



## A letter from the Chairman of the Sponsoring Group of icipe (SGI)

Dear colleagues and friends of *icipe*,

Welcome to the first issue for 2013 where we are pleased to inform you of new donor support, results from research and new rewards and collaborations.

Read about the leafminer flies programme and research findings of contact signalling in beetles and about an *icipe* scientist that has been elected as a new fellow of the African Academy of Sciences.

There is new donor support to *icipe* from the UK Government that grants aid to strategic scaling-up of technologies and new ways of working with the private sector on innovation, and generating evidence from *icipe*'s experience on what works in getting research into use. There has also been a visit to *icipe* by Swiss Agency for Development and Cooperation officials.

There is an on-going periodic external review of *icipe*'s research, capacity building and management programmes, commissioned by its governing council, covering the last 5 years of the centre's operations, which is expected to be publicly available in June 2013.

We look forward to continuing bringing you the success stories of *icipe*, of which there are still many to be told.

**Dr David Lymer, Chairman, SGI**

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## R&D FUNDING

### The UK Government grants support to *icipe*'s agricultural R&D interventions



DFID, under its contribution to international agricultural research centres (IARCs), granted *icipe* support for strategic scaling-up of technologies and new ways of working with the private sector on innovation, and generating evidence from *icipe*'s experience on what works in getting research into use.

Part of the supported activities is an extension of *icipe*'s conservation agricultural approach known as 'push-pull' technology (<http://www.push-pull.net/>) that has been developed for integrated management of stemborers, striga weed and soil fertility, in Uganda. Further, in partnership with the private sector, *icipe* will develop innovative control strategies for cattle ticks. This public-private partnership envisages developing a strategic plan that centres on the development of a bio-pesticide for the livestock sector as an alternative to the currently used synthetic acaricides. Finally, in harnessing and nurturing Africa's own, the Centre will prioritise a new initiative to offer young African scientists at the postdoctoral level an opportunity to undertake research activities aimed at reinforcing and broadening the young scientists' skills and offering prospects to develop collaborative research programmes, the aim being to build a critical mass of African researchers undertaking relevant research-for-development for the betterment of the continent.



## R&D FUNDING

### **icipe leafminer R&D Intervention: Expanding the rational and biological control of invasive *Liriomyza* leafmining flies to major horticultural production systems of East Africa**

icipe's Leafminer Flies (LMF) programme was initiated in 2006 with funding from the German Federal Ministry for Economic Cooperation and Development (BMZ). The first phase of the project was concluded in March 2010 and the second phase is ongoing.

Surveys conducted during the initial phase indicated that the most devastating *Liriomyza* leafminer flies in Kenya are *Liriomyza huidobrensis*, *L. sativae* and *L. trifolii*, that are characterised by their high degree of polyphagy (the habit of feeding on many different kinds of food) representing >99.8% of the total *Liriomyza* collected both in the cultivated and wild habitats. The pests cause yield losses of 50–100% and constitute a major quarantine limitation for exports to the European market. Presently, the pests are primarily controlled by frequent applications of synthetic insecticides, leading to resistance in the pests and pollution of the environment. Natural enemies are important in regulating *Liriomyza* leafminers in their native and invaded areas. Yet the impact of native

parasitoids in Kenya is low (with parasitism <5%), necessitating the introduction of exotic parasitoids.

icipe in partnership with the International Potato Centre (CIP) and the Kenya Plant Health Inspectorate Service (KEPHIS) identified, introduced and successfully established in icipe's quarantine facilities, populations of three Peruvian parasitoids (*Phaenotoma scabriventris*, *Halticoptera arduine* and *Chrysocharis flacilla*). Following the first releases of *P. scabriventris* rates of parasitism in LMF populations have risen from 5% to between 30–60%. This remarkable success encouraged the subsequent releases of *H. arduine* with establishment and impact studies ongoing.

icipe work on LMF management in Kenya has been well received by the government and local farmers. For instance, Dr Wilson Songa, Secretary of Agriculture in the Ministry of Agriculture, has praised the Centre's approach in tackling these highly destructive vegetable pests.



