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Center for Microenterprise Development

A FARMER'S FIGHT

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CMD is providing a mix of activities that - educate members on climate change, promote agricultural practices that prevent emission of greenhouse gases, and supporting farmers to mitigate the negative effects of climate change. Our program aims to create awareness about climate change and its impact; create demonstration farms to show-case climate smart agriculture; Support farmers with technology-based climate smart advisory services; provide access to inputs that will facilitate sustainable climate smart agriculture and continue to provide access to finance and markets to facilitate sustainable businesses.

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A FARMER'S FIGHT

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MEET ADAMU

In the heart of Northeast Nigeria lived a farmer called Adamu. Adamu had a wife and three children, and all his life, all Adamu had known was farming.

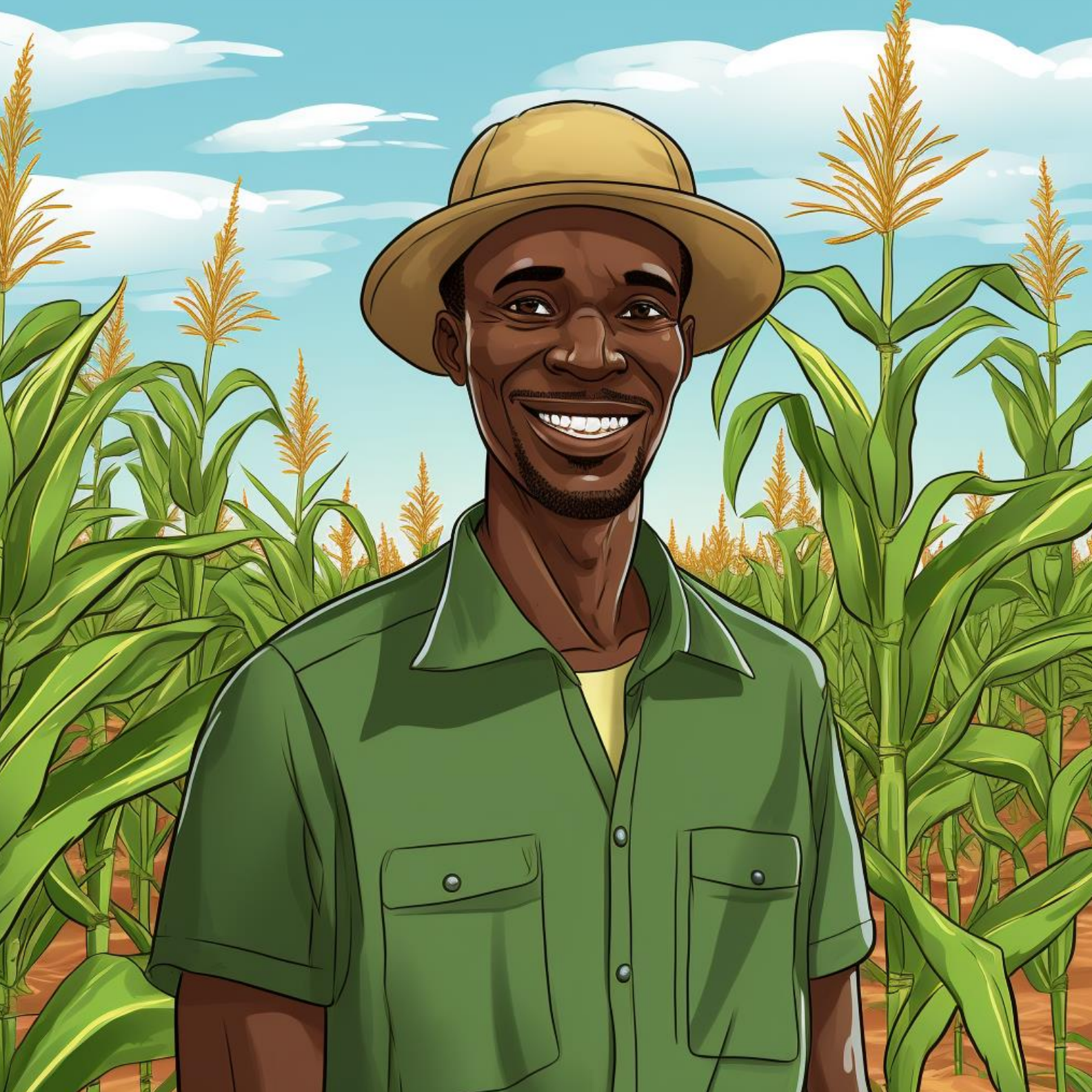
His father was a farmer, his grandfather was a farmer, and his great-grand father was a farmer. He came from a long lineage of farmers that was known for growing maize and rice. And every year, they brought bountiful harvests home.

Every day, Adamu toiled under the sun alongside his brothers, but he noticed something was changing, and affecting his beloved farm. It was getting hotter, the rains were not coming as frequently, and one could not predict when they would come. These changes were affecting the harvest.

He noticed the problem was not isolated to his farm only, and he had tried everything, but nothing seemed to be working. For the first time in many years, Adamu worried that he might not have enough money to feed his family.

One day, Adamu's son came from school and told him "Daddy, my teacher spoke about climate change and said that is the reason why the crops are not doing well in the farms."

"Climate change? What is that?" "I don't know, his son said.

