

## Stakeholders meet virtually to discuss shared plans for One Health Challenge

The CGIAR Two Degree Initiative for Food and Agriculture recently organized an online stakeholder consultation to articulate a shared vision, outcomes, and outputs around the One-Health collaborative, multisectoral, and transdisciplinary approach.

The approach aims to work at the local, regional, national, and global levels to achieve optimal health outcomes while recognizing the interconnection between people, animals, plants, and their shared environment.

The online consultation, attended by more than 100 key stakeholders, explored the steps towards operationalizing the initiative in 16 sub-Saharan African countries.

In his opening remarks, IITA Director General Nteranya Sanginga commented on the importance of tackling the adverse effects of climate change and climate-driven and

emerging biological risks. He said that the establishment of the Biorisk Management Facility (BIMAF) in Benin is part of efforts by IITA and partners towards contributing to the One-Health approach.

According to Cristina Rumbaitis del Rio, Action Track Co-Manager, Global Commission on Adaptation at the World Resources Institute (WRI), the Two Degree Initiative seeks to approach research-for-development differently (demand-driven, coordinated) and not just deliver scientific evidence but do outreach, capacity building, communication, engagement, and participatory research towards delivering end-to-end results.



“The initiative is also looking to mobilize more funding to ensure resources are available to deliver the needed innovations in the region,” she stated.

While looking at reforming research-development-deployment pathways, employing an interdisciplinary, intersectional food systems approach,

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## Adoption of mobile phones can provide youth with agriculture market access

Agriculture has been categorized as the largest economic sector in most African countries, offering opportunities for poverty alleviation for youth, yet there is still a low percentage of youth involvement in the sector. This has been attributed to several factors. One major reason for poor youth participation in agriculture, according to research carried out in Tanzania, is low returns linked to a lack of access to agricultural market information.



Mobile phones afford rural farmers access to agricultural information to improve their farming activities.

An IFAD-sponsored study explores how policy makers can promote information and communication technology (ICT) to make agricultural market information accessible to youth in rural Tanzania as producers need to locate potential buyers and identify where people are willing to pay higher prices for their produce. Sassi Akinyi, a researcher under the IITA-implemented CARE project, revealed that access to agricultural market information through mobile phones--ICT, can raise returns and make agriculture attractive to more youth in rural Tanzania.

This, in turn, will help reduce unemployment and promote rural development. The study, which is part of several others carried out by young researchers under the CARE project in 10 countries across Africa, has revealed factors that negatively affect women's intention to use ICT, especially to access market information.

Despite previous studies suggesting that most farmers use mobile phones mainly for social purposes, Sassi states that using mobile phones to post offers of farm produce for sale and accessing bid prices in different markets can help farmers in rural Tanzania make more and profitable sales.

The study also showed that cultural stereotypes negatively affect mobile phone use among women, an area that policy makers can consider when promoting ICT among young farmers. While governments in Africa are working on various agriculture interventions for youth, the study has recommended the need to prioritize gender issues and other determinants of intention to promote the use of ICT in agriculture.

While the CARE study has revealed that using mobile phones for finding agriculture market information was higher among female farmers than males in rural Tanzania, several factors influenced the adoption, such as an increased access to valuable market information and ease of use.

The mobile phone affords rural farmers access to a large amount of agricultural information to improve their farming activities and, eventually, their livelihoods. It also provides the possibility of linking other parts of the country or the world to resources to help their farming practices.

According to Sassi, for widespread adoption of mobile phones to occur among young Tanzanian farmers, policy makers need to create enabling conditions, which include network service access as well as orientation on the economic benefits of adopting it.

## Stakeholders meet to discuss shared plans for One Health Challenge

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the Two Degree Initiative for Food and Agriculture will also improve tools and communication for policymakers, collaborate with private companies, leverage digital technologies, strengthen co-creation along value chains, and prioritize transformation approaches.

Pests, diseases, and other biotic stresses are major threats to the health of crops, livestock, humans, and ecosystems, which even now has been convoluted by the recent coronavirus pandemic. According to discussions during the event, climate change dynamics will affect the distribution and dynamics of such pests and diseases; this will also disrupt complex

interactions and tradeoffs between different ecosystems, with huge and adverse economic implications.

The advanced climate-informed One-Health approach is building on CGIAR's track record to frame the nexus of crop, livestock, human and ecosystem health, pest and disease epidemiology and control, food production, safety and nutrition, and climate change as a complex public health issue to proffer a field-grounded, conceptually refined response to the scale of this global challenge.

As part of the online stakeholder consultation, knowledge-sharing sessions were organized to explore

the countries' capacity gaps and how the four priorities can address these existing gaps.

The four strategic priorities were discussed in alignment with national priorities and how partnerships can strengthen the lack of very effective linkages within the Research-Extension-Farmer interface. These priorities include Horizon scanning and building early warning & rapid response systems; Managing climate-driven biorisks; Harnessing high throughput technologies for food safety and health for megacities in West Africa; and Mainstreaming biorisk management into national and regional development programs.

