icipe quarterly e-bulletin

Volume 5, Issue No. 4, 2015

From the Chair of the Governing Council of *icipe*

In 2015, *icipe* delivered meaningful and sustainable change to the communities it serves. May we move forward together in 2016 in delivering food security, development outcomes and research capacity. The present newsletter from *icipe* provides a snapshot of the final quarter of 2015. It creates an information platform for existing *icipe* projects and new areas of research and development for 2016. The Governing Council is very pleased with the continuing positive trajectory of *icipe* and the way that science remains at the forefront of all activities. The focus remains on research, publishing scientific results, and subsequently applying these results for food and nutrition security, plant health, animal and human health and environmental improvement

The Director-General has focussed on stakeholders and donors in her thought leadership column, and I would like to echo her appreciation of long standing supporters and her welcome to the new *icipe* donors. I would like to particularly mention the Young Entrepreneurs in Silk and Honey project in Ethiopia funded by the MasterCard Foundation, as it is a boost for the existing beekeeping activities in this country. The *icipe*-Ethiopia office has been working in food security and health projects for some time, and this project will provide significant benefits for disadvantaged youth.

I am also proud of the continued recognition that *icipe* research is receiving in diverse fora such as the UN report of the Secretary-General and the Certificate of Recognition for *icipe*´s contribution towards the implementation of the Pan African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC).

Finally, my sincere congratulations to the winners of the Governing Council awards for the best published science papers and science posters by *icipe* scholars. The development and achievements of *icipe* graduate students are of vital importance for the future of high quality research at *icipe*.

I wish you all a productive and rewarding start of 2016!

Prof. Dr. Bill S. Hansson
Chair of the Governing Council

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icipe by the numbers:

Published research papers for *icipe* January – December 2015
143

Number of MSc and PhD students trained at *icipe* in 2015
177

The number of countries MSc and PhD students were drawn
24

Multi-year restricted project funding approved/received in 2015
USD 55,401,610

New donors who joined *icipe* in 2014 and 2015
15

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THOUGHT LEADERSHIP COLUMN: DIRECTOR-GENERAL

The importance of partners

Since its inception, *icipe* has delivered world-quality science, made scientific breakthroughs and crucial contributions to African food and health policy, generated knowledge, and delivered development outcomes to rural communities. It is a record to be proud of. The work of *icipe* is not possible however without key stakeholders.

In the past two years, we have put systems in place to raise the visibility of *icipe* and acknowledge our donors and partners in the region and globally. We have significantly expanded our donor base (some of them as first time investors in agricultural/ health research for development). This is a testimony to *icipe*'s enhanced profile in the international arena, *icipe*'s research quality and relevance to Africa's development agenda and impact.

icipe has active collaborative arrangements with some of the highest-ranked universities and advanced research institutions in the world, in particular in North America and Europe. The strength and longevity of these and other collaborations, some of which have been active for well over a decade, are indicative of the quality of the science being delivered by *icipe*.

icipe is one of 15 regional centres of the Stockholm Convention on Persistent Organic Pollutants (POPs) charged with undertaking capacity building and technology transfer in developing member countries to achieve elimination or reduction of the use of POPs. In 2012, *icipe* was also designated as a Food and Agriculture Organisation of the UN (FAO) Reference Centre for vectors and vector-borne animal diseases, which include tsetse flies and animal trypanosomiasis as

Dr Segenet Kelemu
Director General, *icipe*

well as arthropod-transmitted viral animal pathogens. In addition, *icipe* has been a founder member of AIRCA—the Association of International Research and Development Centers for Agriculture since 2012.

However, it is perhaps the many and diverse partnerships within Africa that best distinguish *icipe*. Some of the most important are with the Forum for Agricultural Research in Africa (FARA) and sub-regional agencies such as the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), the West and Central African Council for Agricultural Research and Development (CORAF/WECARD) and the African Academy of Sciences (AAS). A further set of prominent partnerships in Africa has been developed through *icipe*'s long and outstanding history of supporting research, and developing African research capacity in the agricultural and biological sciences. Since 2007, 171 MSc graduates, primarily from Kenya, and 157 students from across Africa have carried out their PhD studies at *icipe* with co-supervision by *icipe* senior researchers.

The most recent emerging partnerships being assembled are those with the private sector. Over the past five years, *icipe* has adopted public–private partnership models to assist in delivering the outcomes of its research. The most prominent of these is currently that with the Kenyan-based company, Real IPM Ltd, but other similar partnerships have been developed with Elephant Vert Company based in Morocco and Mali, and Kenya Biologics Ltd to deliver various biopesticides and fruit fly attractant products as *icipe* moves to a position of employing a far wider set of partners to ensuring research outputs with the best possible opportunities to be adopted.

