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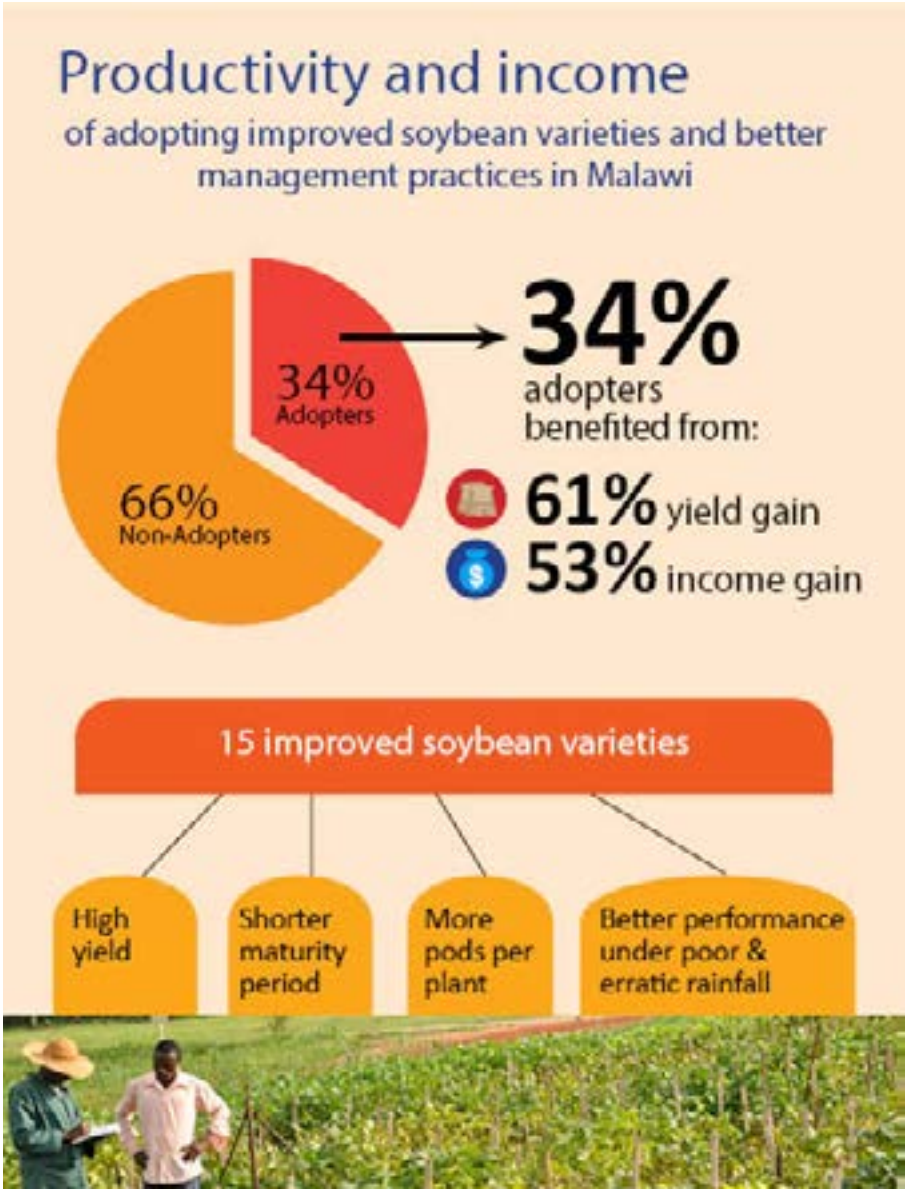
Improved soybean varieties increase farmers' incomes by 53%, study shows

Without doubt, maize is the giant of all food crops in Malawi. However, most smallholder farmers often intercrop maize with soybean, thus making it an equally important crop. Soybean enhances soil fertility by using its natural ability to fix nitrogen in the soil.



Infographic showing productivity and income effects.

Farmers in Malawi generally harvest about 9.8 t/ha of soybean, which is far below the African average of 12.4 t/ha and global average 27.6 t/ha (FAO 2017). This low production is mainly due to the low adoption of improved varieties, poor quality seed, and continued use of traditional production technologies.

