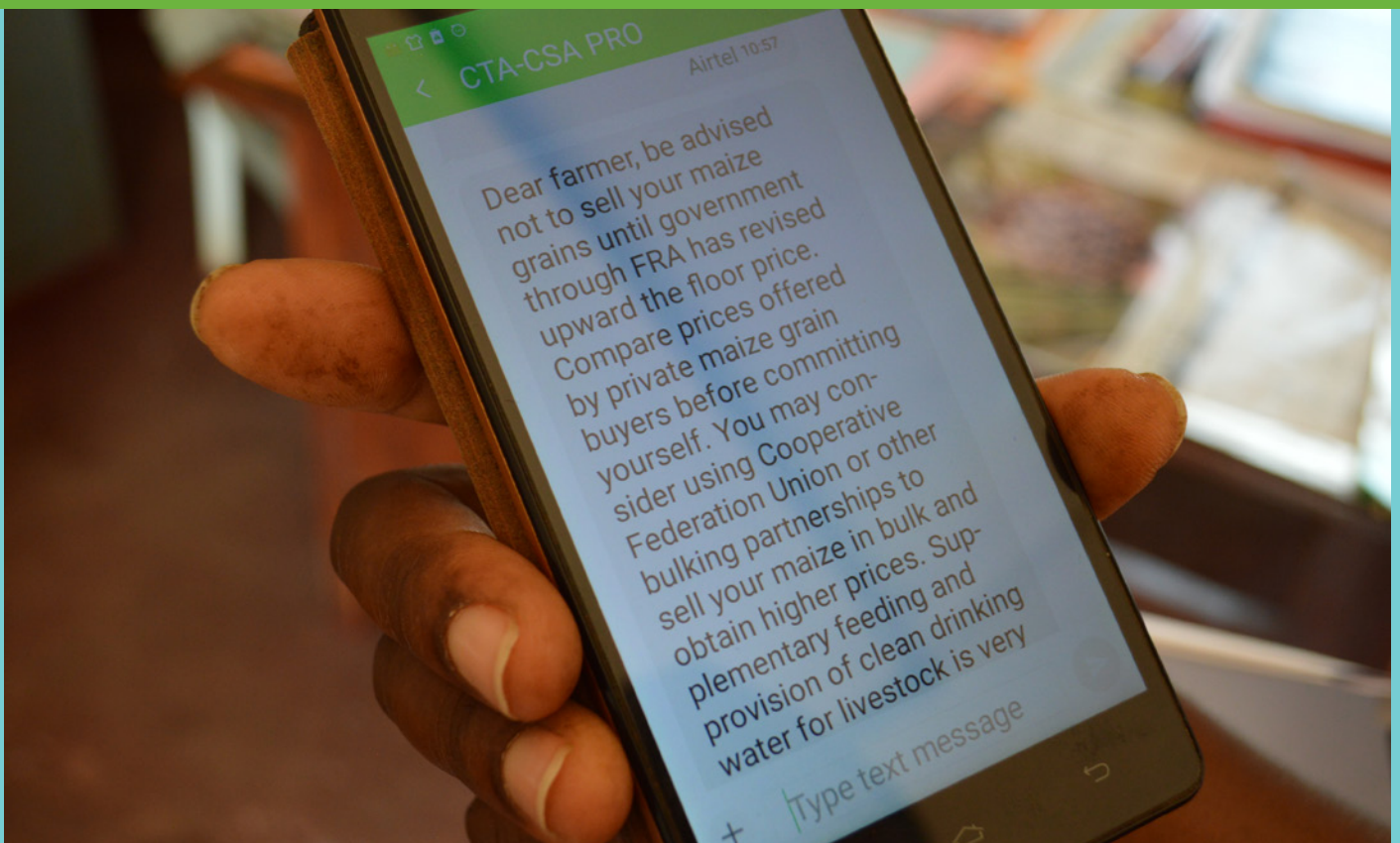




# PROMOTING CLIMATE-SMART FARMING IN SUB-SAHARAN AFRICA



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## ABOUT CTA

The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU).

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*For more information on CTA, visit [www.cta.int](http://www.cta.int)*



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## PROMOTING CLIMATE-SMART FARMING IN SUB-SAHARAN AFRICA

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# A BRIGHT FUTURE FOR CLIMATE-SMART FARMING

The United Nations Food and Agriculture Organization (FAO) estimates that food production needs to rise by at least 60% by 2050 to meet the demands of the growing population. Most of the extra food must come from existing farmland at a time when many farmers are already beginning to experience the impact of climate change.

However, there are good reasons to be optimistic. Climate-smart agricultural innovations and policies are helping farmers to increase their resilience in the face of more frequent and adverse weather variabilities. As this booklet shows, projects supported by CTA in Eastern and Southern Africa are assisting pastoralists and smallholder farmers adapt to climate change by adopting a number of important measures. Access to accurate, geo-referenced weather information and agronomic tips is leading to better decision-making. The planting of drought-tolerant varieties of staple crops is increasing yields and incomes. Index-based insurance is helping farmers to survive droughts and other weather shocks. These projects show that climate-smart strategies can raise agricultural production and improve living standards.

By promoting climate-smart technologies, innovations and policies in smallholder agriculture, CTA is helping to advance food and nutritional security and resilience in African, Caribbean and Pacific countries.

Michael Hailu  
Director, CTA



*The Faiya Cultural Women's Group is one of 40 organisations in Kenya to benefit from CTA's CLI-MARK project.*



# CLIMATE-SMART AGRICULTURAL PRACTICES ARE HELPING FARMERS TO IMPROVE LIVELIHOODS AND PRODUCTIVITY

ERRATIC RAINS AND UNPREDICTABLE WEATHER PATTERNS POSE A SERIOUS THREAT TO FOOD PRODUCTION IN EASTERN AND SOUTHERN AFRICA. THE LOSS OF LIVESTOCK AND CROPS FREQUENTLY PLUNGES MILLIONS OF PEOPLE INTO POVERTY AND THREATENS REGIONAL FOOD SECURITY. HOWEVER, PROJECTS SUPPORTED BY CTA ARE HELPING PASTORALISTS AND SMALL-SCALE FARMERS COPE WITH CLIMATE CHANGE.

Climate change is one of the greatest challenges we face. It is leading to an increase in the frequency and intensity of extreme weather events and threatening food security in some regions. Extreme weather events can destroy crops and reduce yields. Climate change can also have a devastating impact on pastoralist communities. Although the impact of climate change is felt across the globe, the worst affected areas tend to be in least developed countries, small island states and in fragile landscapes, such as Africa's drylands. In these areas, communities are particularly vulnerable and have the least capacity to adapt to climate change.

However, this doesn't have to be a story with an unhappy ending. "We are well aware of the climate change problem and we know a lot about what's causing it," says Oluyede Ajayi, CTA's Senior Programme Coordinator for Agriculture and Climate Change. "But we shouldn't continue to talk about the problems only. The big question now is: What can we do to help farmers, especially smallholder farmers, gain access to existing solutions?"

This booklet features a range of stories which illustrate how the adoption of climate-smart agricultural practices, allied to the availability of accurate

weather information and index-based insurance, can do much to protect pastoralists and farmers from climatic shocks, and in some cases help them to increase their productivity and incomes.

