

Sudan delegation visits IITA, initiates collaboration, and signs MoU for introducing cassava

A 6-member delegation from the [University of Khartoum](#) (UofK), and the Office of the President, Sudan, visited [IITA](#) on 6–10 November to familiarize themselves with the Institute, exchange ideas, explore areas for collaboration, and sign a memorandum of understanding (MoU).



UofK VC, Professor Ahmed Mohamed Suliman (left) presenting a gift to IITA Director General, Nteranya Sanginga.

The 5-day exploratory visit was led by Prof Ahmed Mohamed Suliman, Vice-Chancellor of UofK, and Dr Abuelgasim Elzein, Head, Department of Agricultural Biotechnology, also a former scientist with IITA, and accompanied by Abdalla Higazi and Hala Ahmed Elamin, both from the Internal Political Affairs unit of the office of the Sudan President and two other professors from the University. Receiving the delegation, IITA Director General [Nteranya Sanginga](#) gave an overview of the Institute's achievements and success stories from inception to date and highlighted the efforts made to generate agricultural innovations to meet Africa's most pressing challenges of hunger, malnutrition, and poverty, and secure the path to food security.

"We are ready to expand into Sudan with a strengthened diversified portfolio to contribute to improved livelihoods and incomes for small-scale farmers in the country. We are optimistic that this collaboration will put smiles on the faces of the Sudanese," he added.

Continued on page 2

AfricaYam project wins ISTRC best poster award

The poster paper of the AfricaYam project on "Yam anthracnose phenotyping" was adjudged the best poster of the 18th Triennial Symposium of the International Society for Tuber and Root Crops (ISTRC) held 22–25 October at Cali, Colombia. The poster was presented by [Olufisayo Kolade](#), Postdoctoral Fellow and Yam Disease Phenotyping Specialist in the AfricaYam project and in the Virology & Molecular Diagnostics Unit, [IITA-Ibadan](#).

The paper titled "High-throughput yam anthracnose phenotyping using detached leaf assay and digital imaging" presented a new phenotyping method established

for assessing yam (*Dioscorea* spp.) germplasm and breeding lines for yam anthracnose disease (YAD) caused by *Colletotrichum gloeosporioides* resistance.



The trophy for the best poster of the 18th Triennial Symposium of the International Society for Tuber and Root Crops (ISTRC).

"This work funded by AfricaYam allows assessment of the performance of yam genotype against YAD under 3 weeks and up to 100 genotypes can be assessed in a week, allowing simultaneous gathering of data on host-pathogen interaction," said Kolade who led the development of this procedure.

Another technology was presented by Molecular Geneticist [Ranjana Bhattacharjee](#), who adopted the Detached Leaf Assay (DLA) for evaluating the breeding populations of *D. alata* (water yam) as part of the National Science Foundation program, Basic Research to Enable Agricultural Development (NSF-BREAD) funded project. She said that: "The best aspect of the 'DLA-Leaf Doctor' phenotyping is that a same

genotype can be evaluated for multiple traits and it offers precise phenotyping data necessary for genotyping and identification of quantitative trait loci (QTLs) and markers."

IITA Head of Virology and Germplasm Health [Lava Kumar](#) congratulated Kolade for this success and added that the 'DLA-Leaf Doctor' innovation facilitated the much needed high-throughput phenotyping pipeline necessary to accelerate breeding for YAD resistance in water yam.

AfricaYam Project Leader [Patrick Adebola](#), also cited Kolade for the achievement added that AfricaYam is paving the way for new innovations on biotic stress phenotyping to fast track development of molecular breeding tools and yam breeding in West Africa.



Dr Kolade in the field with the 'Leaf Doctor' App.

For more information, contact: Lava Kumar (l.kumar@cgiar.org) and Dajie Blessing Odok (d.odok@cgiar.org)

Delegation from Sudan visits IITA, initiates collaboration Continued from page 1

Stating the purpose of their visit, Suliman said, "UofK is leading an initiative to adopt one of the best-bet proven technologies developed by IITA which is High Quality Cassava Flour (HQCF) and its processing techniques for which IITA is known worldwide and has made significant breakthroughs, achievements, and impacts. UofK has plans to adopt and promote this technology with strong support of the Presidential Office of the Republic of the Sudan to make up for the shortage in wheat flour. Our Presidential Office is very much interested in supporting the inclusion of HQCF in bread and other forms of confectionery as part of efforts to improve food security and the livelihoods of farmers in the country. On that note, I would initiate an immediate development of an MoU with IITA to serve as a guide to common interests between the two institutions," he added.

Elzein corroborated this stating, "Even though the Republic of Sudan is not a

cassava-producing country, I know that as soon as the cassava breeding program is replicated in our farming system, agriculture will take a new dimension. With that in place, HQCF will be available to make bread and other confectionary. As an IITA alumnus, I assure you that I will continue to be an active ambassador for IITA in my home country Sudan and in other relevant occasions. I am optimistic that this collaboration would open more opportunities for Sudan and strengthen future fruitful linkages with IITA and other institutional partners."

Due to the strong motivation indicated by the Sudanese delegates, the two organizations officially signed a memorandum of understanding.

