

IITA scientists reveal strategy to increase cowpea yield and protein content

Cowpea, one of [IITA](#) mandate crops, is an important source of protein and livelihood for many people in West Africa. West Africa accounts for more than 80% of annual world production and Burkina Faso is the third largest producer of cowpea in West Africa. However, cowpea yields per unit area and its seed protein content must be increased to meet the protein demands.



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Farmers happy with high-yielding cowpea in Burkina Faso.

IAA, CADL Partnership: Second phase of input financing for farmers begins

In continuation of input financing for 259 maize and rice farmers in Gombi and Song Local Government Areas of Adamawa State, the USAID-funded Feed the Future Nigeria Integrated Agriculture Activity (IAA), and Capital Agricultural Development Limited (CADL), commenced the second phase of the exercise in July.



Women beneficiaries of input financing in Gombi, Adamawa State.

During the first phase, the farmers received certified rice and maize seed and some herbicides to aid their 2022 wet season farming. For the second phase of the input financing activity, each farmer received four bags of fertilizers, four liters of post-emergence herbicide, fungicide, and insecticide suited for their rice and maize plants. This will help the selected farmers increase productivity

and reduce the purchase cost of farm inputs during the planting season.

The input financing activity also addresses the issue of fake or poor-quality inputs encountered by these farmers in Adamawa State.

The farmers are expected by the project to deliver four bags of grain

after harvest aside from the overall produce harvested for the season. Input financing is one of the ways through which the Activity supports over 60,000 smallholder farmers trained in Climate Smart and Good Agricultural Practices (GAP) in both Adamawa and Borno states. *Contributed by Joke Fayemi and Timilehin Osunde*



Top: Some beneficiaries of the partnership in Song Local Government, Adamawa State. Bottom: Farmer beneficiaries sorting bags of inputs.

Researchers from IITA-CGIAR and Institut de l'Environnement et de Recherches Agricoles (INERA) recently carried out a study in Burkina Faso to establish a simple method for increasing cowpea yield and the protein content of seeds. The effects of top-dressing timing on cowpea yield and the seed nitrogen content were investigated to achieve this. The effect of the planting density on the cowpea yield in farmers' fields was also investigated in three different regions of Burkina Faso.

During the investigation, three planting density plots—normal, high, and super high—were established in the different regions. The regions were characterized by their annual rainfall. The north region was semi-arid with an annual rainfall of 520 mm, the central region was semi-arid with an annual rainfall of 780 mm, and the south region was sub-humid with an annual rainfall of 1175 mm.

The result showed that high-density planting and top-dressing during flowering could increase the yield and grain protein content of cowpea in different agroecological zones across different regions in Burkina Faso. Under such approaches, the yield significantly increased by as much as 214.5%, with an average value of 88.9%. Applying top-dressing when the plants started flowering increased the seed protein content by up to 24.4%.

The findings suggested that cowpea yield can be easily improved, even when farmers have no access to fertilizer. Even if the cowpea yields for any individual farmers do not improve dramatically, the effects of high- and super high-density planting could greatly impact national or regional production.

The researchers advised farmers to evaluate the soil type, soil fertility, and varieties of cowpea they use in their locations to adapt to the developed

techniques. They added that simple management practices could improve the income and nutritional status of populations through increased protein intake in developing countries.

The lead researcher, [Haruki Ishikawa](#), Plant Physiologist at IITA said, "Our

findings could contribute to achieving stable and sustainable food production in West Africa." This Activity is one of the achievements of the Ministry of Agriculture, Forestry, and Fisheries, (MAFF) Japan project. *Contributed by Favour Eleta*



Cowpeas in a high-density plot in Burkina Faso.

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.gha@cgiar.org).



MEDA partners with IITA to improve food systems

The Senior Regional Director of [Mennonite Economic Development Associates \(MEDA\)](#), [Dr Pierre Kadet](#), and his Country team visited [IITA-CGIAR](#) headquarters on 22 July. The purpose of the visit was to explore value chains of some IITA crops, such as soybean, and request support and linkages on other non-IITA mandate crops like rice and groundnut.

Giving the welcome address, [Chrysantus Akem](#), Technologies for African Agricultural Transformation (TAAT) Program Coordinator, introduced the team to IITA's activities, including the Research for Development (R4D) and Partnerships for Delivery (P4D) programs. He also highlighted some of TAAT's achievements, mentioning IITA as the lead executor of the program. "IITA and MEDA can work together to make a difference," he said.

Dr Kadet, stated that IITA and MEDA have an overlapping interest in agri-food systems and P4D. He gave an update of their "Global strategy plan" mission, which strongly emphasizes improving food systems and creating and sustaining 500 employment opportunities for women and youth in sub-Saharan Africa. He further shared their expectations, including the types of crops that will meet domestic needs and having robust industrialization to reach local and global markets.

