

## Incoming BoT member commends IITA's work in upscaling research for impact

On 21 April, [Professor Felix Kolawole Salako](#), Vice Chancellor, Federal University of Agriculture, Abeokuta (FUNAAB), visited IITA to reacquaint himself with the Institute and find areas of collaboration between IITA and FUNAAB. Prof. Salako is an incoming member of the IITA Board of Trustees (BoT).

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FUNAAB Vice Chancellor, Prof Felix Salako (center), with the IITA management team.

## IITA's circular bioeconomy innovations contributing to food security and natural resource management in sub-Saharan Africa

Innovations on the circular bioeconomy from [IITA](#) have contributed positively to increasing crop productivity, food security, resource use efficiency, job creation, and reduction of greenhouse gas emissions.

This is according to a study by the CGIAR-IITA research team that assessed the contributions of IITA's circular bioeconomy innovations to economic, social, and environmental outcomes. The findings were published in the paper "[Circular Bioeconomy Research for Development in sub-Saharan Africa: Innovations, Gaps, and Actions](#)" in the special Issue of Sustainability titled "Accelerating Bioeconomy Growth through Applied Research and Policy Change" in February 2021.

Circular bioeconomy is simply keeping resources in use for as long as possible, using them as much as possible, designing out waste, and recovering materials in the end with nothing being wasted. Circular bioeconomy also includes knowledge-based production and use of biological resources.

It holds great potential to address the challenges that sub-Saharan Africa faces today. The study focuses on the efficient utilization of resources, including nutrient recycling, sustainable biomass for biofuel production, value addition, reducing the use of toxic chemicals like chemical pesticides and fertilizers, and reducing postharvest losses through breeding improved varieties using gene editing.

For over a decade, IITA has applied the circular bioeconomy approach in several of its research-for-development (R4D) projects in the region to address natural resource degradation, climate change, hunger, and poverty. However, evidence was lacking on the circular bioeconomy's contributions to the environment and economy and the positive social benefits.

The team found that IITA's circular bioeconomy interventions had led to 10 technological innovations that translated into five economic, social, and environmental outcomes: food security, crop production, job creation,

resource use efficiency, and reduction of greenhouse gas emissions.

"While the current development model has benefited humanity for decades in creating material wealth, meeting food and other needs, it has compromised the ability of future generations to meet theirs. Scientific modeling results suggest that the current level of resource use has already exceeded what is considered sustainable," says [Shiferaw Feleke](#), IITA agricultural economist and the lead author of the paper.

"The results of our study are important in building a case for integrating a circular bioeconomy approach in R4D work to find more efficient and less wasteful ways to achieve economic, social, and environmental development for a sustainable future for current and future generations," says Feleke.

"This type of work will be critical as we transition into One CGIAR as so many CGIAR centers have different experiences designing and testing

circular bioeconomy innovations. We shall need to collaborate effectively for such innovations to lead to positive environmental, social, and economic outcomes," he added.

ITA's circular bioeconomy interventions have been implemented in Benin, the Democratic Republic of Congo, Tanzania, Kenya, Nigeria, and Rwanda, while the interventions' outputs have been deployed in several other African countries.

Interventions include [improved varieties developed](#) for tolerance to postharvest physiological deterioration, [biofertilizer development for soil fertility management through nitrogen-fixation](#), [biocontrol development for the management of aflatoxin in food crops](#), second-generation biofuel development, safe and nutritious food product development, safe and nutritious feed production development, [animal feed development](#), [biochar development for carbon sequestration](#), [organic fertilizer development](#), and biogas production.



Applying Aflasafe in a farm in Tanzania: Aflasafe is one of the biocircular economy innovations of IITA. Feleke Shiferaw, lead author.

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Prof. Salako was a researcher at IITA from 1989 to 2000. "I am an IITA investment in FUNAAB because IITA sharpened my research acumen. I learned a lot about research and publication during my 11 years of research in IITA," he said.