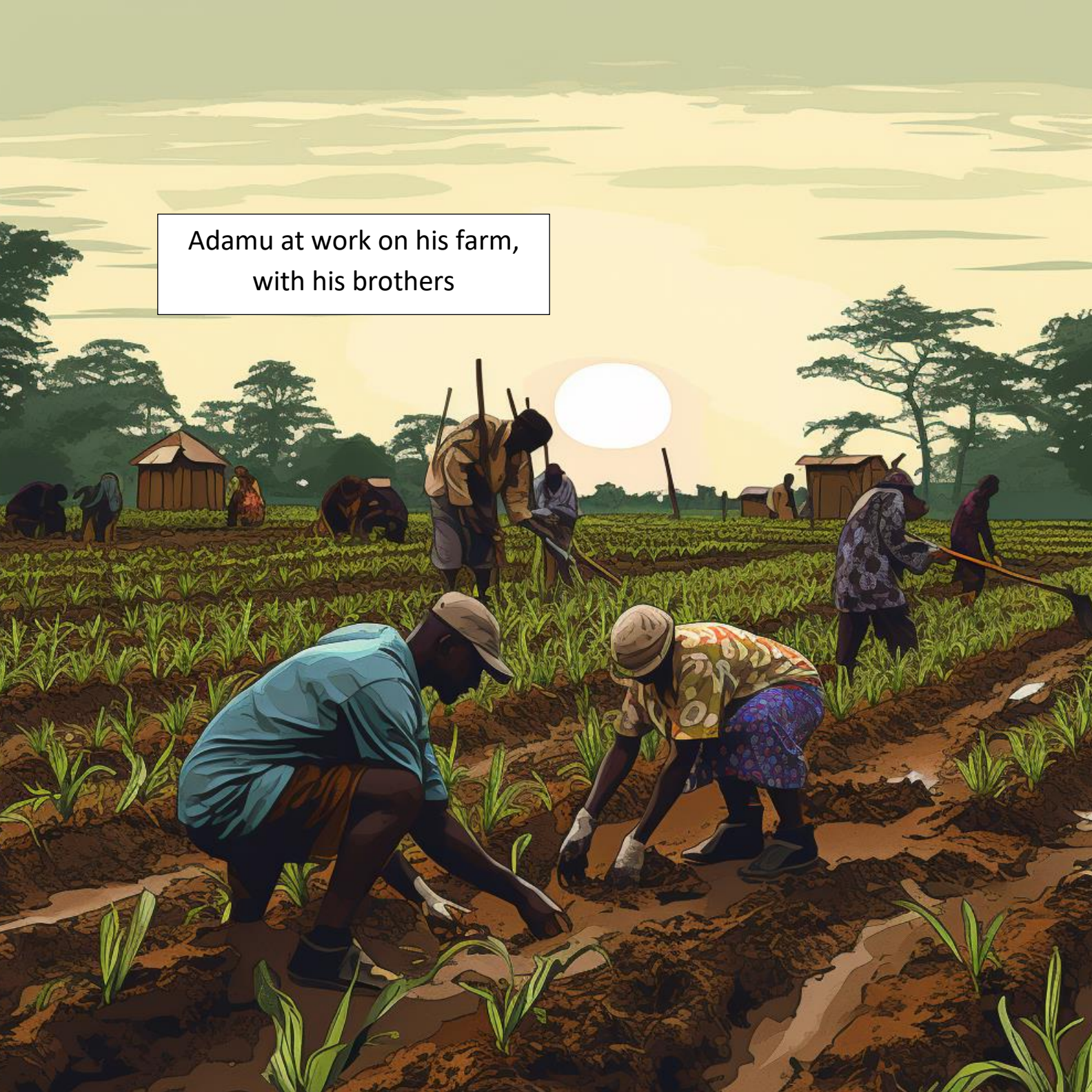


Adamu decided to ask his friend Musa. “Musa, do you know what Climate change is?”

Musa smiled.

“I belong to *Alheri group* that is registered with *Centre for Microenterprise Development Cooperative*,” he said. “At each of their branches there is a Climate Smart Agronomist who can answer all your questions.”

Musa immediately called the branch office and informed them that he will be coming to the branch with Adamu to discuss climate change.


Adamu at work on his farm,
with his brothers

CLIMATE CHANGE – WHAT IS IT?

When they arrived the branch, they were greeted by Mr Ibrahim. “My name is Ibrahim, the Climate Smart Agronomist.” “I work for Centre for Microenterprise Development and part of my job is educating farmers about climate change. I will tell you all you need to know about climate change.”

Mr. Ibrahim patiently explained. “Climate change is the significant variation of average weather conditions becoming, for example, warmer, wetter, or drier—over several decades or longer. It is the longer-term trend that differentiates climate change from natural weather variability.” It is happening because some gases, such as carbon dioxide, are building up in the atmosphere.” “These gases known as Green House Gasses (GHGs) act like a blanket, trapping heat from the sun and making the earth warmer.”

“Scientists, researchers, and affected peoples around the world report changes beyond the natural variation of temperatures on land and in the ocean, as well as abnormal trends in the timing of seasons, in rainfall patterns, and in many other systems.

The science on climate change is clear. The concentration of GHGs has been rising steadily since the time of the Industrial Revolution as a result of human activity, primarily the burning of fossil fuels and changes in land use, leading to increasing global temperatures.” (United Nations Climate Change, 2023).

