

# LEAD FARMERS



*Enhancing Agricultural Resilience and Sustainability*  
**IN EASTERN AND SOUTHERN AFRICA**



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Produced by the International Maize and Wheat Improvement Center (CIMMYT) for SUSTAINABLE INTENSIFICATION OF MAIZE-LEGUME CROPPING SYSTEMS FOR FOOD SECURITY IN EASTERN AND SOUTHERN AFRICA (SIMLESA) with funding from the Australian Centre for International Agricultural Research (ACIAR).

JOSEPH NTIRIVAMUNDA  
*works with his daughter Gysele*  
MUSANZE, RWANDA

Maize is currently grown on 35 million hectares of land in Africa and is easily the most important staple food crop, feeding more than 200-300 million people and providing food and income security to millions of smallholder farmers. It is the key staple in eastern and southern Africa, providing the principal source of calorie nutrition and food security.

Nonetheless, the region faces many challenges, including lower than average yields, crop susceptibility to pests and diseases, and abiotic stresses such as droughts that can be frequent and severe. There is also widespread lack of access to high-yielding stress resilient improved seed and other farming innovations. So there is a great need for scalable technologies, adapted to farmers' conditions, which can contribute to sustainable and resilient maize agri-food systems.

The success of the high input approach (fertilizer and irrigation water) accompanied with modern varieties contributed immensely to averting hunger in South Asia in the 1960s and '70s during the 'Green Revolution.' The limits of this approach have been documented in recent decades, with

associated environmental problems (such as ground water depletion) and unsustainable economic policies (such as fertilizer and water subsidies) highlighting the need for new approaches.

There are two options. Food production can be increased by extending crop production into hitherto uncultivated lands. Or second, better farming practices can increase yields on existing agricultural land. The first option may look easy on the surface but in reality is fraught with many risks since the availability of arable land is finite and not all ecosystems and biodiversity can be sacrificed for agriculture. Thus, the second option is the most viable and involves 'sustainable intensification' of agriculture, which works to increase crop yields without exerting negative environmental impacts and without expanding the agricultural frontier.

In the following pages you will read inspiring and moving accounts by men and women farmers across eastern and southern Africa who have bravely embraced change to improve their farming methods and hence the lives and

livelihoods of their families. These men and women have been associated to one extent or another with the Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) program. The SIMLESA program was implemented for 9 years between 2010 and 2019 in 7 African countries (Ethiopia, Kenya, Malawi, Mozambique Tanzania and from 2014, Rwanda and Uganda).

The accounts by farmers in their own words that you will read in this book drive home the core philosophy of the SIMLESA program. That critical paradigm shifts in smallholder farming are possible, leading to positive and potentially lasting impacts. Many smallholder farmers in eastern and southern Africa already live in very challenging conditions characterized by poverty and low levels of economic and social development.

Tackling the challenges of climate change and resource scarcity (especially arable land and water) require that farming and food systems across the globe undergo fundamental shifts

in thinking and practices. While the global community seeks to tackle these grand challenges of the 21st century, the proposed solutions for millions of our neighbors in Africa must not and cannot ask more from them than they can afford. This is why cost-reducing, yield enhancing and resource conserving methods of farming deserve to be prioritized in the region. Conservation farming methods, adapted to smallholder economic and social milieu, is one promising approach.

We hope you will be inspired by the story of Dailess Kasawalla, a 71-year old widow from Kasungu in Malawi who concludes that she would have had to abandon her farm if it were not for the new conservation farming methods she was introduced to. Lacking any social support, her sole source of livelihood are the maize and soya beans she grows using less burdensome conservation farming methods. "Now I harvest even more maize than I did then. I also grow soya beans, which I use for making porridge and sell for a good profit to earn money for other household needs. Soya bean is a very profitable crop," she says.

Or the story of Nalongo Nabayaza Proscovia from Nakasongola, Uganda who has 14 children but who by her own account uses small basins to plant maize, thus avoiding overly disturbing the soil, which then stays moist and retains its fertility. In recent seasons, she has managed to grow more maize, ensuring food security for her family up to the following harvest. "We have also reduced labor quite a lot...and I even grow enough to sell some surplus," she informs.

Or the story of Joseph Ntirivamunda, a former judicial officer from Musanze, Rwanda, who opines that "being a farmer is riskier than being a judge". Using conservation tillage and conserving crop residues on his plots, he has observed that the crops do better even under difficult growing conditions. He says: "...zero tillage is a good way of controlling soil erosion. Even if the rain is heavy it doesn't wash away the soil, and fertilizer stays in the soil rather than being washed away by runoff. I was also taught leaving crop residues helps the soil retain moisture...so our crops are more able to resist erosion, disease and drought than they were before."

The efforts made in the SIMLESA program to propose smallholder adapted conservation agriculture farming are a major contribution to the needed changes in smallholder production systems. Moreover, the SIMLESA program has generated large amounts of multidisciplinary data and scientific information, highlighting the opportunities for these critical paradigm shifts in smallholder agronomy, agricultural value chains and rural institutions and demonstrating how they can be achieved for sustainable intensification and climate smart agriculture in this region of Africa and beyond.

#### **Paswel Marenya**

Economist and Senior Scientist, CIMMYT



RICHARD SEMYALO KWATANSIKA  
with his mother, three wives and children  
NAKASONGOLA, UGANDA

# “Hold the hoe to get what you want.”

I was given my first two names, Richard Semyalo, when I was young, then gave myself my third name *Kwatansika* when I was old. It means, “*hold the hoe to get what you want,*” which is what I have got out of farming. Whoever uses the hoe can get what they need for their life.

