

## Researchers on one of the world's most destructive agricultural pests, whitefly, converge in Arusha, Tanzania

The 2<sup>nd</sup> International Whitefly Symposium (IWS2) is taking place in Arusha, Tanzania, this week, 14-19 February. It has brought together more than a hundred scientists from all over the world to discuss one of the world's most destructive agricultural pests, the [whitefly](#).

In sub-Saharan Africa, whiteflies are a key threat to food security and efforts to reduce poverty in rural areas as they destroy and spread diseases in important crops of smallholder farmers such as vegetables, beans, cassava, cotton, and sweet potato. The whitefly is the driving force behind the twin [cassava mosaic disease](#) (CMD) and [cassava brown streak disease](#) (CBSD) pandemics that are currently ravaging cassava production in sub-Saharan Africa.

However, research on whitefly in the continent is inadequate. Apart from a lack of adequate funding, there are very few vector entomologists that could adequately manage the whitefly and associated problems. Therefore scientists from Africa and in particular Tanzania had an opportunity to learn from their colleagues from other countries such as the US, China, Europe, and Australia on new and innovative strategies to control the pest.

According to the meeting chair, [Peter Sseruwagi](#), from the Mikocheni Agricultural Research Institute (MARI), it was important to bring the symposium to Africa as the continent is currently grappling with how to feed its ever-increasing population in the face of the twin threats of shrinking agricultural land and climate change.

"This meeting brings together renowned whitefly researchers from over 24 countries, the private sector, and students to share and exchange the latest knowledge on the whitefly. They focused especially on CMD and CBSD, the two viral diseases spread by whiteflies and which have ravaged this key staple crop in sub-Saharan Africa," Sseruwagi said.

The meeting's co-chair, [James Legg](#), from IITA, added that "Africa is currently struggling with a wave of new viral diseases that are limiting the productivity of the poor smallholder farmers, who are a majority of the population and are the main food producers. These farmers have limited resources to invest in inputs such as pesticides and herbicides. We need to find sustainable science-based solutions to support them in tackling these challenges."



Close-up of whitefly adults.

The symposium is co-organized by MARI and IITA with the [University of Dar es Salaam](#), [Commission for Science and Technology](#) (COSTECH), and the National Agricultural Research Organization ([NARO](#)) of Uganda. It is supported by [USAID](#), the USAID-funded [Africa RISING](#) initiative, and [Zhejiang University, China](#).

The first International Whitefly Symposium took place in Crete, Greece, in 2013. The Symposium is a series of specialized scientific meetings created out of the merger of the International Bemisia Workshop (IBWS) and the European Whitefly Symposium (EWS).

## Project to boost cassava production in Africa through agronomic practices launched in Tanzania

The African Cassava Agronomy Initiative (ACAI) -- Taking Agronomy to Scale in Cassava-Based Systems in sub-Saharan Africa, seeking to address this challenge and support smallholder farmers to increase production of cassava through developing

good agronomic recommendations, recently launched its activities in Tanzania.

Speaking during the project launch at the beginning of this month, [Bernard Vanlauwe](#), IITA's Director for Central Africa



Central Africa Hub Director Bernard Vanlauwe being interviewed by the media.

and research leader of natural resource management, said there is a popular myth that cassava does not need fertilizers and can be grown on poor soils. However, if the crop's production has to increase for food and industrial use, this perception has to change.

This was reiterated by guest of honor Hussein Mansoor, Director of Research and Development at the Ministry of Agriculture, Livestock and Fisheries. He noted that much investment in cassava production had gone into development of improved high-yielding disease-resistant varieties and less on cassava agronomy, and thus the persistent high yield gap.

"With the need to intensify cassava production in areas where population densities have reduced access to land for agriculture and with cassava roots becoming an important raw material for the processing sector, the yield gap needs to be reduced. This requires investments in inputs and labor and access to fresh root markets or value-adding processing markets to ensure that farming households can generate the income required," he said.

[Lawrence Kent](#) from the [Gates Foundation](#) said the Foundation was keen on the project due to the link between improved varieties and good agronomic practices.



*ACAI project participants during the launch.*

"By developing improved varieties, we are only addressing half the problem. Low yields in farmers' fields are a result of poor varieties and poor agronomic practices," Kent said to the meeting participants via Skype. He also commended the project for its clear link between research and uptake of the findings and between research and extension and demand-driven approach by working with partners in the cassava value chain to addressing their priorities and concerns.

ACAI seeks to improve cassava yields, cassava root quality, cassava supply to the processing sector, and fertilizer sales, and

have over 100,000 households in Nigeria and Tanzania benefiting and creating a value of over US\$27 million in the next five years. This value will result from increased yield of cassava and associated crops (due to intercropping), higher starch content, more continuous supply of the roots, and use of fertilizers among others. The project will also be implemented in Uganda and Ghana.