IMPACT OF CLIMATE CHANGE

“The impact of climate change is severe, including unpredictable weather patterns. This means that the rains do not come when we expect them! Have you noticed how the rains don’t come early and ends either earlier or later than expected?

The second impact is extreme temperatures. This is a situation where the weather gets very hot and extremely cold. It can be very cold today and extremely hot the next day! This has devastating effects for agriculture as the process of germination, seed and fruit production are linked to temperature and daylight.”

“Another impact is more frequent and intense heat waves. These heatwaves could lead to health issues, crop damage, and even heat-related fatalities.” “These fluctuations also affect agriculture by causing stress in crops and livestock, affecting food production and animal health.”

“Climate change could also lead to droughts. Extended periods without rain could result in water scarcity, affecting agriculture, water supplies, and the overall well-being of the community. When the drought occurs after planting, it can result in great losses for farmers as they have to replant or the plant is distressed and harvests are poor.”

“Climate change can also result in floods. This is when the rains are so much that they overflow farms and houses and even wash them away. In recent years there have been situations where an entire town or village is completely flooded with the surrounding farms.

Flooded maize farm with the farmer waist deep in flood waters.

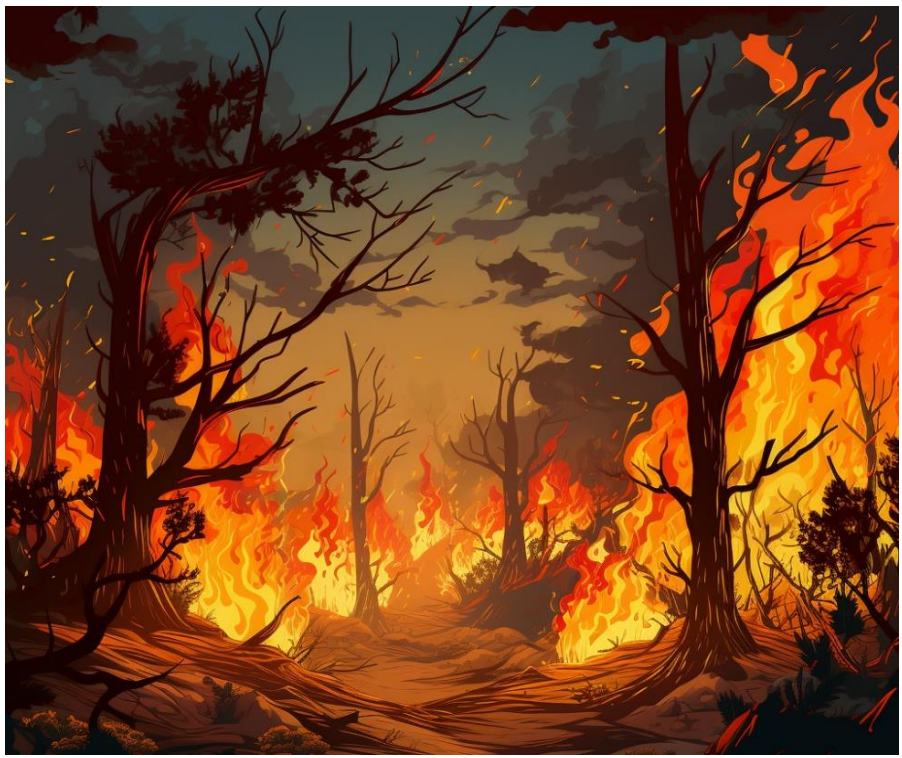
Another impact of climate change is erosion. This is the removal of soil by water or wind. It carries away the topsoil leaving the land unfertile. This can cause great damage to houses and farm lands.

Other impacts of climate change include favourable conditions for disease-carrying organisms and harmful pests, posing risks to human health and agricultural well-being. This is manifesting as new diseases that we did not know before or new strains of the old diseases that are now resistant to known drugs."

CAUSES OF CLIMATE CHANGE!

“What is the cause of this climate change?” Adamu asked.

“There are some things that we do which eventually lead to the changes that you can feel and see” answered Ibrahim.



“Traditional practices of land preparation like cutting and burning down trees and grasses causes the rising smoke to blanket the earth and make it very hot.

“Extensive farming of some crops example maize on the same land every year without crop rotation or intercropping with plans like groundnut or cowpea, harms the environment by taking out all the nutrients and not returning something back. This eventually makes the land to die.”

“Dead farms become very sandy and do not support plants. The absence of the plants makes the planet hotter and without the plants, the natural recycling process of water and rain will fail resulting in droughts.

