

## DRC President seeks IITA's support to transform country's agriculture sector



IITA Country Rep in DRC, Zoumana Bamba (left), and National Minister of Agriculture, Désiré M'zinga Birihanze, exchanging the signed MoU on PDL-145T technical assistance.

Under the patronage of President Félix Tshisekedi of the Democratic Republic of Congo, [IITA](#) organized a planning conference for the Agenda for the Transformation of Agriculture in the Democratic Republic of Congo (ATA-DRC). The meeting took place at the "President Olusegun Obasanjo, IITA Research campus" in South Kivu from 23 to 25 February.

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## Youth boost maize production in Benin through the TAAT project



Maize storage used by the youth.

Maize is the most important cereal crop globally in terms of quantity and area, ahead of wheat and rice. In Benin, maize is one of the staple foods of various ethnic and socio-cultural groups. Several producers are involved in producing this cereal, which represents a real business opportunity for them.

Despite the potential of the maize crop, several factors hinder the optimization of its production. These include the problem of soil fertility, poor cultivation techniques, the effects of climate change, and the lack of good seed and suitable varieties.

To address the lack of suitable varieties, which disrupts maize production in Benin, the youth compact of the [Technologies for African Agricultural Transformation \(TAAT\)](#), also known as ENABLE TAAT, is collaborating with national institutions and development partners. Such partners include the Institut Nationale des Recherches Agronomiques du Bénin (INRAB), the Direction de la Production Végétale (DPV), the Direction Départementale de l'Agriculture, de l'Elevage et de la Pêche (DDAEP) and the Agences Territoriales de Développement Agricole (ATDA). The target of this partnership is to develop the capacity of groups of young people in several localities in Benin on seed production.

Many of the beneficiary youth received training on maize seed production standards and techniques in Benin. Beyond that, ENABLE TAAT registered them with the DPV—the national plant-product control body of the Ministry of Agriculture, Livestock and Fisheries (MAEP). The compact trains the youth and connects them with the right institutions to produce better quality seeds that

boost maize production in their communities.

According to the statistics of a survey carried out on this engagement, 45 youth will be able to supply the Beninese seed market with 90,000 kg of maize seed, allowing the planting of 4,500 ha considering that an average of 20 kg of seed is needed for 1 ha. In addition, projecting an average yield of 4 tons per hectare,

these young people trained by the ENABLE TAAT compact will enable Beninese maize producers to produce 18,000 tons of grain maize per season.

Through this network of young seed growers, ENABLE TAAT is fulfilling its mandate to assist more youth in creating jobs for themselves and other youth in Bénin. *Contributed by Dolapo Ogunsola.*



*Certified maize seed produced by ENABLE TAAT trainees in Benin.*

## 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.

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)).



A plan was developed for the short, medium, and long term to implement the Local Development Program of the 145 territories (PDL-145T) through the agricultural sector.

The meeting identified quick-win activities to deliver by July 2022, including restructuring the Congolese government's ongoing program (Programme Volontariste Agricole managed by Bio Agribusiness - BAB). This activity considers rice and maize production in Kongo-central, the cassava value chain in the Kinshasa and South Kivu provinces, and the maize value chain in Kasai province.

The plan also outlined supporting the private sector to deliver high-quality seed in collaboration with INERA as another "quick win". This will cover the maize value chain and Aflasafe activities in Katanga province, the production of seeds for cassava and rice crops in the Equator province with "Plantations et Huileries du Congo" (PHC), and banana production in the Tshopo province. This activity will extend to the fishery sector across the country.

IITA Director General [Nteranya Sanginga](#) and President Tshisekedi's

Head of Mission, Pacifique Kahasha, chaired the meeting. Other participants included the chief of staff of the Minister of Agriculture, Professor Apollinaire BILOSO, experts from IITA, INERA, and the agriculture ministers' representatives of South Kivu, Haut-Uélé, and Ituri provinces, as well as private sector stakeholders. They all collaborated to develop a consensual and participatory activity plan.

This conference evolved from several stages, including the signing of the MoU

relating to (1) the pragmatic Strategy of the Program for the Transformation of Agriculture in the 145 territories of DRC developed in collaboration with the IITA, (2) the implementation agreement of the quick-win activities for the incubation period of the ATA-DRC by IITA, and (3) the field missions carried by IITA along with the experts from the Agriculture Ministry to assess the activities already been carried out in the field by the government. *Contributed by Michèle Kimpwene*



Top right: IITA experts visiting one of the agricultural fields in Ruzizi, South-Kivu.

Bottom: Meeting participants, including government officials, IITA staff, national and local partners, and private sector stakeholders.

# IITA breeders to develop improved cowpea varieties through modern breeding approaches

Cowpea is one of IITA's mandate crops, produced to reduce hunger and malnutrition in Africa, where it is widely consumed. It is produced in 45 countries of Africa, and five of the top cowpea-producing countries are in West Africa. Cowpea contributes to CGIAR's impact on five key impact areas—climate adaptation and mitigation; nutrition, health, and food security; poverty reduction, livelihoods, and jobs; gender equality, youth, and social inclusion; and environmental health and biodiversity.



