

New project launched to address impacts of climate change and variability in cocoa-based farming systems

In Ghana, the world's second largest exporter of cocoa, a significant impact on smallholder farming in the cocoa belt has been projected from the trend in climate change and variability. To forestall this, CGIAR through its global Climate Change, Agriculture and Food Security (CCAFS) research program, recently launched an initiative which uses "Climate-smart Agriculture" (CSA) to respond to farmers' needs.

CSA includes many of the authentic measures that form the backbone of sustainable agriculture. It is also capable of reducing greenhouse gas emissions from farming and helping farmers, the Government, companies, and NGOs to understand the risks posed by climate change and manage them better, thus becoming more resilient.

This new CCAFS project focuses on mainstreaming CSA in cocoa-based farming systems through applied climate science, certified supply chains, and impact investing. Specific attention will be given to ways in which public and private actors can collaborate to promote whole-system adaptation that is viable over the medium to long term and includes the rural poor, particularly vulnerable groups. The project uses existing value chain interventions with smallholder coffee and cocoa systems in Africa and Latin America as model cases.

It will translate climate science into adaptable strategies for farmers and supporting actors including industry, certifiers, and investors. This novel combination adds value to existing work with the goal of achieving widespread adoption for locally relevant CSA practices.

The project aims to do the following.

- Assess the climate change exposure of cocoa systems at a subnational scale,
- Develop appropriate CSA practices



Cocoa farmers sorting the cocoa pods.

with farmers incorporating cash crops and food crops to increase the resilience of these systems, and

- Codify these practices in adaptation guidelines. These guidelines will be made available through existing curricula for certification training and used to develop innovative impact investment products that will help to finance and increase the adoption of adaptation strategies.

To achieve the expected results the project will be implemented by preeminent actors in agricultural climate science: International Center for Tropical Agriculture and IITA, using also voluntary certification (Rainforest Alliance), impact investing (Root Capital), and sustainable agricultural systems (the Sustainable Food Lab).

As a first step to start work, the project team on 13 May convened the first in a series of multi-stakeholder platform meetings with key actors from the cocoa sector in Ghana. The workshop also

provided the opportunity to map existing activities of stakeholders and assess how the project could add value to ongoing work in Ghana through partnerships with actors such as COCOBOD, CRIG, trading houses, and producers' organizations. The outcome of this first workshop are the seeds for a sweet collaboration that will help Ghanaian cocoa farmers to increase their resilience to climate change and keep consumers happy with chocolate for many more years to come.

Sources: <http://dapa.ciat.cgiar.org/ghana-workshop-on-climate-smart-cocoa-a-success/>

<http://dapa.ciat.cgiar.org/building-climate-resilient-cocoa-value-chains-in-ghana/>



Senegalese stakeholders adopt “Aflasafe SN01” in national strategy to revive groundnut exports

Senegal has a population of over 6 million people predominantly producing groundnut each year. The [restrictions](#) placed on the export of the crop to Europe, the traditional trade partner, have significantly hurt potential earnings as Senegalese groundnut could not comply with the stringent aflatoxin standard of 4 parts per billion. The situation brightened when China, with a less stringent aflatoxin standard, [began](#) to source groundnut from Senegal and became one of the country's biggest markets.

However, hope turned into despair when the Chinese Government also banned procurement from Senegal due to an alarming abundance of [aflatoxins](#) in the imported crop. In spite of the effort to produce large quantities of groundnut to earn more income, the produce rotted in the hands of farmers who were unable to dispose of it because of aflatoxin contamination.

Dr Lamine Senghor is a member of the Aflasafe team leading the project in Senegal and working with the national Plant Protection Directorate (DPV). “In the past,” he explains, “the Chinese Government had sent businessmen to Senegal to purchase groundnut for export. The delegates ended up by rejecting many container loads because of high levels of contamination. Some

exporters tried to find other entry points through Thailand and were sent to prison.”

This situation has, however, been brought under control to such an extent that the Chinese Government signed a memorandum of understanding on 3 September 2014 to accept groundnut from the region. This feat was achieved in a short time through several initiatives, including the use of IITA's biocontrol product [Aflasafe](#) SN01.