In a meeting, [Nteranya Sanginga](#), IITA Director General, with [Hilde Koper](#), DDG Corporate Services, gave the IITA Board Induction and Orientation. DG Sanginga highlighted the role of

BOT members to provide oversight and guidance to the Institute.

Speaking about the activities of IITA in the headquarters and hubs, Sanginga shared that IITA is taking responsibility for agricultural research in Africa. "We are building innovations for impact," he said.

After the meeting, Prof Salako went on a tour of the Institute's facilities to see the innovations and explore areas

of partnership. As part of the tour, he visited the Emeritus Director, R4D West Africa, [Robert Asiedu](#). He also visited the Virology laboratory, Genetic Resources Center, Bioscience, Aflasafe under the Business Incubation Platform (BIP), and the Youth in Agribusiness Office.

Being a former research fellow in IITA, he met with members of the International Association of Research Scholars and Fellows (IARSAF) to share his experience and things that helped him succeed. Encouraging IARSAF not to settle for less, he said, "Never think you have reached the peak by getting a PhD. As long as you are alive, you have not reached the peak, so keep learning."

Visiting his former office, Prof Salako reminisced with the staff and mentioned how the work culture in IITA had helped him beyond the Institute and in his present position. He highlighted efficiency, timeliness, and dedication as significant areas where IITA has impacted him and advised that the culture of IITA should not be taken for granted.

[Kwesi Atta-Krah](#), Director for Advocacy and Country Alignment Function, highlighted the experience and height Prof Salako has attained as an inspiration, especially to younger people, emphasizing that they do not have to settle for where they are now. "You can aim higher," he said.

After the tour, Prof Salako communicated how impressed he was about many changes that had occurred since he left, pointing out the many innovations, especially Aflasafe and Nodumax under BIP. He hailed the Institute's work in upscaling research to impact communities.

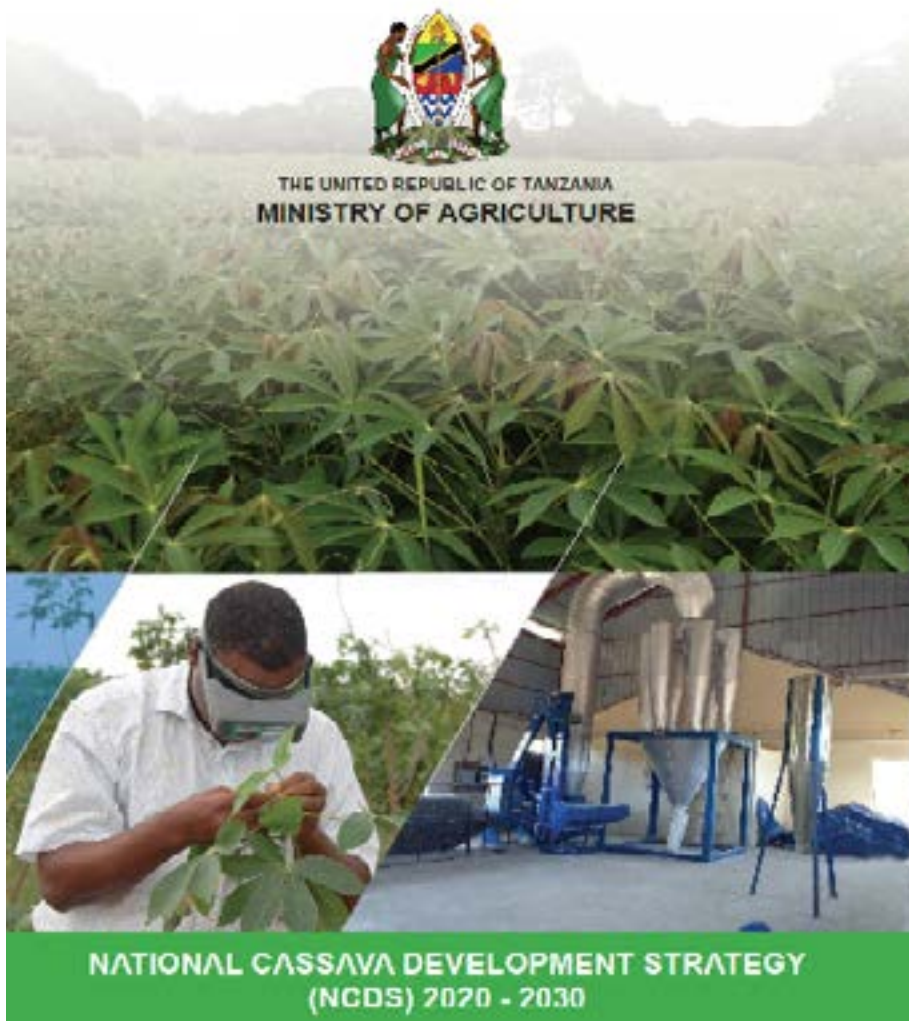
Highlighting the areas of collaboration with [Kenton Dashiell](#), Deputy Director General, Partnerships for Delivery, Prof Salako mentioned Knowledge management and Data management as important areas. He also applauded IITA for setting up the Youth-in-Agribusiness platform and extending agriculture and agribusiness to secondary schools. "I would want the agribusiness part to be replicated in FUNAAB," he said.



