraguayan parasitic wasp that killed the mealy bug by laying eggs inside its body, and released the wasp across the continent. Herren claims that if the same problem arose today, he would not get the money for such research. "The transgenics people would say they could insert a gene resistant to the mealy bug into the plant instead." He argues that if they were successful, they would charge for new seeds, which African farmers could not afford. His solution "solved the problem once and for

all" and did not cost farmers a penny - one reason why companies are not interested in biological control. Herren says his centre has lots of proposals for pest control based on botanical products, "but nobody in the aid community wants to fund them".

"There may be occasions when biotechnology is the only way of solving a problem," says Pretty. "But there are much simpler solutions to most of the developing world's food problems." He says scientists who believe biotechnology would banish hunger are being naive. "Most people are hungry because they are poor, not because they lack technology." Monsanto rejects Herren's charges. The US-based company says that resistance to insects and disease will be among the first benefits of its products.

## **2. Centre Creates Awareness on the Continent's Insects**

*1999 Africa News Service, Inc. Africa News, March 11, 1999, BYLINE: Evans Ombiro, The Nation (Nairobi)*

Nairobi – The International Centre for Insect Physiology and Ecology has stepped up efforts to improve global understanding of African insects. The centre is now collecting data on the insects to enhance their utilisation and conservation.

Icipe's Biodiversity and Conservation Megaproject is based on the known impact of insects on human life and the value of understanding these creatures. Only an estimated 150,000 of Africa's eight to nine million species of insects have been described, presenting a danger to the fate of the unrecorded ones.

Ultimately, the inventory is expected to boost efforts to promote sustainable development. Lack of information or understanding of creatures and their habitats is a key factor in the conflict between development and environmental conservation.

The Centre's final list is also expected to assist countries signing the Convention on Biological Diversity in inventorying their biodiversity. The proposed Species 2000 Diversitas (a list of world species) will also benefit from the list. Still, not all common insects known by many are adequately understood. Icipe, for example, says: "Ants such as the African safari are often thought of only as pests, but these highly organised social insects are vital in soil conditioning and nutrient cycling. The value of the environmental services rendered by soil-borne organisms is estimated in trillions of dollars."

Two situations may arise following failure to identify and adequately describe Africa's insects. One is the likely disappearance of some species, and the other is inability to utilise the beneficial insects, and to tackle the harmful ones. Nowhere is the outcome of the close relationship between insects and people more pronounced as in the insect-rich tropics.

According to information in the Icipe website, "The arthropods (insects, spiders, ticks, millipedes) reach their maximum size and numbers in the warmer temperatures, and likewise their species diversity is greater. Consequently, arthropods have a greater impact on human society."

According to Dr Hans Herren, the Centre's Director General, the tremendous economic importance of insects calls for increased and better research. Essentially, a better understanding of insects and their environment is considered the key to the solution of the problems they cause.

In a message to the scientific and donor communities, Dr Herren says: " Insect science needs much more attention and investment. Unless more work is carried out towards a better understanding of the ecosystem functions of insects and their role as both pests and beneficial organisms, the optimistic predictions of food production will never materialise."

Insects play a key role in agriculture, health and the environment. Dr Herren quotes a study by one R. Constanza and others which puts the value of the ecosystem service from pollinators at around \$232 (Sh13,920) per hectare per year in grass/rangeland alone, or a world total of \$117 billion, (Sh7.02 trillion) while biological control provides services amounting to \$417 billion (Sh25.02 trillion).

The value of the services rendered by the soil-born arthropods and micro-organisms in the nutrient cycling processes, which assure the sustainability of the agricultural production base, is estimated at a staggering \$17 trillion. He adds that these, according to the authors, are just but " conservative estimates of the potential value of the services performed by the earth's natural capital stock.

According to Icipe, insects pose a greater risk to food production, often causing the loss of entire crops and destroying about half of all harvested food in storage. The old tropical diseases – malaria, dengue, kal-azar and others – are making a dramatic comeback and frightening new ones are emerging.

Livestock succumb in their millions to insect-and tick-borne diseases, resulting in loss of milk, meat and traction power. Icipe was established in 1970 in Kenya as a response to the unique scientific problems of the mainly Third World countries of the tropics that were not being adequately addressed by scientists and organisations in the North.

"Furthermore, there was a serious lack of indigenous expertise to resolve these problems."

The Centre focuses on preventive measures in human, animal, plant and environmental health. The megaproject collects information about the kinds and numbers of Africa's insect life.

Icipe notes that, in spite of over 200 years of formal description of life on earth, it is surprising that this has never been done before. "Much of this information is stored in museums and other institutions around the world, so the project is recruiting collaborators to assist in repatriating this data to Africa."

The massive exercise has the support of some organisations, which include the Xerces Society (for international invertebrate conservation) and the Entomological Information Services of Maryland, USA, a private company which compiled a list of the 100,000 or so known species of North American insects.

One of the project's pilot activities to inventory butterflies from forest resulted in some practical benefits. Icipe reports: "Many insects are good indicators of the overall state of the environment, and can be used to monitor changes in water, air and soil quality as well as giving an indication of habitat disturbance."

Results of a 1997 comparative survey in two small coastal forest sections of different sizes indicated that "butterflies appear to be a good flagship group to indicate general insect biodiversity within a forest ecosystem".

The two sections retained about one third of the butterfly species found in the larger forest reserves, and about the same proportion of termite species. Icipe's emphasis on chemical-free solutions to most of the human, animal, plant and environmental problems has seen it incorporate biodiversity, " because the integrated pest management approach relies on making use of pests' natural enemies and studying their ecosystem relationships. Some of these programmes include:

The Biodiversity Megaproject plans to study the impact of population pressure and forest fragmentation and land use and management activities in the Taita Hills, the northernmost part of the biodiversity hot spot known as the Eastern Arc Mountains.