Now I've been farming here for thirty years but I was born further north in Lango. My grandparents had migrated from here to live there. We were chased back here again during the war that ousted Amin when I was ten years old.

When we came back, we found the soil hadn't been used. The forests were still here, and the land was fertile. But there was no farm, so I went to stay with my uncle in Lwampanga, as our father had died in Lango.

Later my uncle came to farm here on an untitled plot the chief gave him. He brought iron sheets and built a house for his family. But the schools were far away and the area was bushy, making it difficult for a young child to move, so I was sent to school in Irima, where I had a brother.

I stopped school after completing my PLE [*Primary Leaving Examination*]. My uncle had died, and I didn't see why I ought to continue studying. Instead I came back here when I was fifteen years old to help my elder brother farm until I got my first wife and this piece of land. That's how I started.

Even then I liked farming, even though we didn't always have enough to eat. The reason is, my father was a farmer, and even though I didn't get to know him well because he died when I was four years old, I had heard a lot about him and knew his work, which made him what he was, was farming.

Later, I saw other farmers were also getting good returns. You can get food to eat, you can get money, and you can lead a good life. Today my farm is over 100 acres. I grow maize, beans, bananas, coffee, sweet potatoes, cassava and cotton. I also have livestock, and mango and citrus trees. But the truth is there have been big changes since I started farming 30 years ago.

Before there were a lot of forests and reliable rainfall, so we never used to experience drought. Our ponds had water throughout the year without getting dry.

But now the situation is very bad. First, we have cut down the trees and destroyed all the forests. When the wind starts, it just moves. Secondly, the soil has lost fertility. We have over-used the land without giving it any rest.

Some years there is drought and people don't have food. For example, when we reached this place there were serious food shortages, and 1997 was also a bad year. Famine hit many people.

In those years, I hired farm workers to dig but I wasn't getting profit. I put in a lot of money, yet the crops would die, so I decided to stop using workers.

Now I just I dig my basins in the dry season and plant when the rains come, together with my wives. We spray then wait for money.

I got this idea from an extension worker who came to visit us [*from the National Agricultural Research Organization*] and helped me move from where I was to another level with SIMLESA.

Before I would spend a lot of time deep digging, plowing and harrowing, then end up planting late and miss out on the season. Now I spray herbicide and dig my basins during the dry season, then just wait for the rains and plant.

I also use improved seeds and apply manure when I see the soil is not fertile where I am going to plant. We have also got a ripper and direct seeder. When we slash we don't burn and the residues help cover the soil, which improves soil fertility.

Before SIMLESA came, maize was in high demand but my farm was small-scale compared to how I farm today. Since then I also started growing more beans, we have enough for sauce, and at the same time you can earn good money by selling the surplus. Planting beans is also very good for the soil.

We have a Maize and Beans Innovation Platform in our sub county, and I am the chairperson. This helps us farmers get together and have a stronger voice. We can go into a market with our produce bulked and get a good price.

When we farmers join together in a platform, we also learn new things. You hear, “*So-and-so harvested ten bags of maize,*” meaning that person grows a lot, then take the opportunity to see why that person has more than you and start increasing your output.

As a result of all these changes, I have managed to pay for and get titles for my land. I also get enough income from my farm to pay for the education of my children, even though they are many.

My people know the children will be able to finish school and we don't expect anybody to come and tell us to leave this place.

That name I gave myself *Kwatansika* has become a registered company, Kwatansika Investment Company Limited. I provide catering

supplies through tender contracts and buy maize grain to mill and sell as maize flour.

When you are doing something you like and are given advice, you quickly adopt and start practicing. However, it is also true that it takes a lot of time for some farmers to change. They want to wait and see what you have done and what you achieve before they adopt.

At first my neighbors thought I would spoil my land. Even today, not all farmers in this village use these new methods – about eight do – but the numbers are slowly picking up.

All those who thought I was going to spoil the soil have changed their way of thinking, even though they haven't started practicing the new methods like I do. Many of them have suffered from food shortage, whereas we have had enough to eat. So they ask, “*Why is this one food secure while we don't have enough?*”

**RICHARD SEMYALO KWATANSIKA  
NAKASONGOLA, UGANDA**

## “Farming can be good for my daughter.”

I see farming can be good for my daughter, so I encourage her to farm, even if she has other work to do, since farm work isn't only for men. I would like her to be a farmer like me.

I myself need to do farm work because my whole family depends on me, so I disagree when people say farm work is only for men. It is not only the work of a man but also for a woman.

You can say women don't need to do farm work because there is the man who should work for the family, but what if there is no man, what would you do? We women must do farm work too.

Some women may stay home while the husband goes out to look for food, but for me this is not true, since my husband left, so I have to go out and look for food for my family.

After he left, I took the position of the man in the household. Since then I have bought my own land and try to work hard to take care of my children, so things move on.

Now I am the household head. I am the one who makes all the decisions, so there are challenges. But I like farming because if you don't farm you can't eat, so I have to like it.

I grow maize and beans to get food. If there is surplus I can sell some of the crop to cover expenses like paying school fees. I have also managed to build this house.

The challenges we face are lack of capital, pests, and weather. There have been times when I didn't have food due to insufficient rains. We tried to plant but didn't manage to harvest anything, so we had to buy food for six months that was a big problem at that time.

I also lead our farmers' group [*organized by RECODA*]. Our activities are savings and farming. We grow maize and beans and I also encourage my fellow women, telling them if we work hard we women can do a lot.

When the SIMLESA project came, I was the first to start and agreed to give some of my land for a demonstration plot because I like learning very much. They taught everyone in our group how to plant using the appropriate spacing and other aspects of conservation agriculture.

