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Initiative announced to improve and make high quality seed yam available

The availability and accessibility of high quality seed yam of improved varieties are the focus of a new US$12 million project aimed at revolutionizing the yam production system. This is intended to transform the formal seed systems in Ghana and Nigeria, Africa's largest exporter and largest producer of yam, respectively.

The flagship yam project, Yam Improvement for Income and Food Security in West Africa (YIIFSWA), will embark on a second phase to boost the production of certified seed yam and improve smallholder farmers' access to high quality seed yam for improved productivity, income, and food security.

YIIFSWA-II, a five-year project funded by the Bill & Melinda Gates Foundation, will be led by IITA in collaboration with Context Global Development Network/ Sahel Capital, and the governments of Ghana and Nigeria targeting the private seed sector. The aim is to provide smallholder farmers with high quality seed tubers of improved varieties that have been released, for example, TDr 89/2665, which farmers have dubbed as "the Wonder Yam" in Nigeria due to its high yield and resistance to diseases.

Norbert Maroya, YIIFSWA Project Leader.

Seed yam tubers in aeroponics system.

Nigeria and Ghana's formal yam seed markets are underdeveloped due to a combination of factors, including inefficient seed production, distribution network, and quality assurance systems, as well as bottlenecks caused by a lack of good seed policy on key issues such as access to credit for inputs. In Nigeria alone, 3 million hectares of land are dedicated to yam production annually. This will require the production of about 30 trillion seed tubers annually!

YIIFSWA-II is an ambitious private sector-led seed system development effort that aims to improve the livelihoods of at least 1.6 million people who depend directly on the yam value chain (including seed and ware yam producers, processors, marketers, transporters, and consumers). The project will initially focus on supplying 161,000 households in Ghana and Nigeria with improved, high quality yam seed.

According to Norbert Maroya, YIIFSWA Project Leader, "The key goal of this project is to promote and boost the production high quality seed tubers of improved varieties by outscaling key breakthroughs from YIIFSWA-I. These include the (i) use and promotion of the novel high ratio propagation technologies (Temporary Immersion Bioreactor System [TIBS]) for pre-basic seed yam tuber production by the national agricultural research institutes NARIs) and the aeroponics system (AS) for basic seed yam tuber production by private seed companies; (ii) implementation of quality standards approved by the regulatory bodies of the two countries using the yam quality management protocol (YQMP) for certification of pre-basic, basic, and certified seed yam planting materials; and (iii) implementation of improved seed health management strategies incorporating virus elimination techniques and indexing for quality control and certification especially at pre-basic level by partners in the breeding institutions."

"To realize the vision of an economically sustainable, commercial yam seed system in Nigeria and Ghana, Context Global Development Network and Sahel Capital—both consulting firms—will provide business advisory support towards establishing appropriate business models and strengthen the business skills of the private seed companies engaged in using AS for high quality basic seed production. This will particularly help women who are engaged or interested in seed production for commercial purposes. We would like to encourage them to pursue commercial opportunities for basic seed yam production using AS. The inclusion and specialization of players along the seed yam value chain will promote competitiveness and sustainability of the commercial seed system," said Maroya.

Stakeholders advocate multisectoral engagement to tackle malnutrition, boost economy

To reverse the trend of Nigeria's declining economy, engage the teeming unemployed youth population, and tackle malnutrition, government and private sector stakeholders in the health, agriculture, and beverage sectors must encourage and take part in the local production of more nutritious foods.

The Smart Mother Initiative to engender women-led attitudinal change towards consumption of more nutritious foods in homes was launched at the Nutritious Food Fair in Calabar.

This was according to experts, including researchers, policy and decision makers, food processors, development workers, civil society organization (CSOs), community based organizations (CBOs), among others, at the second edition of the Nutritious Food Fair (NFF) 2016 with the theme *Multisectoral partnerships to promote more nutritious crops and foods.* The Fair was organized by HarvestPlus, IITA's sister center, to engage stakeholders in the health, education, manufacturing, and agriculture sectors on issues on and around the production and consumption of more nutritious foods in Nigeria. The event was held at the Calabar International Convention Center (CICC), Calabar, Cross River State.

In his address, Minister of Agriculture, Chief Audu Ogbeh, said that the link between nutrition and agriculture needed to be strengthened to ensure that Nigerians consumed more nutritious foods, noting that the Fair would stimulate conversations and strategic alliances to overcome malnutrition and grow the country's food basket.

