

Mbeu Yanga

A M A L A W I S E E D A L L I A N C E N E W S L E T T E R



Farmers like Elinati Mbewe from Dedza will see their sorghum productivity increase, as a result of the new varieties

New highly productive sorghum varieties released

The Department of Agricultural Research Services (DARS) in partnership with the International Crop research Institute for the Semi-Arid Tropics (ICRISAT), has released three improved sorghum varieties; Pilira 3, Pilira 4 and Pilira 5. These new varieties replace Pilira 1 and Pilira 2, released in 1993,

and have since been the only improved sorghum varieties available in Malawi.

ICRISAT Country Representative for Malawi, Dr. Patrick Okori, said ICRISAT and government are keen to replace the old varieties because they no longer meet today's production needs, leading to a

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GEARED FOR GROWTH



During its formative phase, MSIDP investments increased adoption of improved varieties, an essential trigger for unlocking crop productivity and livelihood opportunities in agriculture. On-the-shelf varieties such as CG7, that had been released in 1990, but was not available with farmers, become accessible. An impact study conducted in 2016, reported high use of improved varieties of different crops, positively affecting livelihoods with:

- **35%** increase in the use of improved groundnut varieties at national level and **62%** in project impact areas;
- **46%** increase in productivity for groundnut, **43%** for pigeonpea and **86%** for rice in project impact districts;
- **45%** increase in farmer income associated with groundnut, **66%** for pigeonpea and **60%** for rice;
- An estimated **US\$ 40 million per annum**, up from **US\$ 17 million in 2009**, was infused into Malawi's economy during phase one, from legume export.

Thus far, the project has contributed significantly to improving smallholder farmer livelihoods in Malawi, as shown in the following tables.

Farmers benefitting from Agri-innovations

Crop Species	Three year target	Three year achievements	% success
Groundnut	52, 108	61, 479	118
Common bean	13, 960	17, 742	127
Pigeonpea	24, 690	25, 341	103
Sorghum	10, 375	10, 453	101
Pearl millet	213	238	111
Rice	45, 127	41, 710	92
Total	146,476	156, 963	107

Farmers accessing formal markets

Crop	Three year target	Three year achievement	%success
Groundnut	4, 500	7, 640	170%
Common bean	1, 150	930	81%
Pigeonpea	2, 750	3, 271	119%
Total	8, 800	11, 844	135%

Gross margin per hectare (euros per ha)

Crop	Three year target	Three year achievement	%success
Groundnut	352	290	82
Common bean	386	311	81
Pigeonpea	141	120	85
Sorghum	73	78	105
Pearl millet	84	80	95
Rice	208	221	106

Beneficiaries disaggregated by gender

Sex of beneficiary	Three year target	Three year achievement	%success
Female	55, 809	56, 458	101
Male	75, 818	71, 527	94
Total	131, 623	127, 985	97

€843,000 (USD 1,006,945) has been transferred to farmers mostly through seed related initiatives. Beneficiary farmers generated €72,000 (USD 86,000) from grain sales in the 2017-2018 cropping season. This newsletter highlights selected farmer stories, testament to the project's impacts.

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New highly productive sorghum varieties released



Piliira 4



Piliira 5



Piliira 3

significant decline in yield from three tons per hectare, at the time of release to an average of two tons per hectare, today.

“As farmers diversify their production systems to meet their livelihood needs, including food and household income, agricultural research remains pivotal for development of technologies that secure productivity,” Okori said.

The new sorghum varieties have a yield potential of up to 4 tons per hectare, and are tolerant to grey leaf spot and rust, common diseases that reduce sorghum yield, increasing farmers’ vulnerability to shocks.

The release follows clearance by the Agricultural Technology Clearing Committee (ATCC), of the Ministry of Agriculture and Food Security.

Irish Aid supported the whole research for development process, through the Malawi Seed Industry Development Project (MSIDP), led by ICRISAT. MSIDP project aims to strengthen legume and cereal seed systems and their complementary agricultural innovations, in order to improve productivity and consequently food, nutrition and income security of smallholder farmers.