To improve production, national and international researchers have bred and released new soybean varieties. In the last 19 years, over 15 improved varieties have been released. These varieties have high yields and a shorter maturity period, produce more pods per plant, and perform better under poor and erratic rainfall. Better agronomic practices such as the right planting dates, close row spacing that can smother weeds, and correct and timely application of phosphorus fertilizers have also been popularized through projects such as "Putting Nitrogen Fixation to Work for Smallholder Farmers in Africa (N2Africa)" and "Malawi Improved Seed System and Technology (MISST)". IITA led these projects along with partners that include the Government of Malawi, NGOs, and community-based enterprises.

Despite improved varieties and new management practices being released, no one knew whether farmers were adopting them or not. Scientists led by IITA's Adane Hirpa Tufa conducted a study to find out if these new varieties and management practices were being adopted, and if so, what changes farmers were experiencing.

"We studied 1,237 farmers on 1,465 plots and found that over a third of sampled farmers adopted the new varieties and practices, which resulted in a 61% yield gain and 53% income gain," Tufa said.

The study results, which have been published in a peer-reviewed journal article titled "The productivity and income effects of adoption of

improved soybean varieties and agronomic practices in Malawi," show that adopters are younger, more educated, and have larger, cultivated land. Adopters also tend to be members of a farmers' organization, participate in seed markets, and have access to extension services. This implies that adoption is greatly influenced by access to information.

Although it is now proven that adoption of improved seed varieties and agronomic practices can improve farmers' incomes, it is unfortunate that very few have access to this information. Tufa called for more awareness saying, "With only 34% of the sampled farmers being adopters, more awareness is needed if more farmers are to benefit from improved technologies."

Inspecting a field of improved soybean variety.

IITA trains tutors on climate smart agriculture for sustainable food security in Tanzania

IITA-Tanzania, as part of the Building Capacity for Resilient Food Security Project, trained 33 tutors from agricultural training institutes across 14 regions in Tanzania on Climate Smart Agriculture (CSA) technologies and practices for the various agroecological zones.

The training is part of the project's objective to build the country's capacity to effectively respond to the challenges climate change poses to the agriculture sector. The training took place in September in Morogoro, Tanzania.

The objective of the training was to ensure that tutors are well equipped with the necessary CSA knowledge, skills, and practice, and in turn make sure that all agricultural extension graduates are knowledgeable in CSA practices and know how to apply them in different regions and production systems.

During the training, participants were taken through CSA terminologies, practices, and technologies; Agroforestry and livestock management; Crop management and irrigation; Agrometeorological and demo plots establishment; Nutrition-sensitive issues; and Gender issues and practices.

Field visit

After four days of presentations, discussions, and experience sharing, participants had the opportunity to visit two demonstration sites at Sokoine University of Agriculture (SUA) and Nane Nane exhibition grounds in Morogoro to learn and observe different CSA techniques and technologies.

At SUA's Model Training Farm, some of the technologies and techniques demonstrated include conservation agriculture, drip irrigation, water harvesting, soil management, crop management, and land use.

At the World Agroforestry Center (ICRAF) site at the Nane Nane exhibition grounds, the tutors learned intercropping of maize and Gliricidia as well as Chololo pits as CSA practices.

"Through the training, we wanted to give tutors knowledge and skills to implement CSA. Their willingness to adopt and use the materials makes us believe that they will be able to transfer knowledge and skills acquired to their students," said Bahati Maregeri, IITA Assistant Project Manager.

Participants' reflection on the training

The field visits impressed the participants as they observed the effectiveness of CSA practices and technologies. They promised to teach their students who will in turn educate the farmers for replication to ensure food security.

"The training was very useful because we learned the theory of how different CSA practices work and we also had the opportunity to see them in practice at the two sites we visited," said Saumu Ali, an Assistant Lecturer at School of Agriculture (SOA) of the State University of Zanzibar (SUZA).

She added that the training increased her knowledge on CSA especially the Chololo pits, which to her is a new practice. "I have also learned a lot about irrigation practices like drip irrigation, dams for storing water, rainwater harvest, and water holding structures. I will teach my students these practices so that after graduating they can educate farmers on how to apply them

Participants engaged in group discussions.

and produce more crops. We are fortunate that we have demonstration sites in Zanzibar that we can also use for practical purposes."

Stanslaus Maganga, a tutor at LITA Mpwapwa, Dodoma Region, said the training taught him good animal feeding techniques, which could also be useful for environmental conservation.

"In livestock keeping, we have a challenge of shortage of water and grass for feeding animals. But the techniques I learned from this training, such as rainwater harvesting, free range, paddock grazing, deferred grazing, and using improved variety of pasture seed could help address these challenges. Students need to know these techniques so that they will impart the knowledge to the pastoralists after graduating. It is also important for pastoralists to know how poor pastoral activities can affect food production and cause malnutrition in the society."