The Minister, represented by Winifred Ochimabo, commended HarvestPlus for hosting the Fair, assuring them that he was fully committed to supporting policies and initiatives that promote the production of more nutritious crops.

"I commend HarvestPlus for this event. I congratulate former HarvestPlus Director Howarth Bouis on winning the World Food Prize and for his pioneering work on biofortification. My office is fully committed to promoting this cause, and this event is another milestone in that direction," he said.

Deputy Director, Micronutrient Deficiency Control Unit at the Federal Ministry of Health, John Uruakpa, said the event was instrumental in driving advocacy and boosting awareness on the available options for collaboration among key stakeholders in sectors and industries involved in the production of nutritious foods in Nigeria.

He said, "There has been a call for people to eat healthy food, but not many know what to eat. This platform has given participants a clearer picture of the foods they can consume. We have a number of foods grown locally that are rich in essential micronutrients, such as vitamin A cassava. There are also the options of food fortification, dietary diversification, and supplementation. At the ministry, we are especially happy that we are collaborating with HarvestPlus in promoting biofortification in Nigeria, which ensures that staple crops are enriched with essential micronutrients."

Country Manager, HarvestPlus Nigeria, Paul Ilona, said that this year's edition of the Fair marks a giant stride in the quest to tackle malnutrition in Nigeria, noting, "It remains quite scary that approximately 100 children under the age of 5 die every hour for reasons that include malnutrition. It is our collective belief that every child should have an equal right to grow to full capacity. We expect that interventions at this Fair would change the landscape of production and consumption of more nutritious foods and contribute to reducing mortality rates in children and women of childbearing age."

He added that this year's Fair presents a rare opportunity to build a robust discourse around the food we eat; how they are produced and why we should opt for more nutritious options.

Left: Speaker, Cross River State House of Assembly, Rt. Hon. John Lebo; Cross River State Primary Healthcare Development Agency, Director General Beta Edu, and Country Manager, HarvestPlus Nigeria, Paul Ilona. Right: Participants during the second edition of the Nutritious Food Fair, held in Calabar, 9-11 November.

"The Federal Ministries of Agriculture, Health, and Education have adopted measures to mainstream nutrition into their policy documents. State governments diversifying their economies through agriculture are equally supporting and stimulating the private sector to invest in growing and processing more nutritious foods. This is not happening in isolation. It complements efforts and policies around food fortification, dietary diversification, and supplementation adopted by the government over the years, all of which are geared towards tackling malnutrition," he said.

The Member representing Ohaozara Onicha/Ivo Constituency, Ebonyi State, at the House of Representatives and Chairman of House Committee on Agriculture Institutions and Colleges, Hon. Linus Okorie noted that the event is an innovative platform to engage experts, policymakers, farmers, and residents of the host state, Cross River, on malnutrition and healthy living.

"I am excited about what HarvestPlus is doing and how they are bringing everybody together to have a conversation on nutritious foods. This is supporting government's efforts to tackle malnutrition from the policy making angle. Here, we are meeting with the people and telling them what they need to know about eating the right food, at the right time and for the right reasons," he said.

The Fair also featured NutriQuiz, a quiz competition that tests secondary school students on their knowledge of nutrition and agriculture. The competition was fiercely contested by schools from Akwa Ibom, Benue, Cross River, and Imo states. Students from Government Girls Secondary School, Big Qua Town, were crowned champions after contesting with eight other finalists.

Former IITA scientist receives prestigious award from MAFF

For his efforts in characterizing yam germplasm held in conservation at the IITA Genebank, Gezahegn Girma Tessema, former visiting scientist/DNA Fingerprinting Specialist in the Bioscience Center of IITA based in Ibadan received the 2016 Japan International Award for Young Agricultural Researchers.

The award was presented to Tessema on 1 December at the U Thant International Conference Hall, United Nations University, Tokyo, Japan.

Tessema's research on "Contemporary approaches to the improvement of yam germplasm conservation and breeding" earned this year's recognition.

He said he was motivated to research on yam because it is a very important crop offering huge benefits to humankind but the extent of genetic diversity has not been well investigated and minimal efforts have been made to understand its taxonomy. In addition, very little is known regarding which genes are responsible for key traits in yam and there is almost no report on polyploidy and its effect on phenotypic performance.