Partners in Tanzania include [Cassava Adding Value for Africa](#) (C:AVA), [Farm Concern International](#) (FCI), [Mennonite Economic Development Associates](#) (MEDA), and [Minjingu Mines & Fertilizers Ltd.](#)

## Biostatistics and SAS refresher courses organized at IITA-Kinshasa

Two statistics courses were organized for IITA staff and partners in DR Congo on 25 January to 5 February. The first—a refresher course on [Statistical Analysis System](#) (SAS), was organized for IITA-Kinshasa researchers. The training provided detailed hands-on exposure to the basic procedures for appropriate data analysis as well as the provision of SAS software for participants. The second course on Biostatistics was intended for grantees of the *Projet de Recherche pour l'Innovation Agricole (PRIA)*. PRIA seeks to revitalize development-oriented agricultural research in the country.

About 18 grantees from the universities, Institut National pour l'Etude et la Recherche Agronomiques (INERA), and NGOs participated in the training courses which facilitated by IITA's Biometricians Sam Ofofile and Sam Korie. In addition to the statistical courses, Ovegho Okome, IITA Project Administrative Officer, discussed the Institute's financial reporting and accounting procedures.



*Participants of the biostatistics course and IITA staff in Kinshasa after the opening ceremony with the DRC Minister of Agriculture Representative.*

The PRIA project is entirely funded by the DR Congo Government and managed by [IITA](#), and covered by a memo of understanding signed in Kinshasa in June 2013. Since it started in December 2013, PRIA continues to provide competitive research grants to Congolese researchers working with [INERA](#), local universities,

NGOs, and private organizations to carry out innovative agricultural research in the food, livestock, and fish farming sectors. To date, about 44 of such research grants have been attributed to DR Congo researchers. These small grants were selected out of 300 applications.

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## Special feature: IITA long-term trials validate ISFM benefits

IITA researchers working together with other scientists have shown that food security, crop yields and farmers' livelihoods; the resilience of cropping systems to climatic change impacts; and mitigation of greenhouse gas (GHG) emissions derived from fertilizer or soil are significantly enhanced when Integrated Soil Fertility Management (ISFM) is practiced during production.

To achieve these, stakeholders in agriculture advocate a shift in agro-practices to production systems that are "climate smart". This means systems that are more productive, use inputs more efficiently, and are more responsive to local climate and socioeconomic conditions while also contributing to address climate change.

The ISFM system – a set of agro-practices adapted to local conditions for increasing production and the efficiency of inputs – is one such system which decades of research show as being able to satisfy the goals of [Climate Smart Agriculture](#) (CSA).

ISFM promotes the systematic combination of both organic and inorganic inputs, improved germplasm, and sound agronomic practices as the best fit technology to successfully increase agricultural production and achieve food and nutrition security especially for poor smallholder farmers in developing countries relying on rainfed agriculture for their livelihoods. The technology is anchored on the germplasm of crops and use of inorganic fertilizer; organic resource management; and other limitations to productivity such as soil acidity, erosion, pests and diseases. These pillars make ISFM invaluable to CSA.

IITA researchers carried out a 20-year trial in Nigeria to show the benefits of ISFM on all dimensions of CSA. In the study, reduced rates of nitrogen phosphorus potassium (NPK) fertilizer application to maize crops and input of nitrogen-rich organic residues were employed while rotating maize and cowpea.

The technology produced a much higher and better quality harvest for cultivated maize and cowpea. The study also demonstrates a cost-effective and environmentally friendlier alternative to boosting food security and generating wealth compared to lone use of synthetic chemical pesticides.

ISFM practices of combining fertilizers with organic input showed an average maize productivity of 2.8 t/ha versus 1.7 t/ha when only fertilizers were used. Cowpea yielded about 1.2 t/ha under the ISFM system compared to 0.7 t/ha when no organic inputs were made.

The study further showed that the variability in maize grain yields between growing seasons was reduced by 63% in the ISFM system whereas soil carbon content was almost double under non-ISFM farming practices, demonstrating that ISFM practice does indeed mitigate GHG emissions.

Details of the study are contained in a report by the Global Alliance for Climate-Smart Agriculture (GACSA) titled "[Integrated Soil Fertility Management: Contributions of framework and practices to climate-smart agriculture](#)." The report, authored by [D Roobroeck](#), [P Van Asten](#), B Jama, R Harawa, and [B Vanlauwe](#), elaborates on and serves as a guidebook for the practice of ISFM as well as identifies and proposes solutions to adoption barriers.

Even though the benefits of ISFM practice are demonstrably clear, adoption and maintenance rates remain very low across sub-Saharan Africa. The report identifies contributory factors that include high transaction costs, inadequate access to input/output and credit markets, land size and property rights issues, poor information dissemination systems, non-existent agricultural extension services, and a paucity of government and donor-funded projects.

The solution to these challenges may, however, lie in replicating across sub-Saharan Africa, an experiment facilitated



by the [Clinton Development Initiative](#) (CDI) and [Alliance for a Green Revolution in Africa](#) (AGRA) to upscale ISFM in Malawi.

The program which combines maize-soybean rotations with strategic use of NPK fertilizers employs a model that brings different participants in the value chain together, facilitating close relationships and enabling better access by smallholder farmers to information, input/output, and credit markets.