Samuel Muchemi and Nicholas Mwikya of icipe (right), explaining a point to a farmer and area local chief (left) during release in his snow pea crop in one of the release points in Mt. Kenya region.



Ministry of Agriculture local officials (left and 5th from left) and KEPHIS staff (2nd from right) witnessing release by a farmer (2nd left) in one of release points in Mt. Kenya.



A release session in Loitokitok in a farmer's tomato crop under the guidance of icipe staff (right) with the supervision of area Ministry of Agriculture personnel (left).

## RECOGNITION

### **A third icipe scientist admitted to AAS Fellowship in 2012**

The African Academy of Sciences (AAS), the most prestigious scientific organisation on the continent, recently elected another icipe scientist, Prof. Zeyaur Khan, as a Fellow of the Academy. He joins Prof. Ahmed Hassanali and Prof. Christian Borgemeister as AAS Fellows.



Prof. Zeyaur Khan





## STRATEGIC PARTNERSHIPS

### **icipe signs MoU with a Malindi community-driven organisation Punguza Mbu Malindi (PUMMA)**



Malaria integrated vector management community training in Malindi

Punguza Mbu Malindi (PUMMA), Swahili for “Reduce Mosquitoes in Malindi” recently signed a memorandum of understanding (MoU) with the *icipe*-KEMRI Malaria Project, which is aimed at fostering self-sufficiency and sustainability in malaria control.

“There can be no effective answer to the malaria problem without control of mosquito breeding sites and any efforts should be homemade and community-driven. Controlling mosquito breeding areas using simple, environmentally friendly methods has been a success in Malindi town”, explains *icipe*/KEMRI scientist Dr Charles Mbogo. For effective implementation of integrated vector management methods, community participation is important. In Malindi PUMMA is using simple yet effective vector control methods in tackling the mosquitoes. Mosquito larvae are eliminated by simply spreading sawdust from local neem trees on stagnant water in pools and puddles. “This method is not only simple, but is also cheap and effective in controlling mosquito larvae and does not harm the environment,” explains Dr Mbogo.

## INSTITUTIONAL EVENTS

### **Visit to *icipe* by Swiss Agency for Development and Cooperation (SDC) officials**

On 1<sup>st</sup> February 2013, Dr Philippe Monteil, from SDC’s HQ in Berne, Switzerland and Dr Katharina Jenny of SDC’s regional office in Rwanda visited *icipe*.

SDC has a longstanding research and development partnership with *icipe* providing the Centre with core funding and restricted programme support. The two visitors were very impressed by the ongoing R&D interventions and were happy to learn about the wide array of projects being implemented by *icipe* and its partners. They noted that *icipe* was undertaking excellent work that was contributing towards food security and adaptation to climate change, by means of a holistic and integrated approach, through the 4Hs paradigm—human, animal, environmental and plant health.



Katharina Jenny (left) and Philippe Monteil (2nd right) hold discussions with Christian Borgemeister (2nd left) and Roger Finan (right), *icipe*’s Directors

### **Review of *icipe*’s R&D, capacity building and management programmes**

Starting November 2012 *icipe* embarked on a periodic 5-year external review commissioned by its Governing Council. *icipe* considers the regular external and internal monitoring and evaluation of its performance an important activity to regulate both quality and relevance as well as ensure compliance to its mandate and mission. As a result, the Centre undergoes numerous reviews to assess its institutional performance and output. This includes research projects, which have their own mechanisms of review and planning, based on agreements with funding partners, and with close participation of the stakeholders. It is through these periodic monitoring and evaluation exercises, that *icipe*’s activities and operations are prioritised, and refocused to meet the needs of the beneficiary communities as well as the larger constituency.