The research addressed the gaps in the establishment of a DNA barcoding system that supports conventional taxonomic identification, improvement of yam field genebank management through mismatch/duplicate identification, understanding the extent of genetic diversity among cultivated guinea yams and wild relatives based on next-generation sequencing based genotyping techniques, understanding the effect of polyploidy on aerial tuber production, and the discovery of novel candidate genes implicated in flowering and sex determination.

Receiving the award, Gezahegn said, "I feel honored to be one of the recipients of the 2016 Japan International Award for Young Agricultural Researchers. I am truly pleased for the recognition of our research efforts toward solving some of the challenges in yam germplasm conservation and improvement. This would have not been possible without the great mentorship from my research supervisors, Melaku Gedil from IITA and Charles Spillane, academic supervisor at the National University of Ireland-Galway. I am grateful to Robert Asiedu and Satoru Muranaka for their recommendation and kind support. I also believe that this recognition will motivate other young researchers in making commendable research outputs that contribute to solving agricultural challenges in developing countries."

Awardees of the 2016 Japan International Award for Young Agricultural Researchers pose with officials and award organizers. Tessema is second from right, seated beside JIRCAS President Masa Iwanaga.

Officials and researchers from the Japan International Research Center for Agricultural Sciences (JIRCAS), the Ministry of Agriculture, Forestry and Fisheries (MAFF), the Japan International Cooperation Agency (JICA), and the Ministry of Foreign Affairs of Japan (MOFA), and the Ethiopian ambassador in Japan, attended the event.

JIRCAS president Masa Iwanaga, in his remarks, expressed his appreciation on the great achievements made by the young awardees, and expectations for much greater success in the future. "Young scientists are essential to developing countries to achieve further development, and the government of Japan sincerely wishes to contribute to the capacity development of the next generation of scientists who will play a major role in improvement of world food and nutrition security."

This annual award, which began in 2007, is organized and presented by MAFF. Its purpose is to increase motivation among young researchers contributing to research and development in the field of agriculture, forestry, fisheries, and related industries in developing regions funded by Japan for the benefit of those countries. Up to three young researchers receive the award and cash gifts of US$5,000 each every year.

Efforts launched to save 6.8 million soybean growing households in Africa from rust disease

While soybean is increasingly becoming an important commercial and food crop in many countries in Africa, its production is greatly threatened by factors such as lack of access to improved varieties and inputs; abiotic factors such as poor soil fertility and unpredictable weather changes; and biotic factors such as diseases, weeds, and insect pests. However, top on the list is the very virulent soybean rust that originated from Asia and is currently rapidly spreading in the continent.

Harun Murithi, a graduate research fellow with IITA-Tanzania, while presenting on his study on the disease titled "*Virulence diversity of soybean rust (Phakopsora pachyrhizi) isolates*" at a seminar at the Eastern Africa hub in Dar es Salaam recently, said soybean rust is a serious constraint to the crop's production and can cause yield losses of up to 80%.

Soybean rust.

Harun

"Soybean rust is a disease caused by two fungal pathogens *P. pachryhizi* and *P. meibomiae* which are spread by wind. Of concern is *P. pachryhizi* which is the most aggressive of the two. The livelihood of about 6.8 million households representing about 28.6 million people in sub-Saharan Africa that produce soybean crop is at risk", he said.

The study seeks to support efforts to control the disease's spread and impact by identifying resistant genes effective against *P. pachyrhizi* populations in Africa, and characterize the virulence spectrum of the African rust isolates in comparison to a few other isolates from other continents. The study is being conducted in collaboration with the University of Illinois and Wagenigen University.

From the study, 5 genes (Rpp1b, Rpp2, Rpp3 Rpp5a, and Rpp6) and cultivars Hyuuga and UG5 were identified as effective against soybean rust isolates from Kenya, Malawi, and Tanzania. However, he noted that the *P. pachyrhizi* pathotypes are highly adaptive, quickly breaking down the resistance of these genes and weakening effectiveness of the genes, therefore making control efforts very difficult.

"The *P. pachyrhizi* pathotypes from different regions have emerged with the ability to adapt to the resistant genes. Currently genes Rpp1, Rpp4, and Rpp5b, which had resistance to soybean rust, are no longer effective against the African rust isolates used in the study", commented Harun.