When we started to practice what we had learned some of our neighbors laughed at us, but others were happy to learn how to farm more easily, so they saw it as a good thing.

Now I've been practicing conservation agriculture on my own land for two years. What I was not doing before was spacing and digging bigger holes for planting maize, which I do now. I have also started to apply herbicides to kill weeds, which doesn't take long, and this has also helped me.

Before, we didn't do intercropping because we doubted beans could grow comfortably with maize in the same plot. It just didn't seem possible, so we were growing maize and beans separately.

But now we can see it is good for the soil to grow beans and maize together and you get a good harvest. I also leave the crop residues to decay and add nutrients in the soil, so I don't need to use a lot of fertilizer.

The main benefits I have got are the new varieties of maize and bean seeds that I have planted on my farm. I have also had training, for example in how to spray herbicides, and I have got more yields and sold the surplus.

**RUKAYA HASANI MTAMBO**  
*fetching water with her daughter Mwanamisi HAI, TANZANIA*



## “Wealth is in the soil.”

My parents went to Zimbabwe with my brothers, leaving me alone with my grandmother who was very poor because she had no husband or anyone else to help her.

After I turned 11 years old, I just stayed home because there was no money to pay my school fees. My grandmother had a field where she grew maize and cassava. I helped with household chores like drawing water until I was 15 years old, then got a job on a tea estate.

When I knocked off from the estate, I would go to help my grandmother, who taught me how to prepare the land and plant crops, until I started farming on my own when I was 17 years old.

After I was married, I met a lot of challenges. I was farming a big piece of land, but the yield was usually not enough for my family. But I never thought about leaving farming like my parents did because I knew I would do better in future. I had hope, as we Malawians say, “*Chuma chili mthaka*” – “*wealth is in the soil.*”

I am 57 years old now. Our farm is ten acres. We grow maize, soya, groundnuts, cassava and sweet potato. I have six children and using C.A. [Conservation Agriculture] methods we harvest enough maize to feed the whole family.

The main problem with conventional farming was lack of knowledge about how to improve. For instance, spacing between the rows was

big, even the spacing between the plants was too far – hence the low production. It’s easy to realize more yields with C.A. farming because we have been taught what to do.

I started adopting C.A. methods after meeting our extension worker [from the Ministry of Agriculture, Irrigation and Water Development], who I was willing to listen to because the amount we were harvesting was so little, we needed to try the improved farming methods.

Despite having a small farm, I gave part of my land for use as a demonstration plot so I could learn more, leave the old ways taught by my grandmother, and test what the extension worker was teaching us – so my children could learn from there as well.

When I did this, those who don’t think straight were wondering, “*Will he get anything from that land?*” And when we started spreading the residues in the field, some people couldn’t believe what we were doing. But today they have seen the benefits and understand I was not as crazy as they thought.

Today we use our heads when we farm and this is as good as going to school because we are now able to produce enough food for the whole year. That wasn’t possible in the past.

We can prepare land, spread the residues, plant and get a good yield, using less than

half the amount of labor we struggled to do in the past, when we had to do hoeing, ridging, weeding, bunding, and plowing, yet the yields were still low.

I grow more maize with less labor on less land and use my excess land to diversify with other crops like sweet potatoes, ground nuts and soya beans, which add fertility to the soil, so when I plant maize the yield is high, and I can sell the surplus.

In the past the food we produced would only take us up to December or January. Now it takes up to June, even up to the next harvest, so we have enough food to feed ourselves throughout the year.

I would say my life is better than my parents’ life. They went to Zimbabwe in search of greener pastures, but didn’t bring much money when they came back – actually they were still poor. They even envied me, even though I was the one who remained behind.

It is better to stay here and farm because “*wealth is in the soil.*”

**CARLOS KAMOTO**  
*planting maize with his wife Margret*  
**KASANGU, MALAWI**



## “My field is a school where others can learn.”

In our house we are *Ngoni*, we speak *Chichewa*, we rely on farming for our living, and we help each other do whatever work comes our way.

In our *Ngoni* tribe, children start working with their parents from seven years old onwards. We take them with us to the farm and start teaching them bit by bit how to plant maize and how to hoe – just like going to school – so as you grow up you get used to working with your parents and farming becomes a habit.

I stopped school when I was 10 years old because my parents were very poor. Before then other people would hire me to help graze their animals early in the morning so I could earn money to buy clothes for going to school. I also had to help my parents do their work, so I failed to continue my education.

After leaving school, I continued looking after other people’s animals to earn money for my clothes and food. Sometimes I would just stay home and sleep. I never thought I’d reach this far because we were living in extreme poverty.

When I was seventeen years old, I got married and went to stay with my husband in his village. In our *Ngoni* culture, your husband’s parents give you some farm land when you get married and your parents do the same, so in the end you get two plots of land to farm with your husband. So this land we are farming now is owned by both of us.

Before doing any kind of work, we discuss what to do together, and we help each other. When

it comes to planting, which we did today, I am in-charge, but the whole family shares the burden of the work. We are all responsible for watching over the field until we harvest, then my husband sells the maize and I look after the money, so we work together.

We have two acres of land where we plant maize and soya beans. Sometimes we plant common beans, and groundnuts in another field, but mainly we grow maize because that’s what makes us *Ngonis* strong. It’s our staple food.

I am very happy to be a farmer because thanks to farming my life is better than when I lived with my parents. If you don’t like farming, you will be hungry, your children will be malnourished and your poverty won’t end.

Nowadays we are doing well in our household. We farm as a family and nobody is sick. It is only hard when one of us is sick and we have to outsource labor. Otherwise farming is easy for us and gives us a good life.

