

Renowned international journal says IITA's drought-resilient maize takes pressure off African farmers

Is drought-resilient maize an answer to pressure on African farmers through climate change? Renowned [Rural 21](#)—the International journal for rural development in its May 2017 edition featured responses from a panel of experts including [Tahirou Abdoulaye](#), IITA's Agricultural Economist, who spoke during the meeting of the Center for Development Research (ZEF) in Bonn, Germany.



A farmer that uses drought tolerant maize variety.

Maize is an important staple food crop in most of sub-Saharan Africa, and it is grown on around 33 million of the total 194 million hectares under cultivation in the region. However, [El Niño](#) and global warming have had a dramatic effect on farming in many areas. The 2015-2016 El Niño event was one of the strongest on record. Among the countries affected in Africa was Ethiopia, which saw its worst drought in decades. The country, which is the continent's fifth largest maize producer, suffered huge crop losses, and an estimated 1.35 million farmers were left without new seed.

In West Africa, global warming is set to trigger shorter rainy seasons, more arid conditions, longer dry spells, and more droughts. According to an [IITA](#) survey, farmers in Northern Ghana consider drought and floods as the biggest challenges to their income and to food security. Together with the International Maize and Wheat Improvement Center ([CIMMYT](#)), IITA launched the “[Drought-Tolerant Maize for Africa](#)” ([DTMA](#)) project in 2006 that now operates in 13

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IITA hosts US-Nigeria commodity management workshop

On 30 May—1 June, IITA Ibadan hosted participants from Africa and the US who attended the seventh joint commodity management workshop of the United States and Nigeria.

The meeting provided an avenue for attendees to chart the course towards improved practices on stored grain in on-farm and warehouse structures and also learn and address topical challenging issues faced by farmers, aggregators, and merchants in field and storage warehouses.



L-R: Michael Abberton, Head, IITA Genetic Resources Center and Deputy Director for West Africa, Harold Tarver, Program Manager, USDA-FAS, and Klein Ileleji, an associate professor and extension engineer in Agricultural and Biological Engineering, Purdue University.

[Michael Abberton](#), Head, [IITA Genetic Resources Center](#) and Deputy Director for Western Africa, welcomed the participants to IITA. Abberton recognized the efforts of organizations such as the United States Department of Agriculture-Foreign Agricultural Service ([USDA-FAS](#)), U.S. Land-Grant Universities and USAID, as well as other collaborating partners from Nigeria, in trying to forestall postharvest losses in Nigeria.

According to Harold Tarver, Program Manager, USDA-FAS, this meeting builds upon lessons from previous postharvest training which had been conducted every year since 2012. This year, the focus is on developing sustainable approaches to localize the training, involve other universities, and deploy new postharvest technologies nationwide.

Klein Ileleji, an associate professor and extension engineer in Agricultural and Biological Engineering, Purdue University, USA gave a presentation on the vision for the Stored Commodity Consortium of Nigeria (SCCON) to improve grain trade. He said the consortium was working to address problems encountered by stakeholders.

“SCCON is a proposed multi-state effort that builds on the solid foundation of seven years of technical assistance in stored commodity protection, management, training and research. It is implemented by the US Department of Agriculture (USDA) agriculture capacity

strengthening program in Nigeria. SCCON intends to address identified problems encountered by stakeholders to impact productivity along the grain value chain and provide services that facilitate grain trade,” Ileleji said.

Invited lecturers from universities in Nigeria and the USA also discussed several interesting issues bordering on storage management, integrated pest management for stored product insects, temperature and moisture measurement of bagged grain in warehouses, pesticide resistance and effective fumigation of stored grain, workers' safety and health concerns in grain storage warehouses, and grain warehouse design and operations management for bagged commodities.



Participants at the commodity management workshop.

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countries in sub-Saharan Africa. Results and experiences from this program, which ended in 2015 and also included genetically modified maize, were discussed at a ZEF meeting in May 2017.

In 2015, Abdoulaye participated in an IITA study among 2,305 farmer families in Nigeria 24% of whom, it was established, had adopted drought tolerant maize varieties. The study also found that the combination of access to seed had a huge impact on the adoption rate, with the rate rising to 90% where access was good and farmers' families were sufficiently informed about the advantages of the new plants.

Referring to problems the project faced, Abdoulaye maintained that the effectiveness of extension systems was declining in Africa. *“We were pushing the new technology for 10 years,”* he told the meeting participants. *“And yet there were still communities that hadn't heard of it.”* Another disadvantage Abdoulaye

mentioned was the issue of recycling. There was no hybrid seed to sell.

The social and cultural implications of seed and planting material were also addressed by David Millar, Vice Chancellor of the Millar Institute for Transdisciplinary and Development Studies in Bologatanga, Ghana. Millar stressed that the new seeds always put new demands on farmers, and that a farmer always had to look at the entirety of uses.