*Top: Prof Salako sharing his experience with the IARSAF team.  
Bottom: Prof Salako on a tour of the Knowledge Center.*

# IITA supports production of Tanzania's national cassava development strategy

[IITA](#)-Tanzania has handed over to the Ministry of Agriculture 2000 copies of the National Cassava Development Strategy, a roadmap to guide cassava commercialization and industrialization initiatives in the country. IITA had offered to support the government in editing and printing the copies.



*Book cover of the National Cassava Development Strategy.*

The books were handed over to the Ministry at their headquarters in Dodoma on behalf of IITA by Bahati Maregeri, Assistant Project Manager, and received by Beatus Malema, Assistant Director of Crops

Development, Agricultural Inputs and Cooperatives.

Malema expressed his appreciation to IITA for technical and financial support in producing the books.

"The development of this national cassava strategy has been a long-term process faced with many technical and financial challenges. We appreciate IITA for supporting the government in the process. This book provides a roadmap for the development of cassava in the country. We hope to have more strategy books for other crops too," Malema noted.

The National Cassava Development Strategy provides strategic interventions that focus on increasing the crop's current production three-fold to meet growing demand. The strategy aims at contributing to the implementation of major commitments outlined in the National Agriculture Policy (2013) and the second phase of the comprehensive Agricultural Sector Development Program (ASDP II) towards transforming the agricultural sector in Tanzania.

"Cassava is a priority crop for IITA. We see much unexplored potential in the crop to transform Tanzania's agriculture and economy. It was our pleasure to work with your team to complete the editing and printing of the national cassava strategy, which we see as an important document for the crop's development in the country," said Maregeri.

Technical and financial support was provided by the Building an Economically Sustainable Cassava Seed System in Tanzania (BEST Cassava) project that aims to increase agricultural productivity and farm income of smallholder cassava farmers through access to improved cassava seed varieties. IITA leads the project in collaboration with national partners: the Tanzania Agriculture Research Institute (TARI), MEDA, and Tanzania Official Seed Certification Institute (TOSCI).

## Got a story to share?

Please send your story with photos and captions every Tuesday to [iita-news@cgiar.org](mailto:iita-news@cgiar.org) or Katherine Lopez ([k.lopez@cgiar.org](mailto:k.lopez@cgiar.org)) and Uzoma Agha ([u.gha@cgiar.org](mailto:u.gha@cgiar.org)) for headquarters and Western Africa, Catherine Njuguna ([c.njuguna@cgiar.org](mailto:c.njuguna@cgiar.org)) for Eastern and Southern Africa, and David Ngome ([d.ngome@cgiar.org](mailto:d.ngome@cgiar.org)) for Central Africa.