MSIDP is implemented by a consortium of the International Center for Tropical Agriculture, the Department of Agricultural Research Services, the Department of Agricultural Extension Services, the African Institute of Corporate Citizenship, with ICRISAT as the lead center.

STORIES

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Bean postharvest storage and handling technologies deployed



NUA 45-one of the bean varieties being promoted under the MSIDP project

Estimates by the African Post-harvest Losses Information Systems indicate that southern African farmers may lose up to 13.5 percent of their grain to storage insect pests. These losses result from use of inappropriate storage techniques that support insect infestation and multiplication.

In order to minimize post-harvest losses incurred by bean farmers in Malawi, the International Tropical Center for Agriculture has trained smallholder bean farmers on best post-harvest handling practices.

To improve adoption, a participatory approach, whereby farmers compare their local methods of bean storage and pest control, with the new technologies introduced by the project was used.

The Purdue Improved Crops Storage (PICS) bags and application of

actellic, a common pesticide in Malawi, are some of the technologies being tested and promoted. Farmers were also trained on proper drying, sorting and measurement of moisture in bean grain. They also learnt how to maintain grain and seed quality.

Meanwhile, CIAT through the Malawi Seed Industry Development Project (MSIDP) has reached 884 smallholder farmers, in Chitipa, Mzimba, Kasungu, Mchinji, Dowa, Ntchisi, Dedza, Ntcheu, Thyolo, Zomba, Lilongwe, Mulanje and Rumphi districts, equipping them with knowledge on pest control and post-harvest processes for bean produce. MSIDP will continue scaling-out these best practices to protect other grain legumes such as pigeonpea and cowpea, from storage pests.



During Maliro, thrid from left, during a cooking demonstration

Better dietary options for healthier children

Juliana Maliro, 57 from Mpenda village in Dowa district shares an interesting story about her grandson. The boy, Robert, had been in and out of the hospital for the most part of his young life. His parents were told, at the hospital, that the boy was constantly sick because he was malnourished. They however did not know what to do, as they thought nutritious food was too expensive.

The worried grandmother took her grandson in her care and fed him on a porridge diet based on a recipe she had learnt from a women's care group in her village.

"After noticing how dire the situation was, I started feeding my grandson with this new porridge made from maize, beans and groundnut flour, and within a month I saw a big change," she said with a big smile.

CIAT through the Malawi Seed Industry Development Project (MSIDP) is training care groups on how to prepare nutritious recipes, using locally available materials. In Dowa, CIAT collaborates with Rhema Institute for Development, a nongovernmental organization, that serve poor, vulnerable and marginalized communities around Lumbadzi in the district.

Through Rhema Institute, CIAT has trained 18 care group leaders, including Juliana, on different food recipes that are based on locally available commodities. Some members of the group, which is known as Thandizo, have started small scale businesses selling doughnuts made using recipes that CIAT introduced.



A chickpea crop in fruit, at a demonstration field in Phalombe district

Research update: New chickpea varieties on the way

Chickpea is an important cash crop grown mostly in the shire highlands of Malawi. Major producing districts include Phalombe, Chiradzulo, Mulanje and Thyolo. Malawi is ranked 14th among the world's 58 major chickpea producers. A key challenge has been the absence of improved varieties.

ICRISAT Malawi aims to develop new adapted and productive chickpea varieties by 2020. To speed up the release process, MSIDP through ICRISAT is introducing material bred in its other centers and is conducting farmer participatory research to identify the best adapted materials for Malawi.

Three varieties have been identified for release. Currently, a complete technology package for production is being tested. After two years of experimentation it is clear that women prefer early maturing materials to bridge their household legume requirements, while men consider seed size as the most important quality, for increased grain weight at the market.

"We plant chickpea after harvesting other crops like sweet potato since it does not require a lot of water. This is good for farmers like us who own very small landholdings," said Ms Emily Mateyu a smallholder farmer, who grows chickpea on a 0.3 ha piece of land, in Phalombe district.

Due to its short duration of growth and high adaptability, chickpea provides an option for farmers who own limited land. In Phalombe most farmers own less than 0.5 ha of land, as tea plantations cover almost half of the total arable land. This technology will thus bridge the growing seasons while meeting food and income needs.

