Fifty technologies in five years – Feed the Future, MISST project shares outcomes in Malawi

Over 245,000 households reached 14,500 MT of seed produced, over 50 technologies developed – these are some of the highlights presented on the completion of the Feed the Future – Malawi Improved Seed Systems and Technologies (FtF MISST) project. At the national project completion workshop in June 2019, key stakeholders discussed the milestones of the FtF MISST. Other key results included improvement in productivity-gross margins and yield for groundnuts at US$ 352/ha and soybean at US$ 357/ha.

Representatives from government ministries, development partners, public, private, research and local bodies discussed the achievements of the project over 4.5 years. The workshop aimed to unveil the commercial potential of the technologies that FtF-MISST developed and promoted and their relevance in the agriculture, trade and health sectors of Malawi. It also aimed to disseminate the results to existing and potential stakeholders and identify critical implementation and investment gaps and knowledge questions to inform the implementation of investments in the country. The gathering evaluated steps to be taken to continue efforts for seed systems delivery, besides strengthening partnerships for bridging post FtF MISST delivery at scale to benefit small and marginal farmers.

The guest of honor, Dr Alexander Bulilani, Controller of Agriculture and Extension services in the Ministry of Agriculture, Irrigation and Water Development, Malawi, commended the project, emphasizing the need for similar initiatives to increase production, productivity and delivery of quality seed to smallholder farmers of Malawi.

Dr Patrick Okori, ICRISAT Malawi Country Representative and FtF MISST Advisor, highlighted the commitment of USAID in investing in seed production and delivery, strengthening partnerships, developing technologies, capacities to produce; monitor and deliver quality seed, planting material and allied production technologies. He also thanked MISST staff for their contribution to helping vulnerable communities. Mr Cullen Hughes, USAID Malawi Director of Socio-economic growth, said the country is ready to spearhead innovative programs to strengthen economic resilience and the socio-economic status of smallholder farmers.

FtF MISST was a CGIAR-led consortium, comprising partnerships between CGIAR centers ICRISAT, IITA, CIMMYT and CIP, the Department of Agricultural Research Services, the Department of Agricultural Extension Services, local government, the Seed Traders Association of Malawi, agro-dealer networks, private sector, civil sector and farmer and community organizations. FtF-MISST was implemented in 10 districts.

Project: Feed the Future Malawi Improved Seed Systems and Technologies (FtF MISST)
Donor: USAID
Partners: ICRISAT, CIP, CIMMYT, IITA, DARS, DAES
Leveraging a multi-level community model for better nutrition in Malawi

The Government of Malawi is working with ICRISAT, CIAT and the Malawi Seed Industry Development Project (MSIDP II) to increase the utilization of legumes and cereals as a means of reducing malnutrition and stunting in women, children and other vulnerable groups in the country. Over 7500 farmers have so far obtained training on processing and consumption of these foods since the start of MSIDP II in 2016.

Adopting a multi-institutional approach, the Nutrition division of the Ministry of Agriculture, Irrigation and Water Development (MOAIWD) is enlisting the existing infrastructure – Nutrition Coordinating Committees at the national, district, area and village levels along with the other institutions. In six districts – Dedza, Ntchisi, Mchinji, Lilongwe, Mzimba and Balaka – interventions are carried out through a ‘care group’ model involving community leaders in a ‘trickle-down’ methodology.

Smallholder farmers, organized into clusters of 10–15 members, are led by cluster leaders selected from within the communities. These leaders receive training regarding the importance of balanced meals with six food groups (grains, meat, fruits, vegetables, oils and legumes) and how to prepare them using dryland cereals and legumes that are part of MSIDP II. They then pass on their learning to the farmers in their group.

According to the latest Integrated Household Survey (IHS4) report released in 2018, over 35% of Malawians are malnourished. To tackle this issue, MSIDP II has intensified efforts to enhance consumption of agricultural produce among the local populace, with a focus on food processing and utilization.

Working in collaboration with government nutrition officers, the Project conducts demonstrations of cooking nutritious recipes made with legumes, cereals and other locally grown produce. Also, farmers are educated about the negative effects of aflatoxin on their health and finances, and trained to prevent aflatoxin contamination before, during and after harvest of their farm produce.

About 7% of households in the project’s target areas are already practicing aflatoxin mitigation strategies being promoted by the project. A total of 7557 smallholder farmers have benefited from these interventions already, with many more poised to learn and teach others, expanding the circle of information and awareness about health and nutrition.