Africa today is in a good position to seize opportunities in education, research, trade, land and water resources. African education at all levels continues to improve, as does the number and quality of African scientists. Trade barriers are being dismantled and the challenges associated with supply of land and water is also spurring innovations to make agriculture more efficient.

icipe must continuously realign, refocus and evolve to maintain and improve on its research capability and relevance to take advantage of new research technologies, address emerging challenges and deliver development impacts for Africa. It is through our partnerships and donors that we can deliver change and move forward with certainty and assurance.

icipe´s push-pull technology

icipe´s push-pull technology has been recognised and featured by the United Nations in a report of the Secretary-General which examines the current status and trends of agricultural technologies and provides suggestions for transitioning to sustainable agricultural systems.

The report entitled *Agricultural technology for development* states that "Push-Pull provides agroecological solutions to some of the most common challenges facing smallholder farmers in sub-Saharan Africa: stemborers, Striga and low soil fertility affecting cereal production". Furthermore it posits that "integrated pest and weed management can particularly benefit marginalized populations and women".

This UN report marks an important milestone in the development of push-pull, and reinforces the commitment of *icipe* to develop comprehensive and holistic approaches to research into food security, sustainable development and equality.

Rhoda Abong'o, from western Kenya

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RESEARCH AND DEVELOPMENT FUNDING

MasterCard Foundation provides assistance for Ethiopian youth

A new five year project, with USD 10,349,607 in funding from the MasterCard Foundation, will empower unemployed Ethiopian youth through technology based entrepreneurship. The project launch will be be officiated by His Excellency Hailemariam Desalegn, Prime Minister of the Federal Democratic Republic of Ethiopia on 3rd March 2016 in Addis Ababa, Ethiopia.

The project entitled ¨Young Entrepreneurs in Silk and Honey¨ will create an environment in which youth are a thriving part of the economy, have access to financial services, have the tools and resources needed to establish sustainable enterprises, and are linked to markets.

This project recognises that there is a need to enhance opportunities for employment among youth in Ethiopia; and it is within this context that it will engage the effective use of beekeeping and silk farming innovations to establish successful enterprises for the participants. This project will establish training centres that will impart technology, business and life skills to provide the participants with opportunities within and beyond the honey and silk industries.

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i. Beekeeping activities by youth groups in Tolay, Ethiopia.

ii. Youth engaged in mass rearing of *Bombyx mori* silkworms in Alage, Ethiopia. This species is an economically important insect for farm based silk production.

iii. Spinning of *Bombyx mori* silk floss into yarn by youth at Bere Sericulture, Arba Minch, Ethiopia.

iv. Processed and packaged honey by Meles Union Organic Honey Marketplace, Agulea Town, Ethiopia.

Insects for food and feed research attracts new funding

In November, *icipe* was advised by one of their longstanding donors, the Federal Ministry for Economic Cooperation and Development (BMZ), Germany of the approval of a new project on insects for food and feed.

The EUR 1,200,000 funded project will develop and implement insect-based products to enhance food and nutritional security in sub-Saharan Africa (EntoFOOD). The project, led by Dr Subramanian Sevgan, will run for a period of three years and will be implemented in collaboration with partners from Uganda, Kenya and Germany.

icipe survey shows that over 500 species of insects (such as this cricket) are eaten in Africa

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RESEARCH AND DEVELOPMENT FUNDING

Beekeeping Activities in Oromia and Tigray, Ethiopia

The production of honey and other hive based products have great potential in rural areas of Ethiopia and *icipe* recognises the need to scale up beekeeping technology for wider application. An initiative to increase livelihood options has been operating in the Oromia and Tigray regions of Ethiopia, with initial support from IFAD (the International Fund for Agricultural Development), and ongoing Biovision Foundation for Ecological Development, based in Switzerland and European Union (EU) funded projects. In these two project sites, a total of 1,116 beneficiaries are currently engaged in beekeeping activities, and two honey marketplaces have been established for processing and packaging of honey as well as act as market outlets. Organic certification of the honey and wax has been completed and this has resulted in enhanced returns from the sale of certified products. The communities have demonstrated abilities to manage scaled-up beekeeping profitably over successive cycles of production and marketing; an indication that the projects have augmented the communities' economic potential.

Beekeeping activities in Ethiopia

RESEARCH UPDATE

Biting flies and surra

icipe shall transfer its tsetse repellent collars technology for use on cattle, to camel health research, to control surra, which is transmitted by biting flies. The study will investigate how biting flies interact with each other, their environment, hosts, and non-hosts; and use this knowledge to develop improved control strategies for these vectors of camel diseases. The study is funded by the EU and *icipe* core donors as part of the Integrated Biological Control Applied Research Programme (IBCARP) that aims to increase the adoption of our push-pull, fruit-fly integrated pest management (IPM) and tsetse fly control programmes in east African countries, and with a total budget of EUR 15,000,000.

icipe will seek to identify the olfactory cues the principal vector species transmitting surra use to find their hosts (camel), and their resting and ovipositing sites. *icipe* will also develop novel repellents from natural sources, and use their templates for the discovery of synthetic mimics. Unpreferred hosts will serve as sources for development of these natural repellents, as well as the optimised tsetse repellents. Development of collars for camels will also benefit from the public–private partnerships being forged for large-scale manufacture of the tsetse repellent collars.