This area stretches across Eastern Africa and has high altitude (up to 2, 200 metres) forest. It harbours many rare and endemic species, making it one of the world's top 25 biodiversity hot spots and qualifying as a world heritage site.

Icipe's concern for environmental integrity is reflected in all the Centre's projects. Dr Herren names insect ecology, behaviour, biology, taxonomy and diversity relative to their pest and vector status, as well as their potential for income generation and their invaluable ecosystem services, as the key issues constituting Icipe's research agenda in the millennium.

Many of the techniques used by the centre in fighting maize, sorghum, cowpea, banana, fruits, vegetables, horticulture, and storage and agroforestry pests are based on creating an unfavourable environment for pest feeding and reproduction. Benefits of compiling data on insects are already being realised.

Icipe's Commercial Insects Megaproject surveys, for instance, found that there are about 65 potential wild silk producers in East Africa. The Centre's scientists have been studying the life cycle of these species with a view to developing technologies to support the rearing of silkworms.

This is intended to develop a domestic hybrid which will flourish in the African environment and provide high quality silk.

"These beautiful creatures can usually be harvested only from their forest habitats, but here they are subjected to attack by natural enemies such as wasps and flies, and by man as a source of protein food," says the centre. The benefits associated with the silkworm may spur communities to practise conservation measures in a bid to sustain their source of additional farm income.

The Centre's aims at helping the African bee industry in its infancy come of age by providing farmers with improved bees and better hives. Sericulture and apiculture, bee-keeping, can be sources of income for smallholders.

Says Icipe: "By stressing the benefits of conserving these useful insects and their habitats, economic development can provide the impetus for ensuring environmental health. The story of the renewed conservation of the Arabuko Sokoke forest by the surrounding community for butterflies that they sell is a case in point.

Icipe's research into ways of managing ticks is exploring the possibility of using a tiny wasp, *ixodiphagus hookeri*, a natural enemy, to kill ticks. Ticks and tick-borne diseases cause huge economic losses in livestock keeping in Africa, leading to poverty and food insecurity.

### **3. Fighting Hunger Naturally**

#### **Hans Rudolph Herren Was Awarded the 1995 World Food Prize**

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*Copyright 1995 The Washington Post View Related Topics, October 21, 1995, Saturday, Final Edition, SECTION: OP-ED; Pg. A2, BYLINE: Colman McCarthy*

What reality is a greater indictment of the rich nations than the one Oxfam America reports year after year: that 35,000 children die daily of hunger-related diseases? What calling is higher than working to feed people and prevent malnutrition?

One of the food specialists now earning a deserved measure of praise is Hans Rudolph Herren, a Swiss entomologist who directs the International Center of Insect Physiology and

Ecology in Nairobi. On Oct. 16 he was given the 1995 World Food Prize, a \$ 200,000 award now in its 10th year and administered by the World Food Prize Foundation, a Des Moines, Iowa, group whose board includes Jimmy Carter, Robert McNamara and Norman Borlaug.

Herren's award – overshadowed at this time of year by Nobels – is a story of an idealistic and persistent scientist driven by two ideas: We aren't helpless in the face of periodic famines, and biological controls of pests are superior to chemical controls.

Herren is the world's leading authority on the cassava mealybug. That may not be among the most sought after titles, but to the 200 million sub-Saharan Africans for whom the cassava root is the primary food staple, any foe of the mealybug is a friend of theirs. In late 1979, the year Herren began working as an agriculturalist in Nigeria, mealybugs were devastating the cassava crop. Billions of the insects were sucking the sap out of cassavas, and then injecting toxic saliva, which shrivels the plant.

Witnessing the resulting food shortage among a population that was on the dietary edge to begin with, Herren had two choices: go along with the conventional quick-hit method of pest control – widespread application of chemicals – or begin searching for a long-term solution that depended on balancing nature, not drenching it with poisons. He chose the second.

The scientific task meant looking to the natural world and finding another insect that would serve as the mealybug's biological predator. "Pesticide use," Herren says, "has increased over the years, with no drop in pest problems. Insects have figured out a way to become immune." Herren's research led him to Paraguay, a country with cassava and the mealybug. Crops were not wiped out because a native wasp – *E. lopezi* – feeds on mealybugs. Biological controls were at work.

By the end of the 1980s, the African cassava harvest was safe. Herren had raised \$ 20 million from multiple sources, including the United Nations International Fund for Agricultural Development, to carry out a program to breed the Paraguayan wasps and spread them across the croplands in 30 African countries.

Hans Herren, 47, has spent most of his professional life on food programs in Africa. He did postdoctoral studies at the University of California in Berkeley on a two-year fellowship to research biological control of pests.

While in Washington earlier this month, Herren recalled the good fortune of getting the Berkeley fellowship: "When I finished my doctorate in Zurich, my classmates had little choice but to go to work for the agrochemical industry. That's where the jobs were."

It was also where huge investments are made in the idea that the world's chemical manufacturers know best. In food production, the evidence is that they don't, that it's the independent researcher cooperating with nature who wins results.

Herren and his work are well known in Africa, where much of the population spends 80 percent of its income on food. In the United States, it's 11 percent. These days, Herren – a true philosopher of biological diversity, local economies and sustainable food production – is working through cooperatives on other projects, including locust control, in Kenya and the rest of Africa. "If we want to have a supply of food 25 years from now," Herren argues, "investments in agricultural research need to be made now."

Officials at the World Food Prize Foundation credit Herren's work on cassavas and mealybugs with saving 200 million Africans from famine. It also saved buckets of money. Paraguayan wasps work for free.