Project: Malawi Seed Industry Development Project (MSIDP II)
Partners: ICRISAT, CIAT, Legume Development Trust (LDT), Department of Agricultural Research (DARS)
Donor: Irish Aid
How over 500 women in south India built sustainable livelihoods in face of drought

**POWERGRID-ICRISAT project in Karnataka empowers through integrated watershed management**

Farm-dependent households in Ukkali now have an added source of income, thanks to the village’s enterprising women who availed of the POWER GRID-ICRISAT watershed project.

Underway in the northern Karnataka village, the watershed project ‘Improving rural livelihoods through farmer-centric integrated watershed management’ has been empowering women through skills-based trainings since 2014. Over 500 women who have never been provided opportunities, are now self-sustainable through tailoring, computer skills and small enterprises.

Over the past many years, crop failures due to perennial drought in Vijayapura district, where the village is located, forced families to migrate for work. However, the POWERGRID-ICRISAT watershed project has helped farmers retain water in water harvesting farm ponds, masonry check dams, well recharge pits and percolation tanks. As these initiatives help agriculture in the village bounce back, empowering women is helping hasten household financial recovery.

“The CSR activities we took up under the guidance of ICRISAT has not only helped farmers but also the women in the village, where skill development, education and training has accrued benefits to the community,” said Mr D R Murty, General Manager (HR), POWERGRID, Southern Region Transmission System-II, Bengaluru.

**Entrepreneurship to the rescue**

Recognizing the scale of efforts required to empower women, the project is supporting entrepreneurship to amplify livelihood opportunities. A revolving fund provides to enterprising women the necessary seed capital to set up their stores or start a venture from their homes. Ms Kalavathi, for instance, received a loan of ₹30,000 from her SHG group through the watershed program. She set up a bangle store and turned it profitable. Selling bangles alone, she nets a profit of ₹6,000 every month. Likewise, Ms Hameeda set up a store to sell snacks and stationery from the ₹10,000 she received.

Others like Ms Muktha Bai, who had no source of income until 2018, started making jowar (sorghum) rotis (traditional Indian bread) at home for sale in hotels, weddings and other events. Severe drought in the region forced her to take up this activity as the family was running out of savings. She now sells about 5,000 rotis a month.

“I turned a food entrepreneur while at home with just ₹3,000 to start making papad (crispy rice foods) for 4 months in a year. I now sell 1,000 packets per month for a profit of ₹5000,” Ms Yamunakka, another beneficiary, said.

A few amplified their farm activities with the financial support they received. Ms Shankaravva Kothanapur took up goat rearing with ₹30,000 assistance and manages to turn in a profit of ₹25,000 a year selling them.

**Bhagyashree has been playing the key role of a computer trainer and has trained 2 batches of more than 25 students in basic computer skills.**
Investing in the future

Ms Bhagyashree, a computer trainer, has made more than 25 students computer literate. The computer training initiative of the POWERGRID-ICRISAT watershed program aims to impart skills to enhance employability of young women.

“Through the computer training program, I learnt basic computer operations, typing, use of word processing and basic image editing and printing. Now, I want to enroll for an advanced course that will help me secure a well-paying job,” Ms Gangambika, a pre-university student, said.

In some, the computer training program instilled entrepreneurship. Ms Pallavi Hiremath wants to use her skills in word processing, image editing and printing at her own computer center that provides specialized documentation services and internet access.

Tailor-made initiative

Ms Nagamma Kalmath, the master tailor in the village, has trained 430 women under the program. She has helped the women learn stitching, designing and customizing outfits. One of the beneficiaries, Ms Bharathi, learnt designing ethnic outfits for weddings and established a cloth store that now earns her about ₹5,000 per month, covering the education of her children and ensuring savings for the family.

Ms Ashwini, another beneficiary, has gained employment at a local garment center after learning tailoring. Besides a regular income, she also devotes time at home tailoring to augment her income.

“Apart from providing inputs to farmers in Ukkali through water harvesting structures, micronutrients etc., we have strived to benefit families by empowering the women. Trainings in tailoring, computer education and income generating activities like goat rearing and vermicomposting have helped families through the extra income generated by the women,” said Dr Sreenath Dixit, Head, ICRISAT Development Center.
Partnerships

Zimbabwe’s First Lady emphasizes crop research during visit to ICRISAT

Looking to pull rural communities out of poverty through millets and sorghum, Zimbabwe’s First Lady, Ms Amai Auxillia Mnangagwa, visited ICRISAT’s Matopos Research Station. Ms Mnangagwa emphasized research and the need for focus on climate smart crops that have high nutrition qualities to improve food and nutrition security.