As a result, average maize and soybean yields have increased by 140% and 86%, respectively, in three years while women make up about 50% of the 18,000 smallholder farmers to have adopted the ISFM practice. Another 30,000 farmers, half of which are women, are currently being trained on ISFM practices and a total of 9,906 hectares of land have been converted to the ISFM system.

This demonstrates that accelerating adoption rates of ISFM across the region will ensure that smallholder farmers can secure their food and nutrition needs and enhance their incomes in the face of climate change.

### Announcement

- **Joint World Cowpea and Pan-African Grain Legume Research Conference 2016**, co-organized by IITA and the Feed-the-Future Legume Innovation Lab, Livingstone, Zambia, 28 February to 4 March 2016. For more information, visit the conference [website](#) or download the conference [announcement](#).
- **Training of Trainers (ToT) on ITC's Trade Intelligence Tools** (Market Access Map, Standards Map, Trade Map), 10-13 May 2016, IITA Ibadan. For more enquires, contact [info@ieom-ng.org](mailto:info@ieom-ng.org); [op.akande@gmail.com](mailto:op.akande@gmail.com); [IITA-TrainingUnit@cgiar.org](mailto:IITA-TrainingUnit@cgiar.org).
- **7th International Nitrogen Initiative Conference**, Melbourne, Australia, 4–8 December 2016. More details on the conference are available [here](#).

# Ugandan Agric Ministry pioneer development of climate change mainstreaming guidelines

The Ugandan Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), with support from IITA-led Policy Action for Climate Change Adaptation (PACCA) project, and [USAID Feed the Future Enabling Environment for Agriculture](#) (USAID-EEA), organized a national level stakeholder workshop to validate the recently developed Climate Change Mainstreaming Guidelines for the Agricultural Sector in Uganda.

The validation workshop was held on 29 January in Mukono. Stakeholders from government ministries, departments, and agencies, farmer organizations, civil society organizations, private sector, development partners, research institutions, academia, and the media attended.

“MAAIF recognizes that [climate change impacts](#) can only be tackled through collaborative efforts,” Sunday Mutabaazi, chairperson of the MAAIF climate change task force, said in his opening remarks.

The guidelines are in line with the national ones developed by the National Planning Authority (NPA) in partnership with [Climate Change Department](#) (CCD) in 2014 to harmonize sector specific guidelines and ensure that they are aligned to national development plans.

The draft agriculture sector guidelines were developed through a consultative bottom-up approach led by MAAIF that took nearly a year starting in November 2014.



Group photograph of participants at the workshop.

During the validation workshop, the participants, grouped by subsectors (crop, livestock, and fisheries), scrutinized the document and gave their inputs.

Their feedback will be consolidated and integrated into the draft guidelines to be approved by the ministry, and rolled out for implementation by different climate change participants.

“Once validated, stakeholders at all levels should ensure that the guidelines are implemented,” said Chebet Maikut, commissioner, Climate Change Department, Ministry of Water and Environment. He appealed to the districts that had not integrated climate change into their District Development Plans to urgently do so.

The guidelines will facilitate mainstreaming of climate change issues into the agriculture sector policies, plans, programs, and activities by providing basic and flexible guidance on entry points. They also include basic steps and tools on how to mainstream climate change adaptation into agriculture policy processes.

PACCA is a [CGIAR](#) Research Program on Climate Change, Agriculture and Food Security ([CCAFS](#)) flagship project (policies and institutions) implemented by IITA, the International Center for Tropical Agriculture ([CIAT](#)), the World Agroforestry Centre ([ICRAF](#)), the International Livestock Research Institute ([ILRI](#)), and [Biodiversity International](#).

## Inqaba-IITA trains staff on phylogenetics

Inqaba biotec West Africa in collaboration with IITA organized an Introductory Phylogenetics Workshop on 24-29 January, at IITA, Ibadan.

The workshop was attended by 15 laboratory scientists from various laboratories in Nigeria. It aimed to present the basic principles and techniques for understanding the evolution of genes and genomes. The steps required from checking a sequence to constructing a [phylogenetic tree](#) were also covered.

The workshop was facilitated by Jane Wright, an expert in Phylogenetics from Inqaba Biotec with a PhD in Biology from the University of York, and a teacher of Phylogenetics for over 15 years.

During the workshop, the participants learned about [Base calling](#), Distance analysis using [PHYLIP](#) and MEGA 6, Sequence Alignment and Primer design. They also toured the IITA Bioscience Center where Yemi Fasanmade, Lab Manager, enlightened them on the various activities and research carried out in the labs.

At the end of the workshop, the participants said they were impressed with the course content and the organization of the workshop in general. They showed interest in having an advanced workshop as a follow-up in the future.

[Inqaba biotec](#) West Africa is a subsidiary of Inqaba Biotec, a genomics company

with headquarters in South Africa. Its West African office is located at the [Bioscience Center](#), IITA- Ibadan.



Training facilitator, Dr Jane Wright, talking to participants.