The first chapter tells the story of CTA's Climate, Livestock and Markets (CLI-MARK) project in northern Kenya and southern Ethiopia. "The CLI-MARK project aims to catalyse market-based responses to climate change and this in itself is a departure from past approaches," says Sabdiyo Dido Bashuna, CTA's Senior Technical Adviser for Value Chains and Agribusiness. "The project is improving pastoralists' preparedness for droughts, enabling livestock marketing and trade during droughts."

During the first year of the project, 80 livestock-related enterprises and 10 markets benefited from training sessions that helped improve their business management. The project is also linking pastoralists to meat processors and live animal exporters. In addition to this, CLI-MARK is encouraging pastoralists to take out index-based livestock insurance and it is developing an information system which will provide real time weather updates to pastoralists. All of this will help to minimise the impact of drought on their herds.

The second story describes the activities of CTA's regional flagship project for Southern Africa, 'Scaling up Climate Smart Agricultural Solutions for Cereal and Livestock Farmers'. During its first year, the project helped 75,000 small-scale farmers in Zambia, Zimbabwe and Malawi to adopt strategies to help them cope with droughts and erratic weather patterns. It has four main components. Farmers receive access to weather information and advice on a wide range of agricultural topics through SMS messages on their mobile phones. Thanks to the project, many are now planting drought-tolerant seeds and adopting mixed farming systems, combining crops with livestock, as a way of enhancing soil fertility. Finally, farmers are being encouraged to take out crop insurance.

The last two chapters look at how seed fairs, held in Zimbabwe and Mali and supported by CTA, have helped research agencies and seed companies reach farmers in remote rural areas. Surveys conducted after the fairs found that large numbers of farmers are now planting drought-tolerant varieties of crops such as maize and groundnuts. The knowledge they gained at the seed fairs not only helped them to increase their yields and incomes, but improve their family nutrition as well.

The stories told here involve what Oluyede Ajayi described as "a coalition of strange bedfellows of organisations who traditionally do not work together." A collaborative approach, which has brought together government agencies, farmers' organisations, small-scale farmers, development agencies and private sector companies involved in insurance, telecommunications and seed production has done much to ensure the success of these projects.

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## CHAPTER 1

# CLIMATE-PROOFING PASTORALISM IN EASTERN AFRICA



*Pastoralists like these women in Merille market in northern Kenya say that the CLI-MARK project has helped to improve their business skills.*

**T**alk to any pastoralist family in Eastern Africa and you will hear how droughts can devastate lives and livelihoods. In 2017, for example, many cattle herders in northern Kenya lost over 70% of their livestock. In Ethiopia, over 5 million people required emergency food aid and almost 2 million were displaced from their homes. Indeed, an increase in the frequency and severity of droughts, coupled with unpredictable weather patterns, is threatening the survival of some 20 million livestock keepers in this part of Africa.

“Traditionally, when there are serious droughts, governments and aid agencies move in with lots of resources,” says Thomas Were, who manages CTA’s Climate, Livestock and Markets (CLI-MARK) project, which focuses on northern Kenya and southern Ethiopia.

“But this approach is unsustainable. What we’re trying to do is enhance the resilience of pastoralist communities.”

Launched in 2017, the two-year CLI-MARK project has three main components. The first is designed to link pastoralists to end buyers and encourage the establishment of new enterprises along the value chain. The second involves scaling up livestock insurance. Since the project began, support from CTA has helped two private insurance companies, whose story is told in the box on page 11, to sell many more policies. The other component, still in the development stage, involves the design of a weather information system which will provide pastoralists with the knowledge they need to make decisions about, among other things, where and when to sell their livestock.

## MAKING MARKETS IN KENYA WORK

It is not just drought that is a problem for pastoralists, but the influence of brokers and middlemen who take a disproportionate share of profits. “During severe drought you’ll find pastoralists sell their animals at a very low price,” explains Chrispin Mwatate, programme director for the International Institute of Rural Reconstruction (IIRR), which is responsible for CLI-MARK’s value chain activities. “One of the things we are aiming to do is reduce the influence of brokers so that pastoralists get a better price.”

In Kenya, CLI-MARK is focusing activities on the livestock markets in Isiolo, Kipsing, Merille, Oldonyiro and Moyale, with the aim of helping them to become vibrant business hubs. This has involved training activities for the organisations which run the markets and for 40 livestock-related enterprises, eight associated with each market and most managed by women and young people.

By mid-morning, the livestock market in Isiolo is in full swing, with pastoralists and traders milling around some 300 cattle, 350 sheep, 250 goats and a few camels. Abdi Halake, vice-chairperson of Isiolo’s Livestock Market Association (LMA) says that training provided by CLI-MARK has had a significant impact. “We are now much more effective as an organisation in terms of the way we collect revenues and run the market,” he says. “We keep better records and we are attracting new buyers.”

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He and four of his colleagues had recently been taken by CLI-MARK on a 'learning visit' to Baringo Market, a day's journey to the west. This is considered one of the best run markets in Kenya and Isiolo LMA is now adopting many of its management practices. Further north, in Merille, the LMA chairman Daniel Kapana says much the same. "The trip to Baringo is changing the way we do business," he says. This will be good both for traders and pastoralists.

Other learning visits have taken traders to Nairobi, where they spent time at abattoirs, meat processors and exporters. "The feedback has been overwhelmingly positive," says IIRR's Eric Mwaura. "In the past, most traders from the north simply didn't understand what the market required, but now they know what buyers want in terms of volume, weight and so forth. We are hoping that this will help to reduce the

number of middlemen in the business, and that these traders will now sell direct to the end buyers."

If pastoralist communities are to flourish, they need to establish businesses which continue to trade during the hard times. To this end, CLI-MARK has been improving the skills, knowledge and organisational abilities of livestock-related enterprises. Take, for example, Ismagal Women's Group, set up in 2009 by Somali women and one of eight organisations to benefit in Isiolo County. It was only after CLI-MARK training that the group began to fulfil its potential. "Before we didn't really know how to save the money we made from buying and selling goats," says chairlady Abdia Mohammed. Following the training, the women set up a 'home bank' – a metal box with three padlocks – and each member now contributes 50 Kenyan shillings a day. "We'll open it after a year, when we've

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*If pastoralist communities are to flourish, they need to establish businesses which continue to trade during the hard times.*

”

saved 720,000 shillings [€7,200]. We plan to buy land and build houses to rent," explains Abdia. Entrepreneurial activities such as this will help these pastoralists and their extended families cope much better with future droughts.

By mid-2018, IIRR staff in Kenya had visited 37 of the 40 enterprises that attended CLI-MARK training. Frequently, they were able to provide more advice on the ground. For example, the Tulu Pasture Women's Group, which manages a plot of grassland in Sololo, near the Ethiopian border, made significant changes to the way it operates after a visit from IIRR's Maximillain Leinte. "Max taught us the importance of weeding and how to improve the way we harvested grass," explains Gabriel Bagaja, one of the group's members.

It's not just the group members who are benefiting, but the wider community. In the past, when there was a shortage of fodder, pastoralists in Sololo had to buy hay that came from Nanyuki, over 500 km away. The hay was expensive and poor quality. Now, they produce hay locally for half the price. "Because of this, people round here will be in a much better position to survive drought in future," says Tumme Shan, one of the group's female members.



Members of the Ismagal Women's Group in Isiolo with their 'home bank'.



