

The Niles

Issue #14
Entebbe, Uganda
December 2019

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“We are what we eat”

It is nearly impossible to come up with a single word that describes Africa's diverse culinary traditions. Harder still is conveying the ethical, social, political, artistic and religious facets of food procurement and preparation amongst the various communities in the Nile Basin. From Egypt's Cairo to Burundi's Gitega, this issue of The Niles attempts to explore the essentials of food: from conflict and food insecurity to the sensory aspects of preparing and eating national dishes. In daily life, ancient Africans saw food as a mirror: “We are what we eat.” They believed that proper nourishment sustained a high quality of life – modern-day physicians and scientists confirm their forefathers' beliefs. Beyond science, culture has proven since time immemorial: to eat, people must gather to sit at a table. While the absence of food can divide societies and lead to conflict, the abundance of food forms strong bonds amongst families and entire communities.



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The Niles is a publication of Media in Cooperation and Transition gGmbH

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Illustrations:
mio.matsumoto (p. 12, 13, 14, 15, 16)

This issue of The Niles is produced by Media in Cooperation and Transition (MICT) in collaboration with the Nile Basin Initiative (NBI), and with support from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, commissioned by the German Federal Foreign Office (AA). The views expressed in this publication do not reflect the opinions of NBI, AA, GIZ or MICT.

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Basics:

Using more efficient and sustainable farming techniques, assisting smallholder farmers and creating awareness about ecological preservation are the keys to ending food insecurity in the Nile Basin, according to regional experts.

Help the smallholder farmer to end hunger in the Nile Basin

The bulk of food in the Nile Basin comes from small farmers. Once they are adequately supported, it could bring an end to food insecurity in a region rich enough in resources to feed everyone.

Henry Lutaaya
Kampala, Uganda



All countries in the Nile Basin, with the exception of Egypt, have been classified as some of the world's most food insecure countries in the Food and Agricultural Organisation's (FAO) 2018 Global Hunger Index.

The recurrent state of food insecurity in most countries in the Nile Basin, be it limited quantity or quality, is an embarrassing situation considering the abundant opportunities in the form of vast swaths of arable land, favourable climate, water and knowledge available to produce enough food to feed the people, and perhaps sell the excess in regional and international markets.

Food insecurity also inflicts severe and lasting damage to the health of people by limiting their mental and physical abilities through poor nutrition.

Because the bulk of the food in our countries comes from smallholder farmers (who are also the majority of the population), defeating the problem of food insecurity, therefore, has to start with addressing the challenges facing the smallholder farmer. It also means that lifting the farmer from a destitute situation into a prosperous one, will have a multiplying effect on the wider economy. Doing so will unleash numerous economic opportunities such as markets for the much-touted industrial and service sectors, which will create integrated and self-sustaining economies.

The challenges facing smallholder farmers range from an increasing shortage of land due to bulging populations and undernourishment of the soil, as well as limited access to good quality seeds and well-developed value chains for the crops grown.

Take maize, for example, which is the biggest staple crop on the continent. Increased maize output has come largely through increased expansion of the cultivated land rather than through increased production per acre. Farmers too have not realised much income from the crop because of the low levels of processing and low levels of integration into other industries needed to turn the crop into a high-value commodity that goes beyond its use as food.

The challenge of food insecurity has been compounded by the rising impacts of climate change and climate variability, rapid increases in population vis-a-vis limited land and water resources.

The greatest challenge stems from the lack of political commitment at all levels to prioritise the agricultural sector as the cog in the wheel of our economies. The failure of most African countries to fulfil their commitments to boost investments in the agricultural sector by at least 10 percent of annual resources, as per the Malabo Declaration of 2014, is a clear indicator that many leaders attach low importance to the sector that supports the majority of the population and upon which the goals of ending hunger, poverty and unemployment are anchored.

Only a few Nile Basin countries such as Ethiopia and Rwanda, have implemented the Malabo Declaration and improved their food security.

Increased investments in the sector would go a long way in developing the value chain of food crops and thereby reduce losses arising from poor post-harvest handling, another major contributor to food insecurity. Supplementing rainfed farming with irrigation is a necessary step in countering the recurrent effects of climate change that have increased in frequency in recent years.

Collaboration amongst countries through trade, sharing of resources and knowledge are critical in ensuring that food reaches those who need it the most, regardless of national borders. The collaborative development of transport and energy infrastructures in the Nile Basin needs to be supported to achieve the desired economic integration of our various countries.

This collaboration can be moved a notch higher by ensuring that counties share knowledge and experiences in producing food that best suits the ecological conditions of that country without undermining the greater good of the community.

Building and strengthening platforms for cooperation such as the East African Community, and the Nile Basin Initiative have been essential in mitigating wars and conflict that have proved to be major causes of hunger, according to the Global Hunger Index report 2015.

Mindset changes among individual farmers that allow them to tap into available modern knowledge of food production and marketing can also go a long way towards countering the challenge of food insecurity.

With rapid advances in scientific research and technology, Nile Basin countries have all the necessary tools to escape the curse of food insecurity.

Respect the river that nourishes us

To feed the growing number of people who will rely on the Nile in coming years, all countries in the basin must ensure that the river is used sustainably.

Tuver Wundi
Goma, Democratic Republic of Congo

The population in the Nile Basin is expected to more than double by 2050 to nearly one billion, increasing the demand for food and putting scarce water resources under ever greater strain.

More than 80 percent of the Nile's water consumption is used for agricultural purposes, according to Innocent Ntabana, former Executive Director of the Nile Basin Initiative (NBI). Efficient water use, he says, requires good land and agricultural management, which needs an entire basin approach to tackle food insecurity.

Agricultural commerce, according to NBI, is an opportunity to tackle poverty as well as food insecurity. The decision to locally produce or to import must be based on calculating how much water is used in both cases.

Food security and the provision of sufficient resources is at the centre of this issue of The Niles. Stories from across the Nile Basin focus on the nexus of water and food security while offering a glimpse of culinary crossing points and divergences in food-related cultural practices.

This theme is observed from different angles to share diverse experiences of the people who live along the 6,695 kilometres of the Nile and its basin, a shared source of wealth and survival for over 300 million people.

The lack of investment in agriculture triggers a vicious cycle of poverty and under-production.

Invest more, modernise farming and open the borders to allow for food trade

With basic farming techniques and complex trading, Nile Basin countries are in a race against time to avert a major food crisis.

Henry Lutaaya
Kampala, Uganda

Food insecurity is one of the most significant challenges facing Nile Basin countries. About 140 million people in the basin (or 34 percent of the population of the basin states) are undernourished, with the level of severity varying from country to country, according to the 'State of the Nile Basin' report 2012.

A rapidly growing population, coupled with increasing urbanisation and climate change, point to the food security situation worsening.

Trade is usually one of the ways by which countries meet their future food requirements, beyond what they can produce locally. The region possesses immense untapped potential not only to meet its own food needs but also to grow extra food to support other countries and use proceeds to improve the economies of the region.

This potential to use food trade between member countries of the Nile Basin, however, faces numerous challenges.

Several studies carried out on the subject of food security point to the low levels of production within member countries and generally much of Africa, as the most significant impediment to food trade. Too little is produced, leaving households with nothing left for sale. In Uganda, for example, one of the major food producers in the region, subsistence farming still accounts for more than 50 percent of the country's farming households, according to the Uganda Census 2014.

Lack of investments and old-fashioned techniques

The challenge appears to stem from the lack of political will to invest in more modern means of agriculture. Rudimentary technologies such as the use of digging sticks, inferior seeds, non-application of fertilisers and reliance on rainfall have been allowed to permeate the economies of most African countries. This is despite numerous pronouncements by the leaders of most African countries - for example, the Malabo Declaration in which all African Union member countries unanimously agreed to invest 10 percent of their national budgets in agriculture.

The lack of investment in agriculture triggers a vicious cycle of poverty and underproduction, especially when one considers the fact that population growth has for several years now exceeded growth in the agricultural sector.

Closely tied with the archaic technologies of food production, is the lack of investment in storage, value addition, transportation and marketing infrastructure and development or harmonisation of standards to facilitate trade in food crops.

In a 2012 Nile Basin Initiative (NBI) report entitled 'An analysis of Cross-border Trade in Agricultural Products along Selected Corridors of the Nile Basin Region', it was revealed for example that most traders rely on rooms in residential homes to keep stocks for food commodities such as maize, beans, and potatoes.

It is under such circumstances that quality and hence, the safety of food is compromised. Professor Archileo Kaaya of the Makerere University in Uganda argues that poor storage and processing of grains such as maize and groundnuts is a major entry point for fungi that cause poisonous chemicals commonly known as aflatoxins. These toxins multiply in moist and warm conditions and are known to cause cancer of the liver when continuously eaten, and instant death when consumed in high doses.

In October 2018, the Uganda Grain Council, one of the largest grain exporters from Uganda suffered significant losses when its consignment of maize exports was blocked from accessing the Kenyan market. The Ugandan maize was found to contain aflatoxins exceeding the prescribed maximum of 10 µg/kg by the East African Community.

Trade politics

Beyond the capacity challenges of food production, Nile Basin countries face numerous other challenges that frustrate, delay or outright impede the exchange of food within national boundaries or across borders of member countries.

Political and other administrative constraints have very often prevented trade from happening even among countries that profess free movement of goods and services. The closure of the border between Rwanda and Uganda earlier this year resulted in losses to traders. More importantly, the border closure threatened to worsen food insecurity in Rwanda, a country that is already a net food importer – a country or territory whose value of imported goods and services is higher than its exported goods and services over a given period of time.

And this example of complicated trade politics is not the only one. The Tanzanian government has at least twice during the past six years stopped traders from exporting food items to neighbouring countries.

Insecurity arising from political or civil conflicts, as has been experienced in South Sudan, Burundi and DRC in recent years has proven very costly for producers and traders. In March 2019, the government of Uganda paid out UGX 48 billion, (USD 13 million) to some of the Ugandan traders as partial compensation for the losses they incurred when South Sudan plunged into civil war in 2013.

Tariff and non-tariff barriers

Whereas nine of the ten member countries in the Nile Basin belong to a common market either under the Common Market for Eastern and Southern Africa (COMESA) or the East African Community (EAC), where members have decided to remove tariffs on goods and services generally, Nile Basin countries still impose taxes on a wide range of food items.

This is usually done under what countries consider a 'sensitive list' of goods that must be deregulated and therefore still attract high tariffs, with adverse effects to free movement of food from surplus to deficit areas.

The government of Ethiopia also still considers the informal trade in livestock with neighbouring countries such as Kenya as illegal, since it denies the government the much-needed foreign exchange, according to an NBI study on food trade.

Non-tariff barriers such as extortion by traffic police officers, multiple taxes, and red tape by customs officers during the process of clearing vehicles result into needless delays of up to seven hours, as is the case in Busia, on the Uganda-Kenya border.

Resorting to informal paths as a way to avoid delays and illegal fees is a common practice especially by traders of perishable foods. But it helps only in saving

An Ethiopian farmer threshes his harvest.
Photo: Berihu Mekonene



time. The resultant impact on the cost of transferring the food has been estimated by the NBI study to be as high as 50 percent of the cost of transfer fees.

The NBI estimates that non-tariff barriers constitute as much as 50 percent for traders in Uganda, 35 percent in Kenya and 12 percent in Tanzania.

In the final analysis, while some measures have been made to open up borders through economic liberalisation, the same measures pale in comparison with the need to scale up production and increase other capacities.