# Experts examine plant health from a One Health approach

Sustainably feeding the growing world population and safeguarding the environment we depend on for food requires a one health approach. One Health was the focus of the fourth webinar in the [CGIAR](#)-organized International Year of Plant Health (IYPH) Webinar Series on 31 March.

Plant health is critical in the one health approach to ensure food security, zero hunger, and poverty reduction. And given the central role women and men play in agriculture, their extraordinary efforts are also being recognized to propel plant health for one health. With agriculture as the biggest cause of biodiversity loss, the most significant user and polluter of water, and the highest emitter of greenhouse gases, the challenge facing the world is how to produce more food at lower environmental costs.

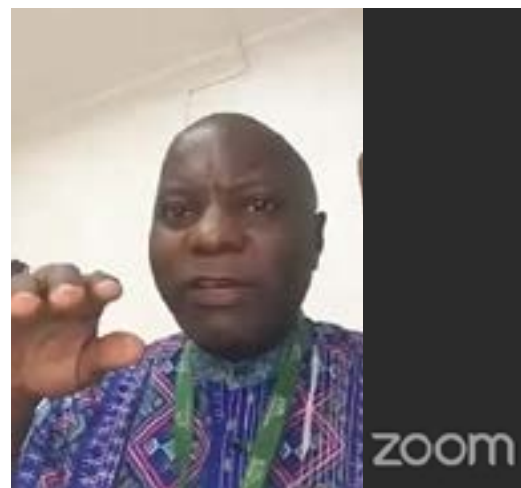
“We need to find ways to increase food production without using more land and offset our agroecological balance,” Prof. Navin Ramankutty, the Research Chair at the University of British Columbia, emphasized in his presentation. “With sustainable intensification through conventional food production systems, we can certainly increase food produce very efficiently. We can increase food production by 30% with a 9% increase in nitrogen application rate,” Ramankutty said.

Dr Arshnee Moodley, CGIAR Antimicrobial Resistance Hub Leader, said, “We live in a complex, connected ecosystem where humans and wildlife use the same food and water, and the same antibiotics and antimicrobial systems. Livestock use 73% of globally used antibiotics and resistance to these antibiotics is spreading across the systems. The dung and other by-products of livestock and wildlife return to our environment in fertilizing crops. To reduce the antimicrobial resistance (AMR) risks from agriculture

to humans is to reduce the usage and transmission of antimicrobial residues from animals to man.” [Rousseau Djouaka](#), IITA Molecular Entomologist, stating the connection between human health and the environment, said, “Residues of pesticides get into the environment through meat and dairy products, dung used as fertilizer, and through mosquitoes, which develop resistance to the pesticide residues.” He further emphasized the need for sustainable management of agrochemicals in plant treatments.

Emeritus Prof. Janice Olawoye of the Department of Rural Sociology, University of Ibadan, said incorporating gender concerns into topical issues is increasingly gaining credence in agricultural research and implementation circles. She said the diversity of gender roles and constraints limit the ability to generalize across localities, status groups, commodities, and value chains. “We need to focus on gender diversity among commodities (maize, cassava), across value chains (production to consumption), localities (drier or wetter regions), and across status groups (richer, poorer, young or old).” She gave the example that women are often given less fertile land, which invariably affects yield and crops for sale.

The interactive webinar enabled participants to ask questions and take polls to express their views on the factors that drive plant health in a one-health approach. The contributions reiterated that human beings are healthier when our crops, natural



*Top: The One Health approach has the potential to create win-win outcomes for people, animals, and the natural environment. Bottom: IITA Molecular Entomologist Dr Rousseau Djouaka spoke about the misuse and overuse of agrochemicals from a One Health approach.*

environment, and animals are healthy and free from the insects, pests, and diseases that militate against food security.