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## THE ETHIOPIAN EXPERIENCE

In Ethiopia, CLI-MARK is promoting strategies to improve livestock value chains with the aim of increasing productivity and incomes. The project is focusing on Borana Zone, which is home to over three-quarters of a million people, the vast majority of whom depend on livestock. Erratic rainfall, frequent droughts, poor market infrastructure and political insecurity have conspired to make this one of the poorest regions in Ethiopia.

The IIRR team responsible for managing the market component of CLI-MARK began by commissioning studies to assess the state of the livestock value chain and the needs of pastoralists. “The studies highlighted the fact that there is a serious lack of skills and organisation at every level in rural areas in Borana Zone, from local government to livestock markets and private enterprises,” says Zerihun Lemma, IIRR Country Director in Ethiopia. Spend time in one of the five Borana markets where CLI-MARK is operating and you will see what he means. The infrastructure is poor and there are none of the services you might expect, such as water troughs or fodder or veterinary facilities.

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*Our role is to organise local enterprises, train them and give them space to do business.*

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The project partners have forged close working relationships with the local government departments responsible for job creation and food security, markets and trade development, co-operative promotion, and pastoral area development. By the end of 2017, the departments had helped CLI-MARK identify 40 livestock-related enterprises, most of which were poorly organised and operating on a very small scale. Five of the groups are cooperatives; the rest are enterprises managed for and by women and young people.

Two training sessions, similar to those held in Kenya, were attended by local government staff and five individuals from each of the 40 enterprises. “Our role is to organise local enterprises,

train them and give them space to do business,” explains Yohannes Jenberu from the Job Creation and Food Security Department in Borana Zone. “But we needed training too and the CLI-MARK project has really helped us – it was like a training of trainers for us.” The CLI-MARK training sessions have been held in five of the 13 *woreda*, or districts, in Borana Zone, and Yohannes and his colleagues are now conducting similar trainings in the other eight *woreda*.

“We’ve noticed that there is now much better cooperation between different local government departments than there was before,” says Zerihun. Thanks to CLI-MARK, there is now a Livestock Market Steering Committee for the five *woreda* where the project operates.



*Kidst Endashan, a local government official in Elwaye woreda, keeps track of livestock sales in the local market.*



“

*The CLI-MARK project has really helped us – it was like a training of trainers for us.*

”

The committee, whose secretary is IIRR field officer Dida Wako, meets once a month to coordinate livestock value chain activities. The project also established a Livestock Marketing Forum, whose quarterly meetings are attended by government officials, CLI-MARK project staff, local enterprises, NGOs and major livestock buyers. For the first time, the lead companies – most are based in Addis Ababa and many are involved in the export trade – have agreed to sign agreements with some of the enterprises established by the project.

“Before CLI-MARK began, the lead companies would send their own people from Addis Ababa to buy livestock, as the local traders and enterprises didn’t really understand their requirements,” explains Dida Wako. But that’s beginning to change. The project took 47 youth and women’s livestock enterprises to visit three companies in Mojo and Ziway, near Addis. Here they gained a good understanding of precisely what the market demands. Just as importantly, CLI-MARK training helped many enterprises gain a better understanding of how to buy and sell livestock.

You can see the change when you accompany IIRR staff to local markets. Soon after we arrive at Elwaye market, we find Garbole Jaldesa, secretary of



*IIRR staff Dida Wako (left) and Zerihun Lemma (right) have guided CLI-MARK’s operations in Ethiopia.*



*Tume Huka is one of many female pastoralists to benefit from the CLI-MARK project in Dubuluk woreda.*



*Dabasa Jaldesa was one of almost 3000 customers to benefit from taking out livestock insurance in the areas covered by the CLI-MARK project in Ethiopia in 2017.*

a small livestock buying enterprise, in discussions with Chala Kasa, a trader who has just spent 14 days trekking a fine herd of bullocks from northern Kenya. “CLI-MARK really helped us,” he says. “In the past, I didn’t really know how to assess the price of an animal, but I do now. CLI-MARK also linked me to some lead companies. I know what their specifications are now and we are negotiating an MOU.”

Dhaki Dhenge, the chairlady of an enterprise which buys and sells cattle and goats, has come to the market to monitor prices. In the past, she explains,

“

*I have learned how to monitor prices in the market, keep proper records and work out the best time to buy and sell. As a result, we are making more money.*

”



*Haro Boku (right) of Elwaye woreda Trade and Market Development Department advises pastoralists when to sell their livestock.*

her seven-women group had little idea about when to buy and sell. Now, thanks to the CLI-MARK training, they are fattening animals and only selling when they can get a good price. They are helped by local government officials who have also received training from CLI-MARK. Today, Haro Boku and a colleague from the Trade and Market Development Department are noting down the prices that animals are fetching, according to species, weight and breed. “When prices are good, I share the information with the enterprises we are working with and suggest they might sell,” he says. “If they’re poor, then I’ll tell them to hold on till later.”

The following day we head for the market in Dubuluk woreda with Tume Huka, an eloquent young woman who owns a shop selling motorbike fuel as well as a herd of cattle, sheep and goats. She is also a member of a micro-enterprise which buys, fattens and sells livestock. “Before

the CLI-MARK training, we never kept any records and we didn’t make much money,” she says. “Now, I have learned how to monitor prices in the market, keep proper records and work out the best time to buy and sell. As a result, we are making more money.”

If pastoralists increase their incomes, they will be in a better position to survive future droughts. But this is just one feature of the project. Several thousand people in Borana Zone have taken out livestock insurance this season (see box). This means that if the amount of forage falls below a certain level, they will receive the money they need to buy in feed. Pastoralists like Tume will also benefit from CLI-MARK’s soon-to-be-launched weather information system. Taken together, these measures are expected to increase the productivity and incomes of some 50,000 livestock farmers.



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# INSURANCE IS A LIFE SAVER

Like tens of thousands of other pastoralists in southern Ethiopia, Dabasa Jaldesa and his family were severely affected by the drought in 2016. “We’ve been the victims of drought oftentimes in the past,” he says, “but 2016 was a particularly bad year.” He lost 17 of his 45 cattle and 25 of his 70 goats. “It had a dreadful impact on my family and we even had trouble feeding ourselves. We almost lost hope.”

After the drought, representatives of Oromia Insurance Company (OIC) visited Dabasa’s village in Elwaye *woreda*. “They told us: your animals are always dying. We can help you.” So he took out insurance on some of his animals and when the forage levels became perilously low the next dry season he received a pay-out of 15,000 Ethiopian birr (€465). This not only paid for fodder to keep his animals alive; it provided him with sufficient funds to purchase two small bulls and to pay school fees.

Index-based livestock insurance was first piloted in northern Kenya. The International Livestock Research Institute (ILRI), which devised the scheme, launched a similar programme in Ethiopia in partnership with OIC in 2012, focusing on Borana Zone. In simple terms, the scheme works like this. ILRI analyses satellite imagery provided by NASA to establish when fodder levels have fallen so low that livestock are likely to die. Instead of insurance agents having to go out and verify whether animals have died, the index triggers payments.