The NBI has been categorical in warning that the region's food security future looks very precarious if no deliberate action is taken. It urged in its 'State of the River Nile Basin 2012 Report' that: "Clearly the Nile countries must boost food production if they are to avert major food crises, which have the potential to erode and wipe out past gains in socio-economic development."

Protect DRC's 'breadbasket' from armed thugs

Although eastern DRC has some of the most fertile land in the country, many farmers cannot harvest their seasons of hard work, due to dangerous kidnapers waiting amidst the crops.

Tuver Wundi
Goma, Democratic Republic of Congo

Rutshuru, Lubero and Beni in eastern Democratic Republic of the Congo are considered to be the country's 'breadbasket', thanks to the rich agricultural sector. But harvesting the riches of the land comes at a great risk. Since the end of 2017, armed groups, both from the Congo and from abroad, have inflicted a system of kidnapping with high ransoms – some payable with land.

"The land is becoming bloody for the people in this part of the Nile region. People do not know how to protect themselves," says expert and UN Habitat consultant, Jossy Materu. "There are no mechanisms for nutritional security because of these kidnapers."

When one enters the fields at harvesting time, that person may be kidnapped by thugs hiding in the crops. The kidnapers demand ransoms ranging between USD 1,500 to 25,000. If the ransom money is not paid, they execute the hostage.

"The harvesting of goods happens either through deals between people and armed groups or by sharing the food with armed people in the fields," said Sabine Karume, the coordinator of an agricultural group in Rutshuru, in a presentation in January 2019.

From October to December 2018, nine women were kidnapped on a road leading to the fields in Gisigari, in the territory of Rutshuru. The kidnappings took place along the Rutshuru River, considered to be one of the sources of the Nile on the Congolese side, Karume said. Numerous families are under financial pressure to free their relatives.

Negotiations with the kidnapers resulted in the transfer of the entire harvest as payment for the ransom. This, of course, means that the farmers lose the produce of their labour, which lasts many seasons.

This phenomenon endangers not only food security each season but also deprives the local people from building a future free from this vicious cycle.



Members of an agricultural group visit the site of a recent abduction near Gisigari.
Photo: Tuver Wundi

This present danger also renders any investment in the region impossible. Known for its cocoa and arabica coffee production, this area has yet to yield any viable local processing businesses.

Educate farmers about post-harvest management to stop food loss

Fourteen percent of crops grown go to waste due to poor storage, late harvesting and improper packaging.

Selam Mulugeta
Addis Ababa, Ethiopia

In Ethiopia, farmers, governmental and non-governmental actors have been trying to tackle post-harvest loss and its negative impact on food security. Thirty percent of the total annual crop production vanishes in post-harvest losses, leaving five million Ethiopians annually food-aid dependent.

Tolecha Bekel is a farmer with two hectares of land in the Adea district, one of the highest crop production areas located near the capital Addis Ababa. The area has been registering tremendous production growth, however, farmers like Bekel are losing significant amounts of crops because of poor post-harvest crop management.

He said that until recently, he had paid too much attention to increasing production and productivity, and less to actual grain loss.

"In our locality, we had been losing significant amounts of crops post-harvest. There were different factors, such as handling, transportation, drying, milling and traditional crop storage. Surely, I can tell you that if I could have managed the loss, it would have easily covered the yearly amount of my family's food demand," Bekel said.

Misa Demise, Crop Value Chain Development Expert within the Ethiopian Agricultural Transformation Agency (ATA) said: "In Ethiopia, post-harvest practices are extensively handled in traditional ways and hence cause grain loss and deterioration in quality."

In 2016, for example, of the total 24.8 million tons of annual yield from major edible crops, 3.54 million tons, which could have fed nearly 18 million people, were damaged post-harvest.

Contributing factors

Failure to timely collect harvested grains from farms is one among many factors contributing to post-harvest loss, and it is widespread in Ethiopia's agricultural sector. According to a senior Ethiopian agricultural expert, harvested agricultural yields are left behind at farms for long periods and hence are exposed to physical changes in temperature and moisture content – they eventually dry up or decay.

A lack of proper transportation facilities leaves harvests exposed to mites, rodents and birds, adding losses at the farm level.

Poor storage facilities and a lack of appropriate packaging materials, resulting in the growth of pests, remain significant challenges for farmers in Ethiopia.

"If I could have managed the loss, it would have easily covered the yearly amount of my family's food demand."

“Farmers are using the programme to get various types of information, especially poor and smallholder farmers can access information and start dialogues with professionals on preventing and reducing post-harvest loss.”

The overall poor post-harvest management across the nation not only affects the short shelf life of the food grains but also hugely impacts the overall decline of edible food for consumption for the steadily increasing population of Ethiopia.

The minimising of post-harvest losses would have a significant and direct impact on food security in Ethiopia. It would enhance food availability, and proper post-harvest management would retain the high nutritional value of crops.

The prevention efforts to reduce post-harvest loss needs comprehensive work, said Misa Demessei, Crop Value Chain Development Expert at the Ethiopian Agricultural Transformation Agency (ATA). She explained that “improved agricultural technologies should be available to the farmer, especially for those who are small scale holders”.

She continued: “Technology would significantly support farmers to reduce the traditional way of harvesting. The technologies that we are talking about are not those of high mechanisation; we are working on adopted technologies of threshing, winnowing, storage and others. We are doing it in a way that is accessible and useful for small scale farmers.”

Bekel, the farmer living in the Adea district, said ATA’s support has enabled him to improve post-harvest management:

“I have been implementing three major tasks to reduce crop loss. Timely grain collection is the first task. Secondly, I have started using better packaging, and finally, I have changed the traditional method of crop storage.”

The Agricultural Transformation Agency of Ethiopia (ATA) has launched mobile phone information programmes for farmers, called ‘8028 Farmer Hotline’, as part of the strategy of tackling post-harvest crop loss. Through the hotline, farmers can easily access information related to weather, markets, and the use of technologies.

“Farmers are using the programme to get various types of information, especially poor and smallholder farmers can access information and start dialogues with professionals on preventing and reducing post-harvest loss,” said Misa.

Beware of tricks to steal land from widows

Land disputes are par for the course in Burundi, but witchcraft and other tactics can leave bereaved wives with nothing.

**Fabien Niyonizigiye
Burundi**

Emillienne Sinabikeka is sitting on a chair at the Justice Department of Kayanza as she awaits her turn to formally submit her claim on her late husband’s land. Her brothers-in-law have been trying to deny her of her inheritance.

“I am constantly intimidated by them, and I often receive death threats,” she said.

Sinabikeka believes her in-laws might have induced her husband’s death through witchcraft – a commonly held belief in Kayanza.

Florence Ndikumana is the Coordinator of Family and Community Development Centre in Kayanza and says that cases like Sinabikeka’s are

common. A man’s family members can kick a woman out of a house directly after her husband has passed away, and then claim that the woman no longer has ownership of the property.

Land possession has always been a prestigious indicator of a family’s wealth in the Burundian culture, which is one reason why constant fighting for land ownership persists amongst Burundian families. Kayanza is the most populated province in Burundi, and unsurprisingly, it has the highest percentages of complicated land fighting court cases.

In Kayanza’s commune of Gatara, where the population density is 961 inhabitants per km², land cases are also widespread. Kayanza’s commune has a population density of 1000 inhabitants/ km² and the same cases of widespread feuds over land ownership are also very common.

Killings, revenge amongst families and targeted witchcraft hunts are all a result of land disputes. The Governor of Kayanza says that over 90 percent of the cases he receives in his office are related to land disputes.

See how food connects despite political divisions

Along national borders in the Nile Basin, similarities in food traditions prove that cultures are far more similar than they are different.

**Elzahraa Jadallah
Khartoum, Sudan**

Human connection between neighbouring nations knows no boundaries. This can be witnessed by shared cultures, traditions and ways of life among many groups in the Nile Basin. While they may be divided by political borders, they still live together as one civilisation, proving that social ties are stronger than politics.

Besides clothing, rituals, traditions and spiritual practices, food is proof of a significant cultural connection. The traditional meals made of natural and local ingredients are almost the same for the local people living along the borders in each country in the basin.

In Sudan, a country vast and diverse, the cuisine varies depending on the region. But in the north and down to the centre there are many similarities between Sudan and Egypt in terms of food choices.

Since northern and central Sudan mostly adopt Arab culture, they have a lot of meals in common, not just with Egypt, but with the entire Middle East. Most of the well-known Arabic dishes are present in almost every home in those parts, including fowl and falafel.

Fowl is made of fava beans, boiled with salt and served with chopped onions, cheese and sesame or peanut oil, and sometimes with dressings like garlic or tahini. In Khartoum, many people prefer to have fowl mixed with pieces of bread and other ingredients – they call it “boash” and it is college students’ favourite meal.

Falafel are fried ground chickpea balls with herbs and other kinds of seasoning. Fowl and falafel together make a great breakfast meal.

However, in the northern and central parts of Sudan, they have their own special meals like qurasa, which is made from flour in a way similar to making crepes. Qurasa can be eaten with different sorts of stews and



Left: A woman prepares kiswa, a thin, fermented bread.
Right: Assorted stews and sauces served along with qurasa.
Photos: Elzahraa Jadallah





Kagina Ermogene, a specialised maize farmer in Rwanda.
Photo: Jean Paul Mbarushimana

sauces made with meat and other ingredients, and sometimes with sugar and margarine.

The western parts of the country, especially Darfur, share culinary similarities with Chad. Many tribes are present on both sides of the border, where the most well-known meal is asieda, a porridge mostly made of millet flour. In Sudan, it is made from different types of flour and served with different sauces. Other meals typical for these border regions are stews such as mirris, which is made of sheep's bone marrow and sharmout or tagalia stew, made with dried meat and tomato sauce. On the eastern side, the cultural and ethnical interaction happens among three countries: Sudan, Ethiopia and Eritrea. There are many foods in common there, but the most well-known connection is the coffee and the way it is prepared and served.

Drinking coffee in this tri-border area is a custom of a unique process of cooking and serving the coffee. It is a daily practice, mostly at noon, and starts with roasting the coffee beans, grinding them, boiling them with ginger, and then serving it in small cups. The process is done using a traditional coal stove and traditional utensils. The coffee is finally served with incense, nuts, popcorn, and sometimes fruits or sweets.

There is also kisra, a thin, fermented bread, which is very similar to the Ethiopian injera, and it is not limited to the east despite the common features between the two types of food. Kisra is consumed across Sudan and in some parts of Chad as well.

The southern part of the country has the same features of the west, as Darfur and Kurdufan states are very close and similar, and the eastern part of the south combines the eastern and western cultures. There are a lot of Sudanese meals to be found in Juba (South Sudan), showing that the people remain united even though politics have divided them into two nations.

Don't underestimate the effect climate change has on food production

Irregular weather patterns have dwindled farmers' harvests and made food insecurity inevitable. A governmental plan to tackle the issue in Rwanda is still in its early stages.

Jean Paul Mbarushimana
Kigali, Rwanda

Rigorous weather events, particularly droughts, have historically imposed heavy tolls on Rwanda's food security. Climate change has exacerbated the issue of food insecurity not only in Rwanda. According to a study published in 2018 by the Food and Agriculture Organisation (FAO), the total number of undernourished people in the world exceeds 820 million. This number, which decreased between 2010 and 2014, started to increase again in 2015. One of the influencing factors which led to this surge is climate change.

