



## Happy New Year!

### IITA's transformation initiative pays off in Africa

IITA has lifted 7.2 million Africans out of poverty through its research innovations. The success of projects carried out by the Institute in 2018 has immensely helped in achieving a large percentage of its goal, according to Director General <u>Nteranya Sanginga</u>.

Sanginga, in an interview with the <u>News</u> <u>Agency of Nigeria</u> (NAN), said that as part of achieving its goal of poverty reduction for over 11 million Africans, IITA has succeeded in lifting 7.2 million out of poverty. He added that in the process of working to achieve other goals, which are to redirect over



Nteranya Sanginga, IITA Director General, highlighting IITA's achievements.

7.5 million hectares of underutilized, marginal, degraded lands to more productive, sustainable use, and increase yields of major crops by 60 percent, the Institute has obtained about 895,000 ha of restored degraded land associated with the adoption of improved technologies developed by IITA and partners.

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The DG said that on-farm yield assessment showed that farmers' adoption of improved varieties and good management practices resulted in 50-80 percent yield gains in maize and soybean. He added that research for development (R4D) efforts in scaling out successful drought tolerant maize in the dry savanna and excellent research on reducing the breeding cycle of banana and plantain contributed to the above goals. He also mentioned that the liquidity status of the Business Incubation Platform (BIP) enterprises-the ease at which assets can be converted into cash-improved from 303 days to 94 days of actual sales. In addition to improved cash management, the BIP enterprises achieved operational profitability in 2018. **Continued on page 2** 

# Tracking adoption of improved varieties in informal seed systems using GBS markers: A case study using cassava

Assessing the impact of crop improvement has been a concern for agricultural researchers as varieties tend to look alike. Improved varieties of cassava, a clonally propagated crop, were mostly disseminated through informal seed systems, making the task of variety tracking difficult. However, researchers from <u>IITA</u>, <u>Michigan</u> <u>State University</u>, and Ghana's Council for Scientific and Industrial Research-Crop Research Institute, took advantage of rapid advances in DNA sequencing to carry out a pilot study on cassava varietal identification through DNA fingerprinting.



Cassava farmer appreciating his yield.



This study was conducted in three regions of Ghana covering the largest cassava producing area accounting for 61% of cassava production in the country in 2010. The three study regions were Brong Ahafo, Ashanti, and Eastern.

Before 2010, traditional methods such as household survey, morphological descriptors, and expert knowledge were employed in cultivar identification, but these methods were not very reliable. Thus, researchers including Ismail Rabbi, <u>Peter Kulakow</u>, Joseph Manu-Aduening, Ansong Dankyi, James Asibuo, Elizabeth Parkes, <u>Tahirou Abdoulaye</u>, Gezahegn Girma, <u>Melaku Gedil</u>, Punna Ramu, Byron Reyes, and Mywish Maredia took a step further in tracking crop varieties.

In carrying out this research, samples were collected from 495 cassava

growing households in the three regions and a "library" of improved varieties and landraces maintained by the Crop Research Institute of Ghana. Each accession was genotypedby-sequencing. Single Nucleotide Polymorphisms (SNPs) were identified. A total of 1045 clones, including 63 "library clones" representing improved varieties and known landraces were genotyped.

The accurate cultivar identification and ancestry estimation was accomplished through two complementary clustering methods (distance-based hierarchical clustering and model-based maximum likelihood admixture analysis). The researchers found that 30% of the cassava collected on the farms matched specific released varieties, which is consistent with the results of a prior impact assessment. analysis However, their revealed

widespread discrepancies in the names of varieties and landraces. While the farmers provided 180 different variety names for 917 accessions collected, genetic analysis revealed that many were actually the same variety, whereas some accessions with the same name were genetically different.

While concluding the study, the researchers affirmed that the traditional methods used to assess the impact of crop improvement are not as reliable as DNA fingerprinting. They therefore advised that the increasingly affordable DNA fingerprinting methods such as Genotyping-By-Sequencing (GBS) should be employed as the primary variety identification tool in agricultural surveys and impact studies, because accurate identification of crop cultivars is crucial in assessing the impact of crop improvement research outputs.



Improved variety of cassava planted by a farmer in the northern region of Ghana.

#### IITA's transformation initiative pays off in Africa Continued from page 1

Sanginga also mentioned that in 2018, IITA was awarded the Africa Food Prize in recognition of its contributions to innovations, food security, and economic development through agriculture across Africa. "In awarding the prize which had a worldwide recognition during the <u>World Food Prize</u> award ceremony in Des Moines, Iowa, on 18 October, the committee chairman, former President Olusegun Obasanjo, recognized IITA for generating solutions on and off the farm that have improved the lives of millions in the face of climate change, surge of crop pests, disease and urgent need for youth employment across Africa.

"IITA refined its strategy to direct youth from diverse academic disciplines toward agribusiness careers through the <u>IITA Youth in Agribusiness</u> (IYA) program which strengthens youth participation in agricultural transformation through agribusiness establishment and growth," said Sanginga. "Between November 2017 and November 2018, we completed three new studies on impact of soybean innovations in Malawi (1,237 households in six major soybean-growing districts), cowpea improved varieties in Northern Nigeria (1,525 households in 10 states) and we also have the Adaptive Yam Minisett Technique (AYMT) in the yam belts of Ghana and Nigeria (1,400 households)," he added.

