

Project brings ray of hope to fight against cassava viruses in Africa

The 5CP project has come to an end but it has made significant progress in fast-tracking the development of cassava varieties with dual resistance to two viral diseases.

In 2012, five countries came together and shared their five best cassava varieties. The main criteria was how well they were able to resist the two viral diseases, Cassava mosaic disease (CMD) and Cassava brown streak disease (CBS), affecting cassava production in Eastern and parts of Southern and Central Africa. These varieties were first cleaned of viruses before they were sent to the countries. Each country received 25 varieties to test for adaptation and performance in their local environments.

Five years later, each of the five countries has identified their top four to five best varieties that will be integrated into their national breeding programs to generate more breeding populations, and further testing on-farm for acceptability and possible release as new, dual-resistant varieties. The sharing and testing of the 25 best varieties pooled from the five countries—Kenya, Malawi, Mozambique, Tanzania, and Zambia—was one of the main activities of the

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Edward Kanju speaking at 5CP final meeting.

MSU and The MasterCard Foundation partner to increase youth employment in Africa

A five-year, \$13 million collaboration between Michigan State University and The MasterCard Foundation will help 15,000 young people access employment and entrepreneurship opportunities in the fast-growing horticulture, aquaculture, poultry, cassava, and oilseed sectors in Tanzania and Nigeria.



Another project is being launched to provide youth employment and entrepreneurship opportunities.

The partnership, the AgriFood Youth Opportunity Lab, will focus on youth aged 18 to 24 in major foodshed regions surrounding Lagos and Dar es Salaam. The Ag Youth Lab will assist economically disadvantaged, hard-to-reach, and out-of-school youth transition into employment and entrepreneurship opportunities in the agrifood system.

More than 60% of Africa's young people are jobless or underemployed, and formal job creation efforts in Africa's growing economies have been insufficient, according to African Economic Outlook. Comprising 20% of Africa's population, Tanzania and Nigeria together represent an important opportunity for intervention in skills acquisition, job creation, and employment for youth.

The program will have a special focus on gender equity, aiming for equal representation of young men and women across its programs and

addressing policy, training, mentoring, and other constraints that affect the ability of young women to start enterprises or obtain employment.

The Ag Youth Lab will respond directly to opportunities and constraints identified in the 2016 MSU and The MasterCard Foundation [Agrifood Youth Employment and Engagement Study](#). The report highlighted the need to:

- Actively engage the private sector in the design, development, and implementation of youth employment programs.
- Improve training curricula to ensure its relevance to the modern agrifood sector.

Taken from the MSU and The Mastercard press release.

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New Cassava Varieties and Clean Seeds to combat CMD and CBSD project (5CP in short). The project was funded by the [Bill & Melinda Gates Foundation](#).

The activity aimed at fast tracking efforts to provide farmers with improved high-yielding and dual-resistant cassava varieties, and in turn revive the crop's production and contribute to improving income and food security of the target countries.

The project was led by IITA, working in collaboration with the national cassava breeding programs of the five countries. It started in June 2012 and came to an end on 31 March 2017.

Threat to cassava production

CBSD and CMD together cause production losses worth more than US\$1 billion every year and are a threat to food and income security for over 30 million farmers growing cassava in East and Central Africa.

"Africa loses more than a third of its potential cassava harvest to pests and diseases. The most important of these are CBSD and CMD. A severe form of CMD which causes curling of the leaves and drastically reduces yield started spreading in sub-Saharan Africa in the late 1980s and early 1990s," said Edward Kanju, IITA cassava breeder and 5CP Coordinator.

"In the early 2000s, CBSD which causes a dry rot and was previously confined to low coastal areas, started spreading rapidly and nearly all the newly deployed varieties with resistance to CMD were susceptible. Countries had no varieties resistant to this new disease creating the need for the five hard-hit countries to join forces to find a quick solution," Kanju said.

- Apply information and communication technologies (ICT) and other advanced technologies to solve agrifood system problems.
- Adapt youth programs to meet the expanding consumer demand for fresh fruit, vegetables, high-quality proteins, and semi-processed and ready-to eat meals.

MSU will lead implementation of the Ag Youth Lab in close collaboration with regional partners, including IITA; Venture Garden Group, a Nigerian company; Tanzania's Sokoine University Graduate Entrepreneurs Cooperative (SUGECO); and Nigeria's Oyo State College of Agriculture and Technology.