"The recommendation therefore is to develop soybean varieties with multiple genes of resistance through gene pyramiding as a sustainable solution for soybean rust management. We also need to continue screening varieties for more sources of novel resistance genes."

The knowledge from the study will be useful for breeders to develop high yielding rust resistant varieties in Africa or elsewhere. Use of rust resistant varieties will increase soybean productivity among smallholder producers that would eventually lead to higher incomes, reduced poverty, and improved livelihoods.

Did you know: The start of IITA's Research Program

- IITA's first research scientist was entomologist W. Keith Whitney, who accepted the position in 1968.
- The following year, he was joined by nematologist Fields Caveness and a host of others.
- By April 1969, these scientists had established experiments at the Ibadan site organized along disciplinary lines.
- Soon afterwards, a research committee was established to coordinate these initial steps in the evolution of the Institute's research program.
- The first research director, agronomist Rodney A. Briggs, arrived early in 1969.
- Upon his resignation 2 years later, the position was accepted by John L. Nickel, who left in 1974 to become director general of CIAT.
- In 1971, the research was organized into four interdisciplinary programs: Farming Systems (James Moomaw), Cereal Improvement (Michael N. Harrison), Grain Legume Improvement (Kenneth O. Rachie), and Root and Tuber Improvement (Sang Ki Hanh). Each of the crop programs included a breeder, agronomist, plant physiologist, plant pathologist, and entomologist as well as biochemists for work on grain legumes and roots and tubers.
- Staff of the Farming Systems Program represented the following disciplines: systems agronomy, weed science, agricultural engineering, agricultural economics, plant breeding, nematology, soil classification and pedology, soil chemistry, soil fertility, and soil physics.
- By April 1971, the scientific and administrative staff moved into temporary office and lab space on the IITA campus. These and other facilities were essentially complete and occupied by late 1972.

Excerpted from Sustainable Food production in sub-Saharan Africa, vol. 1 IITA's contributions, IITA 1992.

PASIC study findings and Humidtropics' Innovation Platforms factored in Uganda's newly passed National

The approval of the National Agricultural Extension Policy (NAEP) and its strategy (NAES) in October 2016 by the Cabinet of the Government of Uganda was a major milestone for IITA and partners in their efforts to push for wide consultation with stakeholders in policy formulation.

The policy incorporated findings from a study on Policy and Institutions by Policy Action for Sustainable Intensification of Cropping Systems (PASIC), an IITA-led research project that seeks to have an impact on intensification policy. The studies showed that national level policy consultations often excluded the contributions of agricultural producers and local governments and were instead dominated by technical staff. Consequently, there was limited use of evidence and incorporation of concerns and issues from local level into the policies.

Another finding was that there was a disconnect between policy processes at local and national levels, which later affected policy implementation. These findings therefore led to nationwide consultations in the formulation of the national agricultural extension policy (NAEP), its strategy, and Regulatory Impact Assessment (RIA).

Another major influencer in the extension policy and strategies were the experiences of the IITA-led Humidtropics program which established innovation platforms as a way to bridge the disconnect between researchers and farmers' needs.

The platforms, also known as multi-stakeholder platforms, bring together different stakeholders to share their learning and experiences as well as jointly implement activities together. They try to bridge the gap between demand and supply for both technologies and knowledge. These platforms were nationally facilitated by the National Agricultural Research Organization (NARO) and Makerere University.

Mukulu making a presentation at one of the IP workshops.

The success of these platforms led to a similar approach being included in extension policy strategy 4.2 which states that the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) *will establish a formal working relationship with research organizations/ institutions to ensure participation of the extension services and farmers in identifying, testing and evaluating technological solutions including indigenous knowledge.*

This strategy emphasizes the development and strengthening of multi-stakeholder innovation platforms at the national, zonal, district, and sub-county levels.

Fred Mukulu, Chairperson of the Mukono–Wakiso innovation platform, and also the District Production and Marketing Officer for Mukono, was one of the key informants consulted by the technical committee that formulated this policy and its implementation strategy.

"Mukono–Wakiso IP was a result of 'frustrations'. Scientific researchers were frustrated because their technologies were not being taken on and they were asking themselves why? Farmers too were frustrated because they were faced with challenges which they thought scientists could have provided a solution to; but the solution was nowhere to be found. The government too was frustrated because farmers were not taking on new technologies at the rate they were expected to," remarked Mukulu.