Alpha Mtakwa explaining about banana farming and water drainage systems at SUA Model Training Farm.

The project

Building Capacity for Resilient Food Security Project is an initiative of the Government of Tanzania in partnership with USDA, funded by USAID. In the project, IITA is working with the World Agroforestry Centre (ICRAF) and the United Nations Food and Agriculture Organization (FAO) to enhance various identified capacities geared towards building agricultural resilience and food security.

CBN and IITA explore areas of synergy to boost cassava production in Nigeria

In an effort to improve cassava productivity and value addition activities in Nigeria, representatives from the Central Bank of Nigeria (CBN) visited IITA Ibadan on 25 September to explore possible avenues of collaboration, especially in facilitating finance for farmers. Achieving more efficiency in the sector promises to increase incomes of the value chain actors.

IITA Deputy Director General, Partnerships for Delivery (DDG-P4D), Kenton Dashiell, received the team led by the Head of the Agriculture Credit Support Division of the CBN, Kayode Oluwole. In his welcome address, Dashiell gave a brief summary of IITA's history and current activities.

In his remarks, Oluwole emphasized the need for financial interventions to encourage cassava farmers to change production techniques and create access to clean seed. He said, "We observed that the yield in cassava production in Nigeria is poor despite the fact that we are the largest producer, and from what we have learnt, this is as a result of the vigor of the cutting, as well as the agronomy practices. There is, therefore, the need to make clean cuttings of high vigor available to small-scale farmers and assist them through loans given to groups."

Oluwole also said CBN considers collaboration with IITA in identifying large-scale cassava processors and creating a supply chain through the creation of clusters of smallholder farmers that will be financed. He said that in multiplication and production of vigorous cassava cultivars, IITA's expertise will definitely be of great use.

The reception team from IITA included the BASICS Project Director, Hemant Nitturkar and ACAI Project Principal Investigator, Sustainable Weed Management Technologies for Cassava Systems in Nigeria, Prof Friday Ekeleme. Other team members present were Cassava Peel Technologist, Iheanacho Okike; IITA Postharvest Engineer, Thierno Diallo; BASICS Project M&E Officer, David Obisesan; Cassava Seed System Specialist, Mercy Diebiru-Ojo; and RTB Project Officer, Richard Ofei.

CBN team with IITA staff.

CIALCA organizes ICT4Ag workshop to build capacity of staff and partners

The Consortium for Improving Agriculture-based Livelihoods in Central Africa (CIALCA) organized a two-day course on the use of digital tools in agriculture research. This is part of CIALCA's efforts to build the capacity of national scientists and practitioners on innovative digital technologies, to empower research and decision-making to facilitate sustainable agri-food system transformation.

Twenty CIALCA scientists, researchers, PhD students, and partners from Burundi, DR Congo, and Rwanda attended the course in Bujumbura, Burundi.

Participants were provided with the basic skills required for using Open Data Kit (ODK), a digital tool for developing customizable data collection forms to collect data from the field. They also learned how digital tools are revolutionizing agricultural practices and research and how CIALCA is harnessing them for its research. The CIALCA scientists and researchers shared their experience on how to develop easy-to-use forms for field trials (simulating CIALCA's Nutrient Omission Trials) and household data collection (simulating CIALCA's extensive household surveying).

Participants were given the opportunity to apply ODK in the real world, in situations that they might find themselves, like scanning barcodes to assign fields in trials and performing household surveys.

With assistance from colleagues and trainers, participants also applied the skills learned to develop their own data collection forms.

Willy Désiré Emera, CIALCA PhD student from Ghent University, said that the training has helped to improve his knowledge on setting the tools depending on the type of research, data collection, sending the collected data to the server, and retrieving the data collected in the Excel format.

"The skills gained from the workshop will help me collect and manipulate data. It's a good tool that will save time and money," he added.

Workshop participants 'in the field' practicing using ODK software on their smartphones for NOTs trials and household surveys.

Events

1st Aflasafe for Africa Conference, Arusha, Tanzania, 4-5 November
Food Security Synthesis Caravan Conference, IITA headquarters, 5 November
International Plant Protection Congress (IPPC) 2019, Hyderabad, India,10-14 November
5th Nutritious Food Fair, IITA headquarters, 13-15 November
Board Meeting and R4D Week, IITA headquarters, 18–22 November

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