IITA Cowpea Breeder Usmane Boukar.

In a virtual seminar on 7 March, IITA Cowpea Breeder [Ousmane Boukar](#) shared the objectives and activities of the IITA breeding program in implementing modern breeding approaches to develop varieties with increased productivity. Despite the constraints to cowpea production, such as diseases, parasitic weeds, insects, and abiotic stresses, some achievements have mitigated their efforts on cowpea production. The diversity and population structure of cowpea germplasm conserved by the genetic resources at GRC and other sources have been evaluated. Some have been screened to detect virus-resistant lines.

The new breeding approaches include the development of product profiles: extra-early to early varieties, medium maturing varieties, and late-maturing varieties, all with producers' and consumers' preferred traits. Other additions are improving the stage-gate system and variety replacement strategy, developing mid-density genotyping services for cowpea, and developing QA/QC SNPs.

To implement modern breeding approaches, the breeding team has developed standard operating procedures for all major breeding activities, acquired breeding equipment for increased breeding efficiency,

improved experimental designs and data analytics, and developed digital seed inventory systems.

As a personal contribution, Boukar has made 21 oral presentations, most presented while representing IITA; reviewed about 20 manuscripts for various scientific journals; written 22 journal articles in Thompson-indexed journals; and contributed to 15 pre-proposals and concept notes as well as 19 proposals of which 12 were funded to the tune of about \$7.0 million.

Highlighting the plans for the cowpea breeding programs, Boukar shared that the team will implement a well defined stage-gate system; improve market segments and target products, work on optimizing breeding pipelines, map and identify market segments from end-users to producers and consumers; refine and strengthen cowpea breeding network; and strengthen partnerships with NARS, SMEs, and advanced research institutions.

"The Cowpea breeding program has made significant progress in modernizing our breeding strategies. The team is highly committed to the modernization of the program. Hence, with efficient technical support from EiB and Bayer and financial support of donors, best practices in modern breeding will be adopted," Boukar said.

Rounding off the seminar, [Michael Abberton](#) - Director of IITA Western Africa Hub, commended Boukar for the detailed presentation and appreciated participants' engagement.

Contributed by Favour Ochuwa Eleta



Cowpea is a staple in many households and one of IITA's mandate crops.

# Study finds diverse microbial communities across agroecologies enhance plantain productivity

Plantain (*Musa spp.*) is a staple food crop and a key source of income supporting the livelihoods of millions of smallholder farmers in sub-Saharan Africa (SSA). However, pests and diseases, synthetic chemicals, and climate variation threaten its production and productivity.

A recent study titled “[Subterranean Microbiome Affiliations of Plantain \(\*Musa spp.\*\) under Diverse Agroecologies of West and Central Africa](#)” published in *Microbial Ecology* explored bacterial and fungal diversity, an important aspect in increasing plant performance in plantains.

The study revealed significant differences between the High rainfall forests and derived Savanna agroecologies among the most abundant bacterial communities, and some specific dynamic responses were observed in fungal communities.

In considering the lack of knowledge on plantain-microbe associations and the need for a holistic approach to increase productivity and identify a more efficient and robust system for long-term food security and economic concerns for smallholder farmers, the study explored the self-supporting microbial ecosystems and distribution

in agroecologies and seasonal regimes in the SSA.

“Ascomycota, Basidiomycota, and Zygomycota are the three most dominant fungal species in both agroecologies. Moreover, an immense array of beneficial microbes in the roots and rhizosphere of plantain, including *Acinetobacter*, *Bacillus*, and *Pseudomonas spp.*, were found,” said [Manoj Kaushal](#), Systems Agronomist at [IITA](#).

*Acinetobacter*, *Bacillus*, and *Pseudomonas spp.* are common biocontrol agents that suppress pathogenic microbes, enhanced by the combined antimicrobial actions exerted among beneficial pathogenic microbes.

Kaushal noted that the findings show that the diverse agroecologies and host habitats differentially support the dynamic microbial profile. This helps in altering the structure in the rhizosphere zone to promote synergistic host-microbe interactions, particularly under the resource-poor conditions of sub-Saharan Africa.

For decades, soil microbes have been considered key for protecting numerous crops from various biotic and abiotic constraints. The increase in beneficial microbial diversity of soil can control various soilborne diseases and prevent the establishment of harmful pathogens in the rhizosphere and roots of a host plant.

In addition, for *Musa spp.*, cropping practices tend to influence microbial community structure and compositions. These differ under diverse agroecologies and climatic conditions.

The study, led by IITA in collaboration with the International Maize and Wheat Improvement Center (CIMMYT), is the first to describe bacterial and fungal communities associated with plantain-based production systems in the humid tropics with different agroecologies and seasonal regimes in SSA. Also, the team established a model for studying plantain-microbe interactions and their mechanisms to serve as a baseline for future plant health and production studies. *Contributed by Gloriana Ndiabalema*



Top: Harvested plantain. Bottom: Plantain plantation.