

IITA to lead One-Health in Ghana-Benin under AICCRA Project

In a bid to help African countries strengthen the resilience of their agricultural sector against the threat posed by climate change, a \$60 million grant has been awarded for the 'Accelerating the Impact of CGIAR Climate Research for Africa' (AICCRA) project.

The project will concentrate its activities in six countries: Ethiopia, Ghana, Kenya, Mali, Senegal, and Zambia. The International Center for Tropical Agriculture (CIAT) will administer the project as the lead center for the

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A farm settlement in Tamale, Ghana.

Scientists reveal the hybrid origin of the white Guinea yam



Yam is an important food crop that contributes to the sustenance and sociocultural lives of over 300 million people in West Africa.

An international team of scientists has revealed the origin of the most popular food staple in Africa, the white Guinea yam.

Yam is a major staple widely consumed in West Africa. This starchy tuber is an important food crop that contributes to the sustenance and sociocultural lives of over 300 million people in the region. Many species of yam are grown in Africa, of which white Guinea yam (*Dioscorea rotundata* Poir) is indigenous to West Africa. Despite its importance, relatively little is

known about the white Guinea yam, especially at the genetic level, leading to its being branded as an “orphan crop.”

Yam cultivation is hampered by many challenges, including pests and diseases, postharvest losses, and the need to develop more sustainable farming systems for the crop. To efficiently improve Guinea yam, the genetic diversity of the species and its relationships with wild relatives need to be understood to allow breeders to identify genes controlling useful traits that could be rapidly transferred to elite cultivars by cross-breeding.

In 2017, Iwate Biotechnology Research Centre (IBRC), Japan, in collaboration with [IITA](#), succeeded in decoding the whole genome sequence of a Guinea yam plant consisting of 600 million letters of genetic information, setting the stage for improving the crop using genomics information.

To further understand the genetic diversity of Guinea yam, the IITA-led [AfricaYam](#) project funded by the Bill & Melinda Gates Foundation, together with IBRC, Kyoto University, Japan International Research Centre for Agricultural Science (JIRCAS), Japan as well as other institutions joined efforts to expand the genome sequencing to 300 Guinea yam landraces and compared them with the genomes of putative or reputed wild ancestors of Guinea yam.

A paper on this breakthrough titled “[Genome Analyses Reveal the Hybrid Origin of the Staple Crop White Guinea Yam \(*Dioscorea rotundata*\)](#)” was recently published in an open access journal of the Proceedings of National Academy of Science, USA.



A yam field at IITA Ibadan.

The study showed that Guinea yam likely originated as a hybrid between two wild species, *Dioscorea abyssinica* found in the savannah region and *Dioscorea praehensilis* common in the rainforest region.

“The finding also suggests the importance of wild yams that are found in savannahs and rainforests. They have much wider genetic diversity than the cultivars and may be used as parents for cross breeding of yam to overcome the many challenges facing yam farmers in Africa and other parts of the world,” said Professor Ryohei Terauchi of Kyoto University and IBRC, the lead scientist of the study. He said that systematic efforts are needed to introgress the beneficial alleles from wild species into cultivated species.

According to [Patrick Adebola](#), the IITA scientist leading the AfricaYam project, such alleles will increase disease resistance and abiotic stress tolerance to improve crop resilience

and productivity, a useful resource for agriculture and farmers in Africa.

“Cracking the genetic origin of the crop and its relationship with wild relatives would facilitate the crop’s genetic improvement through breeding,” said [Asrat Asfaw Amele](#), IITA yam breeder and program lead. [Robert Asiedu](#), IITA R4D Director for West Africa, said the information on yam’s genetic origin would help increase the efficiency of the breeding program.

According to the study, the *D. abyssinica* and *D. praehensilis* accessions in the IITA GeneBank account for only 1.6% of the total *Dioscorea* accessions maintained as of 2018. Therefore, it will be important to collect and preserve wild *Dioscorea* species as genetic resources for improving Guinea yam, as findings from the study suggest that new alleles of loci, such as the *SWEETIE* gene, were introgressed from wild yam into cultivated Guinea yam multiple times, which likely conferred the plants with phenotypes preferred by humans.

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 or Katherine Lopez (k.lopez@cgiar.org) and Uzoma Agha (u.agha@cgiar.org) for headquarters and Western Africa, Catherine Njuguna (c.njuguna@cgiar.org) for Eastern and Southern Africa, and David Ngome (d.ngome@cgiar.org) for Central Africa.



CGIAR Program on Climate Change, Agriculture, and Food Security (CCAFA). [IITA](#) will lead the One-Health component in Ghana-Benin, while also having a significant role to play in Zambia.

Under AICCRA-Ghana, the focus will be on bridging the gap among the research institutes that produce improved technologies and the development organizations that promote the adoption of improved technologies—including digital climate advisories. This will enhance the resilience of the country's agriculture and food systems in the face of climate change while improving the livelihoods of hundreds of thousands of farmers.

With IITA leading One-Health in Ghana, AICCRA-Ghana will bring together existing expertise to strengthen the technical, institutional, and human capacity needed to move CGIAR innovations off the shelf and achieve impact in the country.