Camels are a vital resource, particularly in tropical and sub-tropical dry zones

Rift Valley fever research

Rift Valley fever (RVF), a mosquito-borne zoonotic disease, poses substantial public health and economic threat to vulnerable pastoral communities in East Africa. *icipe* research has improved the understanding of inter-epidemic ecology of the disease. *icipe* has mapped the nomadic routes used by herders to access pasture and water in the semi-arid regions of East Africa. In addition, *icipe* has mapped the distribution of the vectors along the major nomadic livestock movement routes in Garissa, Kenya, and identified key vegetation types used by primary vectors as resting/refuge sites (from environmental pressure). All this is important in developing approaches for disease prevention and control. *icipe* research also identified knowledge gaps on the mode of RVF virus transmission, as well as preventive measures that should be taken among communities living along the nomadic routes; thus, focus should be put on addressing these knowledge gaps among communities through health education to reduce the likelihood of infection and death.


David Tchouassi's research focuses on developing odour baits for improved surveillance of adult mosquitoes that transmit zoonotic diseases such as Rift Valley fever

Zoonotic Diseases

A zoonotic disease is an infectious disease of animals that can be transmitted to humans. Zoonotic diseases can be caused by viruses, bacteria, parasites and fungi. Another way people can contract zoonotic diseases, is by coming into contact with the saliva, blood, urine, or faeces of infected domestic livestock.

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RESEARCH UPDATE

Insects for food and feed

Results of recent surveys of farmers and extension workers in Kenya and Uganda confirmed that feed remained the most important limiting factor in poultry and fish farming and the majority of small-scale farmers mix their own feed at household level, or purchase it from small-scale feed producers.

While female respondents preferred insect-fed chicken because of its enhanced taste, male respondents were indifferent about feeding chicken either with insects, or with conventional feed. Women spent more time feeding and watering poultry and collecting eggs, whereas men spent more time cleaning equipment and poultry houses, selling poultry and buying feeds. A total of 1194 small-scale farming households (452 female and 742 male), and 221 feed traders and processors (99 female and 122 male), were interviewed for their perception, knowledge, attitudes, and practices towards the use of insects as feed. In addition, 184 households (114 female and 70 male) were interviewed for their postharvest practices regarding insects.

Seven insect species are maintained in laboratories in Kenya and Uganda, with monthly production levels of up to 10,000 and 35,000 adult insects per week for house crickets and black soldier flies, respectively. Preliminary nutritive profiling of different insect instars was carried out and results showed insects had up to 71.9% of protein content, indicating that insects can provide high content of protein for food and animal feed.

A common edible insect, the locust, being reared for laboratory trials

Expansion of fruit fly IPM technologies

During the 2014/2015 mango season, *icipe* expanded the dissemination of fruit fly integrated pest management (IPM) technologies. The IPM, based on the use of food bait, male annihilation, biopesticide, and field sanitation expanded beyond Kenya, Tanzania, Benin, and Cameroon, to four Southern African Development Community countries—Botswana, Namibia, Zambia and Zimbabwe.

icipe, national agricultural research systems (NARS), private sector partners, NGOs, farmer groups, and farmers facilitated the uptake of the fruit fly IPM technologies, and more than 2100 growers are participating. In excess of 21,000 growers are now adopting at least two to three components of the fruit fly IPM technologies across various African countries.

Trapping the African invader fly in citrus crops in Embu, Kenya

Stingless bees

icipe's work on stingless bees continues to have an impact on the livelihoods of African honey producers. Traditional methods of harvesting honey from the hives of stingless bees involved invasive methods that resulted in the destruction of the hive. *icipe* scientists have designed new hives that not only encourage stingless bees to colonise hives, but also enable the honey to be harvested without damaging the hive, which has significant food security implications.

icipe scientists have developed a technique to mass produce stingless bee colonies using *in vivo* and *in vitro* queen rearing methods. The effectiveness of stingless bees to improve fruit and seed quality of green peppers under enclosure, compared to self-pollinated plants and plants pollinated by feral pollinators in the open field, has also been studied.

New hives will help to domesticate stingless bees for the first time

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RECENTLY PUBLISHED

Invasive weed could increase malaria incidents in East Africa

A highly aggressive invasive weed known as *Parthenium hysterophorus,* and within the region as famine weed, could increase malaria incidents in East Africa.

This is because *Parthenium* has the ability to sustain the malaria-transmitting mosquito, *Anopheles gambiae,* by extending its life even in the absence of a blood meal, according to a study by *icipe* and partners, published recently in the journal *PLoS ONE*.

A native of North and South America, *Parthenium* is considered one of the world's most serious invasive plants. The success of *Parthenium* as an invasive weed is based on its ability to adapt to harsh environmental conditions, it also grows quickly and store large amounts of seeds in the soil.