In 2010, and for the first time in the country, the DPV in collaboration with IITA led an initiative to introduce a new biological control method to reduce aflatoxin. The biocontrol product Aflasafe SN01 contains native *Aspergillus flavus* strains incapable of producing aflatoxin. It was developed by [IITA](#), the [University of Thies](#), and the United States Department of Agriculture – Agricultural Research Service.

“The results obtained in the groundnut basin during the last five years in hundreds of farmers' fields are encouraging, translating to a reduction of aflatoxin levels in treated fields by almost 90% compared with controls.” According to the government's statistical reports Senegal had an increase of 84% in the volume of the country's export of groundnut in 2014; this can partially be linked to the trust that international

markets are now building for Senegal's “Aflasafe-grown” groundnut. Consequently, stakeholders in the national workshop organized in Dakar on 4-5 March to discuss Sanitary and Phytosanitary Measures in the context of liberalization of exports of groundnut have pledged to support the production and dissemination of Aflasafe SN01 for solving the problems linked to aflatoxin and food safety.

The forum also recommended Aflasafe SN01 for large-scale use in the country as “the only technology integrated with good agricultural practices that has effectively lowered the level of aflatoxins on groundnut as witnessed by the farmers and exporters that have used it,” Senghor reported.

The product is now being mass produced at the Aflasafe manufacturing plant at IITA in Nigeria and distributed by the private sector company [SODEFITEX](#) to farmers in Senegal. Further discussions will take place between SODEFITEX, DPV, and IITA about manufacturing Aflasafe locally to make the product more affordable and readily available while maintaining product quality.

Aflatoxin biocontrol work in Senegal is funded by the [United States Department of Agriculture – Foreign Agricultural Service](#).



The Senegal groundnut stakeholder team with the Chinese Ambassador in Senegal during the meeting on 14 and 15 April to chart the way forward for reviving groundnut export to China as a follow-up of the agreement signed on 3 September 2014.

“How Aflasafe transformed the ‘lives’ of Burkinabé farmers”

Every season, farmers assume the responsibility for providing food for the world’s population. They do this amid various challenges related to pests and diseases, soil infertility, low yield, drought, lack of credit, and many others. The situation is worse for African farmers, since many are smallholders, resource-poor, and have no formal education. IITA and partners in the last 47 years have been providing solutions through groundbreaking research that ease the stress on the farmers. One such solution is Aflasafe.

Aflasafe is a natural biological control product that can reduce aflatoxin contamination in crops by up to 99%. Aflatoxins are poisons primarily produced by the fungus *Aspergillus flavus*. They are harmful to humans and livestock and known to cause liver cancer, stunted growth in children, and in extreme cases, death. Maize and groundnut are the crops most susceptible to contamination. This problem is widespread throughout sub-Saharan Africa, restricting farmers from selling their produce in the international markets unless they can meet stringent standards. Many African farmers rely on these crops for the income they need for their sustenance.

The use of Aflasafe was first piloted in Nigeria in 2009 and has since been extended to Kenya, Senegal, The Gambia, Burkina Faso, and Zambia. Product development is under way for Ghana, Tanzania, Mozambique, Malawi, and Uganda.

Two years ago, a team of scientists from IITA and Institut de l’Environnement et de Recherches Agricoles (INERA) selected 300 farmers from four regions in Burkina Faso as models for piloting Aflasafe in the country. The tide is changing for many of these farmers who have adopted the use of the biocontrol product to grow their crops.

Namoro Arzouma, 38, a farmer from Yallé village, Sissili province, Midwest region, Burkina Faso, is the president of 20,000 farmers in the Fédération Nian Zwé (FNZ).



“When I first heard that

aflatoxins could kill, I was startled, fearing for my life, because I have always consumed the bad grains from my farm. I also thought of the lives of others who eat the produce from my field. Through the training I received, I learned better farm management and processing practices,” Namoro said. “The harvest from my field gave me so much income because the maize cobs were by far healthier and better than the previous years. I will continue to use Aflasafe.”