Before we had a lot of challenges. We often got low yields, so food was a problem. I had to go to work as a casual laborer on other farms just to be given food.

Now I grow my own food, I don’t need to go to work on someone else’s farm, and our small piece of land produces a lot. Before the SIMLESA project came I used to harvest one ox cart of shelled maize from all the land we farmed. Now I am able to harvest three oxcarts of maize, so there is a big difference.

We have learned to plant our maize seeds closer together, which I like. We also have more time to rest, since if you can control the weeds you have at least three or four weeks without having to work after planting, as the field stays clean. We are only busy doing weeding when there are not enough residues.

Now we have seen with our own eyes these new methods are beneficial and we want to continue what we are doing. The extension workers [from the *Mozambique Institute of Agricultural Research*] have told me my field is a school where others can learn. Farmers come to ask for help and I go with my husband to help measure the lines in their fields and teach them what to do.

Why should I leave farming and move to a town? I would be stranded with nothing to do. It is better to stay here and continue farming, so others can learn from me.

We grew up learning from our parents. Now I have seven children who also follow what their parents are doing. If they don’t, they might get in trouble for stealing other people’s maize and end up in jail.

I want my children to learn from us so if we die they can continue practicing what we are doing. I myself also want to continue learning, so I will not stop.

**MARIA GORETE**  
**ANGONIA, MOZAMBIQUE**



## “I don’t have to go far away to look for work.”

Not long after I was born here in *Ngoni* land my father went to work in South Africa, since in those days money was scarce and he had to go out to make a living.

As a boy, I worked as a laborer on someone else’s farm because my father was poor and couldn’t support me. It was hard work, growing tomatoes, but you have to go through hardship if you want to better yourself – you reap what you sow.

When I was twenty years old my father gave me a small piece of his land and I started to grow maize, since I realized that I was getting older – if I wanted to get married I would need to farm on my own land to support myself and my family. Now I am 56 years old, and I’ve farmed my own land for more than thirty years.

My parents only grew maize and I do too – it’s our staple food. But I also grow soya beans and common beans, which we eat as relish. Another difference is I practice conservation agriculture and I harvest more than enough maize, so hunger is minimal, and whenever there is any surplus, I sell, so farming has improved since my father’s time.

When TLC [*Total Land Care*] came here, they told me they liked my land and asked me to allocate some for a demonstration plot to help me improve my farming. They brought improved maize and bean seed, fertilizer and advice, and we did the planting together.

At the end of the first season I harvested gallons of beans and an ox-cart full of maize, so I realized this new type of farming was very productive. Next season I did what I was taught and harvested more than in the first year.

I have practiced conservation agriculture for four years now. Each year I try to keep the crop residues after harvesting but neighbors hunting for field mice set the residues on fire. I try to tell them not to, but they just wait to burn when we are away.

Even though there are plenty of challenges, I’m better off now than I was before. My farm is more productive, so I don’t have to go far away to look for work, as my father had to do.

**JANUARIO LECODI**  
*with his wife Joana*  
ANGONIA, MOZAMBIQUE



## “We make decisions together.”

We women need to be strong because we are the ones who are responsible for giving birth and looking after children, milking cows, cooking food and other household work.

My husband also works hard. He's responsible for farm activities like planting, weeding, and harvesting, and I also do some work on the farm and help bring in the crop.

He decides what to plant or when to change crops. However we make other decisions together through discussion. I don't just unquestionably accept whatever he decides, so we women have more equality than in previous generations.

We like farming and prefer to live here on the farm than in the city because this is the only way of life we know, and living here is also convenient. We eat what we produce.

The main challenge we face is rain, both its scarcity and timing. We sometimes get no rain when we need it at planting time, and too much rain when we need dry weather for harvesting.

When extension workers came here [from the *Ethiopia Institute of Agricultural Research*] to make a SIMLESA demonstration plot on our land I was not very happy because I didn't like the idea at first. But my husband decided to accept their proposal.

As time went by, I have become more comfortable due to the positive results. Before our diet mainly consisted of maize. Now we have a greater variety of crops, such as pigeon pea and common beans, so we eat better than before.

Farmers who come to visit us from the surrounding region have been very complimentary, and due to profits from the surplus we can dress better, we look after our children better, and we have more time to rest.

**TADELECH LEDAMO**  
*cooking with her daughters*  
**BORCHA, ETHIOPIA**



## “What kind of farming are these people doing?”

We never have a problem with hunger because we help each other. If my neighbors don't harvest and I have some food, I can help them, and the next time they harvest they return the same amount to me.

I have been farming here for more than thirty years. My father also farmed this same land. In his time the land was fertile, but nowadays the fertility of the soil is so poor you have to use fertilizer.

We also had floods in former years, but they weren't big enough to cause as much erosion and destruction as they do nowadays. Pests are another big challenge. Last season, fall armyworms fed on our maize – a problem we hadn't seen before.

However I continue growing maize and beans because this is how our parents raised us. Being a farmer is what I know how to do, and I get food out of it, as well as paying school fees for my children and other expenses, by selling the surplus.

As chairman of our irrigation association, my responsibilities are to supervise the water distribution, make sure the canal is clean, and look after other issues like strengthening the

infrastructure. There are 180 members but being the chairman is not very difficult because the farmers themselves are committed – they value what they've invested.

I am also a member of a SIMLESA farmers group [organized by RECODA] that has taught us about conservation agriculture. Together we cultivate a demonstration plot that is completely different from other farms. So looking at it is a learning opportunity for all of us. The crop has done very well, and everyone wants to know what was done there that brought such good results?