Kagina Ermogene is a specialised farmer of maize, in Burambi Village, in Rulindo District. With irregular weather patterns due to climate change, he has dealt with disappointing harvests.

"We grow maize and eggplants, but we don't expect a good harvest because we planted them too late. We would have started growing these cereal grains and legumes at the beginning of January as usual, but the

good conditions from the rain season came in mid-March this year. That is why we were late with planting and, of course, it will affect our harvests compared to the last two years, when we had favourable climates for growing plants."

Farming is an essential source of income in Rwanda. About 70 percent of the population works in the agricultural sector. Another farmer, a woman from Ntarabana Sector, who wishes to remain anonymous, said: "Last year we successfully harvested a lot of cereal grains, but today we are hopeless. We have grown sorghum, and they are still small because they missed the favourable rain season. Last year I harvested 100 kilograms of beans, but this year I will not harvest even a half kilo."

Rwanda's current climate is subject to high levels of variability. This will increase with climate change, leading to a rise in climate hazards, which could affect economic growth and investment in poverty reduction, as indicated in a 2015 World Bank report. Risk analysts Maplecroft categorise Rwanda as high risk in terms of climate change vulnerability, due to limited capacity to respond to disasters, high poverty rates and reliance on rainfed subsistence agriculture.

Mukamana Speciose, a legumes farmer, said that climate change affected their annual harvest and ultimately the food production.

"We had our first day of rain on April 1. The beans we planted have dried up (because of the late rain)."

The government of Rwanda warned farmers about climate change and has initiated techniques within its seven-year agenda to overcome the challenges faced by farmers. Musabyimana Jean Claude, Permanent Secretary in the Rwandan Ministry of Agriculture and Animal Resources, told The Niles:

"The seven-year project includes the specific pillar of improving our agricultural procedures vis a vis climate change. This includes more measures to mitigate the effects of climate change, such as improved irrigation to maintain crop production during a drought and improved technology for more production. These are measures we will use as we know that climate change affects food production in Rwanda as well as in other countries."

"We know that climate change affects food production in Rwanda as well as in other countries."

Food security is essential for human life

Humanitarian aid is the only way to survive for the South Sudanese population living in protection camps. This aid, however, is reducing despite efforts by humanitarian partners to fill the gap.

Bullen Chol
Juba, South Sudan

More than 6.35 million people – 54 percent of the South Sudanese population – were severely food insecure in August, despite large scale humanitarian assistance, according to the Integrated Food Security Phase Classification (IPC) analysis released jointly by three United Nations agencies and the Government in September.

South Sudan's civil war has uprooted over four million people from their homes, both internally and externally, forcing them to seek shelter within the country and across neighbouring states.



A boy taking shelter in Juba's Mahad IDP centre takes away maize received as food aid.
Photo: Bullen Chol



A woman dividing the maize she received as monthly food ration in the Mahad IDP centre in Juba, South Sudan.
Photo: Bullen Chol

“We inherited the small plots of land from our father. Our sons and daughters will not have that privilege. It is a pity.”

A March United Nations Mission in South Sudan (UNMISS) update said about 181,891 people were seeking shelter at civilian protection sites across the country.

The report added that the UN agencies, and other humanitarian partners, are collaborating to support the needy with over 15,000 metric tonnes of food and nutrition assistance.

Tens of thousands of citizens living in Juba’s temporary camps rely on this life-saving aid. Despite this massive humanitarian effort, food is often not enough.

The Mahad site hosts a population of 3,423, about 1,200 households, mostly, women and children and elderly depending on monthly humanitarian aid.

Twenty-six-year-old Sarah Juan lives here, and she is a mother of six children. She said the monthly ratio had been cut compared to 2014, at the height of the crisis.

“I only received 10.5 kilograms of maize, 1.5 kilograms of beans and 0.63 litres of cooking oil, for a month, which cannot feed us for this number of days. Sometimes it does not even come on time. My children and I cannot survive without food,” Juan said.

Mach Nhial, one of the camp leaders, said the drastic decline in food ratios is worrying and alarming amid an economic crisis that spurs high prices of food commodities.

“Last year, the matrix for the food distribution was 15 kilograms per individual, but this year, it has decreased. So, this is the situation we are undergoing. The food is not enough,” Nhial said.

But there is hope. In parts of the country that have been relatively secure, the availability of seasonal harvests from September has slightly improved the overall outlook. Between September and December 2019, 4.54 million people – 39 percent of the population in South Sudan – are projected to be severely food insecure.

Revise tradition of inheritance to save the land

In both Burundi and Ethiopia, the cultural practice of splitting up land amongst heirs, destroys the land, yields bad harvests and leaves people hungry.

Addis Getachew & Fabien Niyonizigiye
Addis Ababa, Ethiopia & Bujumbura, Burundi

Kabura Serges was born and raised in Kayanza, Burundi, and he is currently facing the challenge of dividing his half-hectare plot of land amongst his eight adult children. He claims that disputes among his children have caused serious feuds within his family, as his children suffer from insufficient harvests from the fragmented farmland they have inherited.

One child and his family might farm beans on his small portion of land, and another might cultivate sorghum. Regardless of what they plant, the meagre harvests bring chaos and unstable livelihoods to all families. These are common issues in most families living in Kayanza province and generally throughout the country.

Land fragmentation in Burundi consists of the process of taking inherited land from parents or grandparents and dividing it into several sections among brothers and sisters of a family.

Burundians regard land as one of the greatest treasures a family can possess, and land has historically been a sign of wealth and prestige in Burundian culture.

Burundi is a small landlocked and densely populated country, with 250-260 inhabitants per square kilometre. Over 90 percent of Burundians depend on agriculture to sustain their livelihoods.

The impact of land fragmentation

Dividing land amongst heirs comes with several negative impacts, notably the small harvests on tiny plots of land, contrasted with large Burundian families, which have an average of six births per woman.

Niyitunga Marcien, the director of the provincial agriculture and livestock department, says: “Every year there are considerable declines in our agricultural harvests due to land fragmentation, which is frequent and common in our up-country provinces because they usually contain large families with high birthrates.”

He added that due to the lack of land space, farmers tend to exploit the land. This leads to poor quality and less fertile soil, exacerbating the poor harvests. Marcien blames the inheritance processes that perpetuate land fragmentation.

What is the solution?

While the government says it is coming up with strategies to fight poverty, scarce farmland and productive land management, Evariste Ngayimpinda, a demographic expert says that as long as there are no political strategies organising public and private property nothing will stop the current land disputes occurring in most Burundian families.

An intercontinental issue

Thousands of miles to the northeast of Burundi sits the much bigger Horn of Africa nation, Ethiopia, with more than 100 million inhabitants. As in Burundi, most people rely on agriculture for their livelihood.

Begashaw Gemechu sits in the shade created by an acacia tree in the middle of a small patch of farmland in Melka Adama, close to the sprawling city of Adama.

“Forty years ago this land was less inhabited, and there was plenty of land to farm,” he said pointing to fields in the distance – lands he apportioned among his eight children, all of whom are now married.

As his family swells with grandchildren, the patches of land will grow impossible to divide. Seventy-five percent of Ethiopia’s population is aged between of 18 and 35.

“And some of them sold parts of their land to buy a Bajaj (a tri-wheeled motor car used as a taxi in the city), and they are struggling to make ends meet,” Gemechu said.

One of Begashaw’s sons, Addisu, said: “We inherited the small plots of land from our father. Our sons and daughters will not have that privilege. It is a pity.”

According to Addisu, urban ways of life will be the future of the whole village and “[...] our children need to adapt to that and get a level of education to take them somewhere.”

In Ethiopia, with land fragmentation creating the same problems as in Burundi, young people have begun to migrate to urban centres in search of jobs, as they have not inherited land of their own.



Fragmented farmland in Burundi.
Photo: Fabien Niyonizigiye

Ingredients:

Amid hunger and a growing population, residents in Nile Basin countries will have to use more available resources previously overlooked. From date tree bark to crickets, nutrients can be found everywhere.

With the world's population expected to reach 9.7 billion by 2050, insects will become a vital source of nourishment.

Add crickets to your diet for more protein

With populations growing and resources shrinking, scientists are turning to insects as a nutritious food alternative.

Rehab Abd Almohsen
Cairo, Egypt

In Nile Basin countries, insects play the role of organic fertilisers, animal feed, and sometimes, as food for humans.

Muniirah Mbabazi, a researcher in the Department of Food and Science at Makerere University in Uganda, wonders why don't more people eat insects. "Edible insects remain one of the lowly tapped food resources in this region."

Mbabazi explained that insects are a rich source of essential fatty acids and minerals like iron. "In diets that are deficient in protein, edible insects may be an important alternative, as they may supply over 50 gram of protein per 100 gram of edible insects."

In East Africa, grasshoppers, termites or white ants, palm weevil larvae, bee larvae, and lake flies are good sources of food, while lepidoptera larvae and locusts are common in Central and Northern Africa respectively.

Mbabazi wrote a paper "Edible insects in Eastern and Southern Africa: challenges and opportunities" as part of her contribution in the book "Sustainable Diets and Biodiversity" published by the Food and Agriculture Organization (FAO).

Since 2003, FAO has been working on promoting edible insects in many countries worldwide, to deal with the predicted population increase to 9.7 billion people by 2050.

"Crickets need a sixth less feed than cattle, four times less than sheep, and half the amount that pigs and broiler chickens need to produce the same amount of protein, according to FAO. Insects also emit fewer greenhouse gases and ammonia than conventional livestock. They can also be grown on organic waste.