AICCRA-Ghana will specifically launch a “One-Health platform for climate-driven pests and diseases”, an advanced climate-informed One-Health innovation that builds on CGIAR's track record in this area. It will bring together crop, livestock, soil, and water health for improved human and ecosystem health, food safety and nutrition, and climate change as a complex public health issue.

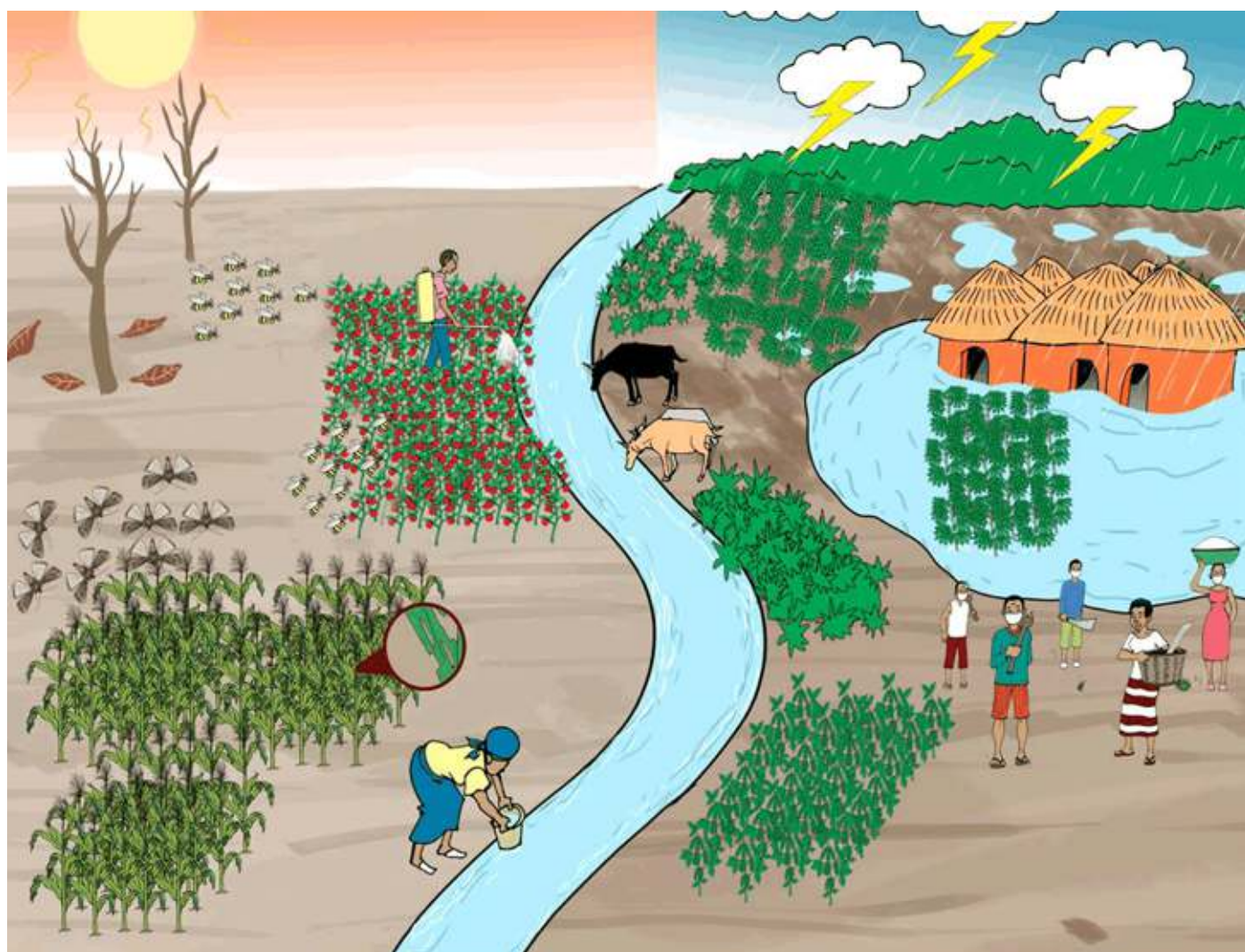
The One-Health initiative is a collaborative, multisectoral, and transdisciplinary approach, working at the local, national, regional, and global levels to achieve optimal health outcomes. The initiative recognizes the interconnection between people, animals, plants, and their shared environment.

The AICCRA project is anchored to CGIAR's multi-stakeholder platform of the [Biorisk Management Facility](#) (BIMAF), hosted by IITA in Benin, West Africa. The World Bank Board

approved the project as part of a commitment to increase support to CGIAR, a global partnership uniting international organizations engaged in research about food security, to help advance agricultural research efforts for the benefit of rural households that rely on agriculture as a major livelihood source, and to increase food security.

Through the project funding, the World Bank will support research and capacity building activities carried out by CGIAR centers and partner organizations, one of which is IITA, to enhance access to climate information services and validated climate-smart agriculture technologies in Africa.