A high market value for chickpea, coupled with its ability to survive on residual soil moisture, is increasing demand for science to provide quick solutions. This effort by ICRISAT also fits well in government's crop diversification agenda for food and income security.

LEVERAGING INTEGRATION TO CURB MALNUTRITION IN MALAWI



A cluster leader teaching legume and cereal based recipes being promoted by the project

According to the latest Integrated Household Survey report by the National Statistical Office, over 35% of the Malawi population is malnourished, with some districts registering as high as 40%. Ironically, districts like Dedza and Ntchisi, which are the country's bread baskets, supplying most of the food consumed by people in urban areas of Lilongwe, Blantyre and Mzuzu cities, are some of the districts with the highest malnutrition rates.

Using government structures such as Nutrition Coordinating Committees (NCCs), established at national, district, area and village level, MSDIP II, through ICRISAT and CIAT, works in six districts of Dedza, Ntchisi, Mchinji, Lilongwe, Mzimba and Balaka, to increase demand and utilization of target legumes and cereals, as a means of reducing malnutrition among women, children, adolescent girls and other vulnerable groups in Malawi. Using the government approved "care group" approach, communities are equipped with knowledge of dietary options for improving their nutrition and health.

The care group model organizes smallholder farmers into clusters of 10 to 15 members, led by a cluster leader, selected from the communities. These

leaders are trained and in turn train their cluster members. A key message is the consumption of meals that contain six food groups, namely carbohydrates, meat, fruits, vegetables, oils and legumes. Care groups are also trained on meal preparation based on recipes made for dry-land cereals and legumes being promoted by the project.

MSIDP has since intensified efforts to improve utilization and consumption of legumes and dry-land cereals especially by smallholder farmers. To date, 7,557 farmers have been trained on food processing and utilization.

The project also conducts cooking demonstrations, teaching smallholder farmers how to prepare nutritious recipes that combine legumes and cereals being promoted by the project, with other crops that are native to project action areas.

Food safety interventions, such as aflatoxin mitigation measures are also being promoted by the project's nutrition team. Farmers are taught about the negative effects of aflatoxin to their health and finances, and how to protect their agricultural produce from aflatoxin contamination. To date 7% of households in the projects target areas are already practicing aflatoxin mitigation measures.



Cooking oil produced and packaged by Mthiransembe farmers cooperative

ADDING VALUE TO SMALLHOLDER FARMING IN MALAWI

Smallholder farming communities in Malawi have limited access to structured markets. Many are unable to add value to agriculture produce, thereby losing more income. Such factors lock out smallholder farmers of Malawi from participating in its rewarding market economy. The story of Mthiransembe oil producing cooperative in Mchinji district, central Malawi however, proves that smallholder farmers are capable of finding solutions to their development challenge.

The 118-member group (58 women and 60 men), which was established in 2016 is one of the farmer cooperatives that MSIDP through AICC/LDT has reached with technical support, including training and market linkages. LDT trained the group in oil processing and marketing, and later linked them to One Village One Product (OVOP), a government program that equipped the cooperative with oil processing machinery.

Since its establishment, the oil press, which produces 200 liters of cooking oil, has become a stable market for groundnut

farmers in the area, most of whom used to sell their produce to middlemen, at giveaway prices.

Group Chairperson, Kuliyani Chadowoka said the cooperative has since acquired a higher capacity machine, which will enable them process up to 9, 000 kilograms of groundnut, producing 4, 500 litres of cooking oil in a day.

The oil is sold to grocery shops within the community and other big shops in Lilongwe, at 1, 200 kwacha (\$1.6) per liter, and dividends are shared annually, among member of the cooperative.

Meanwhile the project has linked over 1, 923 farmers to structured markets and is working closely with government's nutrition coordinators as well as Food and Nutrition specialists to train Farmer based organization in Rumphi, Dowa, Ntchisi and Balaka districts with a range of recipes that will ensure that legumes and their products such as oil are widely utilized both for business and consumption.