Discussions were held regarding the type of cassava technology to be introduced in the country, soil topography, climatic conditions and action plans for immediate implementation.

[Alfred Dixon](#), Director of the Development and Delivery Office said, "Cassava is the third largest crop in the tropics, and a major staple food in sub-Saharan Africa, providing a basic staple for over half a billion people. It is one of the most drought-tolerant crops, capable of growing on marginal soils. However, with the help of cassava experts from IITA and good agronomic and weed management practices, I am certain that in no distant time, Sudan will be known for cassava production," he added.

During the tour of the Institute's facilities including the [GoSeed facility](#), [Semi Autotrophic Hydroponics](#), [Bioscience laboratory](#), fabrication workshop, and I-House pastry section, VC Suliman asserted: "Having taken a close look at IITA's unique innovation and with the Institute's technology developers, I must confess that I have identified more areas of collaboration. But first, we will start with the production and processing of cassava, machine fabrication for cassava processing, and rapid multiplication of clean seeds. I am sure the Sudan President will be excited to know that our mission was successful!"

Highlights of the 5-day visit include presentations by key IITA staff; [Frederick Schreurs](#), CEO Business Incubation Platform; [Ismail Rabbi](#), IITA Molecular Geneticist/Breeder, Festus Okunola, [IITA Youth Agripreneur](#) (IYA); Iheanacho Okike, IITA Cassava Peel technologist; and Thierno Diallo, IITA Machine Fabricator, all directed towards showcasing the benefits of cassava and its role in economic development. The delegates also had the opportunity to undergo hands-on training at the IITA Food and Nutrition Science Laboratory on how to bake bread, croissant, chin-chin, and Tidbits using HQCF.



Iheanacho Okike, Cassava Peel Technologist, giving a presentation during the Sudan delegates' visit to IITA.

Got a story to share?

Please email it with photos and captions every Wednesday to iita-news@cgiar.org or Katherine Lopez (k.lopez@cgiar.org) and Uzoma Agha (u.gha@cgiar.org) for headquarters and Western Africa, Catherine Njuguna (c.njuguna@cgiar.org) for Eastern Africa, and David Ngome (d.ngome@cgiar.org) for Central Africa.

Exploring partnership to get AI app for disease diagnostics into farmers' hands

"Nuru," a Swahili word meaning "light", is a smartphone app that uses Artificial Intelligence (AI) and Machine Learning (ML) to diagnose, in real time, crop pests and diseases. It was developed by Pennsylvania State University (PSU), USA, in partnership with the plant pathology team at [IITA-Tanzania](#) led by [James Legg](#).

The app is able to accurately diagnose leaves damaged by the two cassava viral diseases—Cassava Mosaic Diseases (CMD) and Cassava Brown Streak Diseases (CBSD) and by red and green mites.

Recently, the IITA team gave a presentation on the app to potential partners in Tanzania and explored ways to partner and collaborate in scaling it out to the farming community to support efforts to control pests and diseases. They included representatives of mobile, information technology, and finance

companies, other CGIAR centers, and IITA staff in Tanzania.

"In addition to fast and accurate detection of crop pests and diseases, Nuru is also a learning tool able to give users more information and advice on pests and diseases and their management and control. It also connects them with the relevant crop disease and pest experts," said Latifa Mrisho, a PhD student at IITA.

"Nuru is a free app that is easily accessible using smartphones with good cameras, 2GB RAM, android software version 5.1, and a stable Internet to upload photos," she added.

According to Mrisho, at least 100 extension officers in Kenya and Tanzania have been trained to use the app to diagnose cassava pests and diseases. The team has been working to improve the app's accuracy

under different environmental conditions and to include pests and diseases of other root and tuber plants including Irish and sweet potato, yam, and banana.

[Nacha Mlaki](#) from [Andre & Ross](#), a Technology Management Company, appreciated IITA and PSU's efforts in developing innovative solutions to address challenges in the agriculture sector such as Nuru. He said the technology has great potential in the agriculture sector and advised the team to think of adding other functions such as integrating the app with a platform where farmers can submit queries about any issue relating to agriculture.

The tool is available in PlantVillage <https://plantvillage.psu.edu/> and at <https://play.google.com/store/apps/details?id=plantvillage.nuru>. More info about Nuru is available here <http://www.iita.org/news-item/african-farmers-get-new-help-against-cassava-diseases-nuru-their-artificially-intelligent-assistant/>



Latifa Mrisho, A PhD student at IITA, giving a presentation on the app to potential partners in Tanzania.

IITA PhD student among 10 top fellows selected to attend the 2018 World Food Prize

IITA PhD student among 10 top fellows selected to attend the 2018 World Food Prize

A PhD student at [IITA](#), Francis Onyilo, was among the 10 fellows of the Borlaug Leadership Enhancement in Agricultural Programme ([Borlaug LEAP](#)) selected to attend this year's World Food Prize festivities in Des Moines, Iowa. The 10 were selected based on their excellence in research, mentorship, and leadership.