“Farmers usually keep their seeds, although they may also procure additional seed from other farmers,” Millar said. “Surrendering that culture to other institutions is a delicate issue. Some seed has to be kept. The situation is too insecure to rely on external seed supply.”

Ernst Mill, Team Leader of the *“Adaptation of Agro Eco Systems to Climate Change”* (AAESCC) program, run by Deutsche Gesellschaft für Internationale Zusammenarbeit in Ghana, promoted technologies in the country's extension systems for more than four years. Mill noted that meager rainfall was to blame for 50-60% of losses in cereal production. Across the entire sub-Saharan region, maize production averages 1.8 t/ha, which is far below the crop's genetic potential. Pooled across three years, the Wandata variety, which proved to be most popular, yielded an average of 2.4 t/ha, although 2.7 t were harvested in some areas.

The meeting concluded that there was indeed a need for the new maize varieties in the areas affected by extreme weather conditions. However, it also became clear that their impact should not be overestimated.

See full DTMVs research paper [here](#). Culled from Rural21

CCPC operators in South Kivu, DR Congo, meet to chart action for steady progress

For two days, 9-10 May, managers of eight community cassava processing centers (CCPCs) in Kavumu, Katana, Mulamba, Bunyakiri 1, Bunyakiri 2, Kamanyola, and Luvungi as well as technicians in charge of production met at IITA Kalambo to take stock, exchange experiences, share knowledge, and articulate strategies on the way forward.



Participants visiting the banana garden at the Kalambo station.

Other participants included IITA Kalambo Youth Agripreneurs (IKYA) and some private sector processors (PIDER-SK and Ste. Kalebwa).

In his opening remarks, [Chris Okafor](#), the Officer in Charge, IITA Kalambo Station, drew the attention of participants to the growing importance and popularity of cassava processing in South Kivu given the increasing demand for high quality cassava flour in the urban areas. The CCPCs presented their performance reports and experiences in turn. The key points included quantity of high quality cassava flour ([HQCF](#)) produced, fresh root procurement using collection centers, linkage to IKYA, solar drying experience, constraints such as transport, market access, multiple taxes,



IKYA members making their presentation.

community farms, and efforts at distributing planting materials.

IKYA also shared their experience in processing. They indicated that demand for HQCF was high and encouraged the CCPCs to increase their production. They

offered suggestions on how the CCPCs can improve their access to the market. The workshop was facilitated by a team made up of Kasereka Bishikwabo, IITA Value Chain Advisor; Byamungu Kigangu Moustapha, Technical Assistant, and Nsindabagoma Francine, SARD-SC Program Support Officer.

As part of the workshop, the CCPC members visited the Katana CCPC located 45 km from Kalambo station where they appreciated the processing activities of the CCPC and the solar driers. They also visited the banana garden at the Kalambo station since some of them benefited from improved banana seedlings distributed by the Station. They appreciated the healthy nature of the plants and felt encouraged to improve management of their banana plots.

As a way forward, the workshop proposed action points to be applied by the CCPCs. The key ones included establishment of multiplication farms with improved varieties; increasing production levels per month; strengthening linkage with IKYA; organization of at least three collection centers per CCPC; and dissemination of other cassava recipes in their respective constituencies to promote consumption of HQCF by the local population.

At the end of the workshop, a representative of the World Bank project in South Kivu who was on an official visit to the Station interacted with participants. He commended IITA and the CCPC leaders while pointing out that the initiative was in line with Government and the World Bank's efforts aimed at developing cassava value chain and the rural economy in South Kivu.



The participants pose with the Station OIC Chris Okafor (center, wearing a cap) after the workshop.

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).

Has agriculture research failed to deliver on the fight to reduce poverty in Africa?

Over 50 years of agriculture research in Africa has not delivered the expected results in terms of self-sufficiency in food production and reduced poverty in many countries in the continent.



A farmer in her maize farm.

It is now evident that developing and delivering new technologies and their adoption without the necessary public policy instruments to accompany them will not lead to self-sufficiency in food production and reduction of poverty.

This was the focus of a seminar presented by [Shiferaw Feleke](#), IITA Agricultural Economist at IITA East Africa hub in Dar es Salaam, Tanzania, titled *'Why is poverty still persistent in Africa despite many years of agricultural research?'*

"Between 1990 and 2015, while many countries in the world reduced extreme poverty significantly, sub-Saharan Africa made the least progress at 28%. Today, nearly a half of the region's population, 41%, is poor, the highest percentage in the world," said Feleke.

"Results from adoption studies conducted in Africa, show that over 70% of wheat grown was of new varieties and same in 45% maize, 20% rice, and 15% sorghum by 2005. In Nigeria by 2015, over 66% of cassava grown was improved varieties. Yet, every year, the continent spends over US\$35 billion on food imports. Poverty especially in the rural areas was still deeply entrenched," he said.

So why hasn't agricultural research helped the poor?

According to Feleke, one of the problems with agricultural research is that it has focused more on improving efficiency in production and not equity. The major goal of agricultural research has been to increase production and therefore it has focused more on highly productive areas. Yet the majority of the poor are in marginalized areas.