The visit was part of a review of the small grains sector. She was accompanied on the visit by Mr Cdes Abednico Ncube and Ms Judith Ncube, Provincial Ministers for Matabeleland South and Bulawayo respectively, as well as the Small Grains Producers Association (SGPA) president Mr Basil Nyabadza.

ICRISAT and SGPA are partners in revamping a market-led production for food security, nutrition security and rural empowerment at village level. The event “Revamping small grains for food, nutrition and income security”, was attended by service chiefs, government officials, church representatives, farmers, research partners, traditional leaders and officials from ICRISAT, Distributed Power Africa (DPA), Cassava Smartech and Cold Storage Company (CSC).

The First Lady said prioritizing research will greatly impact households. “At least 70 percent of our farmers are either communal or small scale and they are affected badly by climate change. Food and nutrition security are vital for development,” she said, noting that her office was following up on the roadmap to implement a positive outcome in producing small grains to empower small scale farmers and increase nutrition levels in villages.

The identified focus crops include sorghum, millet, rapoko, groundnuts, sunflower, sugar beans, garlic, ginger and pepper. Under livestock, the program targets goats, sheep and cattle.

Dr Moses Siambi, ICRISAT’s Research Program Director for Eastern and Southern Africa, said the institute serves a number of vital functions in support of the research fraternity in the South African Development Community region and beyond. He thanked the Zimbabwe Government for supporting the institution as it had fostered research which continued to impact the lives of many farmers in the region.

Highlighting that malnutrition was a big threat to development of African countries, he said ICRISAT was looking for support to create awareness about the high nutrient and health value of millets and sorghum. Minister Ncube emphasized that there was a need for farmers to shift to drought-tolerant crops to strengthen resilience of smallholder farming systems to droughts.

First Lady of Zimbabwe, Ms Amai Auxillia Mnangagwa, in conversation with Mr Basil Nyabadza, President of Small Grains Producers’ Association. Also in picture is Dr Moses Siambi.
The Department of Agriculture Research (DAR), Myanmar, has enhanced its partnership with ICRISAT for close collaboration in agriculture research, with a focus on grain legumes and Smart Food (consumer and industry) approaches with millets, sorghum and legumes.

The key points of this agreement point to future strategies including:
- Modernizing Myanmar's pulse breeding programs, by sharing technologies for:
  - Molecular breeding
  - Rapid generation turnover
  - Breeding management system
- Researching crop product profiles to develop cultivars with new/enhanced traits preferred by farmers, consumers and the industry.
- Ideating approaches to enhance adoption of improved cultivars and of production technologies.
- Developing a Smart Food program specifically for pigeonpea, millets and sorghum
- Exploring market analytics for pulses.

Mr U Naing Kyi Win, Director General, DAR and Dr Peter Carberry, Director General, ICRISAT, signed a Memorandum of Understanding on 11 June 2019 at DAR in Nay Pyi Taw, Myanmar.

The association between ICRISAT and DAR, Myanmar, goes way back to 1976. It was strengthened by the participation of scientists from Myanmar in the Cereals and Legumes Asia Network (CLAN) led by ICRISAT. The first MoU between the two entities was signed in 1986. Dr Carberry said, “Ours is a strong, long-standing association. Some of the senior staff here at DAR are ICRISAT alumni; they did their PhD research at ICRISAT.”

Over the last 40 years, ICRISAT has worked with DAR to modernize Myanmar’s crop improvement programs, increasing genetic gains and enhancing operational efficiency. From extra-large seeded kabuli chickpeas and early-maturing pigeonpea, high-oleic groundnut to biofortified sorghum, crops with several beneficial traits were developed and promoted. Moreover, effective seed production and distribution systems were set up. Domestic consumer market potential for pigeonpea and millets was tested in Myanmar last year under the Smart Food initiative. Sensory evaluations in the selected rural communities showed all recipes scored on average of above 4 out of 5, including eating little millet as rice.

“With the signing of the new MoU, we are hopeful that working together and collaborating on knowledge sharing for crop improvement, production and adoption can improve the lives of smallholder farmers of Myanmar as well as encourage more people to adopt Smart Food,” Dr Carberry concluded.

For Dr Pooran Gaur’s presentation at DAR click here.
Towards better impact for the AVISA project – partners meet to chart pan-African communication activities

Three days of intense brainstorming helped chart out the communication activities for the AVISA project, that works across seven African countries. Launched in Feb 2019, the AVISA project funded by the Gates Foundation, works on the broad agenda of modernizing breeding and increasing incomes for smallholder farmers in Africa for six crops. Held in Nairobi during May 2019, the workshop on communications involved specialists from ICRISAT, CIAT, IITA and Syngenta Foundation. The project’s coordinator, Dr Chris Ojiewo and ICRISAT’s Global Head of Breeding, Jan Debaene, provided strategic insights into the communication workshop. A series of key strategic actions for better impact, were the key outcomes of this workshop.