When the livestock insurance team in Ethiopia held discussions with local communities in 2014, the latter frequently complained that pay-outs

came after their animals had died. “So we decided to establish a system where payments would be made before animals died and we introduced asset-protection contracts,” explains ILRI research assistant Wako Gobu. When the level of forage falls to the 20<sup>th</sup> percentile of the level in a good year, pay-outs are immediately made. This means pastoralists can buy fodder to keep their livestock alive.

The number of pastoralists taking advantage of the insurance scheme has steadily risen in Ethiopia, from 271 in 2012, to 707 in 2016 and 2942 in 2017. Key players in this story are the village insurance promoters (VIPs) and sales agents. They are particularly active before and during the two annual sales windows which precede each dry season, and all of them receive intensive training from OIC twice a year. Since mid-2017, 220 VIPs and sales agents have benefited from two training sessions, both funded by CTA’s CLI-MARK project. “CLI-MARK has been extremely important for us,” says Getaneh Erena, OIC’s Senior Livestock Insurance Officer. “The project joined us at a critical time when we were out of sponsors and needed support.”

In Kenya, CLI-MARK has worked closely with Takaful Insurance Company. “One of the biggest challenges for us is reaching people living in remote areas, as we have just three vehicles to cover eight counties,” says Abdiaziz Ibrahim, who coordinates Takaful activities in Isiolo County. Nevertheless, the number of pastoralists taking out insurance has steadily increased.

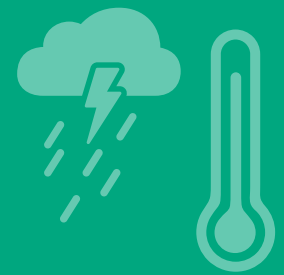
One of the many people to benefit from index-based livestock insurance in Kenya is Habiba Jattan, a casual worker at a school in Isiolo and part-time pastoralist. In 2015, she paid 6000 Kenyan shillings (€60) to insure three cows and three goats. When fodder levels fell below a certain level, she received a pay-out of 12,000 shillings (€120), some of which she reinvested in an insurance policy for the next season. This time she insured 16 cattle and 20 goats, and received a pay-out of 150,000 shillings (€1500) in August 2016. Asked what she would do if there were four or five years of good weather and no pay-outs, she replies: “I would still take out insurance, because I have had a very good experience with it.”

So far, the insurance companies have paid out far more than they have received in premiums. For example, in 2016, a particularly bad drought year, Takaful made pay-outs which were eight times greater than the premiums it received. A similar story can be told for OIC in Ethiopia, whose livestock insurance has suffered losses of around 2 million birr (€62,000) – a figure which does not include the training, sales supervision and VIP commission and administration costs of approximately 750,000 birr (€23,250), incurred twice a year. Nevertheless, both companies are guardedly optimistic and believe that over time index-based insurance will become a commercial success. CLI-MARK, which itself is a pilot project, is helping to make sure that the pilot insurance programmes reach a wider number of pastoralist communities.



## CHAPTER 2

# COPING WITH CLIMATE CHANGE IN SOUTHERN AFRICA



*Phineas Muyabi is one of many farmers to benefit from CTA's flagship project in Southern Africa.*

When Phineas Muyabi retired from the Zambian Army in 2001, he invested his lump sum payment in seeds and other agricultural inputs. However, drought destroyed his crops and over the next few years his family had to rely on food aid. His fortunes took a turn for the better in 2009. He began to practice conservation agriculture – a farming system which involves minimum tillage, crop rotation and keeping the soil covered throughout the year – and his yields steadily increased. “From that time on, we’ve never gone hungry,” says Phineas. Indeed, he is now doing so well from his farm in Chibombo District that he is building a new house.

This year he has benefited from CTA's regional flagship project for Southern Africa, 'Scaling up Climate Smart

Agricultural Solutions for Cereal and Livestock Farmers'. He has received training as a lead farmer and he receives regular weather alerts and farming tips. “I have had over 20 SMS messages so far,” he says, “and they’ve been extremely useful.” He cites, in particular, messages reminding farmers when to sow their crops; how to limit the damage caused to maize by army worm; how to reduce post-harvest losses; and when to consider selling crops. “Information is power,” says Phineas, “and this is helping me to increase the productivity of my land.”

The CTA project seeks to build the resilience of smallholder farmers to climate change. It consists of four main components. It is providing farmers with access to weather information and

agricultural advice, which they receive on their mobile phones. It is advising farmers to plant drought-tolerant seeds. Farmers are also being encouraged to combine crops and livestock to diversify their livelihood options, enhance the quality of their soils and help them cope with climatic shocks. And it is promoting index-based weather insurance for crops: if crops fail, because of too little rain or too much, farmers with insurance policies will receive compensation.

Some 75,000 small-scale farmers in Zambia, Zimbabwe and Malawi were reached by the CTA project during its first year. By the time it comes to an end in early 2020, 140,000 farmers will have adopted a range of climate-smart strategies to help them cope with drought and erratic weather.

“

*Information is power  
.... and this is helping  
me to increase the  
productivity of my land.*

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Reflecting on activities at a regional annual project review and planning meeting, held in Zambia on 28–30 August 2018, CTA’s Olyuede Ajayi suggested that one of its highlights was the creation of a “coalition of strange bedfellows of organisations who traditionally do not work together, due to an absence of common interests.” Dr Kolawole Odubote, Dean of Agricultural Sciences at Zambia Open University (ZAOU), which manages the project in Zambia, agreed. “It was tremendously important to involve both government and the private sector,” he said. “The government sees us as a valuable partner and this has given the project a high political profile.” Just as significantly, the project has enlisted the help of the private sector. Seed merchants, agro-dealers, telecom providers and insurance companies are key to its future success.



*Elizabeth Mwanza is one of the many farmers to benefit from CTA’s flagship project.*



*Camp Extension Officers Rebecca Zuw and Grace Sohati train farmers in climate-smart farming practices.*



*Children gather around a new well in Chikoloma village in Chibombo district. Their future will depend on their families finding ways to cope with climate change.*

## WORKING WITH FARMERS

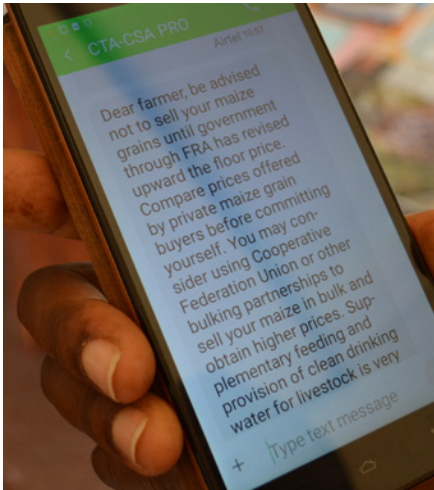
The project’s foot soldiers on the ground in Zambia are the Camp Extension Officers (CEOs) employed by the Ministry of Agriculture. Following the project’s inception meeting, some 300 CEOs received training on the objectives of the project in 12 districts in three provinces. “Our biggest challenges are the way the distribution of the rain has changed and animal diseases,” says Grace Sohati, CEO for Mwachisompola Camp in Chibombo District. “The CTA project is definitely helping me – and our farmers – learn how to cope better with climate change.”

After training, some 230 farmers in Grace’s camp were registered with the project. Other CEOs did the same in their camps, most of which have

around 3000 farming households. Since then, she has kept in close touch with the farmers, holding training sessions at which she encourages them to plant drought-resistant varieties, pay close attention to the SMSs they receive and consider diversifying their crops and introducing livestock if they haven’t already.