The envisaged benefits from growth in the agriculture sector in the trickle-down theory that the poor would benefit through lower food prices and increased wage and employment opportunities have not come about.

Agricultural research can only benefit the poor if they are adopters of the technology. However, in the dynamics of adoption, the poor with their limited resources adopt late in the cycle. Yet increased adoption and yield depress prices, as domestic prices are responsive to local supply.

Complex nature of poverty in Africa

Another challenge says Shiferaw is the very nature of poverty in Africa. Africa's poverty level starts way further down the poverty line and therefore cannot be lifted by technology alone. Technology is only one of the instruments. The rapid population growth further compounds the problem—the rate at which poverty is falling is less than the rate at which the population is rising.

In addition, the fact that agricultural research funding in Africa is very low has stifled the actual level of poverty reduction.

"While research has shown that potential impacts of agricultural research as measured by poverty elasticity in sub-Saharan Africa is at least 30% greater than in Asia, actual poverty reduction has been greater in Asia," he said.

The measurement of impact of agricultural research on poverty reduction has been very difficult. The technology dissemination process has also made the measurement of impact difficult—the farmers either self-select themselves into adoption or are selected by extension personnel, making it difficult to isolate the poverty-reducing impacts of agricultural research.

Good news – Agricultural research is still on the agenda

The good news is that many players have realized that these challenges can be addressed through public policy, and increased investment in research and development. There is still opportunity for agricultural research to refocus its approach with the renewed interest in agriculture as an engine of growth and poverty reduction in the continent from mid-2000s following the tightening of the global food markets. This culminated in the 2006 Comprehensive Africa Agriculture Development Program (CAADP) declaration that among others, calls for increased investment in the agriculture sector.

IITA as well, is making strategic adjustments in its research agenda to ensure its research delivers impact on transformation of agriculture in Africa.

"We are moving beyond reduction of poverty and hunger to transforming agriculture. We are now focusing on delivery of proven technologies with a balanced approach of efficiency and equity but bearing in mind technology alone will not be enough to lift poor people out of poverty," he said.

Looking back

The Nigerian Government's role in the establishment of IITA

IITA's 1000-hectare land was actually a donation of the Nigerian government, with an annual rental fee of one peppercorn (if demanded). The government also agreed to compensate the approximately 3,000 people living on the site; they resettled them in a new village they called Ibadan Parapo, (now more popularly known as Shasha).

The government also provided IITA with an 80-ha site in Onne when the institute needed a high-rainfall station in an acid-soil area. And during the oil boom in the country, the government became the first among host countries to participate in the funding of these international agricultural research centers, pledging \$800,000 annually to the CGIAR system.

The government also granted special legal status to IITA in Decree no. 32, giving it several privileges that have been consistently honored.

Source: Lawani, S. 1992. History and Evolution of IITA's Scientific Program. Sustainable Food Production in sub-Saharan Africa, pp. 1-23.



Gen. Yakubu Gowon, Head of State, 1966-1975.

Peppercorn used as IITA annual rental

The 1000-hectare land that the IITA campus rests on was donated by the government to the Ford and Rockefeller foundation. The terms of payment are stated as follows in decree no. 32:

"Land so made available by the Government shall be held upon such term or terms as may be agreed and upon payment of, in each case, one peppercorn as annual rental (if demanded)."

One might wonder why the Nigerian government demanded one peppercorn, today's most commonly used spice, as rental.

Peppercorn, dried black pepper, is the fruit of the black pepper plant native to Kerala, a southern state of India. In the ancient times, black pepper was one

of the most widely traded spices in the world.

Black pepper has many medicinal properties. It can be used to relieve respiratory disorders, coughs, colds, constipation, indigestion, anemia, impotency, muscular strains, dental disease, pyorrhea, diarrhea, and even heart disease. It is also used to preserve food, and is a very good anti-inflammatory agent. It is rich in manganese, iron, potassium, vitamin C, vitamin K, and dietary fiber.

However, this does not explain why the government only asked for one peppercorn. Given peppercorn's medicinal properties, the government could have asked for a greater quantity, so as to increase the chances of

addressing the high crude mortality rate at the time with an average of 25 per 1,000 people.

A more viable explanation would have to be the concept of peppercorn rent in British contract law. Peppercorn rents originated during the Middle Ages wherein landowners sometimes deed over a piece of property to an employee. Nominal rents, usually in the form of peppercorn, sometimes of a single rose or a petticoat, were used as a reminder that the person living on the land was still a tenant; that he did not own the land outright.

In modern times, peppercorn rents can sometimes be used when a struggling company is sold. And up until today, the University of Bath in the UK pays a peppercorn as rent for the land its campus is built upon.

With freshly-gained independence from British colonial rule, the Nigerian government's request for one peppercorn as rent does not seem as unusual now.

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Despite the civil war, the construction of IITA began in 1967.