## 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.agha@cgiar.org](mailto:u.agha@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.



# PIDMA delivers technologies to farmers' organizations for sustainable cassava and maize production in Cameroon

The IITA Cassava and Maize Breeding Units in Nigeria have developed multiple cassava and maize genotypes with improved yields, starch content, resistance/tolerance to major pests and diseases, and other characteristics that will satisfy industry requirements, such as improved nutritional content (e.g., higher provitamin A content).

The deployment of these newly developed varieties into Cameroon required a basic understanding of their performance in relation to contrasting environments. These selected varieties were then disseminated through development projects like the Agricultural Investment and Market Development Project (PIDMA).

PIDMA is a joint operation of the World Bank and the Cameroonian government to transform the low productivity and subsistence-oriented cassava, maize, and sorghum subsector into commercially oriented and competitive value chains that are inclusive of smallholder farmers, sustainable and resilient to climate change, and create rural employment. Another objective is to improve access of beneficiary farmer groups (including women and youth) to value chain finance and quality food.

IITA and PIDMA signed a partnership agreement to ensure that gender-equitable benefits reach smallholder farmers by providing cooperatives with technologies for sustainable production, such as improved pre-foundation and foundation cassava seedlings and maize (including biofortified varieties) with the following characteristics: high yielding, disease resistant, and adapted to targeted production zones.

The project addresses the challenges related to low productivity of cassava and maize landraces, vitamin A deficiency, yield loss caused by emerging pests and diseases, and low soil fertility. PIDMA is implementing it in collaboration with the Institute of Agricultural Research for Development-Cameroon and the Ministry of Agriculture and Rural Development.

Successes recorded include introduction of 27 cassava and 13 maize genotypes from IITA-Ibadan, which were evaluated in multilocation trials conducted with IRAD.

From the trials, the project selected nine cassava genotypes that had an average fresh root yield between 25 and 30 t/ha in four agroecologies, and two maize genotypes yielding between 2.5 and 3.5 t/ha in two agroecologies. Average fresh cassava root yield for 17 improved varieties over two cropping seasons was 26.9 t/ha against 16.65 t/ha for the best local variety.

In 2018, some 4,395,000 cassava cuttings and 8 tons of improved maize seeds of selected genotypes (including biofortified varieties) were delivered to 37 farmer groups. The cumulative number of improved cassava cuttings supplied by IITA for subsequent multiplication into certified seeds is

estimated at 8,525,000. Cassava yields in PIDMA cooperatives increased from 8 t/ha in 2014 (baseline study) to 23.51 t/ha, against an expected project target value of 20 t/ha, while maize yield increased from 1.5 to 3.8 t/ha against an expected target value of 4 t/ha.

On the nutrition component, biofortified cassava genotypes were selected for having mean total carotenoid content in fresh yellow cassava roots reaching 10.96  $\mu\text{g/g}$  with genotype I070593. In collaboration with CIRAD, processing this yellow cassava into local cassava-based food ("fufu") was successfully conducted in the East region where vitamin A deficiency is [among the country's highest](#).

Field surveys and trials were carried out to backstop the project. Results included: (1) Various strains of the Cassava Mosaic Virus mapped in various cassava production basin and cooperative farms, with a lower incidence recorded on improved varieties (9%) compared to local varieties (79%); (2) None of the samples collected tested positive for Cassava Brown Streak Disease; (3) Distribution of fall armyworm was [mapped in the country with the identification of strains and host plants](#); (4) Five booklets and five brochures on sustainable cassava and maize production and integrated pest management were distributed to cooperatives.

Further research could be conducted on the Provitamin A (PVA) cassava introduced in rural communities to (1) evaluate the effect of cassava pests and diseases on PVA content, (2) assess the impact of processing technologies on PVA retention, and (3) understand the drivers of adoption of PVA cassava among farming households.



Above: Maize selection by women in the Far North region. Right: Woman drying yellow cassava for fufu in the East region.

# RUNRES project to avail animal feed for farmers in Rwanda

The Rural-Urban Nexus, establishing a nutrient loop to improve city-region food system resilience (RUNRES), project team presented the three project-funded innovation plans to Mayor Thadee Tuyizere of Kamonyi District. The innovation plans will help manage and process urban organic waste in the district, where the project is being implemented, to produce important animal feed and organic manure ingredients.

IITA-Rwanda Country Representative and RUNRES Project Leader [Marc Schut](#), Country Project Coordinator Speciose Kantengwa, and the leaders of the three innovation plans already funded by the RUNRES project attended the meeting on 9 October.

The plans include the large-scale composting plant by the Company for Environment Protection and Development (COPED), a company experienced in waste collection and transport in Kigali. Their innovation will focus on sorting waste from households and separating organic and inorganic waste to produce quality manure from organic waste.

Another innovation is the cassava peels processing into animal feeds by Akanoze Nyamiyaga Ltd, which usually produces cassava flour for *ugali*. Akanoze will be processing cassava peels to produce high-quality animal feed ingredients (carbohydrate).