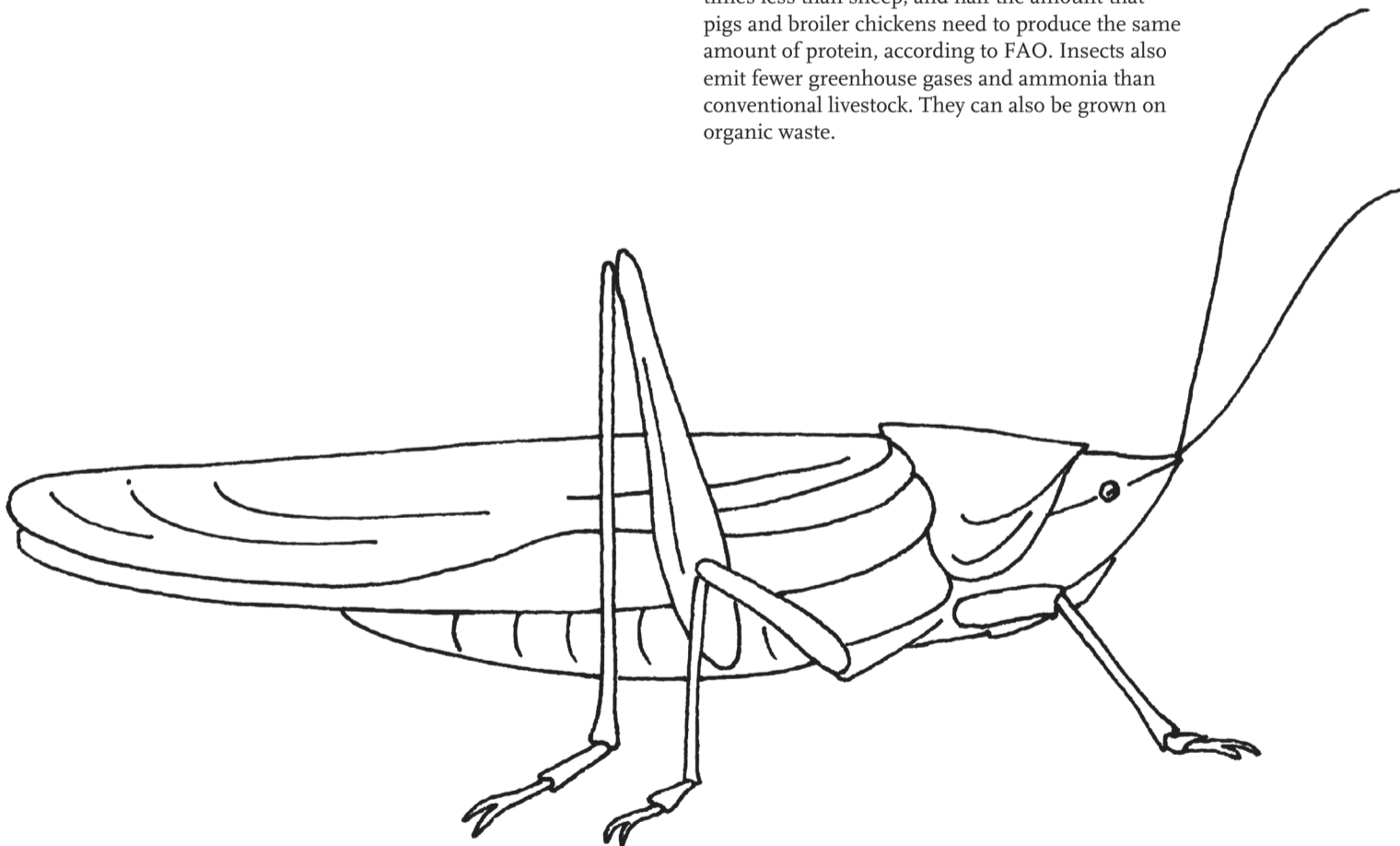
Another advantage of insects Mbabazi pointed out, is that harvesting insects from the wild can fetch over USD 10 for one kilogram of insects and offer not only a cheap source of protein to low-income households but also an alternate source of income.

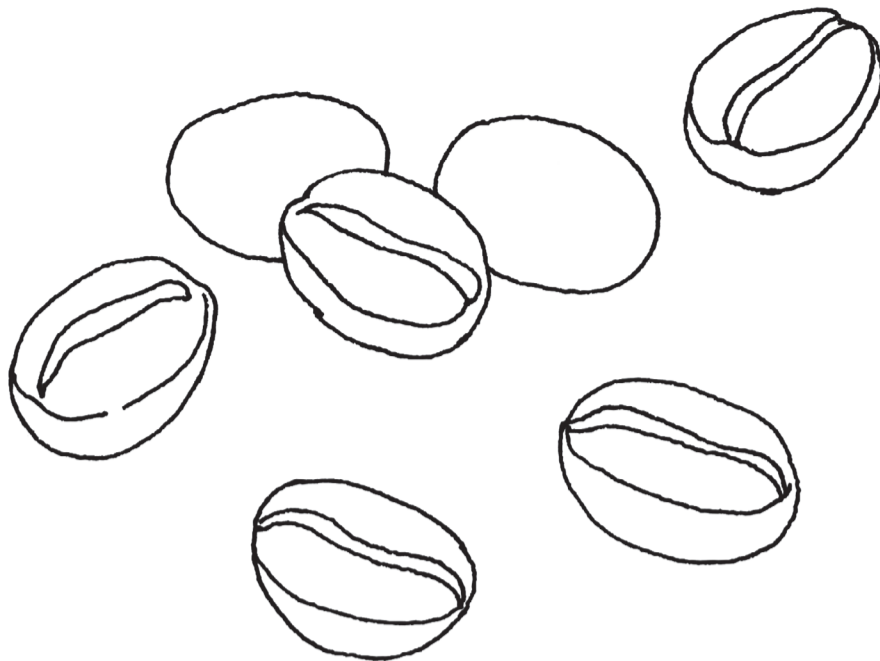
Making crickets attractive to customers

Flying Food, a project based in Kenya and Uganda since 2013, set up small scale insect rearing stations at farms, raised crickets that can be eaten whole, but also dried and ground into a flour to serve as an ingredient for new food products, such as blend flour, cakes, samosas and meatballs, according to their website.

The project has a business model that allows people in the region with low incomes to participate by rearing healthy crickets for food, then learning processing and product development to make crickets more attractive to the customers – for example, selling cricket flour that can be used in e.g. chapatis or irio cakes, and marketing.

"With the keen interest around the world on entomophagy," says Mbabazi, "regulatory frameworks on the use and conservation of insects in areas such as biodiversity conservation, disease control, Integrated Pest Management (IPM), sanitation, pest eradication and the health sector are being developed."





“I love coffee, but I have never tasted the coffee from my garden, only Nescafé that I buy at an exorbitant price.”

Reap what you sow!

A poor coffee farmer toils away at the coffee beans in his garden, but he has never tasted his own coffee. Instead, he spends his money on expensive Nescafé.

**Davis Mugume
Kampala, Uganda**

On a sunny afternoon, George Muhanuka Tindyebwa grabs a bucket to pick some coffee cherries from his garden.

Red-ripened cherries create beautiful scenery in the four-acre space where Tindyebwa has planted his coffee. It took him three years before he could pick any cherries from this garden, but he was patient.

“I had hoped that I would one day start to benefit from my garden,” he says.

He diligently pulled weeds, pruned and mulched his garden. At times he says, he felt desperate whenever he was hungry and could not find food.

“It’s disturbing to see healthy gardens when you actually can’t pick a leaf or anything from it, year after year,” the former teacher says.

Out of frustration, Tindyebwa birthed an idea. He also started a plantation alongside the coffee trees.

“I could also interplant some beans in the coffee garden to survive on as I waited for my coffee beans to mature.”

Now, Tindyebwa harvests at least 20 bags of cherries that he dries and takes to a nearby trading centre for “cleaning”. The cleaning process involves hurling coffee beans to remove bad coffee beans and coffee husks.

Out of these, he says he can make at least UGX 1,850,000 (about USD 500) per season. It is still a work in progress. He is currently harvesting half the garden.

“I love coffee, but I have never tasted the coffee from my garden, only Nescafé that I buy at an exorbitant price,” he says. He sells a kilogram of coffee at UGX 6,000 (about USD 1.60), but he buys a small container (50 grams) of Nescafé at UGX 15,000 (about USD 4).

Unlike other farmers who can live off their crops at various stages, Tindyebwa has first to sell coffee to enjoy the fruits of his labour.

“This is so discouraging,” he says.

Rugaya Richard, a coffee entrepreneur and the owner of Gorilla Highland Coffee, says: “Farmers’ mentalities have to change from the days of colonisation. They were told that coffee was not for consumption but rather for making medicines and bullets.”

Under his label in Kisoro District, Richard teaches farmers how to roast and package coffee, not to mention how to process and drink it.

“Farmers must be informed that coffee is not bad and is something they can directly consume,” he says.

Don’t throw away the date’s byproducts

The fruit of a date tree is just the beginning of its usefulness. There are several other uses for the wood, seeds and leaves.

**Rehab Abd Almohsen
Cairo, Egypt**

During a session on date palm tree waste, one audience member raised his hand to express his objection: “It should not be called waste, it is a secondary product. Date palm trees have zero waste.”

His point received a great deal of support at the Festival of Egyptian Dates, which has taken place every year since 2015 in Siwa Oasis in Egypt. The date tree is known in the Middle East and North Africa (MENA) region as the ‘Tree of Life’ and has a high level of respect as one of the oldest trees known and cultivated by man. The tree also holds a prominent position in Judaism, Christianity and Islam.

The MENA region produces 90 percent of all dates globally and includes the ten biggest date producing countries, topped by Egypt, as the largest producer of dates, yielding 1.5 million tonnes of dates annually, according to Food and Agriculture Organization.

“Imagine that 20 percent of the size of the tree and its dates go as waste, while each piece can be turned into a product,” said Khalid Ghanem, professor of organic agriculture at Al-Azhar University in Egypt.

“Every part of this tree has a number of uses: the trunk’s main use is for wood, as light footbridges or in roof making. Leaves are used to make a wide

variety of containers and crates, baskets and sacks, and smaller articles like fans and hats.”

There are several attempts to find new outlets for the annual crop of leaves and empty bunches that are obligatory by-products of date production. One of them, according to Ghanem, is animal feed that has been proven by research to increase cow milk and soil organic fertiliser.

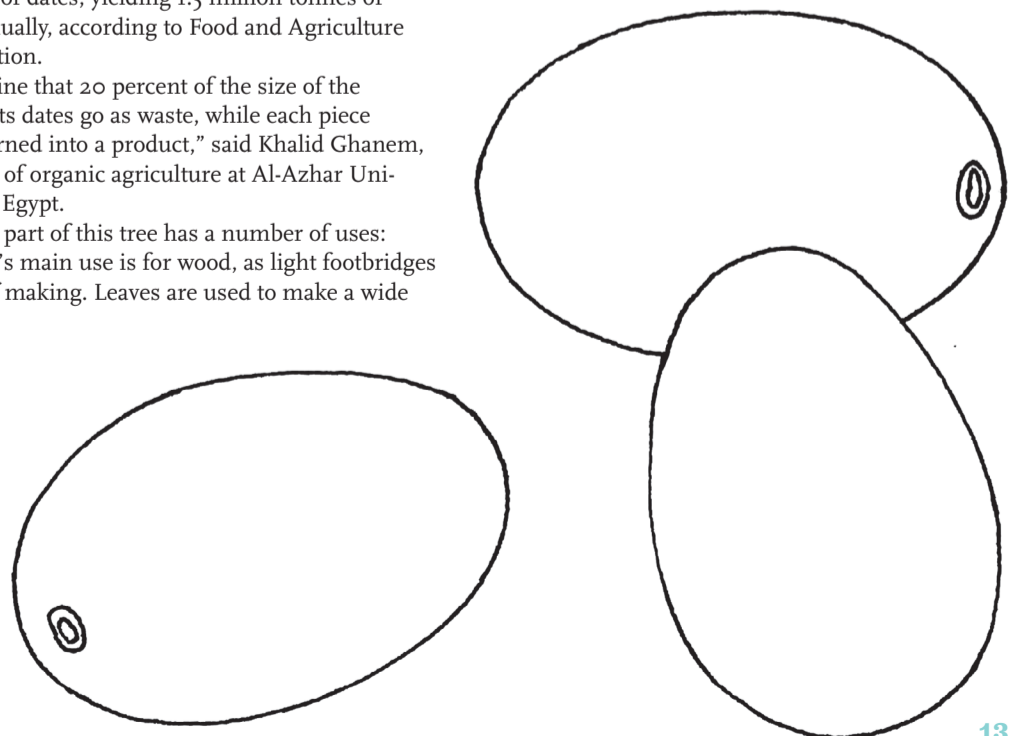
Another way, he said, is using cull or low-quality dates, grinding them and making date paste, which can be applied as a natural sweetener and an alternative to sugar in baking and cooking to raise the nutritional value of the product. Date seeds can also be roasted to make coffee.

Mohamad Kamal, a researcher at the agricultural research centre, pointed out that one of the benefits of using dates is its high fibre content and other nutritional values. “It is rich in protein and fatty acids and amino acids. It also contains a significant amount of iron and calcium.”