I decided to join the group because I wanted to get this knowledge. Others didn't join because they didn't realize the importance of what we are doing, but now everyone wants to benefit from this opportunity.

The main difference I observed was how we planted the plot, which was really different from how we used to plant in the past, and the good results compared to our traditional practices.

One reason for this difference is the maize seeds are sown in bigger and deeper holes, retaining moisture longer. We also intercrop, which we have not done before, growing maize

and beans in one plot, and both maize and beans have performed very well.

When we started to plant without preparing the land in our traditional way, my wife and neighbors were surprised. They were wondering, “*What kind of farming are these people doing? Have they forgotten what our forefathers taught us?*”

My neighbors didn't say this to me directly, but they were discussing among themselves when they passed the farm, and later when the harvest was good they were even more surprised. Since then about fifty farmers have copied what we are doing because the demonstration plot is near the road, so many people pass by.

The most important benefits I have got from conservation agriculture are knowledge about the environment and increased income. I continue working with the group and extension workers who come to teach us new farming techniques. We are confident that in future our farming will be even better.

**MUSA HASANI MTAMBO**  
HAI, TANZANIA



## “As a small boy, I watched what my father was doing.”

My father was a mixed farmer. His main crops were maize and groundnuts, but he also grew sugarcane, beans, millet and other crops. He did agribusiness, selling his surplus to other farmers in times of hunger, and he had a mill.

I myself started to farm by helping him weed and found the job very difficult, as I was around seven or eight years old. But now I find farming is very easy because he trained me well.

In those days I wanted to play with other children, but my father was a disciplinarian. He would hold me back until I did my work for him. At the same time I went to school, completing form four when I was 18 years old. The knowledge I gained then is driving me up to now.

After I left school, which was my own decision, I worked in a sugar factory as a casual laborer for a year then my father gave me three options: to work with him, to go to college, or to get me a permanent job in the sugar factory.

I decided to work with my father on the farm, since if you are a serious farmer, as he was, you can earn more from agribusiness than somebody who is working in an office. Besides that I like being the boss on my own farm more than having someone else supervise me, as you do in an office.

My father gave me half an acre to till and I grew maize and beans using conventional farming methods. Before planting we ploughed the field as well as burning the residue, and soil erosion was a very rampant problem.

Yield was often affected by harsh weather, hailstorms, or drought, and we depended on mono-cropping with no diversity, so some years we didn't have enough food for the whole year, and we had small children... it was not easy. We really struggled, my wife would go out borrowing, but I did not give up farming. I kept looking for ways to improve what I was doing.

I came across SIMLESA when KARI [*now KALRO – the Kenya Agricultural and Livestock Research Organisation*] established some C.A. demonstration plots on nearby farmers' land. When I saw you could spray and then just dig holes and plant without straining or spending a lot of money, I was really surprised.

When I told my wife, she took it negatively. “*That will not work!*” I suggested we try just a small plot and plant another plot the conventional way, then do a comparison. The yield on the C.A. plot did well, and production costs were low compared to conventional costs.

Another advantage was the conventional way of planting required a lot of time for tilling, whereas with C.A. we took a very short time to do the preparation, so we decided to extend. Now my whole farm is C.A.

Before we were plowing with oxen but now we don't. I sold the oxen and bought dairy cows. I'm using manure from the cows to improve the fertility of the soil.

Now we do shallow weeding, we don't burn, we don't clear, we leave the residue on the

field, we rotate maize with beans, and plant cover crops like *macuna* grass that suppresses weeds and controls soil erosion.

My soil has really improved in terms of fertility. Yield has also improved on my farm, so much so that neighbors, who couldn't imagine the way yields have improved, have now adopted the technology seriously – more than fifty farmers around here are now farming with C.A.

Another idea is to bring together groups of people with an interest in agriculture including farmers, agro dealers, seed companies, extension workers, researchers, and others. We have had field days with around 200 people, so it is a very useful concept.

Some farmers are quick to adopt new ideas while others wait and see. For me, taking the risk of adopting C.A. practices on my own farm was worthwhile because my major interest is in farming. When I saw that technology being applied on demonstration plots on nearby farms I wanted to try and see if it works or not, and it has really helped me.

If my fellow farmers take this technology seriously they will have no regrets. But if they continue exploiting the environment without conserving it they will not get good yields and we shall have a lot of hunger.

**FERDNAND WANGILA MAKHANU**  
*planting mucuna grass in his maize field*  
**BUNGOMA, KENYA**



## “Our country is small and we farm on steep slopes. So we have to look after the environment.”

In our village, women farm more than men, who do other jobs and provide money for their wives to pay laborers to help them farm.

Now I am a widow but farming is not difficult for me because I started when I was young. Even when I was a child, I used to follow my mother to the farm and work with her.

My husband’s parents were farmers, so he also knew how to farm, but after we married he got work as a driver. I was the one who did the farming and looked after the children.

He would give me money he had earned to pay farm laborers. But I supervised them and paid them at the end of the day. I also used to work together with them in the field.

Sometimes the husband may have money in his pockets and goes out enjoying himself. He forgets about his responsibilities at home. We women stay home, keeping an eye on everything. We don’t take risks – like spending money on ourselves – when we know there’s no food at home to feed the children. We seem to love children more than men do.

I was the one who had to ensure the security of my children, to make sure they are healthy and to find food for them. It’s not easy – you always

worry about whether they are well or not – so I use my hands to cultivate my crops.

One of my three sons lives at home with me, and the others stay nearby. They all know how to farm because they used to follow me and watch what I was doing, then do the same thing. It is what we normally do to prepare our children to be able to survive when we’re no longer there.