Baldwyn Torto, *icipe* scientist and lead study author explains, "Our results show that when female *Anopheles* mosquitoes feed on *Parthenium,* they survive much longer, and they also accumulate substantial energy reserves. Specifically, the mosquitoes are able to store lipids, the most efficient form of energy that has high caloric value and is critical in a variety of functions in the insects. For instance, lipids have been implicated in the development of embryos in mosquitoes and therefore their ability to reproduce".

"Our findings point to an urgent need for focused efforts to curb the spread of *P. hysterophorus*, especially in malaria endemic areas. The results also indicate the possible existence of disease vector species that are resilient and capable of tolerating certain cell-killing substances in the environment, including highly toxic poisons such as those produced by invasive plants. Further research is required regarding such species so as to design appropriate control strategies for them," Torto observes.

http://www.icipe.org/index.php/news/970-invasive-weed-could-increase-malaria-incidents-in-east-africa.html

Parthenium hysterophorus

Malaria work at *icipe*

With substantial funding from public and private partnerships in Africa, malaria endemic countries are scaling up effective interventions while the burden throughout sub-Saharan Africa declines. Many countries are aiming for possible elimination of the disease within the context of global sustainable development goals. However, biological, social, economic, geographic, meteorological, ecological factors and other environmental differences between and within endemic areas continue to mitigate universal elimination campaigns in sub-Saharan Africa. This poses risks of resurgence in areas previously declared malaria free. In fact, the discovery cited above by *icipe* scientists of mosquito-preferred invasive weeds in farms in Kenya and neighboring countries poses new challenges to the control of malaria and its vectors. Due to the potential for adaptation, vigilant tracking of changes in vector populations, vector-parasite, vector-host, host-parasite interactions, transmission patterns and the impact of the environment in areas undergoing intense interventions is extremely important. Understanding the impact of current interventions on silent and non-silent reservoirs and devising strategies for better targeting of the vectors as we approach eventual elimination of the disease is of great importance. *icipe* continues its work of identifying new mosquito oviposition attractants, preferred host plant and blood feeding sources while identifying new mosquito endosymbionts that may be exploited for their control. *icipe* is developing holistic interventions that systematically targets vector, host, parasite, ecological and social factors maintaining malaria transmission which will lead to sustained malaria elimination.

Anopheles gambiae

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RECENTLY PUBLISHED

New *icipe* find confirms prediction of celebrated South African scientist

Alhajarmyia Stuckenberg

Researchers in the *icipe* Biosystematics Unit and colleagues at the University of the Free State, Bloemfontein and the National Museum, in Bloemfontein, South Africa have discovered the first wormlion fly described from East Africa in the Eastern Arc Mountains of Kenya (Kasigau Mountain and Taita Hills). In doing so, they have confirmed a theory of the celebrated South African scientist, Brian Stuckenberg.

In their paper, "A new species of *Alhajarmyia Stuckenberg* (Diptera: Vermileonidae), the first wormlion fly described from East Africa and its biogeographical implications", the authors have confirmed a theory by Stuckenberg, which showed that an environmental linkage existed between Arabia and East Africa millions of years ago when conditions were much wetter, and forests and woodlands connected the two regions.

In 1999, Stuckenberg, the world expert on these interesting flies, published the description of a new species of wormlion from the Al Hajar Mountains in Oman, the first record of this fly family from the Arabian Peninsula.

Vermileonidae (wormlions) are uncommonly collected flies, many of which have an extraordinarily long proboscis for sipping nectar. Their common name comes from the feeding habit of their worm-like larvae which construct conical pits in loose earth and feed on other insects that happen to fall into them, much the same way as the more familiar antlions.

The paper, by V.R Swart, A.H. Kirk-Spriggs and R. S. Copeland, is available online as a pdf at:

http://dx.doi.org/10.11646/zootaxa.4044.4.5

INSTITUTIONAL EVENTS

Bioinformatics approaches for next generation sequencing analysis

icipe and Trend in Africa have jointly organised the second international bioinformatics workshop, "Bioinformatics Approaches for Next Generation Sequencing Analysis", which ran from the 30th November to 5th December 2015 at the *icipe* Duduville campus. This course provided a rare opportunity for African students and early career scientists to acquire skills in analysis of the huge amounts of biological data generated from next-generation sequencing technologies. The course is growing in popularity, and the number of applicants has doubled from the previous workshop. This year's course brought together 43 students from Kenya, Ethiopia, Sudan, Nigeria, Benin, Uganda, Tanzania, Rwanda, and Democratic Republic of Congo. They interacted while undertaking joint analysis projects aimed at fostering collaborative research. The increase in the number of participants necessitated a commensurate increase in the number of course tutors to ensure the high quality of the course. The tutors were from the United Kingdom (UK), *icipe* and the International Livestock Research Institute (ILRI) in Kenya.