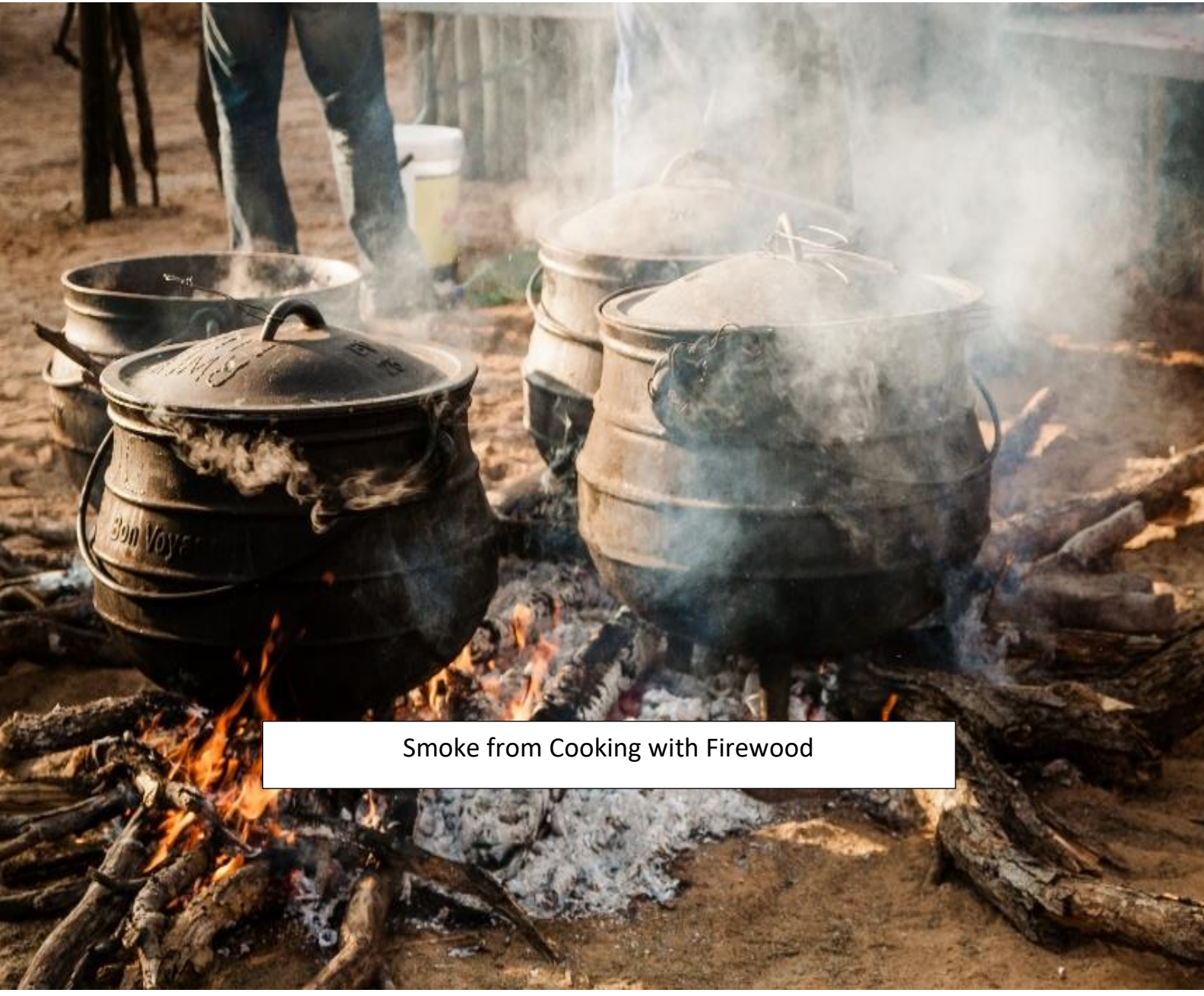
Ibrahim continued “Another cause of climate change is excessive use of synthetic (inorganic) fertilizers especially when they are not applied properly. Inorganic fertilizer releases nitrous oxide, a potent greenhouse gas, into the atmosphere.”

“But we need to use fertilisers…” Adamu cut in. “Not necessarily!” replied Ibrahim.

The use of firewood and other non-renewable means of energy increases the greenhouse gasses which make the planet hotter. Some cooking stoves are also wasteful, thus increasing the rate of cutting down of trees. The smoke from the fire can also cause health problems.

Poor management of harvest can lead to spoilage. The spoilt food if thrown into waste dumps decay and release gases which also cause the warming of the earth! When farmers do not properly manage their harvest, they are contributing to climate change!

When farmers harvest and leave the land bare, the wind carries all the topsoil away which eventually leads to soil erosion. Each year, people lose their homes and farmlands to erosion.



Smoke from Cooking with Firewood

WHAT FARMERS CAN DO!

Land Preparation

“If we do not burn the waste from the farm, how can we prepare the land for planting?” “You can practice mulching for example,” said Ibrahim.

“Mulching? What’s that?” Adamu asked. “Mulching is the process of applying natural or artificial layer of plant residue or other materials on the soil surface. It can be defined as protective covering, as of bark chips, straw, or plastic sheeting, placed on the ground around plants to suppress weed growth, retain soil moisture, and protect the plants from cold weather especially during harmattan.

Example of mulching using maize stalks.

Seeds

After land preparation, the next thing that the farmer can do is to use good seeds."

"You mean I should not be using the seed from my farm each year?" asked Adamu in surprise. "This is what my parents and grandparents did! They always selected the best seeds from the last harvest and use it for planting the subsequent year!"

Musa answered him, "however, have you noticed that the length of the maize cob is getting shorter, the number of rows is reducing and the number of maize cobs with diseases is increasing each year?"

Adamu just gazed at Musa in shock. He was unable to say a word.

Ibrahim waited a few minutes for Adamu to recover and then went on. "Seed selection is so important in determining the outcome of your farm that attempting to save cost by not buying improved seeds is the most foolish thing to do?" Asked Adamu.

"Yes!" Ibrahim added. "Do you know that there are different varieties of seeds, for example maize. There are some that can withstand drought, while some are able to withstand flooding! Others have been adapted to survive even if there is striga in the farm! Therefore, it is important to use the right seed for your farm depending on the soil type and the weather forecast for the year."