After my husband passed away, I gave each of my sons a piece of land. But they do other work and my daughter’s in law do the farming. I also hire two laborers, who I work together with to avoid having to hire more, since here you have to pay them even if you are surprised by rain and have to stop working, so you can lose a lot of money when it rains.

Our climate has changed a lot since I was a child. If there is too much rain, our crops fail, and when there is too much sunshine, the crops also fail. Another challenge is diseases that attack our crops.

When extension workers came [from *Rwanda Agricultural Board*] they taught us how to sow improved seeds without having to till and reduce labor. This enables us to cultivate maize two seasons each year and the yield is good.

Before we knew about this way of farming, we would plant by throwing our seeds haphazardly, we didn’t know how to plant maize in rows, and we used local seeds.

Now we practice what we have been taught and as you can see, I get a better yield than my neighbor, who still follows the traditional way of planting. I also intercrop maize and beans that improves the soil and helps increase the yield.

Our country is small and we farm on steep slopes. So we have to look after the environment. For example, I have bought a cow and fertilize my land with cow manure. We can also try to control soil erosion, adjust how we plant to fit the climate, and improve productivity by using other new technologies.

However, the population is increasing rapidly and people are constructing a lot of houses on agricultural land, so I don’t really know what will happen. Maybe God will intervene?

**ALPHONSINE NYIRAMBANJINKA**  
*with grand-daughter Grace*  
**MUSANZE, RWANDA**



When I was young, I thought going to school was a waste of time, but education is more important in this day and age, so I want my son to study and be a modern farmer.

My father had 30 to 40 cows. I enjoyed looking after them and helping him. But he used to push me to go to school, so when I was 24 I went to high school for two years in Hawassa, even though I wasn't happy staying there, and I still like farming more than living in the city.

My farm is three hectares, and I grow soybean and maize. Every year we lose about a quarter of our harvest due to the unpredictable nature of the weather. Some years we lose up to half of our crops because of rain failure, flooding, or strong winds.

Due to these problems, some people experience food shortages. But I haven't had this problem. In fact for me farming has become easier after adopting modern practices like those brought by the SIMLESA program to our area.

We farmers used to leave our land exposed after harvesting due to our lack of awareness about the consequences. Now we try to leave the residue on the farm to help protect the soil from exposure and maintain its moisture.

When I started this my neighbors undermined my efforts – intentionally or otherwise – by letting their cattle loose on my farm for grazing. I was upset, even going as far as putting up a fence and hiring a guard to protect my farm because my neighbors were angry.

I was also the first one to start intercropping maize and beans. Now other farmers see the

benefits – about twenty of them have started to copy me – so things are a lot better now.

The reason I decided to adopt these new methods, even though others were skeptical, was I have always felt responsible about managing my farm to the best of my capabilities for handing it over to my children.

In my grandfathers' time, we had dense forest. They didn't have problems with land degradation and soil erosion. Now people cut down the forest to use the wood for household fuel and sell it. We often see the earth's surface being cracked after floods wash away the topsoil, turning the land barren.

How a farmer meets these challenges depends on each individual and his or her circumstances, their interests and their attitude to work. We farmers can help bring an end to the problems we are experiencing with erosion and the effects of climate change by planting trees and taking better care of the land.

In future, I think there will be fewer problems with farming due to education and advances in technology. We manage our farms better than our forefathers did. My son's generation will do the same when their time comes.

I believe not being serious about school has disadvantaged me, so I am actually thinking of getting back into studying, because today's world is about education and technology.

**YOHANAS GUDGETA**  
*with family and workers*  
**HAWASSA ZURIA, ETHIOPIA**



## “I thought: ‘Ah! I always see people digging, so let me also dig!’”

In our *Luo* culture, we women do most of the farm work. Most men go to town. Even the ones who stay home don't like going to the farm – because of laziness. “Ah!” they say, “*That's women's work – let a woman do it!*”

But in my house my husband and me do our farm work together. We intercrop maize and beans, and plant sorghum, finger millet, cassava, mangoes, bananas, and groundnuts.

My mother and father were also farmers, but I hated farming when I was a girl, since I just saw them taking a hoe to dig... always digging! “Ah!” I would say, “*Just let me go to school!*” And even after I finished school, I told my Mum: “*Ah! I don't want to weed! I just want to stay home and do other chores like washing and kitchen work!*”

Then I was married when I was 23 years old. My husband had a job as a textile worker with a company in Nairobi, so I was living there and coming back here on and off, and he would send money to cover the expenses.

But when my children reached standard six inflation was so high that paying their school fees was a problem – even feeding them was difficult – so I thought: “*Ah! I always see people digging, so let me also dig!*” I decided to become a farmer.

By then I was 38 years old, already a mature woman. So for me it was not difficult to start

farming. I just started to dig, and loved doing it because my children were growing up and money was scarce.

For this reason, home is better than the city. If you don't have a job and you don't want to do business in Nairobi, all you can do is sit at home, waiting for your husband to bring you money – even if it's not enough for the family. Here we work together and get enough to eat.

Shortly after I had started farming, we formed a group of ten women who wanted to work together. One day they would come to my farm, we would dig, and next day we'd go to another farm. It was like a merry-go-round.

At that time we used to grow maize and beans, sweet potatoes, and cassava. But we just dug without knowing how to space and plant our crops, or why we ought to retain the residue, which we would burn, and we didn't have enough manure, the soil was no good because it had been used by so many people, and yields were low.

Then KALRO [*Kenya Agricultural & Livestock Research Organization*] came to help our group and brought many changes. It was not easy at first, but we agreed to work together with them because we didn't know what to do and they told us they would teach us, which they did.

