



No free lunch: IITA efforts in supporting smallholder farmers to invest in their soils

Since [Dr Nteranya Sanginga](#) took over as IITA Director General in 2011, research on soils has been one of the areas that was strengthened.

He rightly pointed out that while IITA had done an excellent job in developing new, improved, high-yielding varieties of major crops, tackling deadly pests and diseases, and adding value to increase farmers' income, all these efforts would not achieve their full potential and Africa would not be able to achieve its goal of feeding itself if the soils were neglected.

This has also been the theme of many of his talks. For example, while giving a keynote address at the [Global Cassava Partnership](#) (GCP) meeting in Kampala in 2012, Dr Sanginga said the push for a "Green Revolution" in Africa to increase agricultural production for food and economic development would not bear much fruit unless adequate attention was paid to managing soil fertility in the continent.

"Africa cannot achieve a Green Revolution without first having a "Brown Revolution", he said, (referring to the improvement of soil conditions through the application of organic and inorganic fertilizers).

One of the things he did therefore was to set up a new research theme at IITA on natural resources management led by [Dr Bernard Vanlauwe](#) with research on soils as one of the major areas of focus. Furthermore, it is embedded in the Institute's refreshed strategy which, in addition to lifting 11 million people out of poverty, also seeks to contribute to redirecting 7.5 million hectares of degraded lands to sustainable use.

Therefore, on *World Day to Combat Desertification* it is a good time to look at some of the ongoing soil research at the



A farmer examines beans at a demonstration field of the N2Africa project which is encouraging farmers to grow legumes such as groundnuts to improve the soils, nutrition, and increase income of small-holder farmers.

Institute. The theme is "No such thing as a free lunch. Invest in healthy soils" .

Supporting national soil health platforms in West Africa

IITA is implementing an [initiative](#) that is facilitating the wider uptake of better adapted integrated soil fertility management (ISFM) practices in Nigeria, Ghana, Burkina Faso, Mali, and Niger to enhance the food security and income of rural households.

ISFM is defined as "the application of soil fertility management practices, and the knowledge to adapt these to local conditions, which optimize fertilizer and organic resource use efficiency and crop productivity". It offers farmers better returns on investment in fertilizer as it combines indigenous agro-minerals and available organic resources.

The project is supporting the Country-level Soil Health Consortia (CSHC), established by the Alliance for a Green Revolution (AGRA) in these countries, to make them effective in the identification, evaluation, and delivery of best ISFM practices, targeted to specific biophysical and farmers' resource endowment conditions.

Saving farmers from fake commercial products

[The Commercial Products \(COMPROII\)](#) project, now in its second phase, aims to improve the crop yields of smallholder farmers in sub-Saharan Africa through identifying and promoting the adoption of effective agricultural commercial products by smallholder farmers on the one hand, and on the other, working with regulatory authorities to put in place effective laws and regulations for these agro-inputs to control dubious products entering the markets. The project currently covers Ethiopia, Kenya, Tanzania, and Uganda in East Africa, and Ghana and Nigeria in West Africa.

The first phase of the project screened over 1000 commercial agricultural products, including microbial inoculants, biofertilizers and biopesticides in Kenya, Nigeria, and Ethiopia, and found that only a few of them were able to enhance yields—these included *Rhizobium* inoculants for legumes, mycorrhizal inoculants for banana, and seed coating of maize. COMPRO-II is leveraging on the gains made in Phase I, which covered Kenya, Ethiopia, and Nigeria.

Tapping into legumes' nitrogen fixation ability to boost soil fertility

[The project Putting Nitrogen-fixation to work for smallholder farmers \(N2Africa\)](#), now in its second phase, is a large-scale, science-based "research-in-development" project that seeks to tap

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into the potential of legumes to improve soil fertility through their ability to fix nitrogen and to improve the nutrition of rural farming households as well as their income. It is working through public-private partnerships to boost the production of legumes such as beans, cowpea, and groundnut by improving access of smallholder farmers in Africa to effective production technologies, improved varieties, inoculants, and fertilizers. In Phase I, the project

reached more than 230,000 farmers who evaluated and used improved grain legume varieties, rhizobium inoculants, and phosphate-based fertilizers in DR Congo, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Tanzania, Uganda, and Zimbabwe. Phase II builds on these successes.

The project was one of the three winners of the [Harvesting Nutrition Contest](#) established by the [World Bank](#) for its

efforts in scaling out technologies that promote better nutrition by promoting legume production among smallholder farmers in sub-Saharan Africa. The project stood out as a large-scale multi-country project, working with many partners and therefore able to reach many smallholder farmers. Its efforts to enhance agricultural productivity through the cultivation of legumes contribute to improving the nutritional security of the household, directly and/or indirectly.