The communications strategy is guided by four outputs from the AVISA project, focusing on:

- Increase of new communication tools and approaches to facilitate better adoption rates and build advocates from within the community and stakeholders for increased impact
- Effective advocacy and innovative communication approaches by project partners and other stakeholders
- Behavior change interventions to incentivize the choice of improved varieties in place of ‘informal sources’ among rural women users
- Client-oriented channels leveraged to create awareness and generate demand for good quality seed, and
- Effective communication of project progress, achievements and impact.

To standardize action points for partners, a detailed planning process took into account every communication aspect of AVISA to work in consistency. Key agenda items included branding and stakeholder communication, periodic engagement with partners on communications support and communicating impact. Discussions focused on the important role of the private sector in the implementation of the project, particularly seed companies and distributors. Identifying opportunities to work with key stakeholders, periodic review and participation from all partners and stakeholders were planned.

The agenda was supported by Dr Esther Njuguna-Mungai, a gender scientist from ICRISAT ESA, on communication models for behaviour change. Supporting online were Mr Satish Nagaraji on integrating MEASURE, Mr Vengala Reddy on branding, Mr Chandrashekara Srinivas and Mr Muralidhar Budumuru on repositories to provide insights.

Dr Moses Siambi, ICRISAT ESA Regional Director speaking on the final day, emphasized on the importance of communication expertise in any project and shared examples of putting more human resources and budgets into this as well.

Now live: The project website www.avisaproject.org. Check out key project activities by country (Nigeria, Burkina Faso, Mali, Uganda, Ghana and Ethiopia) and by crop (Sorghum, Pearl millet, Cowpea, Common bean and Groundnut).
A blueprint for South-South cooperation in agriculture

How lessons from India can invigorate African farming

India’s strides in agricultural science innovations can greatly benefit African nations, enhancing South-South collaboration between the two regions, said Dr Peter Carberry, Director General, ICRISAT, at the Foundation Day Lecture of the Indian National Academy of Agricultural Sciences on 5 June 2019.

Adopting an optimistic outlook towards the contribution of agricultural science to society, he said, “Significant agricultural productivity growth, diverse and nutritious food value chains and active rural community development have contributed greatly to India’s broader society and to its global reputation for innovation. Continued, targeted development has seen a significant reduction in the number of people living in extreme poverty in India, with this number likely to fall below 3% of the population by 2021.”

Dr Carberry listed three key innovations that could be successfully adapted in Africa:

- **Pearl millet production**: India can provide a pathway for identification and upscaling of pearl millet hybrids in sub-Saharan Africa. From a meager yield of 0.2 t/ha in the 1960s, to the present, average grain yields of about 1.2 t/ha with the help of hybrid seed technology and public-private sector partnership, the growth of pearl millet production is a success story that could be effectively reproduced in Africa.

- **Agricultural value chain development**: Favorable government policies and private sector investments have boosted agri-services and start-ups in food processing, input supplies, manufacturing and value chain operations in India. Africa could benefit similarly, especially with its large youth population and increasingly improved mobile telephony services.

- **Watershed management**: India’s considerably deep expertise in watershed management has benefited millions of farmers. The lessons learnt can be highly relevant to many African ecologies too, providing relief and opportunities to farmers.

Later, during a meeting with Mr Sanjay Agarwal, Agriculture Secretary, Government of India and Member, ICRISAT Governing Board, Dr Carberry, reiterated the sentiment that the CGIAR could play a critical role in bridging the two regions – India and Africa – by way of joint projects and initiatives by the Indian Council of Agricultural Research and other CGIAR Centers.

“I want to believe in the incredible adaptive capacity of humans and the power of science and innovation,” said Dr Carberry, emphasizing the message of ICRISAT’s mission statement – To reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics.
Reaffirming partnership with Osmania University

One of India’s top universities will collaborate with ICRISAT to inspire and achieve greater goals in research and development. Osmania University (OU), Hyderabad, signed a Memorandum of Understanding (MoU) with ICRISAT recently for partnership towards research in science, engineering, humanities, social science and more.

Some of the key objectives of this MoU are:

▪ To explore, design and implement research and extension projects with shared resources from both organizations
▪ To host doctoral students and researchers from OU at ICRISAT for cutting-edge training and access to facilities, fields and technology
▪ To build capacity of agricultural universities with technology developed by OU or ICRISAT.