Weather Information

“What do you mean by weather forecast”? Asked Adamu. “Weather forecast is a prediction of the weather long before that time.” Ibrahim answered. “We collect information about the weather from special organisations that predict the estimated start of the rains for the year and how long they will last.”

Musa added “that is why the seed I used last year when there was prediction of heavy rains with flooding and rains lasting for about four and half months. It was a different variety of maize that can withstand flooding.”

“But this year, the predictions was for a short raining season with weeks of drought, so I selected the maize variety that matures in ninety days and is drought resistant!” Said Musa. Adamu brooded over everything they said in deep thought.

Fertilizers

“We can use organic fertilizers such as cow dung or compost, or incorporate nutrient management plans to reduce emissions,” Ibrahim continued, “for instance, by burying the inorganic fertilizer into the soil and covering it, you achieve two things.” Ibrahim continued.

“The first one is that you avoid wasting the fertilizer you applied. If you bury it, the wind and the water will not wash it away. This means you use less fertilizer when you bury it and get better yield.”

“The second is you reduce the amount of harmful gases that are released into the atmosphere,” said Musa.

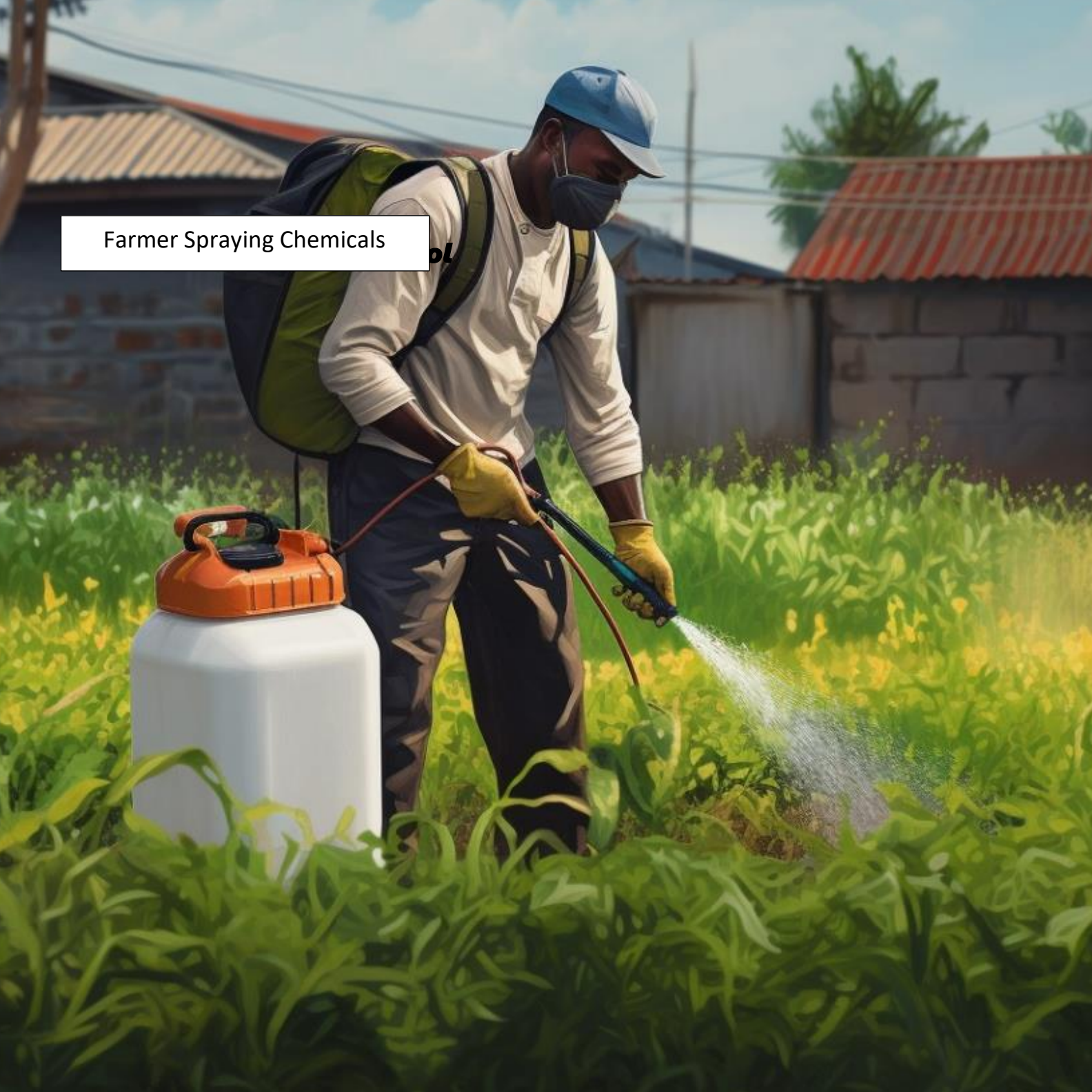
Weed Control

“You should also note that excessive use of chemical herbicides, have negative consequences. For example, if you use chemicals to kill the weeds and unwanted grass around your crops, you also end up destroying grass that help to cover the soil.