Encouraged by the good results, Namoro is committed to work with all African farmers to eliminate the scourge of aflatoxin from the continent. He is also using his influence as a leader to train many farmers within his network and encourage government investment in making Aflasafe available to farmers at reduced prices. Namoro and 10 other farmers from FNZ were trained by INERA and together, they have directly reached more than 2,000 farmers in one year alone.

Mrs Djama Dadioari, 47, is a farmer from Central region, Ouagadougou.



“I call it (Aflasafe) the miracle product. Before, I was unable to export my produce because of very high contamination levels. Thanks to INERA and IITA, I have learned that good management practices are essential even after producing with Aflasafe. With this, I carefully sorted my grain and was able to export some maize grain this year and also sold some to big companies. I have made so much profit just by putting extra efforts to carefully sort my maize grain,” she said.

Many organizations, research institutions, and universities worked collaboratively in the Aflasafe project in Burkina Faso. These are INERA, IITA, the United States Department of Agriculture – Agricultural Research Service (USDA-ARS), [Vienna University of Technology](#), and several farmers’ organizations. The work in Burkina Faso was funded by the [Austrian Development Cooperation](#) and [USDA-Foreign Agricultural Service](#).

Events

Training Workshop on Management and Analyses of ISFM data, IITA Ibadan Nigeria, 25–29 May
Participants: Representatives of the five Soil Health Consortia from Ghana, Burkina Faso, Mali, Niger, and Nigeria

AfricaYam Inaugural Workshop, Mensvic Hotel, Accra, Ghana, 26–29 May

[Africa RISING Program Coordination Team retreat, Washington D.C., USA, 2–5 June](#)

Annual Review and Planning Meeting - Africa RISING, NAFKA and TUBORESHA CHAKULA Scaling Project, Dar-es-Salaam, Tanzania, 8–10 July

[Africa RISING ESA Project Annual Review and Planning Meeting, Mangochi, Malawi, 14–16 July](#)

Africa RISING ESA Project Steering Committee Meeting, Mangochi, Malawi, 16 July

Tropentag 2015, Humboldt Universitaet zu Berlin, Berlin, Germany, 17–19 September

First World Congress on Root and Tuber Crops, Nanning, Guangxi province, southern China, 5–10 October

The 7th International Conference of the African Soil Science Society Announcement of Special Program: Soil Fertility Management for

IITA to host AWARD Women’s Leadership Program in June 2015

IITA is collaborating with African Women in Agricultural Research and Development (AWARD) in hosting the [AWARD Women’s Leadership and Management](#) course to be held in IITA, Ibadan, Nigeria in June.

IITA warmly invites participants from partner organizations, colleagues, and other interested parties. Reservation deadline is 5 June 2015. Click <http://bit.ly/1Cd7Iz8> to view details on how to apply.



IITA holds aflatoxin awareness and Aflasafe stakeholder consultative workshop in Zambia

Last 28 April, about 90 representatives from various sectors of society engaged in the area of food and crop safety and health converged at the Radisson Blu Hotel in Lusaka, Zambia, for a consultative workshop on aflatoxin awareness and [Aflasafe](#). The workshop participants were drawn from about 55 institutions and organizations working with [IITA](#) on aflatoxin and Aflasafe research in Zambia. The workshop was organized by the [Zambia Agricultural Research Institute \(ZARI\)](#), [National Institute for Scientific and Industrial Research \(NISIR\)](#), IITA, and the [United States Department of Agriculture – Agricultural Research Service \(USDA-ARS\)](#).

Dr Juliet Akello, a Postdoctoral Fellow and project manager of IITA's aflatoxin and Aflasafe research in the country, said that the workshop was primarily aimed at creating awareness among the general public on the dangers posed by aflatoxins on humans and livestock.

"We also intended to share practical control methods such as the aflatoxin biocontrol product Aflasafe, developed by IITA and partners, as well as other efforts that the Zambian Government has put in place to manage and mitigate the occurrence and effects of aflatoxin in food crops. Additionally, we also wanted to explore ways to make sure that Zambian farmers get their hands on Aflasafe," she added.