[Grace Fosen](#), Country Project Manager, spoke about MEDA's Women Entrepreneurship and Youth Empowerment Program (WAY). She mentioned that the program's objective is to support women and youth with capacity building on gender and environmentally sustainable



Dr Pierre Kadet explaining how the new strategy would improve food systems.

machines to process soybean, rice, and groundnut. Fosen also shared the different intervention processes on how they have supported youth and women with technologies, transforming agricultural waste into briquettes—a compressed block of coal dust or other combustible biomass material used for fuel. She requested that IITA shed light on the implementation strategies used for projects.

In response, Akem clarified the importance of technologies, explaining that one of the first strategies to adopting new technology is "identifying the best technology."

In addition, [Godwin Atser](#), Digital Extension, and Advisory Services Specialist, explained how IITA has developed appropriate processing machines that are adaptable to local vicinities through the P4D arm of the Institute. "This has stimulated extension activities and created employment opportunities in the process," he said.

Wrapping up, Akem said MEDA would be linked to the youth program of IITA, and some other IITA projects, including

Africa Rice, Feed the Future, and TAAT, to work with them on the identified crops.

Atser suggested they include cassava and maize as part of their crops since they both have local and industrial potential. To support his suggestion, he shared how IITA uses the bottom-up approach to identify farmers' problems, resulting in successes in the Building an Economically Sustainable and Integrated Cassava Seed System (BASICS) and GiZ projects.

Fosen appreciated the IITA team for the insightful discussions, adding that he and his team would follow up on the discussions for implementation.

MEDA is an international organization focusing on employment and improvement of agricultural food systems and women and youth in rural communities. The organization provides business solutions and turns new technologies into marketable products for smallholder farmers and the entire food system around the ecosystem. *Contributed by Anita Akinyomade*



Godwin Atser sharing some success stories of IITA projects.



IITA staff with the MEDA team.

IITA Molecular Geneticist's research gains media attention

Following her emergence as the 2022 winner of the prestigious [Illumina Agricultural Greater Good Initiative Grant](#), [IITA Molecular Geneticist Ranjana Bhattacharjee](#) and her team are receiving support for research in yam sequencing data. Yam is considered an orphan crop and is a staple in Nigeria and some parts of Africa.

The grant announcement made on Illumina's website earlier in the year stated that "Bhattacharjee's work is helping to address food insecurities of low-income, food-deficit countries in West Africa by breeding yams, a staple of diets in this region".

The research explores the sequencing of the genes of cultivated and wild yam species to determine the traits that can increase disease resistance and yields of yam. With the target of addressing food insecurity in the sub-Saharan region, Bhattacharjee is also creating a community resource that will contribute to yam breeding research and sustain benefits for future research at IITA.

According to Bhattacharjee, identifying yam viruses as one area of focus will greatly assist virology research. With the Illumina grant, Bhattacharjee will carry out whole-genome sequencing of one of the most extensive samples of Guinea yam to understand the genetic relationships between different species—cultivated and wild—in West Africa. Bhattacharjee's grant win and research, which is gaining media attention, will focus mainly on specific genes of yam that can confer disease resistance, resilience, and higher yield.

The report on the [Vanguard](#) website notes that her research will use the NovaSeq™ 6000 System, Illumina's fastest production scale sequencing instrument.

[CSRWIRE](#) reveals that when Bhattacharjee joined IITA in 2009, the knowledge of yam genomics was limited due to a lack of funding. With the support of the Illumina grant, Bhattacharjee is carrying out in-depth genomics-assisted research on these starchy tubers, thereby contributing



Dr Bhattacharjee in the laboratory.

significantly to the nutritional and economic value of the crop.

The sequencing data, which will be made public on IITA's open-access platforms, will significantly impact breeding programs and virology research in the future. It will also contribute to addressing food insecurity in the sub-Saharan region.

The Illumina Agricultural Greater Good Initiative Grant is a prestigious annual grant recognizing research proposals that will increase the sustainability, productivity, and nutritional density of agriculturally important crops and livestock species. Grantees receive Illumina products and services equivalent to 20 trillion base pairs of data to support their projects.

For more information

<https://www.illumina.com/company/news-center/feature-articles/breeding-a-more-resilient-yam-in-west-africa.html>

<https://www.vanguardngr.com/2022/07/iita-scientist-breeds-more-resilient-yam-species-in-west-africa/>

<https://www.modernghana.com/news/1172916/breeding-a-more-resilient-yam-in-west-africa.html>

<https://www.csrwire.com/press-releases/751436-breeding-more-resilient-yam-west-africa>

<https://newsghana.com.gh/breeding-a-more-resilient-yam-in-west-africa/>

<https://www.iita.org/news-item/iita-scientist-wins-prestigious-illumina-greater-good-initiative-grant/>

<https://www.facebook.com/illuminainc/videos/2022-greater-good-grant-winner/1382230445554179/>

<https://youtu.be/jB5Hb-qXWQ0>

Contributed by Timilehin Osunde



Dr Bhattacharjee on a yam trial site.

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.