Peter Mwangofi tending his pigeonpea crop

Double harvests for half the effort

Exchange visits are among extension methods that ICRISAT uses to impart proper knowledge to smallholder farmers

Peter Mwangofi is a pigeonpea farmer from Karonga district. He relies on the crop for both food and income. Over the past few years, Mwangofi has seen a decline in pigeonpea produce, mainly due to land pressure, as he now has a smaller landholding than he did in the past.

In 2016 Mwangofi was part of an exchange visit which ICRISAT organized for farmers in Karonga, to learn about pigeonpea ratooning, from an experienced commercial farmer in Mangochi district.

Ratooning involves taking advantage of pigeonpea's perennial life cycle, whereby a farmer harvests from the same pigeonpea plants for two successive years. Currently, Mwangofi is expecting to harvest about two times what he harvested during the

previous season, as ratooning has allowed the crop to have more branches and pods.

"This is a very good practice, it requires less effort but increases harvests quite a lot. Telling by how the plant is looking, I am expecting to harvest about twice what I harvested previously. I am grateful to ICRISAT for arranging the trip that has changed my life.

Exchange visits are among the participatory and experiential learning approaches that ICRISAT uses for extension. Through this approach, farmers see, learn and ultimately adopt new practices from people with similar experience, without the barrier of language, a common challenge for researchers.



An arial view of groundnut breeder seed at Kakuyu farm

FOSTERING SEED SECURITY IN MALAWI

To sustain the availability of improved legume and dry-land cereals among smallholder farmers in Malawi, MSIDP is strategically engaging commercial farmers, leveraging on their unique capabilities to ensure legume seed security in Malawi.

While smallholder farmers are trained and contracted to produce certified seed, and improve their livelihoods, commercial farmers are the backbone of the project's seed security efforts, as they guarantee production even under unfavorable conditions. Moreover commercial farmers, unlike smallholder farmers, meet conditions required to produce some classes of seed, such as breeder, pre-basic and basic. In this regard, smallholder farmers are limited by structural challenges, such as limited landholdings, among others.

Speaking during a visit to Kakuyu; a commercial farm partnering with MSIDP to produce breeder, pre-basic and basic seed of groundnut, pigeonpea and common bean, Irish Aid Senior Advisor; Gracewell

Kumwembe urged the project to engage more commercial farmers, saying they provide a safety net to the country's legume seed systems.

"As Irish Aid, we are guided by the philosophy of 'reaching the farthest first', hence our primary target in the agricultural sector are the smallholder farmers. However we also understand that working cohesively with other players who are not in that category, but are instrumental to our course, is important, in order to achieve our goals. We therefore encourage these kinds of partnerships" he said.

Kakuyu farm owner, Mazur Beda hailed the partnership with MSIDP saying it has revitalized the legume seed system in Malawi. He however noted the need for more effort towards incentivizing legume production among smallholder farmers, citing lack of markets for smallholder farmers, as a major factor crippling the legume grain and seed industry in Malawi.

New Groundnut Varieties unlock opportunity



Sailesi Gwizima, a groundnut farmer from Mchinji district

It is common practice among smallholder farmers in Malawi to plant groundnut at least a week after the first planting rains, as priority is usually given to maize and tobacco, the major food and cash crops. This practice has resulted in declining groundnut productivity among many smallholder farmers, as late planting exposes groundnut crop to Groundnut Rosette Disease (GRD) and drought.

Sailesi Gwizima, from Mchinji district, central Malawi, grows CG 7 groundnut variety. Not unlike many farmers, Gwizima fell for the variety's large seed size and high fat content, which makes for high returns on the market. In the recent past however, Gwizima noticed a decline in his groundnut yield, due to GRD.

Seven new improved groundnut varieties, released by DARS, in collaboration ICRISAT will improve groundnut yield for smallholder farmers like Gwizima, as they are early maturing and resistant to GRD and other foliar diseases, hence responsive to challenges associated with late planting. The released varieties, includes CG 8 (ICGV-SM 08501), CG 9 (ICGV-SM 08503), CG 10 (ICGV-SM 01724) and CG 11 (ICGV-

SM 01731), which are medium duration Virginia varieties, and mature between 120-130 day, hence well adapted to mid altitude agro-ecologies, as well as CG 12 (ICGV-SM 01514), CG 13 (ICGV-SM 99551) and CG 14 (ICGV-SM 99556), which are short duration Spanish varieties, maturing within 90-110 days, hence well adapted for low altitude agro-ecologies.