Photos: https://www.flickr.com/photos/icipeinsects/albums/72157658955452413

icipe Stockholm Convention Regional Centre

The *icipe* Stockholm Convention Regional Centre has formally been endorsed to continue operations for a further 4 years (2016 to 2019) by the more than 160 countries that are members of Stockholm Convention, following evaluation of the performance of the regional centres.

The Stockholm Convention aims to reduce the use of Persistent Organic Pollutants (POPs). The *icipe* Centre is focused on finding alternatives to chemicals for controlling pests and promoting integrated control methodologies for crop and livestock insect pests and other related arthropods, and insect vectors of tropical diseases and the strengthening of scientific and technological capacities of the developing countries in insect science and its application through training and collaborative work.

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INSTITUTIONAL EVENTS

A greener *icipe*

icipe is committed to a reduced carbon footprint and improved efficiency of water use. Following the successful proposal and funding of the "Going Green" initiative in 2013 by The Swiss Agency for Development and Cooperation (SDC), three measures are being implemented to achieve these goals. The measures are:

i. Decrease in energy consumption by means of intelligent energy saving measures;
ii. Sustainable energy supply and decrease in dependency on diesel fuel through use of solar photovoltaic and thermal systems; and
iii. Decrease in clean water consumption through using rainwater and conserving it.

Water tanks will allow the Centre to benefit from rainwater harvesting. *icipe* installed ten 24,000-litre plastic water tanks and rainwater gutter system in Duduville in 2015.

Also in 2015 the Nguruman field station, one of *icipe*'s field research stations in Kenya, was refurbished. There are now improved laboratories, offices, and guesthouse while an upgrade to the *icipe* Muhaka field site in Kenya will be carried shortly. Plans are also underway to renovate and modernise the main research and development (R&D) laboratory block in 2016.

Director-General at the Trieste Next 2015 Science week in Italy

The World Academy of Sciences (TWAS) invited the *icipe* Director-General to give a presentation and participate in a roundtable discussion at the Trieste Next 2015 Science week in Italy.

The topic for the roundtable discussion was "Ask Africa – Can Agribiotech Make the Difference". The session was moderated by an Italian journalist with international experience and involved two other speakers Prof Michele Morgante (University of Udine) and Prof Alessandaro Vitale (National Research Council of Italy). The Director-General was the only participant from Africa invited to be a member of this high level panel.

The Director-General talked about bioscience innovations in agriculture and health coming out of Africa.

The theme of Trieste Next 2015 was *BIOlogos -The Future of Life*, to suggest, both philosophically and from a scientific concept that the most logical choice for the survival of the species and our planet is to search for bio-compatible solutions.

The importance of media coverage of science events

icipe continues to enhance its relations with the media, across the spectrum, in Kenya, East Africa, and internationally. In 2015, *icipe* has been featured in all key Kenyan media outlets, including newspapers, TV and radio. In addition, the Centre has obtained coverage in a range of emerging blogs and online platforms that Kenyan journalists are administering. *icipe*'s solid relationship with the Nation Media Group (East Africa's largest media house), has helped raise its visibility in the region; for instance, through coverage in *The EastAfrican*, a weekly newspaper that is circulated in the Great Lakes Region of Africa, including Tanzania, Uganda and Rwanda.

icipe continues to strengthen its media relationships, evidenced by coverages by *CNN International*, the *New Scientist, The Guardian, SciDev.Net, The Scientist, The Washington Post, CBS News, Al Jazeera,* and *Fox News*. In addition, participation by the Director-General in Trieste Next 2015, and strong support from TWAS—The World Academy of Sciences - led to extensive coverage in the Italian and other European media.

This exposure is of paramount importance to the ongoing work of *icipe,* as it showcases the challenges that African scientists are overcoming, and also the progress being made as a result of the scientific discoveries and applied research.

In another development, an international science TV series called "The Mind of the Universe", which will be the first open source TV series ever, is under preparation by a group of like-minded international journalists. The TV series will be freely available to all countries in the world in order to 'spread knowledge'. UNESCO is ambassador of "The Mind of the Universe". The Open University UK will create an international online learning experience to make all information available for everyone. *icipe* is one of only a handful of institutions and the only research for development (R4D) organisation in the world selected for this.


Si alza il sipario sul futuro
È il giorno di Trieste Next
Quarta edizione al via con la vetrina dedicata alle imprese del settore BioHighTech
Tra gli ospiti Segenet Kelemu, tra le 100 donne più influenti del mondo per Forbes

This is an example of a story with the Director-General in the Italian media.

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INSTITUTIONAL EVENTS

icipe holds science days

On 9 and 10 November 2015, *icipe* held a science day, intended as a chance for diverse stakeholders to engage with the Centre's world-class scientific breakthroughs and extensive contributions to food security, health improvement and poverty reduction in Africa.

Over 200 dignitaries, including Ambassadors and High Commissioners, government ministers and other officials, members of the Centre's Governing Council, investors, partners including farmers, representatives of the general public and journalists attended the events.