Speaking about OU’s rich tradition of the spirit of enquiry, Prof S Ramachandram, Vice-Chancellor, OU, said, “OU recently celebrated its centenary. The legendary institution is among the top 10 universities in the country and is home to diverse spheres of study – from genetics and engineering to social sciences and arts.” He promised to facilitate greater opportunities for students wanting to register at OU for PhD and undergraduate studies.

Dr Peter Carberry, Director General, ICRISAT, said, “We’d be very happy and honored to host OU students and have our scientists supervise them for their PhD studies. Also, this MoU opens up greater possibilities for mutual collaboration between OU academicians and ICRISAT researchers.”

ICRISAT and OU have a history of cooperation; this MoU aims to extend that further. To date, about 30 PhD students registered at OU have been trained at ICRISAT where they carried out a major part of their research. As of now, there are 14 OU students working towards their PhD in ICRISAT.

This agreement, signed on 28 May 2019 at ICRISAT, Hyderabad, promises to pump new energy into various areas of research at ICRISAT as well as OU, to the mutual benefit of both.
High demand for climate info in farm planning

Climate-specific guidance is critical to crop planning ahead of monsoon this year for farmers of Hussainapuram and many other villages in Kurnool and Anantapur districts of Andhra Pradesh, India. To complement the seasonal climate forecast provided by the national agency India Meteorological Department (IMD) and produced by the Indian Institute of Tropical Meteorology (IITM) farmers are seeking additional assistance from ICRISAT scientists.

According to the farmers, such information is crucial for planning the season. It helps them decide how much area to prepare for cropping, what crops and varieties to opt for, what inputs need to be readied or on leasing additional land.

Since 2012, ICRISAT with support from the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and Sehgal Foundation and recently a major investment from the Ministry of Earth Sciences via the Monsoon Mission II initiative, has worked to understand how to assist farmers with climate information services.

Initially pioneered by ICRISAT’s late Mr V Nageswara Rao, pre-monsoon planning meetings have been highly valued by farmers across a dozen villages in both the aforementioned districts. Recognizing the need to scale the delivery of agro-advisories, scientists developed information and communications technology (ICT)-mediated systems, the sowing app and ISAT, in collaboration with Microsoft India (Link).

SMS messages at critical decision points in the season that integrate forecasts and farm systems information have been shown to help farmers make more climate smart decisions (link to Article). While farmers were well aware of the limitations of longer term forecasts, they were unanimous in requesting that such information comes to them regularly.

Mr Nazeer, a farmer with five acres of land and a further 13 acres on lease said: “Without regular updates on how the season looks, it is dangerous for us to invest. Let us have this information we will spread it through our own networks to other farmers.”

ICRISAT scientists have become major contributors to the Monsoon Mission II (MMII) programs of IITM in an effort to increase the usability of climate information. This is one of the areas that the All India Coordinated Research Project on Agrometeorology (AICRPAM) and ICRISAT joint project funded by MMII is planning to strengthen. Recognizing that climate forecasts must be interpreted along with information such as preceding rainfall, soil moisture, crop type and stage, agromet advisories can be designed to deliver context-specific and near-real time information.

Mr Rajendra Reddy, a farmer, said: ‘2018 was a disaster for us. Last year’s rainfall failed us in both the kharif and rabi seasons and we produced very little and suffered a lot.’ Another farmer in the village claimed that 2018 was the worst year since 1927 and the first time since, that drought affected their village. While forecasts won’t make it rain, it’s clear we must do better in communicating climate information to farmers.
Farmers in Tanzania urged to embrace drought tolerant crops

Against the backdrop of changing climatic conditions in Africa, scientists, administrators and seed enterprises have urged the farming community in Tanzania to adopt hardy crops like sorghum.

“Farmers, mainly those in low rainfall areas, can embrace sorghum which is tolerant to drought. This will ensure food security in the country and across the region, bringing economic development,” Mr John Palingo, Commissioner for Songwe Region in Tanzania’s Mobzi District, said during a farmers’ field day organized recently in Magamba.

According to the latest UN Food and Agriculture Organization’s annual Africa Regional Overview of Food Security and Nutrition Report, climate change is a growing threat to food security and nutrition in Africa, and a severe threat to the continent since its countries rely heavily on agriculture. The intensity of recurrent droughts in Eastern and Southern Africa (ESA) call for increased production of drought-resistant crops.

Mr Palingo appreciated the seed production initiatives of Tanzania’s Agricultural Seed Agency and ongoing efforts at the farm, where Dr Mary Mgonja, a scientist-turned-businesswoman, worked with partners including ICRISAT, African Agricultural Technology Foundation (AATF) and the government to produce basic and certified sorghum seed.