“These chemicals can also lead to water pollution, so that rivers and lakes cannot support fish or other life in water. They are harmful to beneficial insects and life in the soil. For example, they kill earthworms. Earthworms breakdown leaves and plants and change them to manure, thus enriching the soil. A rich soil means less expenses on fertilizers and so more profit for the farmer!”

“Successful weed management is based on a combination of cultural and chemical control methods, including prevention, land preparation, crop rotation, tillage, fertilizer management, water management, and proper use of herbicides.”

“Herbicide resistance is an increasing problem that has added considerable complexity to weed management.



Farmer Spraying Chemicals

“What then do we use to fight the insects and the small animals that affect our crops?” asked Adamu. “Not all animals in the soil are harmful,” Ibrahim showed them a picture of millipeds, Oribatid mites, and earthworms which are very important for soil health.

Crop rotation helps to reduce the incidence of harmful animals on the farm. Use of natural enemies is another method, example, maize army worm,” added Ibrahim as he showed Adamu a picture. “This is fall army worm. Killing it with pesticides leaves the chemicals in the maize and is harmful to man and the soil.”

“Haa! You have become a capable teacher,” said Ibrahim. “Yes” answered Musa. “I have been educating my friends about this since last year when you taught us.”

Post Harvest Management

“Next, we shall move our attention to the harvest”, Said Ibrahim.

“When the rains start, the water easily washes away any exposed topsoil leaving the farmland without nutrients. Leaving the farm residue such as corn stalk on the farm serves as cover preventing erosion and serving as feed for animals whose droppings add manure to the farm.”

“Whatever is left becomes feed for worms at the start of the rains and is decomposed to make the soil rich.”

“I am really surprised that there is so much that a farmer can do to prevent climate change,” said Adamu.

“To round off our discussion, let us consider the last two stages in the farm process, the processing and storage,” said Ibrahim. “There are some methods of processing that can have negative effects on the climate.”

“Such as what?” asked Adamu.

“In processing your maize or rice, you are expected to ensure that it is properly dried. Maize is expected to dry to ten percent or less of moisture without any chemicals if properly stored. But if the moisture content is high, both warmth and high moisture content can result in rapid deterioration of the grains and promote the growth of microorganisms (e.g. fungi and bacteria) and insects in the grains.”

“How will I know that?” asked Musa.

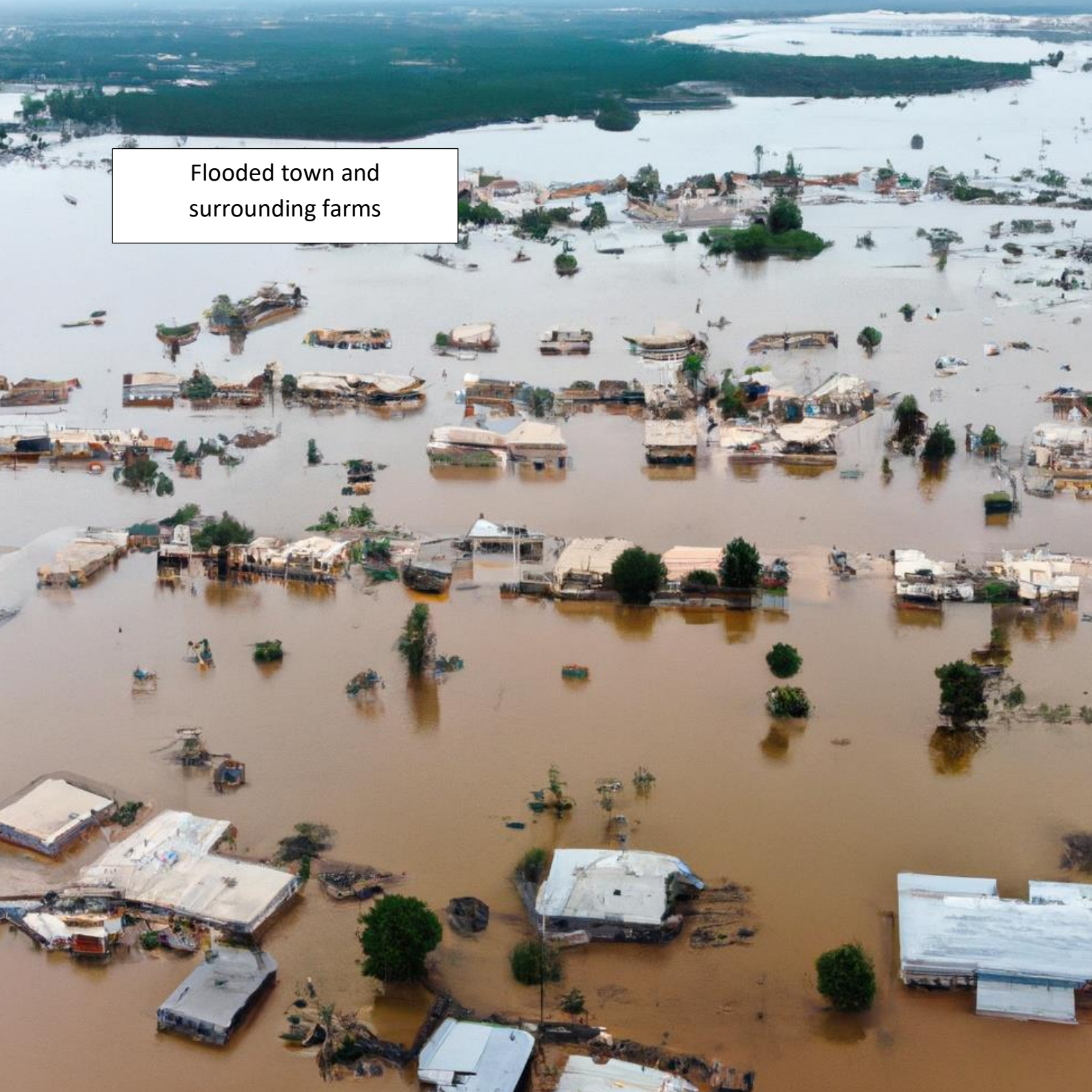
“Do you know that you can keep maize in long-term storage between ten to twelve years with close monitoring and environmental control?” asked Ibrahim.