"The IP provides a platform for the scientists to communicate their technologies to the farmers, and for farmers to communicate their fears over the technologies and to acquire knowledge on how to practice modern farming using different technologies," says Mukulu, building a case for the IP.

The World Bank has already committed to supporting implementation of the strategy under the Agricultural Technology and Agribusiness Advisory Services (ATAAS). The funding will be received by NARO and distributed to local governments through NARO branches at different zones and to MAAIF for the management and supervisory role. Mukono District, for example, will be receiving UGX 220 million shillings to support the district agricultural plans, which in this case are spearheaded by the Innovation Platform.

"I plan to hold a training workshop for district production and marketing officers in the 21 districts within the central region to share my experience on how to successfully establish an IP and sustain it," noted Mukulu.

Got a story to share? Please email it with photos and captions every Wednesday to Katherine Lopez (k.lopez@cgiar.org), Jeffrey T. Oliver (j.oliver@cgiar.org), Catherine Njuguna (c.njuguna@cgiar.org), or Adaobi Umeokoro (a.umeokoro@cgiar.org).

US university explores areas of collaboration with IITA

Delegates from Delaware State University (DSU) in the United States of America visited IITA on 17 November to explore possible areas of partnership that will provide its students with opportunities of acquiring the global experiences needed to enable them to face the world after graduation.

The delegates, led by the University's President Harry Williams were received by Robert Asiedu, Director, Research for Development, West Africa.

"As a core value at DSU, the university is open to establishing partnerships with interested bodies. It now has 13 different partner countries. Nigeria is one of the countries we have decided to reach out to, so we are here to foster a relationship with IITA and to learn possibilities available for partnership", said President Williams. He added, "We hope that collaborating with IITA will help us advance and bring the benefits of agricultural research to our university".

The delegates made a tour around IITA fields and laboratories including the IITA Youth Agripreneurs (IYA) where

Alejandro Ortega-Beltran explains about aflatoxin contamination and aflasafe development to DSU visitors.

Evelyn Ohanwusi and other youth received them and made a presentation on the IYA.

The visitors were impressed with the ideas the Agripreneurs shared during the presentation and how far IITA had gone in developing and winning the interest of young men and women on agriculture.

Several areas of interest were identified, with the visitors impressed with the IYA model and the value chain approach of the Institute which encompasses crop improvement in terms of productivity, and food safety especially the aflasafe technology.

At the end of the tour, Marikis Alvarez, a staff member of DSU said, "It will be an exciting experience for our students to come to IITA and get orientation and training in different fields. This visit is a success to us."

WAAPP/PPAAO visit IITA-Abuja Station

A 156-member international delegation from 13 ECOWAS countries was at the IITA-Abuja Station on 18 November as part of the West Africa Agricultural Productivity Program (WAAPP/PPAAO) wrap-up meeting in Nigeria.

The delegation was received in IITA by Alfred Dixon, Head, Development and Delivery Unit; Michael Abberton, Deputy Director, IITA West Africa Hub; and Gbassey Tarawali, Head, IITA Abuja Station.

In presenting his opening remarks, Dixon welcomed the delegates on behalf of the Director General of IITA and thereafter thanked the organizers of the event for considering a visit to IITA as part of the Nigeria agenda. He praised the positive and progressive partnership between IITA and WAAPP and made a case for its sustenance.

For his part, Tarawali gave a welcome address which highlighted the evolution of IITA-Abuja Station and its rapid transformation. He mentioned the investment of IITA management in revamping infrastructural facilities in the station and the various projects and partner institutions currently working in the station.

Other presentations made by IITA scientists during the event highlighted the progress of the WAAPP-funded initiatives implemented by IITA and other partners. They included: (1) WAAPP Nigeria and Sierra Leone (Cassava) –Richardson Okechukwu, Cassava Commodity Specialist; (2) WAAPP Nigeria (Yam) – Beatrice Aighewi, Seed Systems Specialist; (3) WAAPP Nigeria (Maize) – Sam Ajala, Maize Breeder; (4) WAAPP Liberia (Cassava) – Michael Edet, Cassava Agronomist; (5) Youth Agripreneurs; and (6) IITA and WAAPP – Abberton, Deputy Director for Western Africa.

Group photo taken after the WAAP visit to Abuja Station.