Sharing of virus-free planting material

Each country selected and sent its top five improved varieties and one local check—a local variety that is highly susceptible to the two diseases for comparison—to the Natural Resources Institute (NRI, UK) and to Kenya Plant Health Inspectorate Services ([KEPHIS](#)) for virus cleaning. This was to avoid the spread of new strains of viruses to new places in the target countries.

The clean material was then forwarded to the Genetic Technologies International Ltd. (GTIL), a private tissue culture company in Nairobi, Kenya, where it was multiplied and sent to all the five countries as tissue culture plantlets. Researchers first hardened and acclimatized the plantlets before planting them in research fields in areas with high disease pressure. This was to compare their performances against the local susceptible varieties being grown by the farmers and the identified local checks.

A pilot clean cassava seed system In Tanzania, the project had another objective—to develop a pilot system to deliver clean seeds of improved varieties to farmers from the research system. Under this objective, researchers from IITA, the national agriculture research system, and the Tanzania Official Seed Certification Institute (TOSCI) worked together to develop standards for clean cassava planting material and virus testing methods.

The project also established four sites with very low disease pressure in all the main cassava-growing areas for multiplying high-quality, clean seed areas targeting various agroecologies. "In these four sites, we have so far

The Ag Youth Lab will emphasize policy research, data, and analytics to develop a cost-effective, scalable model for youth training and facilitation. Ultimately, the Ag Youth Lab seeks long-term impact by building the capacity of local organizations, working directly with the private sector to help youth transition to quality agrifood employment, addressing key policy constraints, and reducing the cost of expanding youth employment.

"IITA will bring the lessons from its experience to help Ag Youth Lab tap the dynamism of Africa's youth," said DG Nteranya Sanginga. "By creating better jobs for themselves, youth can transform Africa's agrifood systems and build a brighter future for Africa."

produced 4 million cuttings. In the future, we hope to start the process of commercialization so the national root crops research system can sell this top quality planting material of high-yielding, disease-resistant varieties to private companies to multiply and deliver to farmers in large quantities. Ultimately we hope this will have a positive impact on boosting cassava production in Tanzania," said James Legg, Virologist, IITA-Tanzania.

The seed certification guidelines for cassava developed by the project were incorporated into the Seed Act of Tanzania in January 2017.

"One of the highlights of this initiative is that, working with various partners in Tanzania, we were able develop guidelines on how to produce the highest quality of cassava planting material. These guidelines were recently enacted into law. We are really excited about this," James Legg enthused.



A clean seed site in Tanzania.

The project trained more than 50 TOSCI seed inspectors on certification of vegetatively propagated cassava seeds and equipped the institution with essential equipment for testing viruses in cassava planting material.

Project successes

- Top four to five of 25 in each country: Each country had already identified its choice of four or five varieties to integrate into their breeding program for further testing. These were selected from field trials in at least five or more sites per country in areas with high disease pressure. There were a total of 33 field sites across the five countries.
- Networking and unusual partnerships: The project brought the breeding programs of the five countries to work closely together, sharing their knowledge and skills, and cemented their relationship for future collaboration. The project also brought breeders and virologists to work together in the development of new varieties with dual resistance to CBSD and CMD.
- Understanding responses of cassava varieties to the viruses: The project also supported the five countries to

carry out degeneration trials of their own five best varieties. This was to understand how they respond to the viruses and identify those that remain healthy for a long time even when infected.

- Building capacity for cassava breeding: The project had a strong capacity-building element to support cassava breeding in the five countries. It supported five students in their postgraduate studies—four MScs and one PhD. Numerous short courses were also conducted for the national researchers including handling of tissue culture plantlets, testing for viruses using real-time PCRs, and conducting and analyzing data from multilocation trials, among others.

Next steps

Now that the project has ended, each country will integrate the varieties they have selected into their national breeding programs for further testing and breeding. In Tanzania, the successes and lessons learned in piloting the cassava seed system project have been incorporated into the recently launched 'Building an



Robert Kawuki of Uganda explains 5CP work in the country during the team meeting.

Economically Sustainable Seed System for Cassava in Tanzania - BEST Cassava project funded by the Gates Foundation. The project is being implemented by Mennonite Economic Development Associates ([MEDA](#)) in partnership with the Tanzanian Ministry of Agriculture, Livestock and Fisheries (MALF) and IITA in 11 regions in Tanzania.