ICRISAT Malawi Country Director Dr. Patrick Okori said ICRISAT has released the new varieties in response to the current climatic conditions, as well as smallholder farmers' groundnut cropping practices.

The new varieties also have a higher yield potential, better seed quality and weight, hence giving smallholder farmers an edge on the market.

Meanwhile, ICRISAT through strategic partnerships with members of its Malawi Seed Alliance and the Seed Traders Association, among others, has begun rolling out these new varieties, in the country. The response has been overwhelming, as farmer like Gwizima pictured above have been engaged to produce new technologies for fellow farmers in the country.



Groundnut seed production has helped Gertrude Ngoma and her family achieve food security

Empowering rural women for better livelihood

Through groundnut seed production, Gertrude has also bought two diesel-powered maize mills, to diversify her family's livelihood options beyond agriculture.

Gertrude Goma from Chamunguma in Mzimba district was among the marginalized majority of smallholder farmers in Malawi. She had limited access to inputs such as improved seed and fertilizer, leaving her household vulnerable. She grew Chalimbana, a very susceptible groundnut variety and landrace maize varieties, hence she could not harvest enough to feed her family, let alone sell.

In 2014, Gertrude joined a local farmer group that produces groundnut seed for ICRISAT through the Malawi Seed Industry Development Project (MSIDP II). She noticed that members of the group were both income and food secure, unlike the majority of farmers in the community, and she wanted the same for her family. She received a 10 kilogram of groundnut, as a startup seed loan, as well as training on agri-business and good agronomic practices.

“After giving back the 10 kilogram seed loan, ICRISAT bought the rest of my produce and I made enough money to keep my family food secure, as well as build a decent iron sheet house,” she said.

Through groundnut seed production, Gertrude has also bought two diesel-powered maize mills, to diversify her family's livelihood options beyond agriculture.

“This year I bought 20 bags of fertilizer for maize production, something I could not afford before. I had a good harvest of maize. Today I can boldly say hunger is the thing of the past in my household. I am sincerely thankful to Irish Aid and ICRISAT for helping rural farmers like us,” she said.

The maize mill has become a rare sigh of relief for many women in the community, as they no longer have to walk long distances to the maize mill.



Samson Kwenda during a seed production training session

Ripping the full benefits of groundnut production

Samson Kwenda is a smallholder farmer from Mchinji district, central Malawi. He grows groundnut and soybean for sale and maize for food. Samson struggled to produce enough on his one hectare piece of land, to sustain his family for the whole year. He used local, recycled seeds, and followed the traditional growing practices, adopted from his parents.

After many unsuccessful years of farming, owing to bad weather conditions and lack of access to agricultural inputs, Kwenda relocated to Kasungu district, to work as a tobacco tenant. Life as a tenant was not any better. "With a meager salary, providing food, clothing and other basic needs for five children and a wife was not an easy feat," recalls Kwenda.

A year later, he decided to return to independent farming in his home village. Fortunately for him, ICRISAT through the Malawi Seed Industry Development Project (MSIDP) had just started working with smallholder farmer groups in the area, training them in groundnut seed production.

Kwenda joined Katonda farmer group, which produces groundnut seed

for ICRISAT. He dedicated a little less than a quarter hectare to groundnut seed production, at first, and the results were good. From his groundnut seed production Kwenda has been able to buy goats and pigs but more importantly, he was able to pay for his children's education. He boasts of one graduate son, who has a Bachelor of Science degree in Agri-business obtained from Lilongwe University of Agriculture and Natural Resources.

Katonda group was also trained in community seed banking, whereby small holder farmers receive 10 kilograms of improved groundnut seed, and give back twice as much, after harvesting. The returned seed is then aggregated and kept in a community warehouse, for another group of farmers to receive in the subsequent season.

MSIDP smallholder farmer clubs are provided with improved legumes and dry-land seed varieties along with training on allied technologies and agronomic practices, which in turn will improve farm incomes, food security and reduce poverty of the communities.

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