The main purpose for the participation of the fellows at the Borlaug LEAP event was to expose them to world scientists, leaders, and policy makers, to create partnerships and collaborations, and to be inspired by the World Food Prize Laureates in educating the next generation of leaders in the fight against hunger and uplift food and nutrition security.

At the Borlaug LEAP meeting, the fellows shared research experience and expertise with scientists from different universities.

Francis Onyilo gave a talk about his research work, "RNA interference mediated gene silencing

in ascomycetes *Pseudocercospora fijiensis* causing black Sigatoka disease in banana," highlighting the findings of the research which are relevant to food security. Onyilo's work, supervised by [Leena Tripathi](#), IITA Country representative for Kenya, is a step towards developing transgenic banana resistant to Black sigatoka disease. The techniques, *Agrobacterium tumefaciens*-mediated transformation and RNA interference gene silencing, can be used to investigate other fungal pathogens of cereals like *Magnaporthe oryzae* of rice.

The fellows had interactive and inspirational discussions with the 2018 World Food Prize Laureates, [Drs Lawrence Haddad](#) and [David Nabarro](#). The two Laureates emphasized that communication, partnership, persistence, and taking research findings to the community are key to economic development.

The Borlaug LEAP Fellowship has supported over 170 fellows from over 29 countries to complete their graduate research.



Francis Onyilo, IITA PhD student, (3rd from left, on the second line) with other selected fellows and the WFP organizers.

DDG P4D tours Eastern Africa hub

IITA Deputy Director General, Partnerships for Delivery (DDG-P4D), [Kenton Dashiell](#), embarked on a two-day tour of IITA's Eastern Africa hub in Dar es Salaam, Tanzania on 1–2 November. During the visit, he met the staff, Tanzania Youth Agripreneurs, and partners.

At the end of the visit, Dashiell said he was very impressed with the warm welcome he received from the team and with the ongoing research activities, which are contributing to IITA's vision of alleviating poverty and rehabilitating degraded lands.

During his visit, he was received and accompanied by the Director for Eastern Africa hub, [Victor Manyong](#); the Head of Advocacy and Resource Mobilization,

[Regina Kapinga](#); TAAT Cassava Compact leader [Adebayo Abass](#); and Head of

Finance and Administration, [Eveline Odiambo](#), among other key staff at the hub.



Visiting a lab at TARI-Kibaha nematology lab.

Welcoming new DG of TARI to IITA

Dashiell led the hub in officially welcoming Dr Geoffrey Mkamilo, the Director General of the newly created Tanzania Agriculture Research Institute (TARI) to IITA.

Dashiell noted that IITA had enjoyed a long and fruitful relationship with the Department of Research and Development under the Ministry of Agriculture and now that it had been converted into an institution of its own, TARI, IITA hopes it will continue to enjoy the same close relationship to address major challenges of agriculture in the country and even beyond.

In his response, Mkamilo stated that TARI was created as an independent body by an Act of Parliament in 2016 to enhance agricultural research in the country through effective coordination, governance, management, and conducting of agricultural research activities and to provide for other related matters.

"We have many partners and are working with many CGIAR centers. However, IITA is one of

the most important partners and we are looking forward to your support and collaboration as we deliver on our mandate," Mkamilo said.

During the session, Manyong gave an overview of IITA in the Eastern Africa hub and the collaborative activities between the Institute and TARI, while Mkamilo presented

on the new TARI—its mandate, structure, and plans. Many similarities and opportunities for collaboration were identified.

The hub had also organized a poster exhibition to allow the DDG and TARI DG to interact with staff and get a better grasp of the research going on at the Institute.



Poster exhibition — scientists at the hub explaining their work to the DDG and TARI DG.

Visiting Youth Agripreneurs

The Youth Agripreneurs are close to the DDG's heart and naturally a visit to the Tanzania Youth Agripreneurs Youth Centre for Excellence at Kwember, 25 kilometers from Dar es Salaam where the youth are engaged in running various agribusinesses, was part of his program.

These agribusiness initiatives include processing of cassava into branded cassava flour 'Mpishi Mkuu' (great cook); keeping chicken, rabbit, and fish; and production of chicken feed including growing azolla, a fast-growing water fern that is nutritious for poultry, livestock, and fish.

The DDG also met the youth who had graduated from the program and had received support from the [African Development Bank](#) (AfDB) under the ENABLE Youth program to set up their activities, and toured the farm and agribusinesses of one such agripreneur, Christa Muzanila.

The DDG also met with the staff at the hub to brief them on new developments in the P4D Directorate. He also visited TARI-Kibaha—one of the centers of TARI formerly known as the Sugarcane Research Institute and an important partner for IITA research on cassava.

He also visited Kilimorgano, a private tissue

culture laboratory, that is partnering with the Institute on rapid multiplication of cassava and banana. The company will also be engaged in the Semi-Autotrophic Hydroponics (SAH) technology for rapid multiplication of cassava seeds under the TAAT Cassava compact. Staff of the company had received training at IITA-Ibadan, Nigeria, earlier this year.



Ken Dashiell listening to the Veronica Kebwe, the Enable Youth Coordinator in Tanzania explaining the youth's rabbit keeping project. He is accompanied the hub Director Victor Manyong.