Project to increase banana production in East and Central Africa launched

A five-year project was launched on 20 May in Kampala, Uganda. It seeks to support ongoing national breeding efforts to deliver high-yielding, disease-resistant, and superior cooking banana to increase the food security and incomes of smallholder farmers in the Great Lakes region.

The project is funded by the [Bill & Melinda Gates Foundation](#) and led by IITA in collaboration with the Ugandan and the Agricultural Research Institute of Tanzania. It was launched by the Hon. Maj. Bright Rwamirama, Uganda's State Minister for Animal Industry, who represented the Minister for Agriculture, Animal Industry and Fisheries.

It will focus on developing superior varieties of two popular groups of cooking banana, the East African Highland banana, locally known as *matooke* in Uganda, and the *mchare* in Tanzania.

Speaking at the event, Maj. Rwamirama said the new varieties would help in improving food security and the livelihoods of the smallholder farmers in the region.

Dr Ambrose Agona, Director General of the [National Agricultural Research Organization \(NARO\)](#), noted that the project would support breeding efforts to develop varieties able to withstand the current major challenges affecting production, including pests and diseases.

"Within the next four to five years we will have varieties in the market that are high yielding, with big bunch sizes and good quality fruit. They will be good for home consumption and for domestic and international markets," he said.

The IITA team at the event was led by [Dr Ylva Hillbur](#), the Deputy Director General for Research, [Prof Rony Swennen](#), IITA Banana Breeder /University of KU Leuven, and [Dr Brita Jensen](#), Project Leader and Senior Scientist.



DDG-Research Ylva Hillbur (third from left) with IITA staff, project partners, and collaborators after the project launch.

"Conventional breeding of new improved varieties is complicated; it takes a long time but the farmers do not have the luxury of waiting. The crop is under serious threat from major pests and diseases. The project will help the national breeding programs in Uganda and Tanzania to use advanced technologies for more efficient and faster breeding," explains Prof Swennen.

The project builds on the successes of the many years of joint collaboration between the [banana breeding efforts](#) of NARO and IITA that led to the development of 25 hybrids for food and juice called [NARITA hybrids](#). These are currently undergoing performance trials in Uganda.

In collaboration with [Bioversity International](#) and national partners in Uganda and Tanzania the project will also support the on-farm testing of these hybrids in the two

countries, including participatory variety selection with farmers and other consumers to ensure that the new hybrids meet their preferences and needs.

The project is part of the [CGIAR Research Program on Roots, Tubers and Bananas](#). Other partners include six universities ([University of Malaya](#), [SLU-Sweden](#), [Stellenbosch University-South Africa](#), [Cornell University-USA](#), [KU Leuven-Belgium](#), and the [University of Queensland-Australia](#)), and national breeding programs of the Brazilian Agricultural Research Corporation ([EMBRAPA](#)) and the [National Research Centre for Banana \(NRCB\)](#) of India.

See the video on the event at <https://www.youtube.com/watch?v=LfjcCpczQGg&feature=youtu.be> and <https://www.youtube.com/watch?v=itLamVMpmlA&feature=youtu.be>.

AVEC-BF holds cowpea fair and stakeholders' meeting in Burkina Faso

The National Agriculture Institute of Burkina Faso (INERA) organized a Cowpea Fair and Crop Fair at their headquarters in Ouagadougou, 5-7 June.

The AVEC-BF project displayed IT99K-573-2-1 (local name Yiis-yande) and IT98K-205-8 (local name Niizwe) for various stakeholders, such as seed producers, traders, and wholesalers.

The project also held a stakeholders' meeting with 78 participants, including the INERA Director, the Director of National Seed Service, seed distribution NGOs, and many marketers and seed producers, to strengthen the cowpea value chain in the country.

Dr [Haruki Ishikawa](#) of AVEC-BF said, "It was very interesting and presented good opportunities for linkages between the national seed service and the private sector. Participants not only talked about each other's problems, they also discussed solutions. Finally, we can consider the whole cowpea value chain, and share a lot of information."



Visitors learn about the various cowpea varieties at the fair.

The AVEC-BF project was designed to establish the rapid dissemination of suitable cowpea varieties in the region by capturing the requirements of farmers using farm participatory selection and introducing

packages of improved management practices with improved varieties. The project is funded by the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan.

Partnership between IITA and WAAPP gets stronger

In 2014, the West African Agricultural Productivity Project (WAAPP) under the leadership of Prof Damian Chikwendu chose to sponsor three projects in IITA. These are Production of High Quality Seed Yam Tubers to Enhance Yam Productivity in Nigeria; Production and Dissemination of Breeder, Foundation, and Certified Seeds of Improved Cassava Varieties in Nigeria; and Maize Breeder and Foundation Seed Production and Dissemination. A team of World Bank consultants under WAAPP visited the IITA Abuja Station last November to evaluate the performance of the 2013/2014 projects.