You only have to spend a few minutes with Malambo Chaambwa to see that he is a highly skilled and knowledgeable farmer. He has 20 ha of land on which he grows a variety of crops during the rainy season and vegetables under irrigation during the dry season. He also has a citrus orchard and keeps cattle, goats and poultry. But even he was unable to cope with the vagaries of the climate during the 2017 rainy season. A month of drought in the middle of the season, followed by





*Farmers receive regular agronomic tips and weather alerts on their mobile phones.*

torrential rains afterwards, meant that instead of harvesting 600 bags of maize as anticipated, he got just 30 bags.

Nevertheless, Malambo views the future with a degree of optimism. He says the SMS messages he receives are very helpful. “They sometimes tell me things I already know, but might overlook, or things I hadn’t thought of, which I’m now doing,” he says. His close friend and neighbour, Absom Hangoma, says the texts he received advising him not to rush to sell last year’s maize harvest were particularly important. “If I’d sold straightaway, I would have got just 60 kwacha for a 50 kg bag of maize,” he recalls. “But I followed the SMS advice and waited till I got 75 kwacha a few weeks later.” This meant that his 150 bags fetched 2250 kwacha (€180) more than they would have done had he sold immediately after the harvest.

Shortly after the project was launched in Zambia, ZAOU organised two seed fairs to foster greater awareness about the importance of using drought-tolerant seeds. The fairs provided a forum for commercial seed companies, agro-dealers, extension workers and



*Farmer Malambo Chaambwa has adopted a variety of practices to help him cope with the increasingly unpredictable weather.*

over 800 farmers. “We were very happy to be invited,” says John Muzondiwa, technical sales representative with Pannar Seeds, the second largest seed supplier in the country. “We didn’t sell much in terms of quantity at the events themselves, but fairs like this are a great way for us to meet large numbers of farmers and talk to them about products like drought-tolerant varieties of maize.”

The fairs were also appreciated by agro-dealers, who play an important role providing seeds and other inputs to local farmers. “I just wish there were more of them,” says Changwe Nkonda, whose company Lamko Agro is based in Chibombo District. “The seed fair here was a real education for us and I think I’m now in a much better position to advise farmers about what sort of seeds and inputs to buy, according to their needs and soil type.” Besides attending the seed fair, Changwe was one of some 400 agro-dealers to receive training from the CTA project on climate-smart practices.

Regional projects such as this inevitably require a degree of devolution, with different consortia

of partners operating in the three core countries. The Zambian Open University, MUSIKA Development Initiatives, a non-profit company that stimulates private sector investment in smallholder markets, and Professional Insurance (PICZ) lead project activities in Zambia. In Zimbabwe, the key players are the Zimbabwe Farmers Union (ZFU) and Econet Wireless, while in Malawi the National Smallholder Farmers Association is leading the work in collaboration with the Department of Climate Change and Meteorological Services and NICO General Insurance Company.

Although farmers across the region face much the same challenges, with the vast majority being dependent on one increasingly unpredictable rainy season each year, the political circumstances vary, and so do some of the challenges. In Zambia, to give just one example, the government rolled out a weather-index insurance scheme under the nationwide



*Agro-dealers like Jackson Salujinga have an important role to play in advising farmers on the best seeds to use.*



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Farm Input Support Programme (FISP). This meant that the CTA project confined its insurance activities to training CEOs on the potential importance of getting farmers to sign up to weather-index insurance schemes, rather than on promoting insurance schemes directly to farmers.

## **BUILDING ON SUCCESS IN ZIMBABWE**

In contrast, weather-index insurance has been at the heart of activities in Zimbabwe, where the project has benefited from existing services provided to farmers since 2015 by ZFU and Econet, the country's largest telecommunications service. These organisations have created a remarkable product, known as the ZFU eco-farmer combo, for which farmers pay US\$1 a month. "We call it the dollar that does miracles," explains Shadreck Hungwe, ZFU field and projects manager. The dollar is split three ways: \$0.50 covers funeral insurance; \$0.25 covers ZFU costs for a range of services, such as access to inputs at discounted prices and SMS messages providing weather information and advice; the remaining \$0.25 provides farmers in high-rainfall regions with weather-index insurance.

Between April and June 2018, 30 training sessions were held for the 200 ZFU agents in 10 districts in the three provinces where the CTA project operates, Mashonaland West, Midlands and Masvingo. One of their main tasks was to encourage farmers to adopt weather-index insurance. By the end of July 2018, over 10,725 farmers had signed up for the ZFU eco-farmer combo. By the time the project comes to an end, it is hoped that 30,000 farmers will be benefiting from the package of insurance and advice. Of these, 10,000 are expected to benefit from weather-index insurance.

In the past, the weather information sent to ZFU combo subscribers by SMS was based on data provided by terrestrial weather stations. "This was often unsatisfactory, as there are long distances between many of the weather stations, and they are often far away from the farmers who receive the information," says Shadreck. "That meant that the advice was often of limited use." Now, thanks to a partnership with aWhere, funded by the CTA project, satellite data is being used to provide targeted weather forecasts to combo subscribers. "I am finding the texts very useful," says Winnieildah Hamamiti, a farmer from Mashonaland West who attended the mid-project meeting in Zambia. "Guidance on when the rain is coming, and when to sow seeds and apply fertilisers, has helped me to improve my yields."

Farmers get approximately 20 texts a month with weather alerts and farming tips. The tips are provided by a team which includes ZFU agronomists and livestock specialists, seed houses, stock feed suppliers and experts from the Ministry of Agriculture. The CTA project has enabled partners to increase the range of subjects covered in the texts. For example, farmers in the dry zone are now getting tips which cover all livestock, rather than just cattle, and in areas with higher rainfall, farmers now receive advice not just on maize, but other crops as well.

## **TAKING STOCK**

The regional project review and planning meeting found that despite occasional setbacks – elections in Zimbabwe meant fieldwork was difficult for a couple of months and the project took longer to take off in Malawi than anticipated – much had been achieved. In the three countries, project partners had drawn up digital profiles of over

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*Guidance on when the rain is coming, and when to sow seeds and apply fertilisers, has helped me to improve my yields.*

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75,000 smallholder farmers. Just under 50,000 farmers were receiving weather and advisory services by text. Some 10,000 farmers had received information about drought-tolerant seeds. Over 400 agro-dealers had been trained in climate-smart agricultural practices. And increasing numbers of farmers were buying, or considering buying, weather-index insurance.

The success of the project owes much to the collaboration between the public and private sectors and generators of knowledge on climate-smart agriculture. Oluyede Ajayi points out that all too often development projects fizzle out when donor support ceases. "We want to change this narrative," he says. "One of the best ways of doing that is to establish a strong partnership based on a solid investment case that addresses the interests of partners who were there before the project and will be there afterwards. That's why we've been keen to involve the private sector." If companies dealing in agricultural inputs and insurance have a financial interest in the project – and their enthusiasm was plain to see at the review and planning meeting – there is a much greater chance that its influence will continue beyond its lifetime.