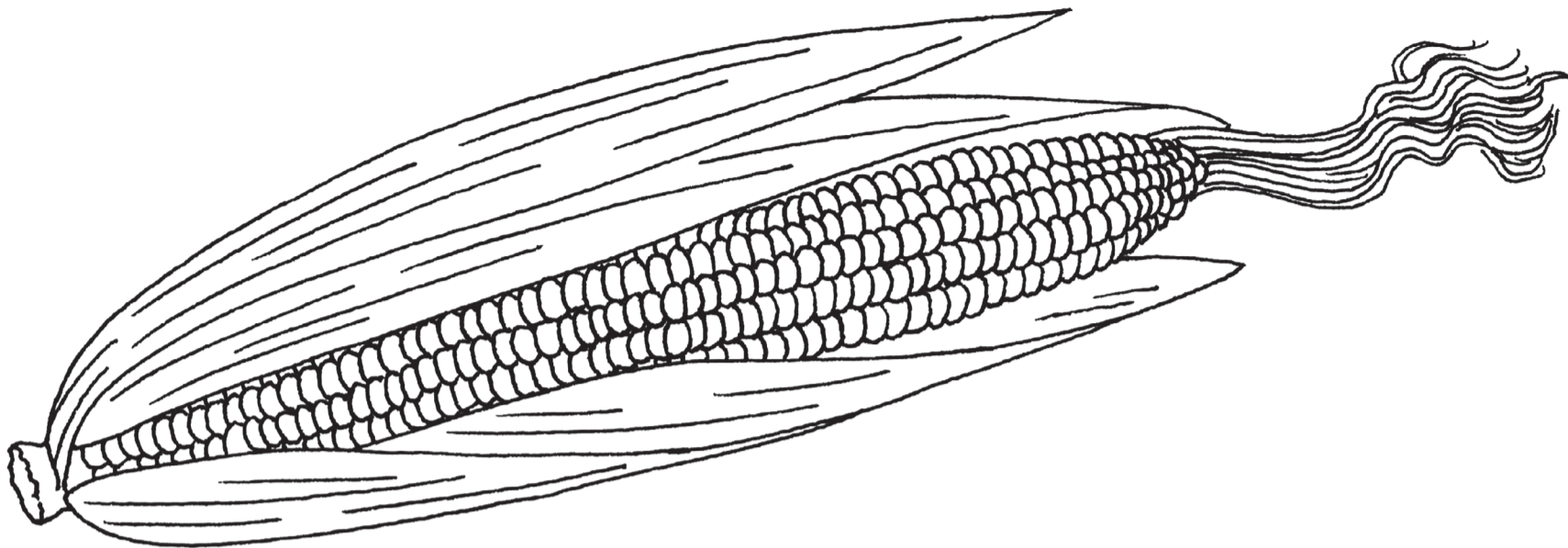
Kamal believes that the government should consider importing and researching the technologies that help improve the use of the by-products.

“Egypt produces a little over 17 percent of global date production but only contributes to 3 percent of world exports. With better use of the tree’s byproducts, exports would go up.”

The country has increased date cultivation by more than 100 percent since 1993 and announced a plan to grow the biggest date plantation that would include around 2,500 million trees to produce top-quality dates.



“That’s the beauty of maize flour, you can use it to make many different kinds of foods.”



Grow plentiful and nutritious maize!

Maize is a key staple crop across the Nile Basin due to its variety, plentitude and easy cultivation.

Davis Mugume*
Kampala, Uganda

Sharon Amumpaire sits in the shade of her house as she eats breakfast with her one-and-a-half-year-old daughter. Like most mornings, they eat maize porridge and leftover matooke (a dish made of steamed plantain bananas) from the night before. Her older children have also had porridge for breakfast before going to a nearby nursery school in Ntungamo district in Western Uganda.

Amumpaire starts eating maize corn while it is still fresh from the garden; her children prefer it roasted. But she sometimes steams it and serves it for lunch or supper.

When maize has properly matured, Amumpaire harvests it and stores it in baskets in her house. It is there that she takes some to cook or mill, to use as porridge or maize bread.

Another mother, Kyomugisha Agnes, also loves maize for its varied purposes. She uses it to make posho bread for lunch or supper.

“That’s the beauty of maize flour, you can use it to make many different kinds of foods,” she says.

Burundi

In Burundi, people cook fresh maize and serve it as a dish to their families.

Sometimes they also mill maize for flour, which they use to make porridge or maize bread, locally known as ubugali. Burundians love maize for its nutritious qualities.

According to the United Nation’s Food and Agriculture Organisation, one of the reasons maize is a staple food across the world is due to its high nutritional value, with high levels of starch and also valuable proteins and oils.

Depending on the variety, maize may contain a number of important B vitamins, folic acid, vitamin C, and provitamin A (i.e. precursor to vitamin A). Maize is also rich in phosphorus, magnesium, manganese, zinc, copper, iron and selenium, and has small amounts of potassium and calcium. Maize is a good source of dietary

fibre and protein while being very low in fat and sodium (salt).

One delicacy in Burundi is a mixture of maize and beans to form what is known as intete. The maize flour is also used to make both non-alcoholic and alcoholic beverages.

Maize is among the main sources of meals consumed in Burundi. It is cultivated in all ecological regions, even though maize is a basic staple for some and a mere supplement for others.

In some regions, maize is known for its bread, beer, porridge and food for domesticated animals. A mason in Rutana province says that the maize is used differently, but it remains an important food for them. It is eaten as bread but also used in the manufacturing of a local beer called umugoriori. A student from Makamba says that maize is eaten grilled and as also as bread. He added that it is transformed into a white flour eaten by people in some towns.

The byproducts during the transformation are sold to stockholders to feed cows and chickens. According to Willy Ndayikeza, a native of the Mugamba region, maize bread is nutritious and also delicious, he says. In addition, he sometimes drinks a concoction of maize and wheat flour in the morning.

Egypt

Dina Khalil, who originally comes from Beheira in the Nile Delta, says that maize is a very important crop in his country. It yields the biggest harvest after rice and is used in many nutritious meals.

Slowly grilled in the mud ovens in the countryside, Egyptians use it for bread-making by mixing it with wheat flour. There’s also a cake made with corn flour called besisa.

“In the city, we use it for popcorn, or in salads and pizzas as sweet corn.”

Rwanda

Josianne Mukarukundo from Huye says she mixes maize, sorghum and millet flour for her children’s meals – either for porridge or bread. Mukarukundo likes maize because it is sun resistant.

“Even when the rain is delayed, maize will survive until we get good rains,” she says.

She usually interplants maize with beans in her garden.

Ethiopia

Maize became increasingly important in the food security of Ethiopia following the major drought and famine of 1984. More than 9 million smallholder households plant maize.

Ethiopia has doubled its maize productivity and production in less than two decades. The yield, currently estimated at three metric tons/hectare, is the second-highest in Sub-Saharan Africa, after South Africa.

The maize area covered by improved varieties in Ethiopia grew from 14 percent in 2004 to 40 percent in 2013, and the application rate of mineral fertilisers from 16 to 34 kilogram/hectare during the same period. Ethiopia’s extension worker to farmer ratio is 1:476, compared to 1:1,000 in Kenya, 1:1,603 in Malawi and 1:2,500 in Tanzania.

Research shows that increased use of improved maize varieties and mineral fertilisers, coupled with increased extension services, as well as the absence of devastating droughts, are the key factors promoting the accelerated growth in maize productivity in Ethiopia, which took a homegrown solutions approach to the research and development of its maize and other commodities.

Maize flour is used as a main ingredient in the preparation of foods such as homemade bread and genfo (Ethiopian porridge).

*Addis Getachew (Ethiopia), Fabien Niyonizigiye (Burundi), Yosra Mostafa Awad Abdelhady (Egypt) and Businge Sadic (Rwanda) contributed to this report.

“Although the short-term economic benefits of khat farms are attractive, the long-term effects on the land, water, and plant resources could be detrimental.”

Beware of easy money

While growing khat means frequent and lucrative harvests, the long-term risk of food insecurity is a crisis in the making.

By Tesfa-Alem Tekle
Addis Ababa, Ethiopia

Khat is a narcotic crop whose leaves are chewed by millions of consumers in the Horn of Africa and the Arabian Peninsula. The stimulating effect is so popular that khat cultivation has boomed in the past ten years, according to the Ministry of Agriculture.

According to studies in the past two decades, tens of thousands of farmers in Ethiopia’s Southern Nations, Nationalities and Peoples (SNNP) region, have switched to cultivating khat, replacing the production of major food staple crops, including Ethiopia’s main export, coffee. The region is home to over 200,000 farmers, who depend on khat cultivation.

The immense conversion towards the khat monoculture farming system is mostly visible in Sidama Zone where most farming communities have abandoned production of food crops for the high-value cash crop, khat.

Khat cultivation is especially prevalent in the highlands of Ethiopia, where traditional home garden agroforestry systems had for centuries been the primary agricultural farming practice and supported the livelihoods of millions of people.

Frequent khat harvests

Unlike staple food crops, khat has a fast-growing stem and produces frequent harvests.

For the millions of poor Ethiopian smallholder farmers, the high frequency of harvests from the high-value cash crop means a very profitable source of income.

Research conducted at the nearby Hawassa University reveals that, “khat harvests from 0.1 hectares annually generates six times more income than other staple food crops such as maize”.

Temesgen Wereba, 43, a khat grower in Sidama area stopped growing food crops eight years ago on his half-hectare land.

“I harvest khat three to four times a year unlike other food crops or coffee, which come only once a year,” said Wereba. “The production of khat is more valuable. I make three to four times more income annually from khat compared to the total returns I used to gain out of the [other] food crops combined.”

Previously, Wereba used to cultivate enset, coffee, maize, cereal grains, cabbage and fruits that fulfil the food requirements of his family.

When no one grows food

According to the Food and Agriculture Organization (FAO), smallholder farmers produce 70 percent of the world’s food, yet they are struggling to feed themselves and their families.

The extensive shift to khat production in Sidama area is a growing threat to food security.

The indigenous enset crop, also known as the “false banana”, is a major food source for millions in southern Ethiopia but farmers continue to clear out enset farms for khat cultivation.

“Khat producing communities are increasingly facing food shortages, and prices for food crops in these areas are rising over time,” said Solomon Melaku, a local crop agronomist.