The guest of honor, Honorable Given Lubinda, Minister for [Agriculture and Livestock \(MAL\)](#), in a speech read on his behalf by Mr Moses Mwale, Director

of ZARI, indicated that aflatoxin was a significant challenge to producing safe crops in the field and stores and putting safe foods on the plates of Zambians.

"In Zambia, aflatoxin is not adequately and appropriately controlled or regulated as most foodstuffs are produced and consumed locally with limited or no testing by the relevant regulatory authorities," he said "As a result, millions of people may be consuming high and unsafe levels of aflatoxin through their diets on a daily basis." He noted that the presence of aflatoxin levels above acceptable international standards led to the restriction of Zambian groundnut exports to the European Union market; therefore, control was needed to achieve greater agricultural development, food security, and improved health in the country.

"I recognize and commend the critical role being played by IITA and other cooperating partners such as ZARI and NISIR in dealing with the scourge of aflatoxin in Zambia, particularly in the development and deployment of the biocontrol product Aflasafe. My Ministry and I will follow the progress of your work in this area with keen interest," Minister Lubinda emphasized.

The Minister also cited the support given by the donor community in aflatoxin research, particularly that of the [USAID](#) which is funding a project on controlling aflatoxins in maize and groundnut in farmers' fields under its Zambia [Feed-the-Future](#) Research & Development Program. The German donor [GIZ](#) is also providing funds to

develop a business plan and pathway for the commercialization of Aflasafe.

At the workshop, Dr Akello highlighted the importance of aflatoxin in Zambia. Dr Peter Cotty of USDA-ARS discussed the principles of biocontrol and its status in the United States. Dr Ranajit Bandyopadhyay of IITA highlighted Aflasafe development in other Africa countries as well as Zambia. The participants also learned about the successful adoption of Aflasafe in Kenya from Dr Raphael Wanjogu of the [National Irrigation Board](#), and in Nigeria from Ms Faridah Ibrahim of [Doreo Partners](#). A lively discussion ensued afterwards.

Based on deliberations by the participants during the workshop, the following were recommended as next steps in managing aflatoxin in Zambia: (1) further capacity development is needed for extension workers on aflatoxin management; (2) more awareness activities should be carried out across the country to educate more people on the harmful effects of aflatoxin in food and crops; (3) Aflasafe should be deployed as widely as possible among farmers, with the Government taking the lead and ownership similar to the way it was done in Kenya; (4) sustainable programs for aflatoxin mitigation must be put in place at the farm level: this would also need policy support from decision-makers; and (5) the official registration of Aflasafe should be expedited so that Zambian farmers would have full access to it, with ZARI leading this effort.



Group photo of the participants and organizers of the IITA aflatoxin and Aflasafe consultative workshop held in Lusaka, Zambia.

Stakeholders in Tanzania commend progress made in developing Aflasafe

Key stakeholders drawn from agricultural research and regulatory bodies of the Tanzanian government have lauded the efforts made so far by IITA and partners in developing a natural, safe, and cost-effective biological control product to contain [aflatoxin](#)—the deadly cancer-causing chemical in some of the country's staple crops.

This was at the end of a two-day meeting organized by IITA to create awareness and bring the stakeholders up to date on the development of a local version of the biocontrol product Aflasafe for Tanzania, and to get their support and cooperation.

Aflatoxin is produced by *Aspergillus flavus*, a fungus that is found naturally in soil and infects grains such as maize and nuts such as groundnut, while in the field and in storage.

Fortunately not all strains of *Aspergillus flavus* produce aflatoxin. Aflasafe is made up of these nontoxic strains which are able to outcompete, displace, and significantly reduce the population of their toxic relatives in the field and in storage.

The first day of the meeting took place at the [IITA-EA hub in Dar es Salaam](#), Tanzania, where participants were warmly welcomed by Edward Kanju on behalf of Victor Manyong, the Hub Director. They were then briefed on the progress made to date in the development of Aflasafe in Tanzania. They also toured the pathology laboratory and saw demonstrations of the process involved in the development of the biocontrol product and to test for aflatoxin.