The *icipe* science day was marked through a mix of scientific presentations and exhibitions. In addition, the *icipe* science days demonstrations enabled guests to view the Centre's research outputs up close, and to interact with researchers, students and partners. They included exhibition booths illustrating topics such as push-pull, fruit fly IPM technologies, tsetse repellent technology, Real IPM technologies, and bee varieties, products and pollination, and the silk value chain.

Outputs from the following programmes and projects were also on display:

- Climate Change Impacts on Ecosystem Services and Food Security in Eastern Africa (CHIESA)
- Insects for Food and Feed
- Solarmal technology
- Sustainable Peri-Urban Milk Value Chain Development in Somaliland
- Bioprospecting Programme
- Biosystematics research
- Geomodelling Unit
- Nematodes research

Eight institutions hosted by *icipe* also exhibited their research outputs.

For more information on any *icipe* programme and project, please email at icipe@icipe.org

i. Bill Hansson, Chair of the Governing Council of *icipe*
ii. Segenet Kelemu, Director-General of *icipe*
iii. Sahle-Work Zewde, Director-General of the UN Office in Nairobi, interacting with *icipe* scientist Everlyn Nguku
iv. Invited guests attending science presentations
v&vi There were 12 African countries represented among the registered delegates

More photos: https://www.flickr.com/photos/icipeinsects/albums/72157658955452413

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STAKEHOLDER ENGAGEMENT

Visit by Swiss Agency for Development and Cooperation (SDC)

A prominent visitor to *icipe* in November, 2015 was Yves Guinand, Senior Thematic Advisor Rural Development from the Swiss Agency for Development and Cooperation (SDC).

Switzerland is a major and committed core donor to *icipe*, and to the Greening of *icipe* project.

icipe management and staff with Yves Guinand (third from right)

Diplomatic Visits

icipe was delighted to welcome the Canadian High Commissioner - H.E Mr. David Angell and the Ethiopian Ambassador H.E. Dina Mufti Sid on 21st October 2015. This was a first time visit for both of them to learn about *icipe*'s research and development activities.

A warm welcome was also extended to H.E. Ambassador Osama Ahmed Abdulbari, Deputy Head of Mission, Sudan on 22nd October 2015, who visited *icipe* to discuss scholarships and cooperation.

The High Commissioner and Ambassador with Suresh Raina and Janet Irungu

Contract signed for food bait production

In November, *icipe* signed a contract with Kenya Biologics, a private sector company for a commercial processing plant for food bait production for the management of fruit flies as part of the "Innovation Transforming into Agriculture – Adaptation into Climate Change (ITAACC)" project, with funding from the German Federal Ministry for Economic Cooperation and Development (BMZ).

Signing the contract are Chris Kolenberg, Director at Kenya Biologics and the *icipe* Director-General

Jean Nguya Maniania and Felix Zeiske of *icipe* recently travelled to Mauritius to visit a working processing plant, and the next steps for *icipe* and Kenya Biologics are to set up the facility in Kenya after the model in Mauritius.

It is expected that the construction of the plant in Kenya will be completed in the first half of 2016.

Certificate of recognition from PATTEC

icipe has been awarded a Certificate of Recognition for its contribution towards the implementation of the Pan African Tsetse and Trypanosomiasis Eradication Campaign (PATTEC) on the occasion of PATTEC's 15th Anniversary. The certificate, recognising the innovative research *icipe* is undertaking, and capacity building activities, was presented by the Minister of Livestock, Government of Chad on behalf of the African Union at the 33rd Conference of the International Scientific Council for Trypanosomiasis Research and Control (ISCTRC), and the 4th AU-PATTEC (Pan African Tsetse and Trypanosomiasis Eradication Campaign) Steering and Mobilization Committee Meetings held in Ndjamena, Chad. The certificate was received by Rajinder Saini on behalf of *icipe*.

Meeting with new President of the International Fertiliser Development Center

Also in November, *icipe* welcomed a courtesy call and meeting with the new President of the International Fertiliser Development Center (IFDC), Scott Angle and ex-President Amit Roy. IFDC East and Southern Africa Division is hosted on the *icipe* Duduville Campus in Nairobi. IFDC and *icipe* are members of the Association of International Research and Development Centers for Agriculture (AIRCA).

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PEOPLE

Staff awards and recognitions

Segenet Kelemu, Director-General, *icipe*, was invited to serve on the National Science and Technology Council of the Republic of Rwanda.

She is being featured in an upcoming book on science and technology for Africa's development in a chapter devoted to highlighting the research, teaching, and leadership accomplishments of selected individuals who have contributed much to Africa.

At the 26th General Meeting of The World Academy of Sciences (TWAS) held in Vienna, Austria, 19 November 2015, the Members attending the meeting have elected the Director-General as a Fellow of TWAS for her role in the advancement of science in developing countries. The ceremony will be held at the 27th TWAS General Meeting in 2016.