For example, before we used local maize seeds to do the planting. Nowadays we use improved

varieties, and we have seen with our own eyes how the yield is higher than before. Even if the year is dry, the yield can still be good because some varieties are drought tolerant.

Last season I planted three quarters of an acre and got eleven bags of maize. Before I planted the same land but sometimes got less than one bag. Each year the yield has become higher and higher. We also leave the stover on the field because it's like manure and retains the moisture.

Before I couldn't always grow enough to eat, so I had to go and buy food at the market. But now I grow enough to eat and save, and I am also thinking about doing business, since the demand is high and there are many here who want to buy.

After we women started farming like this, others saw what we were doing and now the whole area is doing whatever we do. More than thirty farmers have copied us women, and we are all happy because we have enough to eat.

**PATRICIA OYUGI**  
*at the maize mill*  
SIAYA, KENYA



## “Being a farmer is riskier than being a judge.”

I used to be a judge until I retired from my government job twenty years ago and took up farming, as my parents had taught me to do when I was a boy.

Being a farmer is riskier than being a judge. You have to invest money and energy in your farm without knowing what will happen. But it is also not easy to be a judge, and to do either job you have to use your brain.

A big part of Rwanda, like this district where we have volcanoes, is mountainous with steep slopes, so soil erosion is a serious problem. The seeds my parents planted on their farm were often swept away by the rain.

Now we use modern farming methods instead of planting in the traditional way and our yields have improved. But rainfall is still uncertain because of climate change, which results in the failure of our crops, and a lot of forest has been cut down because of urbanization.

When extension workers came [from *Rwanda Agricultural Board*] to work with my neighbor, I used to observe what they were doing and realized it was good since her yield was better than mine, so I chose to work like them, even though I was surprised when I saw they were planting without tilling with a hoe. Instead they dug a small hole and put the seeds and fertilizer in it. Who knew what would happen?

Later I realized zero tillage is a good way of controlling soil erosion. Even if the rain is heavy it doesn't wash away the soil and fertilizer stays in the soil rather than being washed away by runoff.

I was also taught leaving residues helps the soil retain moisture, even if the rain is delayed the crop may survive, so our crops are more able to resist erosion, disease and drought than they were before.

**JOSEPH NTIRIVAMUNDA**  
*with his family*  
**MUSANZE, RWANDA**



## “I hope to stay here and continue farming until the end of my life.”

I’m a widow. When I lost my husband, I was a 65-years-old grandmother with ten grown-up children who couldn’t afford to help me, so I continue to farm on my own – even though I don’t have as much energy as I had before.

Being a widow is painful but I try not to worry too much. If I don’t have soap I just bathe without it and sleep, then get up early in the morning to work on my farm.

Fortunately, I find that due to modern methods of farming I am learning, the work is not too hard. Even though I am an elderly woman, I can plant something and rest assured that I will get some food. My farm is four acres and I grow soya bean, groundnuts, cowpeas, and maize.

My father was also a hard-working farmer but he farmed tobacco. In 1964 he was selected to go to Chitedze [*Agricultural Research Station*] to be trained in improved farming then came back here and taught others the new skills he had learned.

At that time only men went to Chitedze for training but my mother was also a farmer. We children used to work together with both of them and they taught us well.

My parents did all they could to educate me and my sister, giving us all the support they could manage. My father bought us bicycles to ride to school. But it was very far, so on our way to school we would deflate the tire and turn back, lying at home that we’d had a flat tire to avoid going to school.

When I was 13 years old my father gave me and my sister a small piece of land to grow groundnuts. He was the one who decided what to grow. He was also in charge of our money. He used to keep all the cash and give us pocket money. Now I live on my own and look after my own money. I am the household head.

Both the man and the woman ought to go to the farm. In that way the household can develop. This is how my husband and me managed after we married when I was 21 years old.

As for the wedding [*she laughs*] I can’t say anything about going to church to bless the marriage. No! It was more like, “*Hey, just go round there and I will go this way and we will meet there*” – thus we were married.

In those days farming was difficult. We had to clear the land, burn the residues, make ridges, plant, and weed two or three times every season. Today when I plant using conservation agriculture methods the residues help suppress the weeds. Even when there is a dry spell my crop stays green, whereas crops on my neighbors’ conventional plots wilt and die. So they think I have bewitched their fields, and forget that on mine there is residue, which retains moisture and prevents wilting.

I got to learn about this new way of farming from the extension officer [from the Ministry of Agriculture, Irrigation and Water Development]. He taught us to leave residues in the field and other ways to improve how we farm.

The first year I didn’t have crop residues, so I cut grass to lay in the ridges instead of stovers. My neighbors thought I was going crazy – “*You must clear your land, burn, make ridges then grow crops,*” they told me – but even that first year we harvested something. Next season, we used maize stovers, and ever since then I have been very happy with the results.

Now I harvest even more maize than I did then. I also grow soya beans, which I use for making porridge and sell for a good profit to earn money for other household needs. Soya bean is a very profitable crop.

I also don’t need to do as much heavy work with the hoe – that’s good for me, since in the past farming was a painful job – so I don’t get as tired as I used to, and can continue working on my farm.

I wouldn’t be able to manage to farm like I do today if I was still using the old methods. Even in those days, we sometimes failed to grow enough food and had to do casual labor at nearby estates.

If it were not for these new methods, I’d have to rent most of my land out because of the heavy work, and only have a small plot to cultivate. Now I hope to stay here and continue farming until the end of my life.