5CP voices

On 23 and 24 March, the project team held their last meeting to review the project successes and the way forward. The team was enthusiastic about their achievements and experiences during project implementation.

"The project has generated a lot of output. We have seen many people trained, many varieties identified that we can share with farmers across the five countries, and the certification of cassava seed systems in Tanzania." Arthur Tugume, Chair, 5CP Technical Advisory Committee

"The most important thing about the 5CP project was that we had access to some of the best varieties in the region, we were able to test them, and we have identified four very outstanding ones compared to what we had. These varieties from Tanzania, Mozambique, and Kenya have shown very high resistance to cassava brown streak, which is a major constraint to cassava production in Uganda. Right now, they are under participatory variety selection trials in farmers' fields in nine districts in the country. We will get their final verdict in terms of their preferences and their likes but we are optimistic that they will go through and

be taken up by the farmers." Robert Kawuki, National Agricultural Research Organisation ([NARO](#)), Uganda

"CMD and CBSD had drastically reduced cassava production in the country in that all varieties were susceptible. This required us to look for other varieties for farmers. 5CP came in handy in that we were able to introduce varieties from the region. We have tested them in several sites across the country and some of the varieties were doing so well that farmers took all the cuttings. This is an indication that the varieties are good and can be used to mitigate the effect of the two diseases." Theresia Munga, Kenya Agriculture and Livestock Research Organization ([KALRO](#))

"CBSD is a major problem in Malawi especially among the shores of Lake Malawi. Farmers cannot reap the benefits of their hard work. Therefore these varieties we have identified will go a long way in solving the viral disease problems in Malawi." Obed Mwenye, Department of Agricultural Research Services, Malawi

"Another important achievement of the 5CP project is delivering high-quality, clean cassava seeds to farmers in

Tanzania. We have done this by setting up four clean sites in each of the main cassava growing areas of Tanzania and developed protocols for doing this. Some of the small-scale seed entrepreneurs at village level have received some of these materials to be multiplied and then sold to their colleagues and other cassava producers. So already new improved, disease-resistant varieties from the research systems are finding their way to the farmers and are having a positive impact on cassava production in Tanzania."

[James Legg](#), IITA Tanzania

"As we come to the end of this project, the most interesting achievement is that each country was able to receive the 25 elite varieties promised at the beginning of the project, and tested them across different agroecologies in their respective countries. In this meeting, each country has been able to flag at least four varieties that have shown high resistance to both cassava mosaic disease and cassava brown streak disease."

[Silver Tumwegamire](#), IITA Tanzania

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).

Africa RISING management completes monitoring visits to project sites in East and Southern Africa

The leadership team of the IITA-led [Africa RISING](#) project in East and Southern Africa recently concluded monitoring visits to project sites in Malawi, Zambia, and Tanzania to assess the status and progress of implementation of various project activities by partners. These took place between 15 and 22 February in Malawi and Zambia, and 21 and 31 March in Tanzania.

The monitoring team was led by the Manager, Africa RISING West Africa and East/Southern Africa Projects, [Irmgard Hoeschle-Zeledon](#), the Africa RISING ESA Chief Scientist, [Mateete Bekunda](#), and on the Zambia leg of the visits by the USAID Zambia Mission Food Security Specialist Harry Ngoma.

“Overall, I can say that the work being implemented by our partners in all the project countries we visited is impressive. However, we also identified some issues that partners still need to address to ensure that we stay on course to achieve the research-in-development targets that we have committed to with our donor,

USAID, and other stakeholders,” noted Hoeschle-Zeledon at the conclusion of the monitoring visit to Tanzania.

The monitoring visit was the first made by the management team since Phase II of the program launched in October 2016.

“This visit has given us an opportunity as the management team of the project to go one step beyond receiving reports submitted by partners and get to better understand them by verifying the actual status of activity implementation. We were able to discuss emerging operational challenges and opportunities with the partners and also take a good

look at how activities are aligned with the overall Africa RISING vision of success,” added Bekunda.

While speaking at the end of the monitoring visit in Zambia, Ngoma lauded the implementation of activities by project partners, encouraging them to “keep their foot on the gas” in implementing project activities. He also noted that USAID was still in the process of revising its Global Food Security strategy. He also pointed out opportunities for filling some existing research gaps on some of the scaling activities being implemented by the project team.