The visitors were amazed at the high rate of success of the three projects. After receiving a positive evaluation report from the consultants, the Coordinator of

WAAPP-Nigeria showed greater interest in continuing the ongoing projects on these three commodities and trying to explore new areas.

To facilitate this plan, Prof Chikwendu called for an interactive session which took place 2 March in IITA Abuja. The 11-man WAAPP team, led by the professor, met with six IITA scientists/researchers from Ibadan and Abuja. The WAAPP delegation included the dynamic Agricultural Innovation Platform (AIP), also known as the Cassava Platform, which is based in Umuahia (Abia State). Reports on the three ongoing projects on cassava, maize, and yam were made and new initiatives on soils, Aflasafe, and aeroponics were presented. It was gratifying to note that WAAPP bought all our products and urged scientists to submit

proposals between March and August 2015. Prof Chikwendu also reminded IITA about an earlier request for a proposal on the extension of the IITA Youth model to the West African region.

More recently, the WAAPP National Coordinator made a follow-up visit to IITA Abuja in early May, this time bringing with him the WAAPP World Bank representative, Dr Sheu Salau, and members of WAAPP-Nigeria. Also included in the team were representatives from the Federal Ministries of Finance and Agriculture. Presentations were made on the cassava project, yam and potato aeroponics, the maize project and climate change, and the Youth program on agribusiness. The visitors were highly impressed and the team obviously had a very high expectation.

The WAAPP team was pleased to know that the beneficiaries from the State ADPs (Agricultural Development Projects) and ARCN had been collecting seed yam. The list for maize distribution has been forwarded to IITA and the ADP beneficiaries of this improved germplasm have started to collect the seeds. The foundation/certified planting material for cassava will be distributed to farmers and the ADPs as recommended by WAAPP. From all indications, WAAPP is very eager to work with IITA. The collaboration is giving IITA the opportunity for its technologies to get to the consumers/farmers via the national extension outlets.



Dr Gbassey Tarawali (rightmost) shows visitors from WAAPP around the IITA facility in Abuja.

Yam farmers give YIFSWA an acre of land

Yam farmers of Agunrege community, Oyo State in Nigeria provided the IITA YIFSWA project an acre of land for a demonstration of seed production of various yam varieties (in particular, white yam) using the minisett technique. Devoted yam farmers of the community congregated at the lead farmer's house and received training on the minisett technique on 5-6 June.

Last year, [YIFSWA](#) established a small demonstration plot as part of promoting the minisett technique and vine cuttings, and encouraging seed yam production using these techniques. Although the demo plot was established late in the season, farmers were encouraged by the performance of the setts and requested further demonstration in their community.

Success Pelemo Olugboyega is a PhD student supported by YIFSWA. He explains: "The demo plot was set up with yam farmers in the community

to explore the minisett technique for the production of seed yam for various varieties". "These are IITA improved varieties TDr 89/02665, TDr 89/02475, TDr 95/18544, TDr 95/19177, TDa 00/00194, and TDa 98/1176, as well as TDa 291(a landrace). Amula and Pona which are popular market varieties were added for comparison. The trial will also establish which sett size (10 g, 30 g, and 50 g) produces seed tubers of the desired size for each variety."

For Rashidat, a female farmer, the [minisett](#) technique demonstration came at the right time for the community. "Drought is a major concern," she said. "I planted 2000 heaps of yam but only 200 germinated." When asked about why the rest didn't germinate she explained that the rains came late so the seed yam rotted away in the mounds.

Alhaji Mukaila Olomitutu explained that their community was a yam-growing

area but because of drought and low productivity, farmers are now growing small quantities or had abandoned yam farming for other crops such as cassava, watermelon, and soybean.

Despite its low productivity, yam is still significant in this farming community. Victoria, also a yam farmer, said yam was a source of nutrition of most farm households. Farmers no longer planted white yam (*Dioscorea rotundata*) but either planted water yam (*D. alata*) that is poundable or bought yam to feed their households.

A trainer had encouraged farmers to use whole seed tubers for ware yam production instead of cutting ware yam into setts. "When water isn't sufficient, used yam setts are susceptible to abiotic stresses such as drought; that's why you see setts caking and rotting in the mounds. Whole tubers do better in such conditions."



Pelemo Olugboyega (far left) and farmers of Agunrege community, Oyo.

Events

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 Sustainable Intensification in West and Central Africa, Ouagadougou, Burkina Faso, 25 October – 1 November

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