Watch this video which explains the concept of the One Health approach: [\(13\) Plant Health for One Health - YouTube](#).

## Take responsibility! Stop the spread of COVID-19!

Always clean your hands; practice physical and social distancing; wear face masks properly; avoid crowds and public places; keep a 2-meter distance from the next person; and practice general sanitation and hygiene.

# Peas 'n' Chips: Creating food security with African yam bean

The African yam bean (AYB), *Sphenostylis stenocarpa*, produces beans in pods above-ground and tubers beneath. This climate-resilient tuberous legume replenishes the soil through nitrogen fixation and is highly nutritious, with the protein-rich beans and the tuber as an energy source. AYB has a high amino-acid profile and alleviated malnourishment during the Nigerian civil war in the 1960s. As a result, scientists now consider revitalizing AYB to be essential. To promote this underutilized crop while intensifying efforts to establish a sustainable seed system, breeding for bigger tubers, and a short cooking time for the beans, the Peas 'n' Chips entrepreneurs are organizing various activities with different themes.

The Peas 'n' Chips team, consisting of researchers from the University of Cambridge and [IITA](#), hosted one such event during the recent [Cambridge Festival](#) on 26 March. Fifty-six registered attendees participated in the webinar.

Drs Nadia Radzman and Curie Park from the University of Cambridge and IITA's [Drs Morufat Balogun](#), Sarafat Tijani, and Ademola Aina are on this initiative of integrating AYB, an underutilized crop, into the food value chain for sustainable food security in Africa.

The Cambridge Festival included a window museum exhibition at the Eko kitchen presenting the AYB crop. Talks at the webinar highlighted the harnessed indigenous perspectives and scientific knowledge geared towards developing improved farmers' preferred varieties. Radzman elaborated on why AYB is a potential food security crop. Fulfilling the criteria of diversity, proximity, and resilience qualifies the AYB to address better food security. AYB also reduces overreliance on a few major crops and ensures safety in case of other crop failures. Because AYB fixes atmospheric nitrogen, it limits nitrogen fertilizer use, leading to a smaller carbon footprint.

In discussing the development of the crop's tuber, Aina noted, "AYB could grow to almost the size of yam, as obtained by some colleagues in Ebonyi State, Nigeria." He also highlighted the research outcome of both the field and laboratory work at IITA and the University of Ibadan in Nigeria.

Park gave an overview of the project's origins, stating that the researchers are propelled with a zeal to raise awareness about AYB (a forgotten crop) and



*Top: The African yam bean produces edible beans and tubers.  
Bottom: An African yam bean window exhibition at the Eko Kitchen in Cambridge.*

promote a sustainable market structure towards food security and enhanced livelihood of farmers, consumers, and other stakeholders in Africa.

Park also underlined the challenges facing AYB and non-AYB farmers during the AYB exploratory interviews organized in February. These include long cooking time for the bean, short shelf life for the tuber, relatively small tuber size, and inconsistent tuber production.

With the global population increase, AYB is a promising crop with a high seed yield per unit of land. Having established the high nutritional profile of both the tuber and legume, Balogun declared that AYB could be commercially successful in Africa. The Bean\_preneur project is attempting to answer some of the key research questions. Balogun also noted that to realize global food resilience

through AYB, we need an active and versatile value chain for AYB.

In her remarks, Tijani spoke about the immediate and medium-term actions. She indicated that intercropping AYB with other crops would encourage dietary diversity, developing early maturing varieties of AYB will allow 2–3 successive production cycles annually, and the development of processing technologies will prevent wastage due to storage loss. These points will help make AYB available, accessible, affordable, and adopted for global food resilience.

The exhibition at Eko kitchen in Cambridge included a first-ever commissioned botanical illustration of AYB. They also featured a video of nicely cooked African yam bean with a special sauce to attract people willing to have a taste during the festival period.