Want to know more? Click on the images / links below:

How Africa RISING technologies are improving farmers' lives this season (2016/2017) in Zambia: <https://spark.adobe.com/page/9bEuaVvs6Q5z6/> and Malawi: <https://spark.adobe.com/page/EvmJ5a9xsWphe/>



Africa RISING management team delegation in Zambia during a visit to Good Nature Seed Ltd., which is multiplying breeder seed provided by IITA and ICRISAT partners as part of the project's activities aimed at improving the legume seed delivery systems in Zambia.



Announcements

- Training of AgResults Aflasafe Pilot Project Implementers, 19-21 April, IITA, Ibadan, Nigeria
- West Africa Hub retreat (IITA50), 20-23 April, Cotonou, Benin
- Third Project Annual Planning meeting, East Africa Banana breeding project, 24-26 April, Kampala, Uganda
- African Youth Agripreneur Forum (AYAF), 25-26 April, IITA, Ibadan, Nigeria
- STMA Regional Planning Meeting, 30 April – 4 May IITA, Ibadan, Nigeria
- Research Support Day, 3 May, IITA, Ibadan, Nigeria
- IITA-Mozambique inauguration + IITA@50 local celebration, 8 May, Nampula, Mozambique
- IITA Board Meeting, 9-12 May, Nampula, Mozambique
- SARD-SC Maize Conference, Livingstone, 10-20 May, Zambia

IITA participates in Nigeria's biggest Technology and Innovation Expo

IITA had a strong presence at the recently concluded week-long "Technology and Innovation Expo 2017" in Abuja.

At the IITA stand, visitors thronged to see IITA's innovations and technologies. From the first to the last day of the event, visitors were keen to know more about the use of [NoduMax](#), [Aflasafe](#), and [aeroponics](#). They also tasted several cassava and yam-based confectionery including the popular "African salad", also known as, Abacha.

Several high-profile visitors toured the IITA exhibition stand, including ministers, senators, diplomats, and a high-powered delegation from the National Institute of Policy and Strategic Studies (NIPSS).

The Expo is organized by the Federal Ministry of Science and Technology every year. The theme of this year's Expo was "Science, Technology and

Innovation for Nigeria's Economic Diversification". This is the first time that the Abuja station has represented IITA in a national exhibition, providing

an opportunity to advertise the Station. "Now we know IITA is in Abuja; we will visit you soon", was a recurring comment from visitors.



Visitors thronged to the IITA exhibition stand.

ATASP-1 completes first batch of seed production training for youth

Following the flag-off of the seed production training for youth by Nigeria's Minister of Agriculture and Rural Development, Chief Audu Ogbah on 27 March, ATASP-1 has commenced training young people on seed production. The training which ran concurrently in Abuja, and Kano and Niger states ended on 5 April.

The training for cassava was held at the IITA station in Abuja and was anchored by the ATASP-1 cassava specialist, [Richardson Okechukwu](#). The training for sorghum was held at the IITA station in Kano and was anchored by the ATASP-1 sorghum specialist, Hakeem Ajeigbe, while the training for rice was held at the National Cereals Research Institute (NCRI), Badeggi in Niger State and was anchored by the ATASP-1 rice specialist, Philip Idinoba.

The training participants who were drawn from the seven states where ATASP-1 is being implemented—Enugu, Anambra, Niger, Kano, Jigawa, Sokoto and Kebbi—went through rigorous classroom and field training practical sessions including site selection, land preparation, plant density, fertilizer requirement and applications, weeding and plant protection, harvesting and transportation, storage, variety identification, and characterization of pests and diseases.

In addition, the National Seed Council, the agency of the Federal Government

vested with the power to certify seeds and to accredit seed companies in Nigeria, also ran sessions on seed quality control and certification.

The climax of the training was the session on seed enterprise, where participants were exposed to the huge business potential in seed production, including how to promote and sell.

"In my 10 years of growing cassava, I never knew that we grow seedlings. I never knew about cassava diseases, and I never knew the difference between varieties. This training taught

me all of that and I will start producing seed this year," a participant from Lapai in Niger State, Ismaila Mohammed said.

In his opening remarks, the ATASP-1 Outreach Program Coordinator, [Gbassey Tarawali](#) charged the participants to take advantage of the training to succeed in the seed business.

Other batches of training will take place at a later date. ATASP-1 expects to train about 200,000 youth along the value chains of cassava, rice, and sorghum.



Youth being trained on seed production.