**DAILESS KASAWALA**  
*planting maize*  
**KASUNGU, MALAWI**



## “Go to Nalongo to learn what she is doing, and do what she does.”

**NALONGO NABAYAZA PROSCOVIA**  
*Bakyala Kwegaita Women's Group*  
**NAKASONGOLA, UGANDA**

I have fourteen children, and my name Nalongo shows I am respected for giving birth to two sets of twins, two boys and two girls, which is not very common.

In our country it is mostly the women who go to the farm with the children. Men say they don't have time, so the women do the work. But the woman still has to ask, "Husband, may I use this piece of land?"

I started farming when I was a girl and after I got married I kept digging, though it was hard to manage when I had small children – all the time breastfeeding one baby after another.

My husband is an army man. Wherever he was, he used to send help, knowing I didn't have enough energy to do heavy farm work after I delivered two sets of twins.

Sometimes I couldn't manage to send all the children to school – I had so many: eight girls and six boys. There have also been years when food has not been enough for the family so the children would eat but not to their satisfaction.

Now I am Chairperson of Bakyala Kwegaita Women's Group that has twenty women members. I like moving together in harmony and working together with other people very much – you get more ideas than you would on your own.

When an extension worker from NARL-Kawanda [National Agriculture Research Laboratories] came to visit our group, I asked myself: "What has brought this young lady and what has she brought? Is it right or not right?"

At first I had a lot of apprehension, wondering whether what she brought was going to help us. We don't have much land, so if something goes wrong it is a serious problem. Neighbors who came to see what we women were doing told us we were wasting our time digging small holes instead of plowing with oxen.

But now I have seen the results from our trial plot and no longer worry. Other farmers come and admire the new technologies. My husband is also happy because the yield is good.

I grow more maize than I used to do, eat some and keep some for when we are waiting for the next harvest, so my children can continue eating well. I even grow enough to sell some surplus.

What I have learned is, even though we use a small portion of the land, we can get a lot. If we dig small basins to plant in, we don't disturb the soil that stays moist and retains its fertility. We have also reduced labor quite a lot.

Before this I used to do conventional farming but the yield was low, so we would eat it all and then go hungry, and the crops often wilted because of the sun. We used to burn the maize stalks, but now we leave them to decompose in the field.

I grow improved maize in one plot and the beans we got from SIMLESA in another plot, then in the next season I rotate the plot that had maize for beans, and the one that had beans for maize.

The reason I do this is after harvesting the beans you can really see the soil becomes more fertile, and when you harvest maize and leave the stalks

to decompose, the soil also becomes more fertile, which benefits the beans.

We women were the first to try these new methods, but now others see the good outcome and come to join us. Before that some women decided to leave our group when they saw how we were planting, saying they were not very comfortable with the new methods.

Later, their husbands used to come to see what we were doing. After seeing the good crops, they would tell their wives to return to the group – otherwise the group members were going to benefit and they would miss out.

All of us women work together, then they go home and apply the new methods on their own land. Sometimes, the husband observes what his wife is doing and starts practicing it too.

But mostly the men just observe, then go home and tell their wives, "Go to Nalongo to learn what she is doing, and do what she does."





## ABOUT THE SIMLESA PROGRAM

**Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA)** is financed by the Australian Centre for International Agricultural Research (ACIAR), and led by the International Maize and Wheat Improvement Center (CIMMYT) in an international collaboration involving national agricultural research institutes in 7 countries (Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda). International partners include CGIAR centers, Queensland Alliance for Agriculture and Food Innovation (QAAFI) of the University of Queensland, Australia and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Agricultural Research Council (ARC) of South Africa.

The technology focus was on testing and piloting locally-adapted and smallholder appropriate conservation farming methods with the aim of contributing to sustainable intensification in eastern and southern Africa. The social science focus was on the analysis of the market, policy and value chain enablers of conservation agriculture-based sustainable intensification (CASI). Efforts were made in strengthening local seed systems for the delivery of appropriate maize and legume varieties. Pilot scaling programs were funded and monitored for documenting lessons on appropriate scaling strategies for CASI. Capacity building involving graduate and non-degree training was done.

At the end of 2017, over 230,000 farmers had adopted sustainable intensification technologies. Evidence from agronomy and economics research in SIMLESA indicated that reductions in labor use of up to 50% and

yield increases of up to 37% were possible if farmers adopted CASI practices, illustrating the potential large economic benefits from wide uptake of these practices by farmers. Socioeconomic, market and policy studies made available large open access data sets covering more than 5,000 households and 508 villages across project countries.

The scaling pilots have generated useful lessons on scaling modalities for CASI farming methods. A total of 58 innovation platforms were involved in scale out efforts. Strengthening of maize and legume seed systems was a critical enabler of CASI. In collaboration with national and international breeding programs, SIMLESA facilitated the release of 40 maize and 64 legume user-evaluated and preferred varieties. SIMLESA also supported graduate and non-degree training of early and mid-career scientists leading to 65 postgraduate students who studied in Australia, and African universities (23 of them being PhDs). These efforts strengthened scientific exchange between African universities and those in Australia and elsewhere.

SIMLESA's unique research and development contributions are highly recognized by the program's national agricultural research systems partners. Based on its resource allocation and impact orientation, SIMLESA has contributed to building important transnational research networks and capacity, generating scientific data and information on the potential for smallholder appropriate CASI and engaging in policy processes. The results of these efforts are geared to, and will potentially influence, agricultural research and development programs in eastern and southern Africa for many years to come.

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FRONT COVER PHOTO: MARIA GORETE plants maize with her daughters, ANGONIA, MOZAMBIQUE  
BACK COVER: CAROLYNE WAMEME with husband Luke and children BUNGOMA, KENYA  
FACING PAGE: ANGELINA & FERNANDA planting maize in the rain  
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