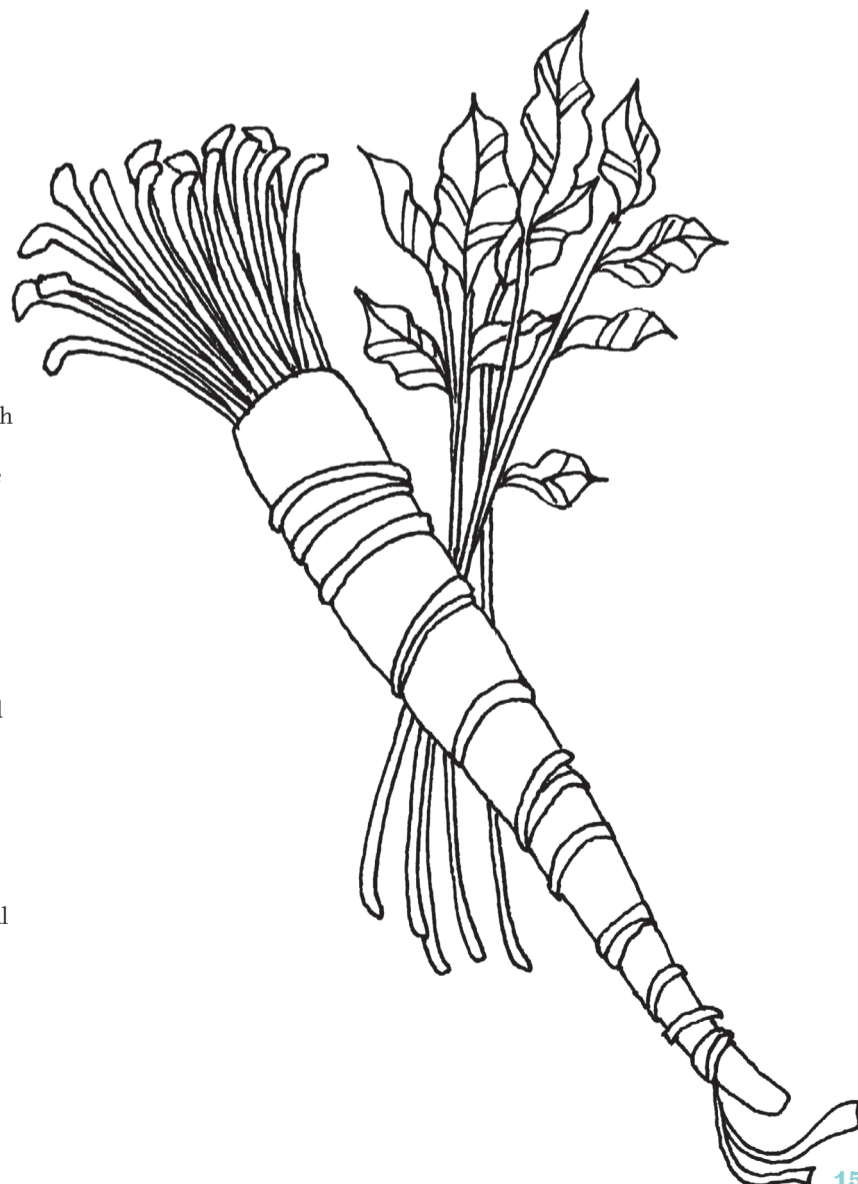
For the smallholder farming communities, a shift to khat production has fattened their wallets; however, they are at risk of potential food insecurity.

“In theory, households practising the modified (khat-based) system can ensure food security through purchase of food from the high income they get from the sale of khat,” said Tesfaye Abebe, Associate Professor of Agroforestry at Hawassa University.

The Ethiopian researcher, however, cautions the potential socio-economic risks linked with high dependence on khat cultivation as a primary means of livelihood.

“If khat were to be wiped out due to pest attacks, unfavourable climatic conditions, or due to other species-specific causes, or if the government banned its production, the millions of farmers behind the sector would be subjected to serious food insecurity. They would not have alternative food crops on their farms.”

“Although the short-term economic benefits of these monoculture khat farms are attractive, the long-term effects on the land, water, plant and animal resources could be detrimental,” Abebe added.



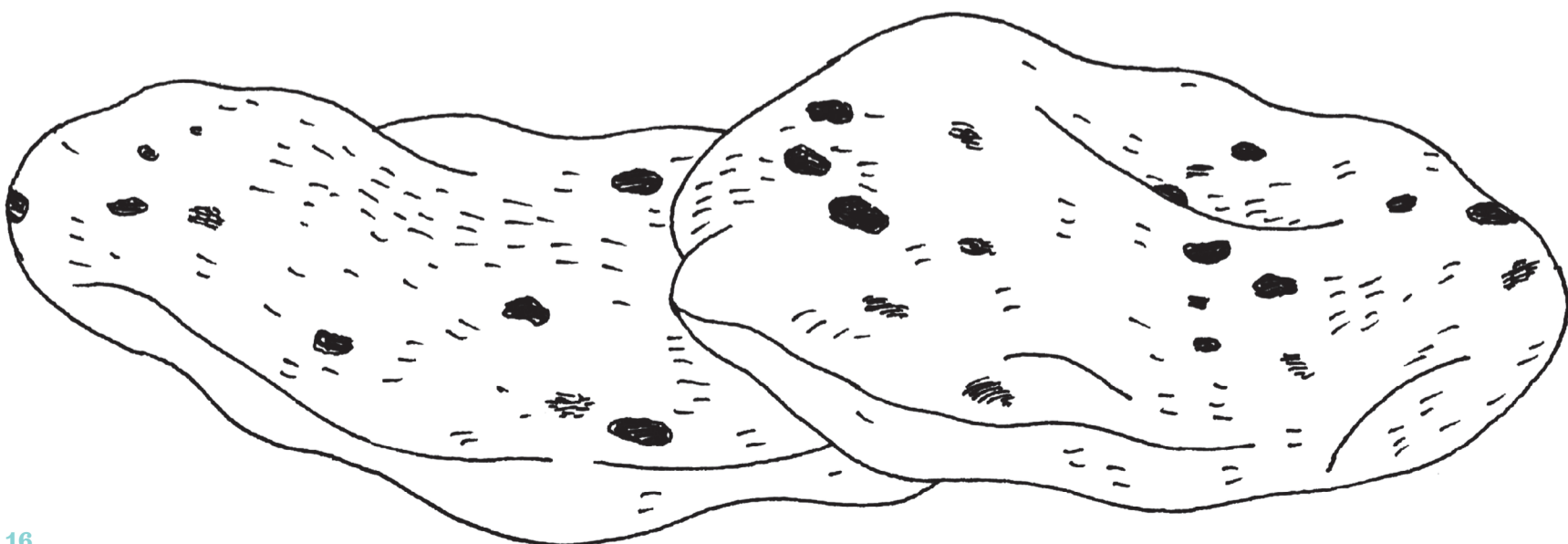
“It’s important
to buy bread
for my children.”



Bread: The food that sparks revolutions

Asmaa Gamal
Cairo, Egypt

In 1977, hundreds of thousands of poor people protested against rising prices of basic food-stuffs, such as local bread. Food riots erupted across the country for two days – from Aswan in Upper Egypt to Alexandria. Bread is the basic food of the people, which is why they call it “living” in Arabic. Every day, thousands of poor people depend on bread as an essential meal, especially after inflation in 2017, which also caused food prices to rise and people to protest. Today, bread is the cheapest food in Egypt, and it is just as important in the everyday lives of Egyptians.



Am Mohamed is 80 years old and lives in Mansoura. Every week, she and her parents bake bread at their home. "My mother taught me the way of baking local bread. Now I teach new generations how to bake bread because it is an essential food and we eat it for most meals every day."



In Cairo, many families bake bread to earn money. Hader and her mother (above) bake different types of bread and sell it in front of their house. Hader said: "Every day, women come and ask for local bread, and sometimes they bring wheat."

Inside 29-year-old Alaa's house, she says: "It is important to buy bread for my children. They eat it all day. I can buy five loaves for less than half an Egyptian pound."



A woman is using her supply card to buy bread. Under the new system, families are issued plastic cards allowing them to buy five loaves per family member per day.

Mohamed el Bandre and his family bake bread. "When I was young, I came to Cairo and learned how to bake bread. This is how I help my family."



Directions:

As modern-day science attempts to solve food insecurity, some solutions have been around for centuries. From ancient super grains to healthy yet straightforward recipes from grandma, feeding a region can often be a matter of re-examining existing resources.

“More than 70 percent of the population depends on rainfed agriculture.”

1.

Make food security the top agenda in the Nile Basin

The Nile Basin Initiative is in a race for time as growing populations still rely on rain to grow crops. Irrigation is a solution on the one hand, but a new challenge on the other.

Waakhe Simon Wudu
Juba, South Sudan

Abdulkarim Seid is the Deputy Executive Director of the Nile Basin Initiative (NBI). He heads the Basin-Wide Program based in Entebbe, which has six pillars or priority areas including food security. In this interview held in Kigali, in February 2019 he re-counts NBI's role in trying to address the challenge of food insecurity across NBI's eleven countries.

TN: How does NBI deal with food insecurity?

AS: We deal with transboundary water resource management related to food security. First of all, most of the basin countries depend on rainfed agriculture, especially the upstream countries. The lower downstream countries like Egypt depend on irrigation agriculture.

Increasingly, because of the erratic nature of the rainfall in upstream countries, their dependence on only rainfed agriculture is increasingly compromising the food security of those countries. Add population growth, land degradation and also degradation of ecosystems, and it is all adversely affecting food security.

NBI was established by member countries to foster cooperation on transboundary water resource management and development, including water for food production. Our initial area was transboundary cooperation, development and management of water resources. Agriculture accounts for most of the water withdrawn from the river system – over 80 percent. When you see this, with rapid population growth, and have this river basin that is shared by eleven countries, managing or developing the water resources of the Nile, in a manner that will address the food security of all countries, is absolutely critical.

TN: As NBI is trying to mitigate this issue of food insecurity in the region, what are some of the challenges or problems behind the food insecurity issue?

AS: I want to link it with the transboundary element because as I told you earlier, most of the upstream countries' agriculture depends on rain, and the

rainfall has become increasingly erratic because of climate change. So, for this reason the farmers are exposed to huge uncertainty because of the high variability of rainfall.

At the same time land degradation and soil erosion in some parts of the basin, especially in upstream countries are hugely and adversely affecting food security. When it comes to the question of how can the basin countries develop their water resources to address or to enhance food security, then there is an issue of increasing interest to have irrigated agriculture. When you have irrigated agriculture, you can make water available, and you are no longer dependent on rainfall. So NBI is trying to help by identifying opportunities for enhancing food security while using the shared water resources of the Nile in a more cooperative and sustainable manner.

TN: What is the magnitude of the food security situation in the NBI region?

As some of the literature and studies by the Food and Agriculture Organization (FAO) mention, especially East Africa, which makes up the biggest part of NBI – a good deal of the population there is food insecure, and quite a good proportion of the population is undernourished. For this reason, food security is the top agenda in the Nile Basin region. This links very much with the water issue because water is at the centre of ensuring food security, whether you depend on rainfed agriculture, or irrigation or fisheries or other forms or components of food production systems.

TN: This year, NBI is marking its 20th anniversary. What are the strategic plans ahead in years to come, as efforts to try to mitigate these problems and ensure they don't happen?

AS: NBI formulated its ten-year strategy way back in 2017. Food security or enhancing food security was decided to be one of the six priority areas for the next ten years. NBI is concerned with the transboundary dimension of food or water security. With this in mind, the primary focus will be, how can we enhance the water use efficiency in agriculture and how can we have productivity of water in agriculture so that we can produce more with the available water?

The other concern is how to optimise cropping patterns across the basin so that we can produce the food we need with the available water.

Another issue is to enhance irrigation technologies to improve efficiency. Of course, as cross-cutting issues we also have capacity building and the knowledge generation aspect of it. But more importantly, at the sub-basin level, we also promote the development of irrigated agriculture, preparation of investment projects like cooperative projects including irrigation and watershed management. There is a win-win situation between the water watershed management upstream and the management of the reservoirs downstream. That is another big area of focus for NBI.

TN: What have been some of NBI's challenges in the last 20 years?

AS: If you are talking about irrigated agriculture, it is not always easy to bring all countries on board. Because irrigated agriculture is a consumptive use of water. Having a mechanism, whereby all countries

come on board for the cooperative development of irrigated agriculture is not easy. The other challenge is actually mobilising the finances required. That is also a limiting factor.