“Are decay and disease the only harmful effects of poor processing and storage?” Adamu asked.

“No, they are not. Using improved storage techniques, like hermetic storage bags help reduce food waste and associated emissions with the added advantage that you do not have to add chemicals which is an extra cost to the farmer. Maize stored in hermetic cocoons can last for ten years if it was already properly processed and dried.”

Adamu was learning a lot from Mr. Ibrahim.

“What if I don’t do all these things?” Adamu asked.


Flooded town and surrounding farms

THE DANGEROUS EFFECTS

“If you don’t do something about this now, things could get much worse,” Mr. Ibrahim explained. “You may have to leave your home and become a refugee somewhere else.”

“What?” Adamu stared back at him, in shock. “Altered weather could lead to devastating floods, causing significant damage to homes, farms, and infrastructure.”

“Do you know that in 2018, there was flooding in Adamawa state that hundreds of people fled their homes and could only return after months when the flood waters had receded. Some people lost everything.”

“In 2022, there were such strong winds in Kaltungo, Gombe state that it took off roofs and some were found several kilometres from where the house was initially.

Some houses were demolished so badly by the winds that houses became just heaps of debris!”.

Other impacts include poor air quality making it for humans and animals to breath. The air can get so bad that it affects health and prevents proper growth of plants.

I MUST FIGHT IT!

“You see, my friend,” Mr. Ibrahim began, “the time to start is now!” Adamu agreed with Mr. Ibrahim. The changing weather was affecting his farm.

The rains had become unreliable, and the sun felt hotter than ever. His crops were suffering, withering under the unrelenting heat. The village was no longer the same; the once-abundant harvests were dwindling. The land was drying up, turning into a barren wasteland.

“Yes it is, but we can fight it!” said Ibrahim. “Fight it?” Adamu asked in surprise. “Oh, you mean by doing all the things you just taught me?”

“Yes! These are the things that you can do to make a difference. They might seem small to you, but if many people make these changes, we will reverse the trend and bring back the fertility of our soils and a bumper harvest.”

“It won’t be easy… but if we are determined, you will have good results.” Adamu knew he had to do something, not just for his own farm but for his entire village. “I am ready!” Adamu didn't keep this new found wisdom to himself. In the evenings, Adamu shared his knowledge with other farmers in the village. He explained the effects of climate change and taught them the strategies he'd learned. They learned how to adapt to changing weather and keep their farms productive.

He joined the CMD farmers' cooperative, and together, they learned and implemented climate-smart farming practices.

GOOD HARVEST RETURNS

A year after the meeting, Mr Adamu invited Mr Ibrahim to visit their village.

When Ibrahim arrived the village, he was shocked and pleasantly surprised. The villages had created pyramids of maize, rice, groundnuts, and cowpea.