Tel Aviv University has decided to give the Director-General an honorary doctorate in recognition of her pioneering role for women scientists in Africa, and for many other ecological agricultural achievements; her pioneering role for women scientists in Africa; her leadership in the fight for providing new solutions for ecologically responsible food crop production, especially by local, small-scale farmers in Africa; her commitment in directing the major effort, through international collaboration; and for the transformation of African agriculture into self-sustainment that will meet the goals of feeding the people. The award ceremony will be on 19 May, 2016.

Baldwyn Torto, Head, Behavioural and Chemical Ecology Unit, was selected as a plenary speaker at the 2016 XXV International Congress of Entomology.

Baldwyn has also been selected to serve as a member of the African Academy of Sciences (AAS) Commission on Sciences Education, one of four commissions that the AAS has established to build capacity and set the agenda for science in Africa. The others focus on women in science, Africa's science heritage, and Pan-African Science Olympiads. In addition, the AAS selected him to serve on the jury for the award of the African Union (AU) Prizes.

Daniel Masiga (Head of the Molecular Biology and Bioinformatics Unit – MBBU), has been invited to participate in the Wellcome Trust Public Health and Tropical Medicine Interview Committee (PHATIC).

Benard Kulohoma, a Postdoctoral Fellow was selected as the "2015 H3Africa-Harvard Fellow", which recognised him as an exceptional researcher and trainer. H3ABioNet funds this fellowship, and the H3ABioNet Harvard node supports it. The appointment as a Visiting Researcher is for the period 25 January 2016 to 25 May 2016. He will be based at Harvard Faculty of Public Health (Harvard H3ABioNet Node). Benard is also the winner of the 2015 award for "Young Researcher" conferred during the UNESCO Merck Africa Research Summit 'MARS 2015' in Geneva (19-20 October). This award comes with a 6-months fellowship to gain professional experience in one of the Merck R&D hubs around the world.

Charles Midega, a Senior Scientist in the Push-Pull Programme, Plant Health Theme, is the Cornell University, USA, Distinguished Africanist Scholar. In September 2015, Midega, in his capacity as "Distinguished Africanist Scholar' (awarded in September 2014), delivered various classroom and public lectures meant to stimulate discussion on agricultural research and development in Africa, challenges, opportunities and future policy directions.

Sunday Ekesi, Head, Plant Health Theme, was elected as a Fellow of the African Academy of Sciences.

Edith Chepkorir, a PhD student within the Human Health Theme, is one of the recipients of the 2015 L'Oréal-UNESCO *For Women in Science* Sub-Saharan Africa Regional Fellowships, whose objective is to bring support to young women pursuing scientific careers.

Micky Mwamuye, an MSc candidate, was awarded the "Emerging Research Talent Award" during the UNESCO Merck Africa Research Summit 'MARS 2015' in Geneva (19–20 October).

Matilda Gikonyo (MSc 2015) was awarded a PhD scholarship with an International Max Planck Research School, Germany. Only 12 scholarships were awarded from approximately 800 applications worldwide.

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PEOPLE

Governing council award for best published science paper and best poster

In November, the Governing Council of *icipe* presented awards for the best published science papers by *icipe* scholars and the best science poster by an *icipe* scholar. In the science paper section:

Best published science papers:

The winner was Xavier Cheseto

***icipe* supervisors – Prof. Baldwyn Torto and Dr. David Tchouassi**

Paper: **Cheseto X.**, Kuate S.P., Tchouassi D.P., Ndung'u M., Teal P.E.A. and Torto B. (2015) Potential of the desert locust *Schistocerca gregaria* (Orthoptera: Acrididae) as an unconventional source of dietary and therapeutic sterols. *PLOS ONE* 10, e0127171. doi:10.1371/journal.pone.0127171

***Contribution to science:* This paper published in *PLOS ONE* (impact factor 3.234)** provides insights into the increasing recognition of insects not only as an environmentally- friendly source of food to feed the ever growing world population but also as potential sources of new products and therapeutic agents.

First runner up was Edith Chepkorir

***icipe* supervisor – Dr. Rosemary Sang**

Paper: **Chepkorir E.,** Lutomiah J., Mutisya J., Mulwa F., Limbaso K., Orindi B., Ng'ang'a Z. and Sang R. (2014) Vector competence of *Aedes aegypti* populations from Kilifi and Nairobi for dengue 2 virus and the influence of temperature. *Parasites & Vectors* 2014 7:435. doi:10.1186/1756-3305-7-435

***Contribution to science:* Published in *Parasites & Vectors* (impact factor 3.430)** this manuscript presents insights on the first initial effort to understand the role of *Ae. aegypti* in driving dengue transmission in Kenya, and to assess the risk of further spread of the disease by analyzing the vector competence of *Ae. aegypti* populations from parts of Kenya and the influence of environmental factors like temperature that prevail in outbreak hotspots and other areas of potential risk.