TN: What's your message to the people across the region on the issue of food security?

AS: I think improving agricultural water management is key – one aspect is to produce more from the available water resources, and to enhance efficiency in agricultural systems and also to diversify the investments in not only irrigation but also effective use of rainfall for irrigation. I think more than 70 percent of the population depends on rainfed agriculture.

We need to manage climate risks in order to ensure production systems can absorb the shocks of climate change. Without it, it will be very difficult to ensure food security, especially if you see the rapid growth of population in the region together with the rapid growth in food demand.

TN: We have read in the media that one of the challenges facing NBI is that member states have been unable to pay their membership fees. Has this been an issue?

AS: Well, that is a good point you raised. One thing I would like to mention to you, since the establishment of the NBI in 1999, the contribution of the member countries has nearly increased tenfold. Right now, yes, there are some challenges because the payments are not coming as expected every year but still the core costs of the institutions are being fully funded by the countries. It is a challenge but still the countries solder the full ownership of the institution.

2.

Plant crops in the city

Recent estimates place Addis Ababa's population at over seven million. Feeding so many people means that farming cannot only take place in rural areas.

By Dagim Terefe
Addis Ababa, Ethiopia

Located in the heart of Addis Ababa's Kirkos Sub-city District 9, spots of colourful vegetation stand out amongst the urban slums. "We were trained how to grow various vegetables on this

“I don’t buy cabbage and potatoes from the market. Instead, I feed my children from my garden.”

little plot so that we get better harvests,” said 38-year-old housewife Mulu Abegaz. Abegaz has four children and has lived in Hadid Gebeya village for over 22 years.

“I don’t have words to express how urban agriculture is benefiting me. I don’t buy cabbage and potatoes from the market. Instead, I feed my children from my garden,” she said, smiling.

Growing food in cities for human consumption is one way to increase global food supply in the face of rising population growth and global food security concerns.

The capital city of Addis Ababa is rapidly changing from a traditional agricultural community to one that is competitive in the global economic market. Addis Ababa is the most populated city in the country, with a total of 3,384,569 inhabitants, according to the 2007 census. Current estimates put the population at over seven million. The majority lives in slums.

Due to the fact that rural Addis Ababa city immigration is increasing at an alarming rate, agricultural lands have been converted to industries, apartments or condominiums. Slums are rapidly expanding, even in the peripheries of the city. The population density is estimated to be near 5,165 individuals per square kilometre.

Tsedale Mengesha, a 51-year-old housewife has six children and has lived in the slums for nine years. She beautifies her plot with ornamental flowers and with food plants.

“I have been growing cabbage, Swiss chard, chilli pepper and tomato on this little plot and I benefit from them. I have reduced some of my expenses by growing my own vegetables,” said Mengesha.

Peri-urban (farming in fringe parts of the city) and urban agriculture have the potential to provide food security for many people in Addis Ababa.

“We are working to secure food at the household consumption level in the city by initiating the people who are living in both government and private houses and supporting the communities to engage in urban gardening and animal development,” said Assegid H. Ghiorgis, Head of Urban Agriculture Division at Addis Ababa City Government Administration.

According to the UN Development Programme, some 800 million people, or nearly eight percent of the world’s population, are now engaged in urban agriculture worldwide.

Rural poor move to cities

In Ethiopia, like many developing countries, the increasing concentration of people in the urban areas, has put enormous pressure on food supply systems in both urban and rural areas.

The majority of migrants come to the city from the rural areas that are often plagued with drought and political instability. They contribute to the growing low-income Addis population, which lacks access to adequate food or the financial means to buy it.

According to Assegid, the city government offers support and monitoring to 96,411 people in the city who are engaged in urban agriculture at the household consumption level.

“We have 2,160 farmers within five city expansion sub-cities with a land of 4,444 hectares; thus, we are helping them by deploying agricultural extension

experts, giving fertiliser and seeds. There were 80,000 tonnes of agricultural produce at the city level last year,” said Assegid.

Slight increases in food prices and available land for cultivation push many individuals and families into food insecurity. With this in mind, there is a growing movement of the city government to empower the efforts of farming within the city at household consumption level by a new organisational structure.

Dereje W. Mariam, a 43-year-old urban pastoralist and father of three, lives in the heart of Addis Ababa’s Kirkos-Hadid Gebeya village. He has two degrees in accounting and management and was a bank employee, but he resigned from his job six years ago and started to work in livestock production.

Dereje invested ETB 13,000 (about USD 435) of capital to start farming. He has 16 milk cows, his own home and a car. He earns between ETB 30,000 and 50,000 (USD 1,005 - 1,675) per month and creates job opportunities for six workers.

“I have covered my home consumption and more than 120 milk customers around my village. There is a scarcity of fresh milk supply in the city, and I can’t fulfil the entire demand, so, the government should give special attention to urban agriculture in order to solve food insecurity,” said Dereje. His future dream is to establish a huge dairy farm.

Urban farming in the capital

Urban farming is not new to Addis Ababa. It has been a major part of the urban scene from the very beginning of the city’s development as the capital of Ethiopia. Many of the city’s early residents cultivated crops, raised chickens, and kept dairy animals. Well-to-do households raised cows for milk for home consumption.

Annually, there are two harvests in and around Addis Ababa, providing an abundance of fresh produce. Carrots, different types of cabbage, cauliflower, lettuce, celery and potato are the most commonly cultivated vegetable crops.

The availability of communal plots and farming cooperatives already has a history of contributing enormously to urban farmers’ ability to enter the market and make a living off their produce, especially when no other land was available to them.

The city has suitable soil, altitude and year-round small rivers that are tributaries of the Akaki River, which is the source of irrigation water for most vegetable growers in the city.

Although the city’s urban and peri-urban agriculture has multifaceted economic, social and environmental benefits, stakeholders also raise issues of human health and environmental hazards because of the contamination of pathogens, bad smells from animal farms and deposits of heavy metals used in the agricultural systems, mainly due to intensive use of agrochemicals and using polluted irrigation water.

“Frankly speaking, urban agriculture needs clean water, soil and air, but our city doesn’t meet all three standards. We recently visited our polluted rivers with FAO and decided to conduct a detailed survey with its recommendations,” said Assegid.

Earlier this year, the office of Prime Minister Abiy Ahmed announced the ‘Addis Ababa Riverside Project’, which aims to make the city green by developing and rehabilitating two river streams

of the city. The 1 billion USD project plans to enhance the well-being of city dwellers by mitigating river flooding and through the creation of public spaces and parks, bicycle paths and walkways along the riversides. The park will cover 23.8 kilometres and 27.5 kilometres along two rivers flowing from Entoto Mountain through Akaki River.

“We will exploit the Addis Ababa Riverside Project as an opportunity to expand urban agriculture and clean our rivers. We can cover vegetation with food plants, which can be used as both ornamental and fruit-bearing, like apple trees,” said Assegid.

3.

Eat with your family, cook with your grandmother

Food is a family affair in Sudan – from learning the recipes to weekly gatherings around a large table.

**Alaa Eliass
Khartoum, Sudan**

In Sudan, like in most of the world, families gather on the weekend, at one table to share a meal. In Sudan, this is usually for lunch.

Families are very connected in our culture, and it is not uncommon to find three generations living in the same house. When families live apart, it is especially important to get together and have lunch. My Egyptian friend tells me it is the same in his culture, although the meals are somewhat different.

One of my most wonderful childhood memories is visiting my grandma’s house and watching her make the most delicious food while waiting hungrily and with little patience.

The Sudanese population is made up of a combination of original inhabitants of the Nile Valley and migrants from the Arab peninsula. There are 19 major ethnic groups and over 597 ethnic subgroups speaking more than 100 languages and dialects. This diversity plays out in a wide variety of foods.

One of the most popular ingredients, which every Sudanese meal must include is beans. They are very cheap in Sudan, which is why they are found all over the country. It’s also easy to cook. Just boil the beans with a little bit of salt, onion, pepper and sesame oil.

Most families in Khartoum depend on bread to go along with any dish, but that’s only in the capital. Go further north and kiswa replaces bread.

One type of kiswa is made of maize – common in northern Sudan where farmers grow a lot of maize – and another type is made of a different kind of flour called fitarita, only grown in western Sudan.

I have tried to make kiswa with my grandma many times. Of course, hers was much better than mine, but the recipe is actually straightforward: corn, salt, water, barm or yeast. All the ingredients are mixed together and left for a couple of hours and then cooked on a flat pan, called saj, which is locally produced to make kiswa.

Same bread across the border

It was a surprise for me when I first tasted the Ethiopian kiswa at an Ethiopian friend's house. It showed me how we, in the Nile Basin countries, in one way or another, share very similar customs, traditions and food.

In Ethiopia, kiswa is called injera. It's similar to the Sudanese kind except that it's a little bit thicker.

The food on any given Sudanese table is mostly determined by where that table is set: the climate, the vegetation and the animals of the area all greatly determine which kind of food is consumed.

In the southern part of Sudan, for example, the food is entirely different, as the soil is more fertile and much more productive than in the northern region. There, vegetables and fruits are regular components of daily meals.

On the Red Sea coast in eastern Sudan, of course, fish and seafood are most prevalent. In the western part, millet is grown a lot and a component in most of the dishes.

For more of grandma's recipes have a look at the 'Taste the Niles' poster.

4.

Eat traditional, homemade foods to stay healthy

Modern lives prefer fast, easily prepared food and baby formula. But slow-cooked, old fashioned diets are far healthier.

**Martha Agama
Kampala, Uganda**

Nutritionists have noted that dietary habits, especially in urban areas, have shifted away from high fibre, homemade foods to pre-prepared, packaged and processed ready-to-eat foods. These are easily accessible in fast food restaurant chains,

where people delight in the taste, unaware of the health implications.

"In Uganda, the adoption of the Western eating habits, modernisation and technology has brought about changes in eating trends from homemade meals to the increased consumption of junk and processed foods," explained Nicholas Musisi, a Nutrition Researcher with Nutri-Worth International.

Non-communicable diseases will account for 80 percent of the global disease burden by 2020, according to the World Health Organization's 2013 report. Of these non-communicable diseases, 70 percent will be the cause of death in developing countries – dietary and nutritional cultures and habits are a great contributor to such emerging health threats.

Uganda's Ministry of Health has listed obesity, diabetes, cardiovascular diseases and hypertension among the conditions that are increasingly common due to the adoption of unhealthy lifestyles. With lifestyle and cultural changes, individuals are giving less and less thought to what nutritional benefits or health risks come with their dietary choices.

"For example, before we acquired maize mills, families would grind maize with stones leaving a high fibre content. Today, maize is highly refined, wasting important nutrients," added Musisi.

The advent of Genetically Modified Organisms (GMOs) has stirred concerns by nutritionist and health experts. In Uganda, most foods consumed are organic, owing to an agriculturally dominant economy. However, the introduction of GMOs in agriculture raises fears about the nutritional value of GM produce, and the impact of potentially lower-quality food on human health.

"Although evidence linking genetically modified foods to cancer is yet insufficient, the consumption of fancy high-fat fast food popularly known as junk food as well as processed foods have been linked with heart disease, stroke, type 2 diabetes and early death," said Musisi.

With a growth in industrialisation, a shift has been noted from traditional household food processing and preservation methods such as sun drying, salting, fermenting and grinding to more industrialised methods that include the use of preservatives in most foods. Preservatives, including nitrates, have been linked to some types of cancer.

