



Kenya Agric cabinet secretary launches laboratory and breaks ground for construction of a biocontrol manufacturing plant

Efforts to reduce mycotoxin contamination in staple crops have received a much-needed boost with the launch of a well-equipped modern laboratory to conduct research on the toxins and ground breaking for the construction a modular, small-scale plant to manufacture Aflasafe KE01—a biopesticide to control aflatoxin at the Kenya Agricultural and Livestock Research Organization (KALRO) center, Katumani in Machakos County, Kenya.

The two events were presided over by Felix K. Koskei, the Cabinet Secretary for Agriculture, Livestock and Fisheries Development who was accompanied by the Principal Secretary, State Department of Agriculture, Sicily Kariuki and Acting Deputy Director General, KALRO, Dr Joseph Mureithi. Other dignitaries present included representatives from Machakos and Makueni county governments, and partners including KALRO, World Bank, USAID, United States Department of Agriculture-Agriculture Research Services (USDA-ARS), Agricultural Technology Foundation (AATF), senior government officials, private sector representatives and farmers.

The delegation from IITA was led by DG Nteranya Sanginga, R4D Director for Eastern Africa Victor Manyong, Country Representative of Kenya, Leena Tripathi, and scientists working on mycotoxins including Ranajit Bandyopadhyay,

Charity Mutegi, and Lawrence Kaptoge.

Speaking at the event, Koskei noted that mycotoxins and especially aflatoxins, one of the most prevalent mycotoxins in the region, were a major barrier to Kenya's efforts to secure food for its people and to regional and international trade. He hailed aflasafe KE01 as a sustainable technology which had demonstrated its effectiveness in reducing aflatoxin contamination by up to 98%, and the modular facility. The facility will use a novel manufacturing process to enable farmers to access the biopesticide to reduce aflatoxin in their fields. This, he said, will make the food of millions of people in the region safer to eat and enable the maize value chain to be more profitable.

The modular plant is the first of its kind in Africa and the second for manufacturing aflasafe after the one at IITA-Ibadan in Nigeria.

“The ‘war’ against aflatoxins cannot be won without employing new technologies. It is therefore gratifying that KALRO together with partners such as IITA, USDA-ARS, AATF, and ACDI-VOCA, have stepped up their research efforts and developed this sustainable solution to the problem,” he said.

Principal Agriculture Secretary Kariuki said the two facilities marked a major milestone in the efforts to fight against aflatoxins in the region. She said every year, Kenya spends millions of shillings



IITA's Victor Manyong (right) welcoming Kenyan Agriculture Cabinet Secretary Felix Koskei (left) to the site of the aflasafe modular plant as IITA's DG Nteranya Sanginga (middle) looks on.

to destroy maize contaminated with aflatoxins in environmentally sustainable ways. This is money that would be put into better use if this problem had been managed, she added.

Speaking at the event, Dr Manyong reported that aflatoxins negatively affect human health, farm productivity and profitability, regional trade, incomes of millions of small-holder farmers and also the reputation of African products in the global markets.

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Nigeria: first country outside of US to provide registration status to a biopesticide for aflatoxin management

Good news: aflasafe™ is now a fully registered commercial product in Nigeria, announced Dr Ranajit Bandyopadhyay, who leads the aflasafe team. aflasafe™ had been granted provisional registration status by the National Agency for Food and Drug Administration and Control (NAFDAC) on 11 August 2009. The provisional registration status permitted IITA to conduct further work on product efficacy, safety, marketing, and manufacturing to generate data for full registration. NAFDAC granted full registration to

aflasafe™ on 7 November.

The full registration now gives IITA the freedom to license the product (if necessary) and expand aflasafe commercialization efforts for the benefit of Nigerian agriculture and public health. As a registration holder, IITA also has several legal obligations including meeting the quality standards of the product.

According to Dr Bandyopadhyay, getting the registration was a classic case of team work. “Joseph Atehnkeng was instrumental in developing the strains as part of his PhD research and generating

product efficacy data in addition to liaising with NAFDAC. Lawrence Kaptoge worked on the product manufacturing part (lack of manufacturing capacity was the main reason for a 2-year delay in product registration) and constructed the

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He further noted that aflatoxin was a silent killer with Kenya being the only country in the world where many lives had been lost due to the toxin, and therefore it needed to be tackled to ensure the region was food secure.

“Aflasafe KE01 is now available as a sustainable solution for making food safe. The biopesticide has been able to reduce aflatoxin contamination by up to 90% and in areas such as Makeni, Hola, and Bura where the maize was found to have more than 100 times the acceptable levels of aflatoxins by up to 99%,” he said.

KALRO through its Acting Deputy Director General, Joseph Mureithi, promised to run the two facilities professionally not only for the benefit of Kenya but for the whole region and to also build the capacity of the staff in the region through the laboratory.