The last external review was conducted during the 1<sup>st</sup> half of 2007

covering the period 2002–2007. The final report of this review can be found at <http://www.icipe.org/external-review.html>. The 2007 review focused exclusively on the programmatic and strategic issues, in particular the research and capacity building agenda of the Centre. The current review is much broader and covers the entire operations of *icipe*, including management, internal organisation, administration, policies and partnerships of the Centre.

This 2013 external review involved a study of relevant documentation, visits and review of on-going work of *icipe*’s programmes, field sites and stations. The three external reviewers also consulted with a broad range of partners and collaborators. The review will result in a detailed report providing key recommendations for the Centre, and is expected to be publically available in June 2013.



## INSTITUTIONAL EVENTS

### icipe hosts The First International Conference on Pesticidal Plants

The First International Conference on Pesticidal Plants (1<sup>st</sup> ICPP) was hosted by *icipe* on 21<sup>st</sup>–24<sup>th</sup> January 2013. The theme of the three-day conference was “Harnessing Pesticidal Plant Technologies for Improved Livelihoods”. The conference was organised jointly by Egerton University Kenya, African Academy of Sciences (AAS), TWAS-ROSSA (Academy of Sciences for the Developing World - Regional Office for sub-Saharan Africa) and African Dryland Alliance for Pesticidal Plant Technologies (ADAPPT) network.



Participants follow proceedings during the 1st ICPP meeting hosted at *icipe*

ADAPPT, a network for optimising and promoting the use of pesticidal plants for food security and poverty alleviation in Africa, with funding from the European Commission EuropeAid ACP S&T Programme, involving the Natural Resources Institute (UK) as the lead partner institution and partners from 7 African countries (Ghana, Kenya, Malawi, South Africa, Tanzania, Zambia and Zimbabwe), has as its overall objective, to strengthen scientific and technological capacity of African nations to exploit and promote pesticidal plants for agricultural development and poverty alleviation.

A prearranged output from ADAPPT was the convening of this scientific conference to help improve networking and build scientific expertise. The ADAPPT partners had unanimously voted to hold the 1<sup>st</sup> ICPP scientific conference in Kenya. Egerton University's involvement in ADAPPT as a leader of dissemination activities made it a natural primary host institution for the conference, with Egerton convening a national organising committee (NOC) that identified *icipe* as the perfect place to host the ICPP because of its location, excellent facilities and long history of research on pesticidal plants and chemical ecology.

ICPP attracted 108 talks, 30 posters and 10 displays, with delegates arriving from more than 25 countries, representing researchers, scholars, traditional herbalists, farmer organisations, NGOs/CBOs, industry and suppliers (scientific and general).

## RESEARCH FINDINGS

### Contact signalling in beetles

Researchers from *icipe* and partners at the United States Department of Agriculture-Agricultural Research Service (USDA/ARS), Gainesville, Florida, have identified critical chemical signals in an African beetle that invades beehives in the East African region, which enable the pest to circumvent the barriers imposed by honeybees to prevent communication among the beetle nest invaders.

The study, which was published as the cover article of the December 2012 issue of the *Journal of Chemical Ecology*, provides evidence that the beetle, which is known as the large hive beetle, or by its scientific name, *Oplostomus haroldi*, utilises a contact pheromone, rather than a volatile one, for mating.

“We identified contact cues on the bodies of the female beetles, which are perceived by the males through sensory cells on the palps of their mouth. In effect, all a male has to do is lick the body of another beetle to discern its sex within seconds,” explained *icipe* scientist, Dr Baldwin Torto.

The contact cues place the beetle in an advantageous position, as they reduce the amount of energy it uses to dispense and perceive a volatile cue in the crowded and smelly hive environment. They also enable the beetle to easily find mating partners in this challenging environment.

“Our findings represent the first evidence of the existence of contact signalling in this family of beetles. They also suggest the evolution of contact signalling as a survival strategy among nest invaders of social insects. Further, this implies the divergence of smell and taste functions to different body organs, culminating in precise and fast processing of communication signals in insects, which can be exploited for control of the ones which are pests such as the large hive beetle,” Dr. Torto further noted.