While discussing the sorghum market situation in Tanzania, Dr Mgonja noted that the sorghum seed market is not well developed for both export and domestic markets. This, according to her, discourages farmers from investing their income and energy in sorghum, which is now largely grown for household consumption.

She also attributed poor market conditions to lack of statistics to guide stakeholders in determining local production capacity vis-à-vis imported volumes. “This makes it hard to track and determine when seed importation can be reduced for seeds produced within the country to have a greater share of the market.”

Mr Baldwin Shuma, a seed specialist, Chief Executive Officer of Tanzania Seed Trade Association (TASTA), a partner in the project HOPE 2, noted that Tanzania has been a net importer of seed from other countries, but is now capable of exporting. This follows accreditation from International Union for the Protection of New Varieties of Plants (UPOV), Organization for Economic Co-operation and Development (OECD) and International Seed Testing Association (ISTA). “With necessary accreditation in place, seed companies can now increase production,” he said.

The visiting farmers were impressed by NACO Mtama 1, an improved sorghum variety from Dr Mgonja’s Namburi Seed Company. Peter Nyelanyela, a farmer from Mbozi, said that through training and provision of improved seeds for demonstrations, they have harvested 20-25 bags from 0.40 hectares as compared to 6-8 bags from past harvests of local varieties. The farmer also welcomed ICRISAT’s idea of product diversification saying it would empower the farming community economically.

Dr Henry Fred Ojulong, Senior Scientist – Breeding, ESA, mentioned that Namburi’s work is a good example of what indigenous seed companies can do. He further said, “ICRISAT encourages Participatory Variety Selection (PVS) whereby breeders bring together farmers, extension staff, seed companies, agro-dealers, processors and policy makers during variety development to select the best.”

Apart from breeding new varieties, ICRISAT is working with stakeholders in Tanzania’s Ministries of Agriculture and Health Services to ensure diversification in sorghum use for making biscuits, cakes and instant porridge. Household consumption of these products multiple times a day will increase per capita consumption of sorghum and boost the grain market.

**Project**: Harnessing Opportunities for Productivity Enhancement (HOPE) 2

**Partners**: Ethiopian Institute of Agricultural Research (EIAR); Regional Seed Enterprises-Amhara, Oromiya and Tigray (Ethiopia); DRD; TASTA (Tanzania); National Semi-Arid Resources Research Institute (NaSARRI); and Uganda Seed Trade Association (USTA); Environmental Institute for Agricultural Research - Burkina Faso (INERA); UGCPA; FEPAB; AGRODIA (Burkina Faso); IER; ULPC; UACT; AMEDD; Faso Kaba; CORPROSEM (Mali); IAR (Nigeria); UDUS; and State Seed Enterprises-Kano, Kebbi, Jigawa and Sokoto (Nigeria).

**Funder**: Bill & Melinda Gates Foundation

**CRP**: Grain Legumes and Drylands Cereals (GLDC)
Seeding entrepreneurship in groundnut farmers of south India

ICRISAT and PJTSAU partner to set up Seed Business Ventures in Telangana

Groundnut cultivation in Telangana, India, could soon make gigantic leaps of improvement as a recently-launched entrepreneurship initiative is set to amplify the reach of enhanced seed varieties.

“In Telangana, more than 85% of the total groundnut cultivation is in post-rainy season when seed demand is high and the formal seed system is unable to supply the desired quantity. Farmers are forced to source seeds from neighboring states,” Dr MV Nagesh Kumar, Professor, Professor Jayashankar Telangana State Agricultural University (PJTSAU), said. He pointed out that the seed production during rainy season is crucial to meet seed demand in a regular season in the state.

Groundnut farmers fail to adopt new crop varieties owing to seed non-availability, high seed rate, low seed multiplication ratio and inefficient storage reducing seed viability. To strengthen groundnut seed system, ICRISAT and PJTSAU began establishing Seed Business Ventures (SBV) by identifying farmers who can be seed entrepreneurs.

To help farmers transition to entrepreneurship, training programs are being conducted in quality groundnut seed production and marketing to achieve increased productivity and profitability from cultivation. New varieties like GJG 32 (ICGV 03043), a high-yielding and farmer preferred variety, are being introduced.

During a workshop conducted at ICRISAT in April, about 20 groundnut farmers from Gadwal and Nagarkurnool districts of Telangana participated. Based on knowledge and skills, resource availability and interest in seed production, farmers were selected for entrepreneurship.