The construction of the regional mycotoxins laboratory was supported by the World Bank which rehabilitated an existing building at the Katumani center while the equipment was provided by USAID through the Aflatoxin Policy and Program for East Africa (APPEAR) project, and USDA-ARS. It will be used for surveillance and monitoring of aflatoxin contamination as well as for developing biocontrol agents for



Koskei unveils the plaque after officially opening the regional mycotoxin laboratory.

aflatoxin management in Kenya and the Eastern African region at large. The total investment for this laboratory facility amounted to US\$170,000.

Aflasafe KE01, on the other hand, was developed in partnership with KALRO, IITA, USDA-ARS, AATF, ACIDI/VOCA and the National Irrigation Board (NIB). The partners are also behind the

construction of the modular plant which will cost \$800,000 and which will produce the biopesticide for the region. Currently the plant will be run by KALRO with technical backstopping from IITA but it is hoped it will eventually attract the private sector for wide-scale production and distribution of the product. Its construction is expected to take 12 months.

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aflasafe factory in IITA. Debo Akande and Joseph continue to be instrumental in scaling out and demonstrating product value. Several NAFDAC officials served as partners rather than regulators and guided us through the process of product registration. Peter Cotty of USDA-ARS and Michael Braverman of the IR-4 project at Rutgers University provided guidance during the initial stages of product registration. They deserve much appreciation for their dedication, hard work, commitment and patience,” he said.

Several Nigerian public and private sector agencies collaborated in aflasafe™ development and testing. Key among them are the Commercial Agriculture Development Project (CADP) of Nigeria’s Agriculture Ministry, Doreo Partners, University of Ibadan and Federal University of Agriculture, (Abeokuta), University of Bonn Germany and Kaduna Agricultural Development Program (KADP). Numerous smallholder farmers in Kano and Kaduna States cooperated enthusiastically in product testing. Aflasafe™ development was funded by the Bill & Melinda Gates Foundation, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, USAID,

CADP, African Agriculture Technology Foundation (AATF), and the Mycored Project of the European Commission. Dr Bandyopadhyay also expressed gratitude to IITA management for its support and guidance that led to this landmark

acceptance and approval of aflasafe™ by the Nigerian government through NAFDAC. Nigeria now is the first country in the world outside the United States to register a biopesticide for addressing aflatoxins in crops.



NAFDAC officials Idayat Mudashir and Beno Nyam discussing aflasafe efficacy trials with Ranajit Bandyopadhyay during inspection in Kaduna State.

Africa RISING holds second program learning event in Arusha

Partners implementing activities in all Africa RISING countries converged in Arusha this week, 11-12 November, for the second program-wide learning event. More than 65 scientists working on various projects within the program attended the meeting where the main focus was on sharing lessons and experiences among the projects on how to deal with the issue of diversity and farm typologies.

Speaking during the opening of the meeting, Dr Kenton Dashiell, IITA's Deputy Director General for Partnerships and Capacity Development, said that the 2-day meeting was a useful practice for ensuring that Africa RISING effectively used lessons from the project partners to improve implementation at both the program and project levels.

Other issues discussed included updating the program framework document and



DDG Ken Dashiell at the learning event in Tanzania.

innovation systems theory and practice across Africa RISING projects. Dr Bekunda Mateete, the Chief Scientist for

Africa RISING East and Southern Africa, noted at the end of the meeting, "The need for all partners involved in different projects to streamline their messages is for me a significant lesson from this meeting. This is important, considering that we have a lot of diversity within the projects and across the program,"

Dr Asamoah Larbi, the Chief Scientist for Africa RISING West Africa, said the interactions were useful in helping the West Africa project to 'borrow' some ideas from other project teams on how to make the R4D platforms work better. "Interactions with colleagues have been very enriching. As a member of the West Africa project team, I would say that we need to change how we structure our R4D platforms in Mali. We also plan to better document the activities implanted by the platforms in Ghana and Mali."

YIIFSWA hosts workshop on using the novel high ratio propagation technologies

To promote novel technologies on high ratio propagation of seed yam, YIIFSWA hosted a three-day workshop on operational procedures and business plans for efficient production of pre-basic and basic seed tubers.

The training aims to share knowledge and build capacity of YIIFSWA partners for using novel mass propagation technologies (aeroponics and temporary immersion bioreactor, TIB) for producing high quality seed yam.

Participants came from Crop Research Institute (CRI), Savanna Agricultural Research Institute (SARI), Grains and Legumes Development Board (GLDB), National Root Crop Research Institute

(NRCRI), National Agricultural Seed Council (NASC), National Center for Genetic Resources and Biotechnology (NACGRAB), Biocrops Biotechnology Ltd—institutes and private corporations from Ghana and Nigeria with a mandate on seed production.