The second day was a field visit to Kilosa District, Central Tanzania, to sites where



Participants of the stakeholders meeting in a group photo in Kilosa in the field. They are holding the biocontrol product being tested.

two experimental strain mixtures were being tested in the field. First, the team made a courtesy call on the Kilosa District Commissioner, Mr Eliya Tarimo, who was very happy to hear of the initiated trials in Kilosa to deal with the deadly poison that affects groundnut—his favorite food—and maize, a major staple crop in the region. He assured the team of his support for Kilosa to become an aflatoxin-free zone. They then proceeded to the field to see the application of the experimental strain mixtures in the field and the sporulation of some of the experimental products that had been applied earlier.

According to George Mahuku, IITA Plant Pathologist, the biocontrol technology was developed in the United States, where it is being used successfully, and IITA and partners including the [United States Department of Agriculture - Agricultural Research Service \(USDA-ARS\)](#) have adapted it for use in many African countries, under the aflasafe trademark. These countries include Nigeria where a large-scale manufacturing plant to produce aflasafe™ has been constructed at IITA in Ibadan, and in Kenya, where the construction of such a modular plant is about to begin after the ground-breaking ceremony held in October 2014

"In Tanzania we have also made a lot of progress as we now have identified eight isolates of the nontoxic *Aspergillus flavus* which have been used to make two experimental strain mixtures (each with four isolates) and we have started

their field testing after receiving all the necessary approval," he said. "We will then identify the most effective ones to package into the biocontrol solution."

Beatrice Pallangyo, a Senior Research Officer at the National Biocontrol Program at the [Ministry of Agriculture, Food Security and Cooperatives](#), said she was very happy with the progress made in the development of the biocontrol agent which she said was a safe and effective way to deal with the deadly aflatoxins.

She assured the stakeholders that all the necessary steps had been taken and will be taken in ensuring that the product was safe for the people.

"We cannot find a solution to one problem by introducing another," she said.

Overall, the meeting was deemed a success and the stakeholders were very happy and very positive about the prospects of an aflatoxin biocontrol. They agreed to have another meeting once the results from the field trials were available—around October and November.

The meeting was held on 7–8 May and was attended by nearly 30 participants from different regulatory bodies of the Tanzanian government, including the [Tanzania Bureau of Standards, \(TBS\)](#), the [Tanzania Food and Drug Administration \(TFDA\)](#), the [Tanzania Pest Research Institute \(TPRI\)](#), the Ministry of Agriculture, and [Sokoine University of Agriculture](#).



A farmer demonstrates how to apply aflasafe in the field

Africa RISING program cross-learning visit to Ethiopia: Key lessons

Scientists implementing activities on landscape and watershed management in the IITA-led Africa RISING projects recently took part in a cross-learning visit to the Ethiopian highlands. The visit took place on 19 to 24 April and was organized by the Africa RISING project coordination office at IITA in Ibadan.

The objective was to provide the scientists with an opportunity to share experiences with colleagues from Ethiopia on the effective establishment of land and watershed management research trials and interventions. Eleven scientists from other CGIAR centers, Government Directorates and non-governmental organizations from Zambia, Malawi, Tanzania, Ghana, and Mali took part in the learning visit.

The participants also visited the sites of the ILRI-led Africa RISING Ethiopia project in Warena and Lemo Districts. Below are three key lessons learned by scientists. A report of the trip can be downloaded at http://africa-rising.wikispaces.com/AR_WA-ESA+Learning+Trip+to+Ethiopia.

Festo Ngulu, Consultant Agronomist, IITA

Seeing is believing: Farmers learned so much from fellow farmers through exchange visits organized by the Africa RISING Ethiopia Project. It is important to let farmers draw from the experiences of fellow farmers and complement their own ingenuity in implementing agricultural interventions.



Davide Kadyampakeni, Researcher-Agriculture Water Management, IWMI

Interventions should be demand-driven:

Farmers expressed interest in the interventions before Africa RISING mobilized support to help them. Thus, a demand-driven intervention will ensure that farmers own it and share it with one another. This makes scaling up and out very easy to achieve within the short span of the project.