Ten farmers were then selected for training by ICRISAT in groundnut seed business, making business plans and good management practices for quality seed production. The training program also trained farmers in post-harvest management. “As a result of the trainings, we expect the improved seed varieties to cover 100 hectares after the first round itself,” said Dr P Janila, ICRISAT’s Principal Groundnut Breeder.

Ms K Pramila, a participant in the program who owns 0.40 ha land in Shampalle village where she adopted groundnut farming, said, “I was not aware of the latest techniques in groundnut production before attending the training program. I can now produce seeds of high quality and sell them to other farmers, besides retaining some for my farm.”

**Project:** Enhancing groundnut productivity and profitability for smallholder farmers in Asia through varietal technologies.

**Donor:** OPEC Fund for International Development (OFID), CRP-GLDC.

**Partners:** Bangladesh, Myanmar, Vietnam, Laos and Sri Lanka.

**CRP:** Grain Legumes and Dryland Cereals (GLDC)
The global population is growing at an alarming rate and is projected to reach over 8 billion people by 2025. By the year 2040 it could hit 9 billion and by 2100 it could reach 11 billion. This, coupled with increased urbanization, consumerism and climate change could put tremendous pressure on the planet’s natural resource base. Our food and agricultural systems, in countless ways, depend on the plants, animals and micro-organisms that surround them.

Biodiversity, at every level from genetic, through species to ecosystem, underpins the capacity of farmers, livestock keepers, forest dwellers, fishermen and fish farmers to produce food and a range of other goods and services in a variety of different biophysical and socio-economic environments. It increases resilience to shocks and stresses, provides opportunities to adapt production systems to emerging challenges and is a key resource in efforts to increase output in a sustainable way.

It is vital to efforts to meet the Sustainable Development Goals (SDGs) of the 2030 Agenda, says the latest report by FAO on ‘The State of the World’s Biodiversity for Food and Agriculture’. Authored by 175 experts globally, the report comprehensively covers the role of Biodiversity for Food and Agriculture (BFA) in providing food and nutritional security to the global population, the drivers of change affecting it, levels of adoption of management practices and strategies that promote its sustainable use and contribute to its conservation, and the state of policies, institutions and capacities related to its management.

The key highlight of the report is the assessment of how biodiversity as a whole contributes to food and agriculture, including “associated biodiversity”, the myriad components of biodiversity that support food and agricultural production by providing services such as pollination, pest control, soil formation and maintenance, carbon sequestration, purification and regulation of water supplies, reduction of disaster threats, and the provision of habitat for other beneficial species.

The urgency of closing knowledge gaps in this field is underlined by mounting evidence that the world’s biodiversity is under severe threat and by ever-growing challenges facing food and agriculture, including particularly those related to the impacts of climate change. The publication of this report is therefore a significant and timely milestone.

The key characteristic of this report is its country-driven nature. As many as 91 countries prepared and submitted reports on the state of their biodiversity for food and agriculture and its management, focusing particularly on associated biodiversity and its role in the supply of supporting and regulating ecosystem services and on wild species that are sources of food. The reporting process provided an opportunity for countries to identify needs and priorities in terms of promoting the sustainable use and conservation of these resources, both at national level and internationally.

It is deeply concerning that in many production systems biodiversity is reported to be on the decline. The foundations of our food systems are being undermined, often, at least in part, because of the impact of management practices and land-use changes associated with food and agriculture. It is also abundantly clear that the state of knowledge of many components of biodiversity, including in particular invertebrates and micro-organisms, is very inadequate and that this contributes to their neglect.

The good news however, is that many management practices and approaches that rely on the maintenance of beneficial species.

Positive global developments include growing global awareness of threats to sustainability of food and agriculture, due to loss of biodiversity, and upward trends in adoption of various management practices that potentially contribute to the conservation and sustainable use of BFA. These developments need to be built upon by the global community. Knowledge gaps need to be filled, cooperation strengthened, including cross-sectorally and internationally, and financial, human and technical resources mobilized. Effective legal and policy frameworks need to be put in place.

This report authored by 175 global experts was released earlier this year.

Dr Ashok Kumar Are, Principal Scientist, ICRISAT, one of the authors of FAO’s ‘The State of the World’s Biodiversity for Food and Agriculture’ report on shares insights on biodiversity, its role in supporting and regulating ecosystem services and on wild species that are sources of food.
Decadal experiences in harnessing chickpea value chain in Ethiopia

In early 1970s, a journey to improve Ethiopia’s chickpea production started in a bid to mitigate low productivity of landraces, poor farming practices, biotic and abiotic stresses, among others. Moreover, lack of improved varieties that met the quality requirements of the international market was a serious bottleneck for the enhancement of the chickpea sector. Hence, improvement of the crop focused on increasing productivity, quality enhancement and development of varieties resistant/tolerant to major diseases, and insects and pests.