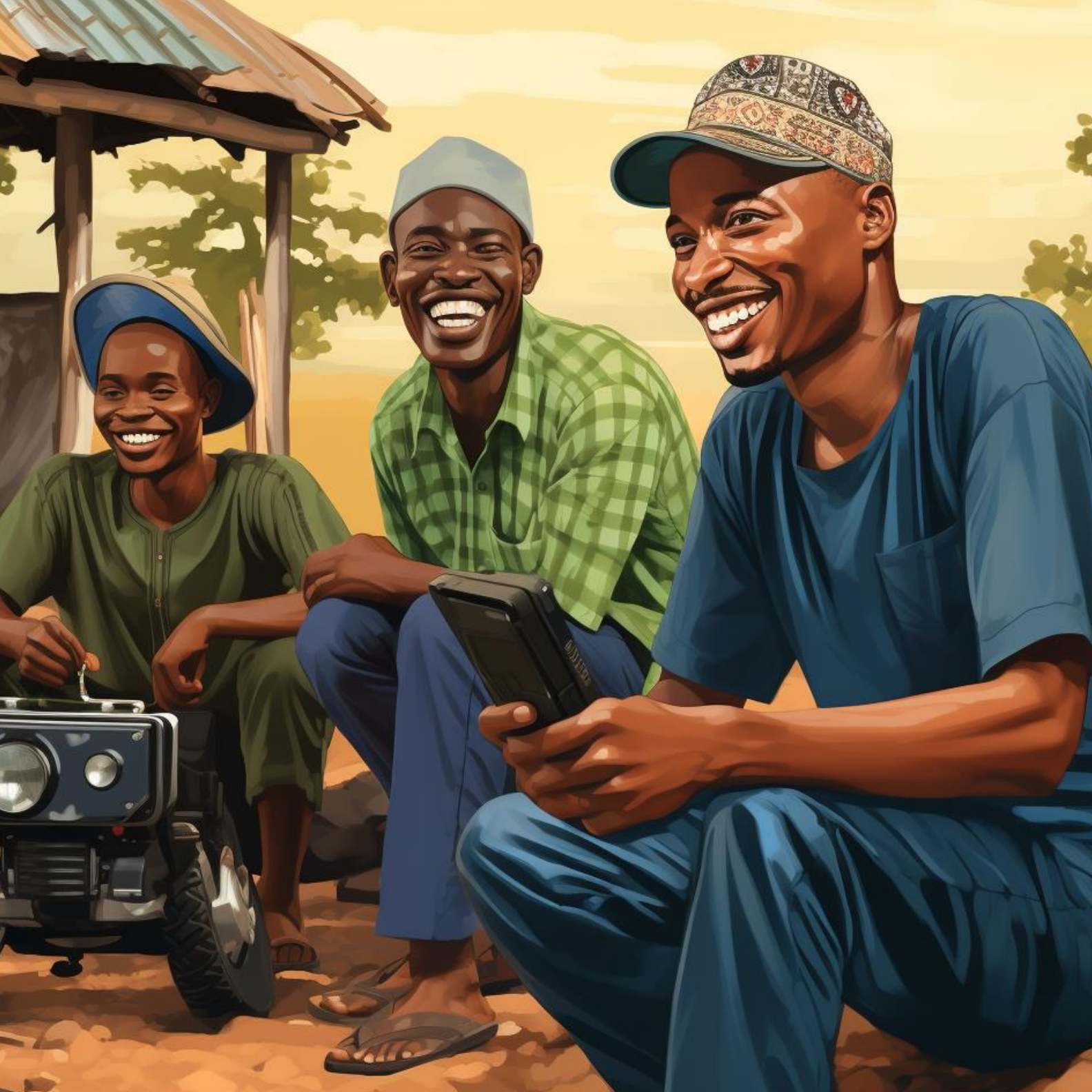
Their harvest had been so good that their homes could not contain the harvest. Each person that adopted climate-smart agriculture had reaped more than ten times their usual harvest.

Ibrahim also noticed that there were lots of trees planted in the village. He asked them about it and was informed by Adamu and Musa that they listened to a radio program by CMD where people were advised to plant trees as shelter from strong winds, as well as providing cooling effects.

Over time, things changed. The land became more fertile, and the community grew more resilient to the challenges of climate change.

Adamu's efforts became a beacon of hope in Northeast Nigeria, showing that it was possible to adapt and thrive despite the challenges.

Adamu the farmer***, had won the fight***!



ABOUT CMD

Centre for Microenterprise Development Ltd/Gte (CMD) is a non-profit, non-partisan and non-governmental organization which has been in existence since year 2002. CMD has been at the forefront of supporting the establishment and growth of micro, small and medium enterprises (MSMEs). Centre for Microenterprise Development works with small holder farmers (SHF) and micro, small and medium enterprises (MSMEs). We provide training and technical support to enable them grow and scaling up. Our support for MSMEs include development of business plans, development of manuals of operations, research, implementation of accounting software, and board development. Our training programs include our Innovation Enterprise Institute, tuition centre for Chartered Institute of Bankers of Nigeria and other soft skills training. Our support for SHF and MSMEs providing them with access to credit, quality inputs, and grains aggregation.

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Edna Ishaya *MSc, HCIB*

Mrs. Edna Ishaya has an impressive career spanning twenty-nine years in the financial sector, with diverse roles that showcase her expertise and commitment. Her experience includes a seven-year stint in microfinance at the *Development Exchange Center* in Bauchi, one of Nigeria's leading microfinance institutions. Following this, she served as the Chief Operating Officer at *CR Services* (Credit Bureau) Plc, a prominent credit bureau in Nigeria, for five years.

Additionally, Mrs. Ishaya spent two years as a pioneer Director at *Enhancing Financial Innovation and Access* (EFInA) and twelve years leading the *Center for Microenterprise Development*. Her extensive background also encompasses two decades of providing consulting and technical support in various aspects of microfinance, including technology, training, business development. She has worked as a consultant for notable organizations such as the *Central Bank of Nigeria*, the *Nigeria Deposit Insurance Corporation*, the *Chartered Institute of Bankers of Nigeria*, the *United Nations Development Program*, and *The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH* (GIZ), among others.

Currently, Mrs. Edna Ishaya is engaged in agency banking as a Master Agent for the *First City Monument Bank.* She is not only the founder but also the Managing Director of the *Centre for Microenterprise*. Her educational background includes a BSc. and MSc. in Biology from Ahmadu Bello University, Zaria. She has further honed her skills through participation in the *Wharton*

Executive Development Program, and she is a Chevening fellow and alumna of *Reading University*, where she specialised in women and agricultural development.

Mrs. Ishaya holds a certification from the *International Labour Organisation* (ILO) to deliver the *'Making Microfinance Work: Improving for Performance'* training course. Additionally, she has both basic and advanced certifications as a board trainer from *Board Source* (formerly National Board for Non-Profits). Her commitment to professional development is evident in her attendance at two highly acclaimed international microfinance institutions in Boulder, Colorado, and New Hampshire, USA. Overall, Mrs. Edna Ishaya's rich and diverse background positions her as a seasoned professional in the financial sector with a focus on microfinance and related areas.