With better access to climate advisories linked to information about effective response measures, farmers and livestock keepers will be able to anticipate climate-related events better and take preventative actions that can help safeguard productive activities and avoid catastrophic losses.



The One-Health approach aims to achieve optimal health outcomes, recognizing the interconnection between people, animals, plants, and their shared environment.

Partners of CSA capacity building project deliberate on sustainability and scaling up

The Building Capacity for Resilient Food Security project recently met with partners in preparation for its fourth and last year. The meeting's objective was to share updates and deliberate on final-year activities and how best to ensure the sustainability of project outputs.



Farmers in Zanzibar learning how to construct rice bunds that conserve water in rice production.

The project meeting, which took place at the [IITA Eastern Africa Hub](#) in Dar es salaam, brought together partners from across Tanzania. Local government partners from the nine districts that the project is working in and principal project partner officials from the Ministry of Agriculture (MA) from the mainland and the Ministry of Agriculture, Natural Resources, Livestock and Fisheries (MANLF) from Zanzibar all participated.

"Climate change is real. We need to work even harder to support farmers to cope with the threats to their food security and incomes due to climate change. The

project has laid a good foundation, and it is our wish to see the work continuing," said [Catherine Njuguna](#), the project's focal point from IITA.

Eveline Kagoma, a Senior Officer from the Ministry of Agriculture, reiterated this. She noted that the project had invested much in the project districts to build extension officers' capacity to select and demonstrate climate-smart agriculture (CSA) practices and technologies for different agroecological zones.

"A lot of investment has been made by this project, and let not let all

that be in vain. Let's explore ways to sustain the project initiatives for the benefit of supporting smallholder farmers cope with climate change," Kagoma said.

Sharing on the project's successes, Fidelis Myaka, Project Field Manager, noted the project had established 15 demonstration plots in nine districts in both the mainland and Zanzibar at the beginning. Two had failed due to various reasons, leaving the project with 13 demonstration plots. In the second year, the demonstration plots had converted to Farmer Field Schools, where farmers participated in all operations of the demonstration plots.

"In Year 4, we will hand over the day-to-day management of the demonstration plots and Farmer Field Schools to the districts with technical backstopping as we prepare them to take over the sites wholly," said Myaka.

At the end of the meeting, the nine districts had prepared their activity plans for the final year and the resources they will contribute, and the support they will need from the project as part of the transition.

"The modalities put in place by the project are feasible because we are now capable of leading in demonstrating and building farmers for implementing CSA. We can start negotiating with the local government management levels for support after the project exits," assured Maria Maige, the Village Agricultural Extension Officer from Mvomero District.

"For the handing over, we will need support from respective leaders to work on these modalities for the activities to be sustainable," emphasized Talib Ramadhan, the District Agriculture and Development Officer from Zanzibar South.

The project is funded by United States Agency for International Development (USAID) through the United States Department of Agriculture (USDA) and the government of Tanzania to strengthen agricultural resilience in the country to climate change. Other partners include the [World Agroforestry Centre](#) (ICRAF) and the United Nations Food and Agriculture Organization (FAO).



Left: Eveline Kagoma spoke at the event. Right: A farmer stands beside the poster of the demonstration plots.



IITA trains Northeast Nigerian women in grains and cereals microprocessing

Through the Feed-the-Future Nigeria Integrated Agriculture Activity, IITA trained 1,274 women on microprocessing of grains and cereals across Adamawa and Borno states in Northeast Nigeria. The capacity building exercise focused on the production of nutritious complementary foods for infants and young children.

The training, which took place in November 2020, selected participants from registered households on the Integrated Agriculture Activity's database, who either belong to a Savings and Internal Lending Community (SILC) or producer group. The exercise used the local language and featured questions and answers, demonstrations, role plays, among many approaches, to reinforce learning.

After the training, the Activity's Nutrition Team also visited the participants for monitoring and mentoring sessions to ensure they were correctly



Participating women displaying microprocessed cereal (tofu) and soymilk in Guyuk LGA, Adamawa.

implementing cereals and grains microprocessing, Infant and Young Child Feeding (IYCF) practices, and homestead farming.

The visits showed that women groups are using the acquired knowledge and

skills to ensure that their households have improved and varied diets. The training recipients can now produce nutritious complementary foods using these grains and legumes. They are also able to generate additional income from the sale of the foods.

New Video: Managing Xanthomonas Wilt of Banana (BXW) using Single Diseased Stem Removal (SDSR) technique

Xanthomonas wilt has been affecting banana fields in Rwanda since 2005.

Alliance of Bioversity International and CIAT, Rwanda Agriculture and

Animal Resource Development Board (RAB), and IITA introduced the Single Diseased Stem Removal technique, considered as the best approach to fight the disease in Rwanda.

[Watch the new video \(www.youtube.com/watch?v=k4mGpm00vD0\)](https://www.youtube.com/watch?v=k4mGpm00vD0) about the SDSR technique on IITA's YouTube channel.



Xanthomonas Wilt of Banana is a serious threat to agriculture-based economies in East Africa and food security in general.