Passing down bad nutrition to children

The shift in our eating habits and cultures has had an adverse impact on the health and nutrition of infants as well. With more women working to support families and the association of breastfeeding with backwardness among young mothers, there has been a notable decline in the breastfeeding of infants.

"The modern young mothers prefer to introduce infants to processed milk and other foods to prevent their breasts from sagging," explained Dr Hanifa Bachou, a consultant nutritionist in an article on the New Vision daily newspaper. "This has had the adverse effect of leaving infants with increased susceptibility to diseases such as diarrhoea and measles."

According to the Uganda Food and Nutrition Policy 2013, the nation is generally food sufficient with a wide range of crops including cereal grains such as maize, millet and sorghum and root crops

including cassava, sweet potatoes and Irish potatoes. Bananas are a staple food for a large section of the country. Animal products like dairy and beef, poultry, edible insects and a large variety of fish from inland water sources are also available.

However, access to cheap convenience foods by way of fast food restaurants and roadside food vendors has reduced the prevalence of local markets and the availability of indigenous and traditional foods.

In the streets of Kampala, Uganda's bustling capital city, it is common to find trading centre streets filled with food vendors who roast chicken, goat meat, deep fry fish, chips and the famous 'rolex', a flat, round, fried bread rolled together with fried eggs. These vendors are the go-to places for inexpensive, time-saving, and convenient fast foods.

The vendors operate freely, however, in generally unsanitary conditions, raising concerns about hygiene and food safety.

"No, the food is safe because it is served while very hot, I buy my food from the streets most nights, and I rarely have any stomach problems," explained a shopper who only introduced himself as Sam when asked if he had concerns about purchasing food from roadside vendors.

Benefits of traditional food

Setting aside cultural influences as a result of modernisation, indigenous and traditional food habits are mostly associated with a variety of health benefits and even beauty. Many leafy foods and vegetables are rich sources of vitamins, iron, fibre and unsaturated fatty acids. Examples of such foods include boo, hibiscus (malakwang), nakati, amaranth (dodo), egg plants, and okra.

A great diversity exists within the ethnic cultures. Traditionally, food defines social class, lifestyles and gender roles. Each communities' unique dishes and methods of preparation and presentation reflects their unique history, belief, lifestyle and values.

Inherent traditions may dictate what may or may not be eaten by certain members of the community, such as pregnant women. Ironically, the foods often prohibited are highly nutritious.

Odoch Obwangamoi takes pride in maintaining a healthy and nutritious diet by not deviating too far from his native, Acholi indigenous eating habits. The Acholi, a Nilotic ethnic group of Northern Uganda, can be termed as a model community when it comes to nutritious and sumptuous foods. They have famous traditional meals with a variety of healthy, leafy foods prepared with millet bread (kwon kal).

"Wherever I am, I always try to find my traditional foods because nothing beats them when it comes to taste and nutritional value," said Obwangamoi. "Our foods are made with lots of care, and some can be prepared over long periods of time. The majority of our foods are vegetables," he added.

The Acholi are both pastoralists and farmers, the cows are kept mostly for milk, with bush meat providing protein. Cereal grains and lentils like lapena, choroco, ngoo, greens like malakwanga and boo make up the rich diet.

Malakwanga, a leafy vegetable also known as Hibiscus sabdariffa is said to have healing properties to increase breast milk for breastfeeding women and building immunity by helping in the production of white blood cells. White ants (ngwen), shea butter and sesame (simsim) are also an important component of the Acholi foods.

“Teff accounts for a USD 4 billion business in Ethiopia and we estimate that it is a staple food for about 70 million of more than 100 million people in Ethiopia.”

5.

Eat ancient grains to ward off future food insecurity

Today, teff is being hailed internationally as a “superfood” for its nutrients. But the tiny grain has been feeding Ethiopians for 4,000 years.

**Addis Getachew
Addis Abeba, Ethiopia**

A tiny seed varying in colour from deep reddish-brown to silver and white, the ancient Ethiopian grain known as teff, is currently a staple for tens of millions of people in Ethiopia. Worldwide, teff is being hailed as a “superfood” and experts say teff has the potential to boost food security in Ethiopia and beyond substantially.

Known by its scientific name *eragrostis*, or ‘lovegrass’ to others, teff is native to the Horn of Africa region, notably Ethiopia and Eritrea, where people have been cultivating it for its edible seeds for 4,000 years.

The word teff originates from the Amharic word “teffa” which means “lost”, due to the incredibly small size of grain (seeds are 1/32 of an inch in diameter).

An Ethiopian Agronomist Dereje Mekonnen says, “teff has endured the test of time due to its incredible resistance to changes in weather and plant diseases, traits most grass species share. In terms of adaptability to environmental factors, no plant producing cereal equals it.”

Dereje marvels at not only the circumstances in which people first came to know teff as an edible grain but also at the process of turning the grain into food. One food product is called “injera” – a sourdough flatbread baked from teff flour. First, it is made into a paste, and with an application of the proper amount of yeast, it ferments and swells before it is thinned down with water and baked.

According to Dereje, there has been no research that traced the very time in history when people in this part of the world began turning teff into injera. But a lot of literature refers to injera in the very form we know today, which became the central part of Ethiopia’s cuisine.

Injera is eaten with a wide range of cooked, roasted, and stewed or sautéed dishes – meats, vegetables and grains. Injera, which is circular, is rolled out over a tray and sauces are poured over it. Pieces are torn off and used to sop up the sauces.

Researching the grain’s potential

In Ethiopia, research on teff began in the 1940s; but it was not until the 1970s that outcomes were released.

Dr Kebebew Assefa is a lead researcher with the National Teff Research Program at the Debrezeit Agricultural Research Centre, which is one of the centres under the auspices of the Ethiopian Institute of Agriculture Research.

“Most of our research on teff was focused on productivity, and good results came out at various times over the decades,” he said.

“Yield per hectare has only been 7 to 8 quintals (700 - 800 kilograms) when research had begun. Today, yield increases get up to 17 quintals (1,700 kilograms) per hectare, most of which they sell for cash,” he said.

Dr Kebebew cited a Central Statistical Authority estimate that shows that there has been a 0.6 percent annual increase in the productivity of teff.

Through the research, 42 improved varieties have come out of which 24 were the result of research conducted by the Debrezeit Research Centre. “We have been able to produce such high yield varieties as quncho, bozet, korra and dagim.”

For him, the attention given and finances allocated for the research and development of teff has never been adequate. “Resources for this aspect have always been negligible. Teff accounts for a USD 4 billion business in Ethiopia, and we estimate that it is a staple food for about 70 million of more than 100 million people in Ethiopia.”

“Of the total amount circulated across the teff value chain – from farm to plate – only one percent goes to research.”

Both Dereje and Dr. Kebebew agree that research on Teff should be intensified as the tiny grain holds a great potential to provide a solution to food insecurity in a region that is often hit by droughts.

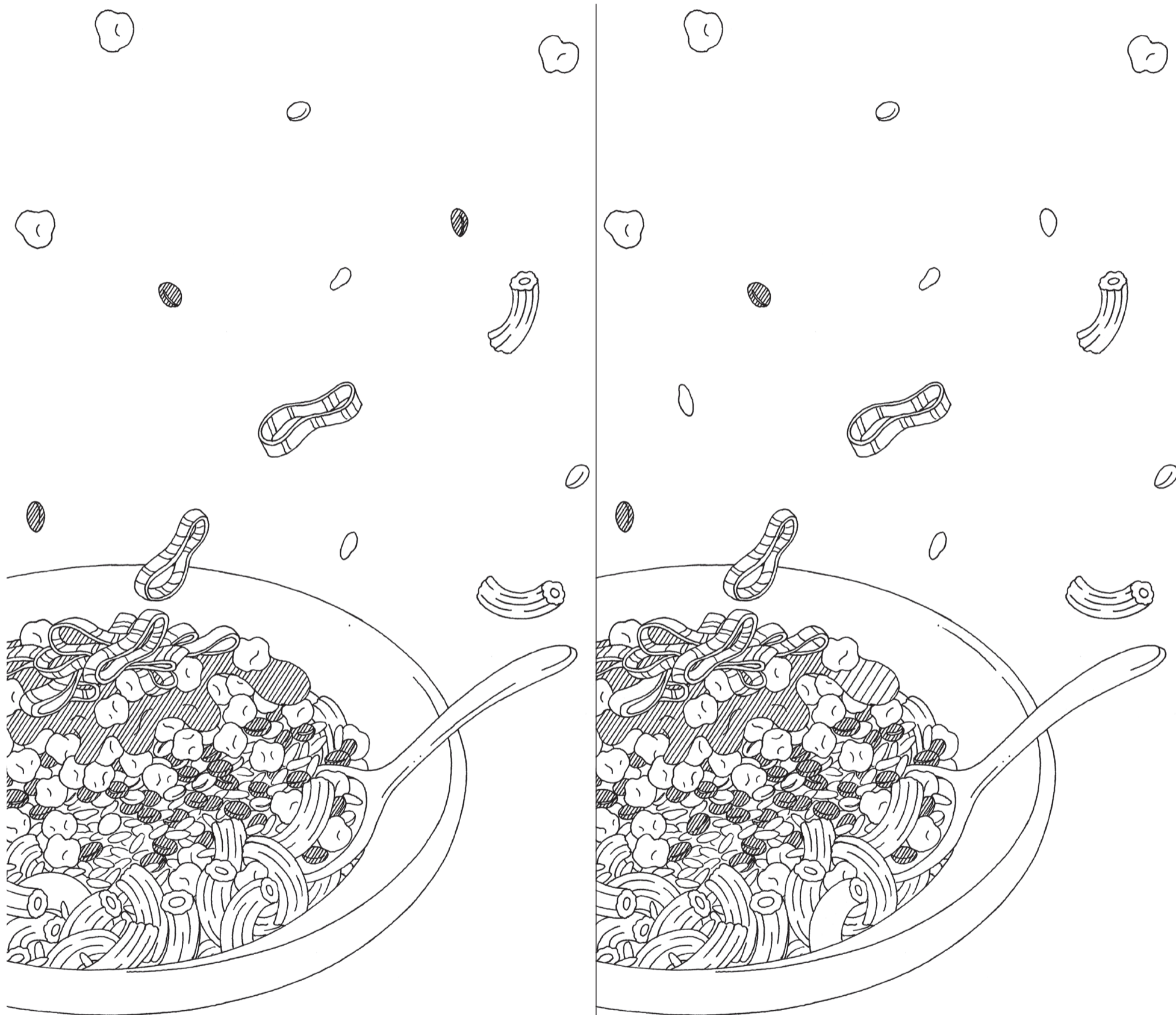
According to Dr Kebebew, teff grows in areas whose altitudes vary from sea level to 3,000 kilometres above sea level. “It is a unique plant that resists both too much moisture in the soil as well as too little moisture.”

“In terms of water consumption, a teff kernel can germinate, grow and mature with very little water. Once it germinates it often grows and bears seeds,” the lead researcher said.

When it comes to nutritional value, Dereje adds that teff is today recognized as one of the “superfoods” even in U.S. and European markets. “It has been found that teff is non-glutinous, is rich in calcium and protein and can ward off craving for more food once eaten at any time of day.”

What's wrong here? One of these kosharis is not like the other! Can you spot the 10 mistakes?

Solving the puzzle:
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