Second runner up was Purity N. Kipanga

***icipe* supervisors – Dr. Jandouwe Villinger and Dr. Daniel Masiga**

Paper: **Kipanga P.N**, Omondi D., Mireji P.O, Sawa P., Masiga D.K. and Villinger J. (2014) High-resolution melting analysis reveals low *Plasmodium* parasitaemia infections among microscopically negative febrile patients in western Kenya. *Malaria Journal* 2014 13:429. doi:10.1186/1475-2875-13-429

Contribution to science: The authors developed an innovative malaria diagnostic platform, nested PCR with high resolution melting analysis (nPCR-HRM) that was published in ***Malaria Journal* (impact factor 3.109).** This novel approach combines the high sensitivity potential of nested Polymerase chain reaction (nPCR) with the species differentiating capabilities of direct PCR-HRM (dPCR-HRM).

In the science poster section:

The winner was Beatrice T. Nganso

Poster: "Aspects of the mechanisms of tolerance in *Apis mellifera scutellata* colonies to *Varroa destructor* mite in Kenya"

***Nganso T. Beatrice**, Ayuka T. Fombong , Abdullahi A. Yusuf, Christian Pirk , Baldwyn Torto*

Brief Summary

Varroa destructor mite is considered one of the greatest threats to honey bee colony losses worldwide, causing physical injury and transmitting pathogens to the bee host. Among the existing management options for the mite, selective bee breeding to enhance traits that contribute to resistance has gained interest in recent times.

First runner up was Nelly Ndungu

Poster: "*Hypotrigona* bees (Hymenoptera: Meliponini): Morphology, behaviour, chemistry and genomics"

***Nelly Ndungu**, Nkoba Kiatoko, Yusuf Ahmed, Christian Pirk, Suresh Raina and Daniel Masiga*

Brief Summary

Stingless bees are effective pollinators, good to use in greenhouses, and surrogates for honeybees. There are about three species in Kenya. However species of *Hypotrigona* are the most poorly defined and difficult to differentiate even for taxonomists. The poster describes how nest entrance and architecture can be used to differentiate the three species. DNA barcoding, a molecular tool widely applied in taxonomy has been successfully applied in this study to differentiate the three species.

Photos: https://www.flickr.com/photos/icipeinsects/albums/72157661254838082

APPOINTMENTS

Menale Kassie, Head of Social Sciences and Impact Assessment Unit

Prior to joining *icipe*, Menale was a Senior Scientist - Agricultural and Development Economist at the International Maize and Wheat Improvement Centre (CIMMYT) where he led various projects such as the Adoption Pathways project which was implemented in five African countries, and Standing Panel for Impact Assessment Nutrition Project. He also designed household survey instruments and implemented panel surveys in various African countries, and undertook adoption and impact assessment of various agricultural interventions using state-of-the-art methods. In his capacity as Senior Scientist, he was also charged with fundraising and developing research projects. Additionally, he was involved in research at the University of Gothenburg, Sweden.

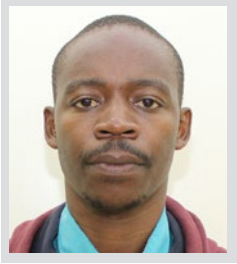
Menale was a Research Fellow in the Sida-funded Environmental Economics Policy Forum for Ethiopia (EEPEF) where he worked on impact assessments, particularly in relation to understanding the role of productivity and production risk in the adoption and adaptation of sustainable land management technologies. Here, he developed extensive knowledge of theoretical modelling, econometric methods and impact assessment methods.

Menale has a Bachelor of Science degree and Master of Science degree in Agricultural Economics from the Alemaya University in Ethiopia, and a PhD in Development and Resource Economics from the Norwegian University of Life Sciences, Norway.

Ivan Rwomushana, Research Scientist, Fruit Fly Ecology & Biological Control

Prior to joining *icipe*, he was the Theme Manager for Sustainable Agriculture, Food Security and Nutrition (SAFSN) at the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). At ASARECA, he was a project manager and worked with multiple stakeholders and partners in 11 ASARECA countries, NBOs, CGIAR, Universities and the private sector. Ivan was responsible for conceptualizing and designing projects for 9 staple crops in his portfolio, mobilizing resources for partners to implement the projects and ensuring grants were well managed. He previously worked at *icipe* in 2004 on a project dealing with the invasive fruit fly pest, *Bactrocera* (invadens) *dorsalis*. Ivan has a BSc in Agriculture from Makerere University in Uganda a MSc in Crop Science from the same University and a PhD in Agricultural Entomology from Kenyatta University.

Emilie Micheline Monique Deletre
Visiting Scientist, Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), France



Michael Okal Nyanganga
Postdoctoral Fellow

Sizah Mwalusepo
Postdoctoral Fellow

Irene Anyango Onyango
Research Assistant

Harriet Adisa Etiang
Accountant

Franceen Kago Amutallah
Guest House Officer

Hosea Oginda Mokaya
Laboratory Technician

Martin Nganga Karanja
Driver/Mechanic

Duncan Festus Were
Workshop Supervisor

Silas Mandila
Driver/Mechanic