## CHAPTER 3

# SEEDS OF CHANGE FOR FARMERS IN ZIMBABWE



*The seed fairs encouraged farmers to experiment with new varieties, such as vitamin A-rich orange maize.*

**E**rratic rains and unpredictable weather are among the greatest threats to the welfare and survival of smallholder farmers in southern Africa. Providing them with the knowledge and technologies to cope is one of the main aims of the plant breeding programmes conducted by the International Maize and Wheat Improvement Center (CIMMYT).

In September 2016, CIMMYT organised two seed fairs in Mutoko and Murewa districts in north-east Zimbabwe. Funded by CTA, the fairs were attended by over 1350 smallholder farmers, eight seed

companies, dozens of extension agents, local politicians and traditional chiefs, as well as by researchers from CIMMYT, Zimbabwe's Department of Research and Special Services and HarvestPlus, an organisation which promotes more nutritious foods. The fairs were designed to entertain as well as enlighten, and the climate-smart agriculture theme was delivered through drama, poetry and dance, and by face-to-face encounters between farmers, seed companies, extension agents and researchers.

"I found the seed fair extremely educative," says Winnet Chiweshe, who grows 6 ha of arable crops in the rolling countryside in Mutoko District's Old Resettlement. She was one of 100 farmers to win the raffle competition, which meant that she received two packets of drought-tolerant maize seeds from five different seed companies. When the rains came, she planted these seeds, as well as larger quantities of three varieties of hybrid maize. "The samples all turned out very well," she reflects. "I was particularly happy with the orange maize and am planning to sow at least 0.5 ha next season."

Orange maize, also known as bio-fortified Provitamin A maize, was first launched in 2012. It is not only drought-tolerant and resistant to diseases such as maize streak, but also rich in vitamin A. When eaten as a staple, it can provide half the daily requirements of women and children. As vitamin A deficiency is a major cause of malnutrition and disease, orange maize could do much to improve nutrition, especially in remote rural communities.

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*I got good yields from the orange maize I planted after the fair.*

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First, however, farmers had to be convinced that it was worth planting for its taste, as well as its health benefits. In the 1990s, during a severe drought, the government supplied farming communities with imported yellow maize after their crops failed. Most disliked its taste, considering white maize – which they traditionally planted – to be superior. At both fairs, CIMMYT provided lunch for all those who attended. A dish made from orange maize proved a great success, even though many had misgivings when they first saw its bright orange colour.

Maize is consumed as a staple food in Zimbabwe, as porridge for breakfast and *sadza*, which is firmer than porridge, for lunch and dinner. "I got good yields from the orange maize I planted after the fair," says one of Winnet's neighbours, Rose Hungwa, mother of six children, "and my family really like the taste. To me it's as though the flour has been mixed with fried eggs." Indeed, many people who now grow orange maize consider it so tasty that they don't bother with a relish.

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## AN IDEA WHOSE TIME HAS COME

Research institutions like CIMMYT are constantly developing new varieties, but they lack the capacity and funds to get them to large numbers of farmers. CTA believes that seed fairs can be one of the best ways of getting the private sector involved in their distribution. Following an approach by CTA's Oluyede Ajayi, CIMMYT seed systems specialist Dr Peter Setimela held discussions with seed companies, the government extension agency and NGOs. "They were all very keen on the idea of attending seed fairs," he recalls. Despite the extra logistics involved, CTA believed the seed fairs should be held in rural areas to ensure maximum reach, rather than in Harare, the capital city. CIMMYT opted to hold the fairs in Mashonaland East province, where it wanted to build on progress made by its on-farm trials to develop drought-resistant maize.

The local extension agencies, already skilled in organising field days and training sessions, drew up a list of people to attend the fairs. "I instructed the extension agents in each of our 29 wards to identify which farmers to invite," explains Lawrence Makonyere, the District Agricultural Extension Officer for Mutoko. "We tried to choose the best farmers who had the greatest influence, so they would be able to pass on messages about what they learnt to those who didn't attend."

"Every year, we develop around 20 new varieties of maize which are commercially viable," says Dr Setimela. "The seed fairs gave us an opportunity to network with seed companies and meet large numbers of farmers in one place." Although maize has been the focus of most of CIMMYT's work, seed companies were encouraged to exhibit other crop seeds as well, including finger millet, pearl millet, sorghum, groundnut and sugar beans. Farmers were also provided with space to exhibit, and exchange, their own seeds.

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*Women tend to be keener on orange maize because it contains high levels of vitamin A.*

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Over 650 women attended the fairs. According to Oswell Ndoro, CIMMYT maize breeder, women tend to be more knowledgeable than men when it comes to choosing which varieties to plant. "They also have a different attitude towards nutrition," he says. "In my discussions, I find that women tend to be keener on orange maize because it contains high levels of vitamin A. Men are more preoccupied with getting the

highest yields." Under good conditions, orange maize can yield 4 to 5 tonnes per hectare, several tonnes less than some of the highest yielding hybrids, but still vastly superior to the average maize yield for Zimbabwe, which stands at around 1.0–1.5 tonnes per hectare.

## THE VIEW FROM THE FIELDS

Feedback from farmers who attended the fairs has been overwhelmingly positive, with many saying that they have now begun to use new varieties and, in some cases, expanded the area devoted to arable crops. Take, for example, Mary Sikirwai, a 70-year-old widow in Rimbi village, Murewa District. Mary had already developed a close relationship with her extension agents and CIMMYT researchers, having trialled a protein-rich variety of maize in the past. At the seed fair, she exchanged seed with other farmers and bought new varieties



*Dr Peter Setimela and his colleagues at CIMMYT develop around 20 new varieties of maize each year which are commercially viable.*





*Mary Sikirwai, a farmer in Rimbi village, Murewa District, is now planting orange maize as well as various small grains, thanks to the advice she received at the seed fair.*

from the seed companies, including orange maize. Just as importantly, she says, she learned how to improve her agronomic practices.

“I also discovered there was a good market for small grains as many people are eating more millet than they used to,” she says. In the past, she used to grow around 0.25 ha of small grains. Now, she has increased the area to 2 ha. After the fair, she sowed 5 kg of orange maize and this yielded 2 tonnes. “I like it very much,” she says. “It was quick to mature and I didn’t have any disease problems. Next season I’m going to plant 0.4 ha.”

Informal discussions during the fairs suggested that farmers were keen to maximise both crop diversity and diversity within crops as a way of coping with the increasingly erratic weather patterns and the emergence of new pests and diseases. Like many farmers, Mary now plants several

varieties of maize, including two hybrids and a popular open-pollinated variety (OPV) called Hickory King. OPVs do not give such high yields as the hybrids, but at least some of the crop is likely to survive if there is a severe drought or pest outbreak. This is because OPVs have greater genetic variability than hybrid crops. Furthermore, farmers can plant their OPV seeds the following year, without suffering the decline in yield that occurs if they use seed from their hybrid crops.

The extension agencies are as fulsome in their praise of the fairs as the farmers. “I think the seed fairs will help farmers to improve their yields and income, and ensure better food security in our district,” says Douglas Makuvira, Muwera District Agricultural Extension Officer. “The fairs have proved the best way of getting farmers to meet researchers and seed companies and I’d like to see more of them in future.”

The fairs also had a profound influence on the extension agents who work on the ground with farmers. For example, Shiela Kamoto Gambara, who provides advice to some 860 farmers in Mutoko District, says she is now changing her recommendations to farmers, thanks to what she learnt at the Mutoko seed fair. “I’d never heard about orange maize before, but now I’m encouraging farmers to plant it, along with other varieties which I saw for the first time.”