In conclusion, he said, "We have numerous successes not mentioned here. Although the situation is still challenging, I am optimistic that we will make more important giant strides in 2019."

## IITA research data now more visible to users!

The visibility of IITA research datasets in GARDIAN in 2018 is a major achievement for IITA, championed by the Data Management team under the Communication Unit. GARDIAN, an acronym for Global Agricultural Research Data Innovation and Acceleration Network, is a search engine created by CGIAR to crawl and index datasets as well as publications in institutional Open Access repositories across all CGIAR centers. It is systematically and technically synchronized with CKAN, the IITA institutional research data repository, thus making datasets of our scientists now more visible to users of the data such as funders and stakeholders, for use in better decision making and more funding.

This technical breakthrough has been underscored as a future CGIAR goal and was announced to the IITA community at a session during the 2018 Partnerships for Delivery (P4D) Week held on 26-30 November in IITA headquarters in Ibadan. During the presentation by Medha Devare, Senior Research Fellow and Module Lead, IFPRI/Big Data Platform on behalf of the IITA Communication Unit, the visibility of scientists' datasets was projected using GARDIAN as a search engine and showing the growth of CKAN with quality datasets. During the live search demonstration, IITA was cited to be at the forefront in "FAIR" data implementation, attesting to the highquality datasets, and scoring high on the FAIRness scale.

Support for cleaning up and producing quality datasets saved on the IITA institutional archive was provided by the CGIAR Big Data Platform under the leadership of Tonny Omwansa, the institutional Big Data focal point. Devare emphasized the efforts of IITA



Data management staff work on cleaning data for institutional repository CKAN.

in putting together a data management team that curates research data and publishes quality datasets that are highly *F*indable, *A*ccessible, *I*nteroperable and *R*eusable (FAIR) for the institution.

This achievement was made possible, thanks to joint efforts of scientists and the Data Management team, which enabled the open data repository (CKAN) to grow from a few datasets to over 200 datasets in just 6 months. The quality of the data is second to none as ensured by data curators in the team.

The institutional CKAN repository on Sharepoint was formally launched in July 2017. Data generated from IITA research, including breeding trials, socioeconomic and household surveys, characterization and evaluation studies, among others, are made available in CKAN. In 2018, links with project managers and database coordinators were strengthened to ensure that research data is captured, organized, and curated.

A year after the launch of the institutional database platform, not many researchers have uploaded their research outputs. Still, IITA remains as the top CGIAR center to have the most number of datasets in the institutional with CKAN recently repository, receiving a badge or seal much like an ISO certification from the Karlsruher Institut für Technologie (KIT) Bibliothek https://www.re3data.org/repository/ --r3d100012883. Our CKAN repository is now part of the ivy league of certified OA repositories. This will help increase the visibility of our datasets, scientists, and IITA as part of the world's leading contributors to open research data.

The Plant health and plant production domain constitute the most number of datasets in CKAN, with Western Africa contributing the most number of datasets—at 225, and Ousmane Boukar providing the most number of datasets at 76.

#### Got a story to share?

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

## IITA Women's Group awards scholarships

The <u>IITA</u> Women's Group (WG) organized a scholarship award ceremony at the Institute's headquarters on 22 November. The award scheme is designed to assist IITA national staff on or below PG 6 in sponsoring their children for an academic session.



Members of IITA Women's Group with Hilde Koper, DDG-CS and Lilian Mendoza, Head, Human Resources.

The ceremony was attended by members of WG led by Charlotte Sanginga, Head of the Scholarship and Charity Committee; <u>Lilian Mendoza</u>, Head of Human Resources; <u>Hilde Koper-Limbourg</u>, Deputy Director General, Corporate Services; and parents of the awardees, with the aim of recognizing the cognitive ability of the privileged awardees.

In her welcome address, Mendoza thanked the donors and the WG for their significant contribution to the future of the children. She said that education is the best legacy and as such, should be the best gift that can be given to any child. She advised awardees to dream big and study hard to be in a position to contribute to the future of others in years to come.

Mrs Sanginga thanked the WG for the effort they put into the screening process. She advised parents to help their children prepare well for the coming year, because this year's scores were significantly low, with only five applicants meeting the cut-off point. The cut-off was reduced to 60% so that more applicants could benefit. Due to the reduction, there were 45 recipients; 25 from Ibadan and 20 from other locations including Cotonou and Kinshasa. Of the 25, there were 10 junior secondary students, 9 senior secondary, and 6 post-secondary students. The examination comprised Math, English, aptitude tests, and essay questions.

According to Edith Badu-Apraku, Chairperson of WG: "The vision of the group is to contribute significantly to society by helping people. Apart from giving scholarships, IITA Women's Group also renders help to orphanages and the less privileged."

While delivering the closing address, Koper-Limbourg commended the organizers for their brilliant idea of securing the future of the next generation of leaders, and encouraged their parents to continue helping the awardees to study hard to excel in their studies. She also encouraged the awardees to "be the light" to their peers.

Speaking on behalf of parents of the awardees, Jacob Ode expressed his gratitude to the WG for helping IITA junior staff with financing the education of their children. The ceremony ended with a vote of thanks from Gbemi Babarinde, an awardee for post-secondary education, who appreciated the organizers for the positive impact in their lives and who on behalf of the recipients, pledged to do their best to make their parents and sponsors proud.



Scholarship recipients from Ibadan showig off their certificates.