In his opening talk, Dr. Robert Asiedu, R4D Director for West Africa, reiterated the challenges in yam development and the promotion of its research findings within the last 30 years. The miniset technology, for a while seemed to be the only achievement on yam research, he said. While it was a crucial technology at the time, it made little impact despite immense promotion of the technique,

in that farmers were slow in embracing the technology due to the rigidity of the technique communicated to them, he further added.

He expressed his enthusiasm for the new era in yam development, indicating that yam could now be compared with other crops due to the novel technologies (aeroponics and TIB) for mass propagation of seed yam. Farmers no longer need to produce their seed which are often of poor quality due to deterioration from pests and diseases but will be able to buy them in the near future depending on the interest of seed producers. He urged participants to pay close attention to the business case presented to them during the course of the workshop, and to understand the processes and cost implications to effectively establish and use the facilities for profit.

Dr Morufat Balogun, Tissue Culture Specialist for YIIFSWA and facilitator at the program, stated that with the introduction of these technologies into the system, she hopes to see more partners engaged in contributing to the development of human capacity and the technologies as well as participating in seed yam business.

Scientists under the YIIFSWA initiative developed these protocols (first of its kind on yam) for high ratio production of high quality seed yam as part of efforts towards establishing a sustainable seed system which means more quality seed yam produced and commercialized in the shortest time possible.



YIIFSWA Project Manager Norbert Maroya explains about aeroponics to workshop participants.

SARD-SC cassava value chain team meets to assess achievements and develop work plans and budgets

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While welcoming participants from all

SARD-SC cassava value chain countries as well as partners from NARS and other stakeholders, Dr Chrys Akem, the Project Coordinator, proposed an innovation platform (IP) training for the implementation team for a common understanding of how IPs should be run. He also highlighted the achievements of the wheat value chain with the release of a number of high-yielding cultivars in different wheat hubs. He encouraged the engagement of youth groups in IP activities, especially those that could result in a quick impact for the project.

The various team members, led by the Commodity Specialist, Dr Marie Yomeni, made presentations which were followed by both group and open discussions to review the chain's achievements in 2014. They also developed work plans and budgets and procurement plans for 2015 and reviewed output indicators to be considered during the mid-term review evaluations.

The meeting was attended by Country Coordinators; project Field Fellows, NARS partners, other stakeholders, and implementing partners from Tanzania.



A cross-section of participants at the cassava planning meeting held in Tanzania.

IITA R4D team visit projects in Northern Nigeria

An R4D Team toured project sites and ongoing activities in northern Nigeria, in September. This is an annual event which allows IITA scientists, management representatives, and R4D partners to interact, learn what others are doing, and make suggestions that can accelerate the implementation of activities and subsequently improve livelihoods for farmers. The team was composed of Dr Robert Asiedu, R4D Director for West Africa, and IITA scientists and research associates who are conducting R4D activities in northern Nigeria. The team visited locations in Kano and Kaduna States and the Federal Capital Territory.

After addressing staff at IITA Kano station and inspecting the building project and research activities, the team moved to Minjibr research farm. The team saw ongoing activities in cowpea breeding, cropping systems and seed production, soybean rhizobiology, and maize-legume cropping practices. The team observed maize breeding trials for drought, low nitrogen tolerance, and resistance to *Striga* at Bagauda community in Bebeji Local Government Area (LGA), and integrated trials for *Striga* management at Tudun Wada LGA.

The team interacted with a partner seed company (Maina Seeds Ltd) which produces seeds of *Striga* resistant maize and cowpea varieties and soybean for

farmers in northern Nigeria. In Kaduna State, the team visited the Shika research farm in Zaria showing maize-legume cropping systems, soybean rhizobiology, cowpea breeding, evaluation of maize hybrids and production technologies, and cassava adaptation trials; also effect of non-responsive soils on maize and soybean productivity.

The team paid a courtesy visit to the Institute of Agricultural Research (IAR) of Ahmadu Bello University. IITA and IAR work very closely together on many partnership projects in northern Nigeria. In southern Kaduna, the team visited on-farm activities showcasing community seed production of *Striga* resistant maize, soybean, and cowpea, and trials showing maize-legume cropping systems and soybean rhizobiology. In the FCT, the group observed R4D activities at the Abuja research station. In addition, the team visited farmers' fields at Kuje LGA.

Dr Asiedu also presided at the hand over ceremony of the yam aeroponics system to Biocrops Biotechnology Co. Ltd. in Abuja city. This is a public-private sector partnership between the YIIFSWA project and the Agency for Science and Technology, Federal Ministry of Education, Nigeria. The R4D activities in northern Nigeria cover a wide range of projects being implemented in partnership with the private sector, Ministry of

Agriculture, universities, research institutes, NGOs, and community based organizations.



Maize field infested with *Striga*.