## INVOLVING THE PRIVATE SECTOR

Although Seed Co, Africa’s largest seed merchant, has 20 depots across Zimbabwe, each supplying local retailers, as well as a network of motorised agronomists, it doesn’t find it easy to reach farmers in remote areas. However, the seed fairs in Mutoko and Murewa meant its representatives could talk to farmers from all corners of these two districts. “It was a very good platform to expose a whole range of our products,” says product development manager Dean Muungani. “The only expense for us was getting there and putting up our tent.”

Prime Seed Co, Seed Co’s vegetable business, has been given responsibility for promoting the ZS242 variety of orange maize. “The seed fairs were a big success from our point of view,” says sales manager Masimba Kanyepi. “We were able to talk to the farmers about the benefits of growing and eating orange maize and they could also taste it. The fact that it’s rich in vitamin A is proving a very good selling point.”

Soon after the seed fairs, the Government of Zimbabwe announced that all maize flour should be fortified with vitamin A, iron and zinc. “This adds extra expense for flour millers, but we see it as a business opportunity,”

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*The fairs have proved the best way of getting farmers to meet researchers and seed companies and I'd like to see more of them in future.*

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explains Rinos Mashongera of National Tested Seeds (NTS). “Orange maize which has been bio-fortified through plant breeding might attract a premium price in future. It should also appeal to millers, as it will save them the expense of adding vitamins.” It could prove particularly important in rural areas, where small-scale millers are unlikely to have the means to fortify their maize with vitamin A by chemical means.

One company which benefited greatly from attending the fairs was Mukushi Seeds, established in 2014 by a former plant breeder from CIMMYT. The company is still a relatively small player, but it is growing rapidly. During the year up to November 2017, sales increased by 40%. “The fairs definitely helped to increase our visibility, and although we didn’t sell large quantities at the fairs, they led to an increase in orders afterwards,” says finance manager Linnet Matinyori.

So what of the future? “We would certainly like to hold more seed fairs, not just here in Zimbabwe, but in neighbouring countries such as Malawi and Zambia,” says Dr Setimela. “There’s no doubt that seed fairs are one of the best ways of communicating with farmers and involving the private sector and government.”

## BREEDING FOR SURVIVAL AND GOOD HEALTH



*Orange maize, which is rich in vitamin A, is popular with both farmers and consumers.*

Over 200 million households in sub-Saharan Africa depend on maize for their food security and economic well-being. However, maize yields in the region are the lowest in the world, partly because farmers have been slow to adopt high-yielding varieties. Low yields are also a reflection of poor and erratic rainfall, degraded soils and poverty: many farmers simply can’t afford to purchase high-yielding varieties and the inputs they require.

For several decades, CIMMYT has been developing new varieties of maize which are drought-tolerant and resistant to some of the more common diseases. More recently, it has focused on improving the nutritional quality of maize, with the successful introduction of Quality Protein Maize (QPM), which is proving popular with farmers in West Africa, and Provitamin A maize in southern Africa. So far 11 varieties of the latter have been developed, and six are commercially available. Each year, CIMMYT scientists in southern Africa evaluate between 200 to 300 new varieties on-station and on-farm, and about 20 new varieties are made available to seed companies for registration and commercialisation.

CIMMYT’s country representative, Cosmos Magorokosho, has played a key role in the development of orange maize. This has involved crossing a vitamin

A-rich variety developed in Mexico with local, drought-resistant varieties. “It has been a time-consuming and expensive exercise, partly because we have to keep testing the vitamin A content of the crosses we develop,” he says. When people complain that the new varieties of orange maize yield less than the best white maize hybrids, he points out that plant breeders have spent 50 to 60 years developing white maize hybrids, and just five years developing orange maize. “Each year we see an increase in the yield potential of orange maize, and it’s already reached more than 4 tonnes per hectare, which is good,” he says.

He believes that orange maize will be particularly important in the more remote rural areas. People in towns, and the better off, can afford to buy carrots, butternut squash and other vegetables which contain vitamin A, but many families in rural areas cannot. The great thing about maize is that the children of even the poorest families eat it in *sadza* and take snacks made out of maize – boiled or roasted in season; mixed with cowpeas at other times of year – when they go to school. All of this should help to reduce malnutrition and provide farmers with a profitable crop. Orange maize would really take off if large food processors and public institutions, such as schools and the army, decided to buy it.

“While there is much information about challenges and impacts of climate change, there is far less about the solutions that could benefit smallholder farmers,” says Oluyede Ajayi of CTA. “By supporting projects which promote better access to drought-tolerant seeds, such as the seed fairs in Zimbabwe, CTA is demonstrating its commitment to providing solutions to the challenges of climate change.”

## CHAPTER 4

# CLIMATE-PROOFING GROUNDNUT PRODUCTION IN MALI



In June 2016, Affou Berthé, a farmer from the village of Sirimana, attended a seed fair implemented by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and supported by CTA. In recent years, he had abandoned groundnut production as yields were poor, largely because of recurrent drought, and other crops, such as rice, were more profitable. However, following the seed fair, held in Sikasso, he began cultivating groundnut again.

“At the seed fair we were given four improved groundnut varieties [Fleur 11, ICGV 86015, ICGV 86024 and ICGV 86124] which have given us much higher yields than the traditional varieties we used to grow,” he recalls. “The new varieties are also much more resistant to drought.” Many other farmers in his village had previously abandoned groundnut to focus instead on cotton, maize and rice; now, like Affou, they are growing groundnut again. “We can all see that there’s more profit in groundnut than rice,” he says.

Affou was one of over 500 farmers who participated in one of the two seed fairs in Mali, held in 2016. The first was in Sikasso, a city in the south of the country, on 20 and 21 June; the second took place immediately afterwards in Kayes, a city located to the Northwest of the capital Bamako. The fairs included plenary sessions, group discussions and stands where seed companies and others could exhibit their products and services. The fairs provided an excellent opportunity for networking, enabling farmers to meet representatives of government agencies, research institutes, NGOs, private-sector companies and district planners.

“The main objective of the fairs was to create awareness about the advantage of using improved varieties of groundnut and maize which are drought and disease tolerant,” says Dr Ayoni Ogunbayo, who manages an ICRISAT project, ‘Increasing groundnut productivity of smallholder farmers in Ghana, Nigeria and Mali’. “Groundnut

and maize yields could be greatly increased in the region if farmers had better access to improved varieties.”

According to Dr Ogunbayo, the seed fairs helped to create awareness about the importance of using improved varieties, and the potential of groundnut as a cash crop and source of nutrition. Approximately 400 farmers were provided with mini-packs of 200gm per variety of improved groundnut seeds. Two thousand copies of flyers with basic passport data of the improved groundnut varieties and 250 copies of brochures on groundnut production and aflatoxin management were also distributed. The materials were designed to be both a learning aid and a convenient reference source for those involved in the production and consumption of groundnut. Farmers attending the fairs also benefited from advice on good agricultural practices, including post-harvest technologies and efficient marketing.

## SEEDS FOR THE FUTURE

During recent years, climate change has had a significant impact on the yields of both groundnut and maize, two key crops for West African food security. It is estimated that droughts have depressed maize yields by some 15% and groundnut yields by 38%. This has frequently led to the exhaustion of local seed stocks, as poor farming families have used the seeds as food. It has also encouraged many farmers to abandon the production of groundnut in favour of crops like cotton and rice.