In 2007, the chickpea program of the Ethiopian Institute of Agricultural Research (EIAR) was one of the programs in the Tropical Legumes projects led by ICRISAT. Funded by the Bill & Melinda Gates Foundation (BMGF), Tropical Legumes I (TL I), focused on developing molecular breeding tools to improve stress tolerance in grain legumes, including chickpea (2006-2014); Tropical Legumes II (TL II), targeted deployment of these tools in marker-assisted breeding to develop improved cultivars and to deliver them to end users (2007-2014); Tropical Legumes III integrated the genomic resources developed in TL I with the applied breeding and seed delivery initiatives of TL II at scale (2015-2019), with additional emphasis on closing gender yield gaps. Additionally, the project had a target of strengthening the capacity of the breeding program and seed systems of chickpea. Under the coordination of Debre Zeit Agricultural Research Center (DZARC) of EIAR, the project focused on four major chickpea producing regions namely Oromia, Amhara, Tigray and SNNP (Southern Nations, Nationalities and People) in collaboration with seven regional and one federal research centers.

According to Dr Chris Ojiewo, TL III project coordinator, TL started with the introduction of over 10,000 chickpea lines and segregating populations from ICRISAT, from which 10 superior varieties were released. Through these projects, there has been a significant increase in seed size, quality, disease resistance levels and other attributes in the present varieties of the crop. “Chickpea is now the third most important food legume both in area and production in Ethiopia,” he noted.

TL supported the production and distribution of more than 167,422 tons of Quality Declared Seeds (QDS) or certified seed of chickpea to small-holder farmers in Ethiopia. Data suggests that between 2007 and 2017, project varieties have been grown on at least 1.3 million ha and US$927 million from project and partners’ investment have benefitted more than 6 million households.

Dr Ojiewo was speaking during a closing workshop for the TL projects organized by DZARC, to review and document the achievements made by the projects in harnessing the chickpea value chain in Ethiopia and discuss its outlook to continue the momentum gained. The partners appreciated the impact made by the project throughout the 12-year-period, which contributed significantly to the Ethiopian chickpea transformation. The project also contributed to chickpea commercialization through enhanced access to high quality seed of improved varieties and enhanced income through better access to markets through the Ethiopian Commodity Exchange Services (ECX). This promoted on-the-shelf varieties with pedigree originating from ICRISAT, ICARDA and locally.

Chickpea improvement has seen the establishment of more than 20 farmers seed growers’ associations (SGAs) that have enabled farmers to become major chickpea seed suppliers in the country. Dr Pooran Gaur, Research Program Director-Asia, ICRISAT and the Chickpea Objective Leader, noted that the projects’ farmer
participatory variety selection trials and enhancing seed availability and awareness of farmers played a key role in the success of the project.

Describing the experiences of scaling chickpea technologies in Ethiopia, Mr Zewdie Bishaw, the head of Seed Section and International Nurseries at ICARDA, said that TL projects were important as they sought to address the limited awareness of farmers and development practitioners; the persistent constraints on availability and access to new technologies; and the inadequate policy support for input/output markets.

TL projects had their fair share of challenges, especially tough policies for releasing improved varieties and seed certification, which made the processes very expensive. This made farmers feel the pinch because the seed companies passed on the cost to them.

Dr Ojiewo noted that chickpea is now the third most important food legume in Ethiopia, both in area and production and moving forward, there is certainly need for review of the policies to allow flexible seed release and certification processes without compromising on quality. this has been done in some places with higher levels of success such as USA, India and South Africa, where certification is done voluntarily.

TL projects are international research and development initiatives that aim to develop improved cultivars of common bean, cowpea, chickpea, and groundnut and deliver their seed at scale to millions of smallholders. The projects have also fundamentally strengthened the National Agricultural Research System (NARS) and CGIAR breeding programs and seed platforms to enhance their ability to deliver high and sustained output to small - holders.

**Project:** Tropical Legumes
**Partners:** ICRISAT; CIAT; IITA; NARS and institutions in Burkina Faso, Ghana, Mali, Nigeria, Ethiopia, Tanzania, Uganda and India (Uttar Pradesh).
**Funder:** Bill & Melinda Gates Foundation
**CRP:** Grain Legumes and Drylands Cereals (GLDC)

Women farmers at a chickpea farmer’s field day in Mwanza, Tanzania.