Kennedy Ng'ang'a, GIS and Remote Sensing Analyst, CIAT



Close collaboration and genuine partnership is critical: The Africa RISING team in Ethiopia enjoys strong and close partnerships with other CGIAR centers ([CIMMYT](#), [CIP](#), [ICRISAT](#), [CIAT](#), [IWMI](#) and [IFPRI](#)), universities, agricultural research institutes, Government district and Kebele (village) agricultural officials. This is important in ensuring that the interventions introduced to the communities are sustainable in the long term.



Tractor demo in IITA

Honda Company recently developed a portable, simple, efficient, and cost-effective hand-driven compact tractor to simplify tillage for smallholder farmers and stopped at IITA this week to demonstrate the operation of the machine on the field. The labor-saving device is light-weight and can be adopted for use on all soil types and for all staple crops.

Many IITA scientists are now exploring the possibility of encouraging farmers to adopt this technology, through the conduct of the same demonstration on their fields.

Dr Kanako Suzuki, IITA Cowpea Breeder, is hoping to test this compact tractor with cowpea farmers in Fashola village, Oyo State, later this year.

Got a story to share? Please email it with photos and captions every Wednesday to Andrea Gros (a.gros@cgiar.org), 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).

Multi-stakeholder partnership launched to support soybean sector development in Tanzania

An innovation platform was launched last week in Dar es Salaam, Tanzania. The platform brings together all the stakeholders along the soybean value chain from farmers to government and nongovernmental organizations and the private sector to address the challenges facing soybean sector development in Tanzania.

The platform was launched by Dr Jackson Nkuba, Assistant Director of Research and Development of the [Ministry of Agriculture, Food Security and Cooperatives \(MAFC\)](#) on behalf of Ms Sophia Kaduma, the Permanent Secretary, MAFC at the end of a two-day meeting of the stakeholders in the soybean subsector held 13–14 May.

Dr Nkuba noted that soybean production in Tanzania had been increasing steadily over the years with the current production estimated at 5000 tonnes. “The Government’s soybean sector strategy,” he said, “plans to increase this production to 2 million tonnes by 2020.”

However, he noted that, even though the demand for soybean had increased, producers often failed to meet market demand owing to a lack of

access to inputs such as good seeds, inoculants, and fertilizers; finance and markets; and smallholder farmers’ lack of knowledge and the skills of modern farming methods.

“To address these obstacles we need to coordinate the efforts of all the different actors and development partners to have tangible and quick results. I am therefore pleased to see the formation of this innovation platform to promote the development of the soybean sector in Tanzania. I am also very pleased to be chosen as its patron,” said Dr Nkuba after reading the message from the Permanent Secretary.

The idea of forming a platform was initiated in December 2013 at the launching of the [Catholic Relief Services \(CRS\) Soya ni Pesa](#) Project, funded by the [United States Department of Agriculture \(USDA\)](#) and implemented in Ruvuma, Njombe, and Morogoro regions.

“CRS is very pleased to see the launching of this platform and will continue to support it and the development of the soybean sector in Tanzania,” Ruth Junkin, the CRS representative, said during the event.

[Frederick Bajjukya](#), an agronomist with IITA, noted that soybean had real potential to make a difference in the livelihoods and nutrition of smallholder farmers in Tanzania. “Soybean can be processed in the home into food products which can improve the nutrition and in turn the health of the communities and, in particular, the children. Soybean is also a source of cash for farmers and can also improve soils through fixing nitrogen in the soils.”

The platform will enhance soybean production in the country by facilitating learning and information sharing among all the actors along the soybean value chain, improving coordination of interventions, and linking different actors. This in turn will lead to the proper utilization of available and emerging opportunities.

The Soybean Innovation Platform is a joint effort by CRS, IITA, Agriculture Ministry, the [Rural Urban Development Initiative \(RUDI\)](#), Kijenge Animal Products, [TANFEED International](#), CARITAS Njombe and Songea, Women & Poverty Alleviation in Tanzania (WOPATA), [MUVEK](#), the [Clinton Development Initiative \(CDI\)](#), [Seed Co](#), and the [Postal Bank of Tanzania](#).



Group photo of soybean stakeholders in Tanzania who attended the meeting.