Farmers queuing to receive mini seed packs of improved groundnut varieties.



At the seed fairs, farmers were introduced to four improved varieties of groundnut, all developed by ICRISAT. The fact that one of these varieties, Fleur 11, is affectionately known by local farmers as 'Alason', which means 'gift of God' in the local language, Bambara, shows how highly it is regarded. It is an early maturing variety and exhibits excellent drought and disease resistance. It is also capable of yielding up to 2 tonnes per hectare and gives higher yields than traditional varieties. The other three high-yielding varieties of groundnut promoted at the fairs were also high yielding, early maturing and resistant to drought. One variety, ICGV 86024, shows particularly good resistance to foliar diseases which often attack fields of groundnut.

Farmers planting improved varieties of groundnut have seen a significant increase in their incomes and also improved their nutrition and health. "The profits I've made from groundnuts have helped me to meet all my needs, to pay for medical care and help my children and grandchildren," says Affou Berthé. In the past, he used to walk long distances to reach neighbouring villages and some of his fields. Now, thanks to the profits he has made from his groundnut production, he has been able to buy a bicycle, something he could not afford when his main crop was rice.

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*One of these varieties, Fleur 11, is affectionately known by local farmers as 'Alason', which means 'gift of God' in the local language.*

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According to Yaya Bengaly, another farmer in the village of Sirimana and the person in charge of the local cooperative, Agno Gnétaso, those attending the fairs now have a much better understanding of how they can benefit from groundnut production. "We learned a lot of things that we used to ignore about the importance and usefulness of groundnut, as well as the advantages of using improved varieties," he says. "The results are visible to the naked eye in our fields."

Furthermore, the revival of groundnut production has proved very beneficial to the many women who attended the fairs and who are now planting improved varieties. They have increased their incomes and become less dependent on their husbands. "The women are now in a better position to buy clothes and kitchen utensils and help their husbands with the family expenses," says Yaya.

Fatogoma Bengaly did not attend the seed fair in Sikasso, but it still had a significant effect on his life. "Several members of our cooperative went to the fair," he recalls. "When they returned they shared information about what they had heard, as well as the seeds they received at the fair." Fatogoma estimates that yields with the improved varieties are almost double those of traditional varieties, even when the rains are sparse. In August 2016, the village received 286 mm of rain; a year later, during the same month, it received just 95 mm. Yet such are the drought-resistant improved varieties that farmers still achieved excellent yields.

You will hear similar stories in other parts of the country. For example, farmers in the village of Tamala, which is situated just a short distance from Bamako, were supplied with improved varieties of seed by the seed company Faso Kaba. One of the beneficiaries was Drissa Coulibaly. "We haven't had enough rain in our village this year," he says, "but



*ICRISAT stand displaying improved varieties of groundnut, posters and dissemination materials.*



*Farmers collecting seed packs of improved varieties.*



*Processor with value-added products.*



*Collecting information on groundnut management.*

we have seen that with the new improved groundnut varieties that we planted, our fields haven't been much affected. We are expecting a good harvest."

## MEASURING SUCCESS

An evaluation of the impact of the seed fairs was carried out in two phases. The first phase, conducted by a team from ICRISAT between 16 August and 1 September 2016, focused on 14 fields in Sikasso region and 34 fields in Kayes region. A second evaluation took place the following March. During the course of the evaluations, 260 farmers, including 139 women, were interviewed about their use of improved groundnut varieties, adoption of good agricultural practices and the performance of the seeds.

"Everybody we interviewed said they were very satisfied with the improved varieties they received at the seed fairs," says Dr Ogunbayo. "Despite a drought occurring at the flowering stage of the crop at Kayes, farmers still succeeded in getting a good harvest with 50% increase in yield compared with local varieties." The ICRISAT team noted that the farmers had managed their crops well and were very enthusiastic about the new varieties.

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*Despite a drought occurring at the flowering stage of the crop at Kayes, farmers still succeeded in getting a good harvest.*

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*The seed fairs introduced farmers to a wide range of technologies.*

Some clear preferences emerged. Most of the farmers in Sikasso region favoured varieties ICGV 86024 and ICGV 86015, while those in Kayes preferred Fleur 11 and ICGV 86124.

During recent years, Faso Kaba has collaborated with ICRISAT on the distribution and popularisation of new varieties of seed developed by the plant breeders. This has been undertaken with support from the US Agency for International Development's Feed the Future initiative, which focuses on three countries, one of these being Mali. Faso Kaba was able to promote drought-tolerant varieties of groundnut at the two seed fairs and distribute flyers describing their passport data, production techniques and harvesting requirements. After the fairs Faso Kaba sold more than 50 tonnes of improved groundnut seeds to farmers. The largest orders were for Fleur 11, with many farmers telling the company that they particularly liked this variety as it had a short growing cycle and was resistant to drought.

According to Mme Maimouna Sidibé Coulibaly of Faso Kaba, the fairs' success owed much to the fact that they were highly educative. There were many presentations to improve farmers' understanding about the

importance of improved varieties and relevant production techniques. Scientists, technicians and farmers also discussed constraints, challenges and opportunities in seed production systems in West Africa. These include seed production techniques and the effect of abiotic and biotic stresses which attack groundnut and maize production in West Africa. The problems caused by aflatoxins, potentially life-threatening toxins produced by fungi which grow on crops such as groundnut and maize when poorly stored, were also discussed during the programmes.

Among the non-governmental organisations to attend the fair in Sikasso was GRADECOM, which has been involved in various agricultural programmes in the region since 2001. These include a partnership with ICRISAT to promote improved varieties of groundnut under the Feed the Future project. According to its executive director, Fousseyni Dembele, local communities now have a much better understanding about how climate change is affecting their lives. "In the past, the communities didn't really believe in climate change, but with the various things they've observed recently they now understand that it is a reality," he says. Farmers have begun to notice significant changes in the pattern of rainfall, with excessive



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*The women are now in a better position to buy clothes and help their husbands with the family expenses.*

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precipitation at times, and none at all when rain is expected. “The seeds which the farmers used in the past were traditional varieties which were not resistant to climate change,” continues Fousseyni. “The introduction of new drought-resistant varieties of groundnut is undoubtedly helping to break the cycle of vulnerability.”

He says that farmers have been unanimous in their praise for the new varieties of seeds. Indeed, some have even come into GRAADECOM’s office in Sikasso with samples of the seeds they have produced as evidence of the quality of the seeds which they received at the fair. “That’s one way for them to show their satisfaction,” says Fousseyni. “The fair was a complete success and we would like to see more fairs in future.”

This project is evidence of CTA’s commitment to finding workable climate-smart solutions for farmers. “We collaborated with different partners in the field to ensure that smallholder farmers get the necessary support to access the various technological options that are available, as well as information about new seed varieties,” says Oluyede Ajayi, Senior Programme Coordinator for Climate Change and Agriculture. “This is helping farmers make informed decision as they cope with the challenges of climate change.”



*Seed fairs provide farmers with a great opportunity to showcase their own produce.*



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Stories  
from the field

## PROMOTING CLIMATE-SMART FARMING IN SUB-SAHARAN AFRICA



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