Maggot Farm Production Ltd will implement the final innovation, black soldier fly (larvae) biowaste processing to animal feed ingredients (larvae as a protein source) for livestock farmers.

The presentations received an enthusiastic response from the Mayor. He urged the project to work efficiently to execute the activities because “they

are important projects that will support the district’s efforts in agricultural transformation and household waste management.”

“We really needed these innovations in waste management. Mainly the fly larvae will help in providing food for fish farming. Furthermore, the processing of organic waste and cassava peels are also very important because we have lacked animal feed for farmers in our district,” the Mayor said.

The project leader also explained that RUNRES would work on human waste recycling, but this part of the project is still under review.

“For human waste, we have to go step by step as we do not want to do it in a way that can cause any trouble for health reasons. We are trying to get feedback from the Government (National Ethics committee) before we start producing anything from human waste in a very responsible way,” RUNRES Project Leader Schut said.

Schut continued: “This innovation will be processed to produce manure for farmers to use in their fields. So we are still checking health matters that can go along with this process so that we ensure that all procedures to produce this manure are followed.”

The RUNRES project in Rwanda has US\$280,000 to fund all the four innovation plans to be implemented in Kamonyi District.

The project aims to turn waste into valuable products, mainly organic manure and animal feed. Achieving this will help improve human and environmental health through enhanced sanitation, crop/livestock productivity, food security, and household income while practicing a resource sustaining circular economy model (recycling and reusing waste in production).

The Project is funded by the Swiss Agency for Development and Cooperation (SDC) and implemented by IITA in collaboration with ETH Zurich University in Switzerland. The first phase of the four-year project began in May 2019 and is executed in the Democratic Republic of Congo, Ethiopia, Rwanda, and South Africa. Successful implementation could lead to a second phase in 2023 to scale up results from the first phase.



Top: The RUNRES team at the Kamonyi District office. Bottom: RUNRES team discussing the innovation plans with Mayor Thadee Tuyizere.

# IITA trains partners on ODK tools for surveillance of new banana disease threat, Fusarium wilt (Foc TR4)

IITA recently conducted a two-day training for national partners from the agriculture plant health services and plant protection departments in Tanzania and Vietnam. The workshop focused on using the Open Data Kit (ODK) tool to facilitate real-time surveillance of invasive pests and diseases in the banana cropping system, including the recent soil-borne fungal disease threat, Fusarium wilt (Foc TR4).

Fusarium wilt, caused by the soil-borne fungus *Fusarium oxysporum f. sp. cubense* (Foc), poses a major threat to banana production globally. A variant of Foc called Tropical Race 4 (TR4) originated from Southeast Asia and was detected in Africa for the first time in 2013 on a Cavendish banana export plantation in northern Mozambique. Foc TR4 status in Tanzania is unknown, hence, the need for accurate and efficient surveillance as the country is among those at high risk.

After the training, participants developed a detailed work plan to survey invasive diseases in Tanzania and Zanzibar using the ODK tool. They scheduled the surveillance to take place in five Tanzanian regions, namely Mtwara, Ruvuma, Lindi, Songea, and in Zanzibar.

Competency on the ODK tool will help the participants overcome data collection challenges in paper-based surveys, such as illegible handwritten notes and time-lapse between data collection and analysis. It will also help to standardize data collection parameters.

“ODK is a very useful surveillance tool as it allows efficiency in data collection and timely processing to enable rapid response in Invasive Alien Species (IAS) prevention and management,” said Beatrice Pallangyo, Principal Scientist with the Plant Health Services (PHS) at the Ministry of Agriculture in Tanzania.

“The use of the ODK toolkit will harmonize data collection and avoid problems and issues encountered using the paper-based survey tools. Surveys can be monitored in real time, thus allowing instant validation, correction, and feedback to teams in the field,” said [George Mahuku](#), IITA plant pathologist in charge of the project.

Mahuku added that the ODK tool would also allow for a centralized collection of information and creation of a database on fungal wilts across continents, which will be crucial for collaborative planning, risk mapping, designing of prevention/exclusion and eradication strategies to limit the negative impact of wilts on banana production.

Thirteen participants from Tanzania mainland and Zanzibar and four virtual participants from Vietnam took part in the training held at IITA Eastern Africa Hub in Dar es Salaam in August. The participants included scientists from the Plant Health Services (PHS) at the Ministry of Agriculture, the Tanzanian Agricultural Research Institute (TARI), Plant Protection Division in Zanzibar and the Department of Agriculture in Vietnam.



Group photograph of workshop participants.

The training was conducted under the [Roots, Tubers and Bananas \(RTB\)](#) supported project on Fungal and Bacterial wilts of Banana (2020–2021). IITA leads activities in Africa and Bioversity-CIAT Alliance in Asia.

The project seeks to harmonize information from different continents, draw lessons from using the same tools, and have an integrated data collection, repository, and curation system. It will create a one-stop portal with information and data from different countries for harmonized management of the invasive Foc TR4 induced disease of banana.



Participants at the ODK tools workshop.