

Cassava: The next generation crop

By Joshua Kato and
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Cassava will be the industrial raw material for the next 20-30 years, according to Prof. Otim-Nape. It is called the food of the poor because of its multiple food sources. The roots are cooked and eaten in pieces, the leaves make vegetables and the stem produces firewood that can be used to cook the roots.

However, cassava is moving from just being a food crop to a commercial crop and farmers are cashing in, especially in northern Uganda.

"There is no looking back. Cassava is needed for making drugs and fuel. There is cassava flour for making cakes and brewing beer," Otim-Nape, who is also the chairperson and chief executive officer of the Africa Innovations Institute, says.

Background

Since its introduction over 120 years ago, cassava was quickly adopted and its production expanded rapidly. By 2040, cassava will be turning 142 years in Uganda.

According to the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) strategy under the National Development Plan II (NDPII), cassava is one of the 12 selected crops to help fight hunger and create wealth as the country pushes her quest to achieve Vision 2040.

This is because of its ability to survive extreme conditions. According to the Food and Agriculture Organisation (FAO), the leading cassava producing areas in Uganda are the eastern 37%, northern 34%, Bunyoro 15% and the central region 14%. However, overall, the crop is grown by at least 75% of small holder farmers in the country.

Otim-Nape says one of the veteran plant scientists with experience in cassava research, cassava cultivation increased greatly during the outbreak of the tropical migratory locust from 1931 to 1935.

"It became clear that cassava could withstand attacks from locusts compared to other crops and this is why many people started growing it," he says. Other records also show that further growing the crop increased after the droughts of 1939 and 1941.

However, the outbreak of the African cassava mosaic virus and the shortage of food in some parts of Uganda, notably Teso (now Kumi and Soroti districts) in 1943-1944, encouraged an eradication campaign and introduction by the district councils of



Cassava on sale in Namalu market in Nakapiripirit district. Cassava has moved from just being grown on subsistence scale, to commercial scale

a by-law, which made it mandatory for each farmer to grow at least 0.4ha of cassava mosaic-resistant varieties as a safeguard against famine.

Flexible crop

Researchers explained that the high yield ability and flexibility of the crop in the farming and food systems; abilities to do well in marginal and stressed environments make it an excellent food security crop. It can do well in marginal and stressed environments and can give satisfactory yields where most crops fail. Cassava has low labour requirements and can be left in situ for over two years without spoilage. Its resistance or tolerance to pests and diseases, particularly locusts, is the main reason that encouraged its rapid spread and adoption and made it an excellent food security crop.

Moreover, its value as a famine reserve crop that was available when others were not, was appreciated.

"One could leave a cassava plant on the farm for at least three years with its tubers still good, compared to most of the current, improved varieties which last for just over a year in the soil," Cypriano Kintu says.

Kintu, 42, says he has been growing cassava in Kikyusa, Luwero district for the last 20 years. He says that he learnt growing cassava from his father, Erostus Mutebi.

Kintu hopes that as more uses of cassava are found, he hopes to still be growing cassava by 2040.

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By 1950, at least 191,200 hectares of cassava were being grown in Uganda. The land area planted to cassava and production of the crop in the country increased from 0.3 million hectares and three million tonnes in 1981 to 0.4 million hectares and three million tonnes in 1989, respectively. By 1994, an estimated total of 3.1 million tonnes of the crop were produced from 0.4 million hectares of land in the country.

National statistics indicate a general increase in area up to 1975 and a general decline up to 1988, which later increased up to 1990. Similarly, production increased up to 1977 followed by a decline up to 1981.

It then increased up to 1990, then declined, but later picked up by 1993. The causes of this decline are complex and may be due to some or all of the following: poor extension services, acute shortages of agricultural inputs; (mostly hand hoes and animal implements), the 1979 liberation war, northern insurgency and frequent occurrences of severe

cotton, coffee and tea.

However, Otim-Nape says the 'colonial' cash crops have declined in status in recent years and now food crops, like cassava are turning into the new cash crops.

"This trend will continue in the years to come. This is because the new crops offer more opportunities both locally and internationally than the old traditional cash crops.

Research

Different government partners have established the importance of cassava as a commercial crops and are promoting its production. The National Crops Resources Research Institute (NaCRRI), Namulonge in Wakiso district, is developing disease and drought resistant varieties.

The ministry of Science, Technology and Innovation is providing support to cassava processors. Private institutes, like the African Innovations Institute is helping farmers access the latest technologies in the cassava value chain.

Despite these interventions, cassava production is still at a minimal four million tonnes annually.

Dr Titus Alicai, the head of the roots programme at NaCRRI, says this is far below the five million tonnes the country was producing in the 1980s, before the diseases struck.

He attributes the low productivity to two virulent diseases: the cassava mosaic diseases and cassava brown streak disease. The latter can

cause wipe out the entire plantation. The disease struck at the end of the 1980s.

Alicai says there are two ways Uganda can increase its cassava productivity, to around 10 million tonnes by 2040.

High yield varieties

First, Alicai says farmers need to grow high yielding varieties. Currently, the best one is called NAROCA 1. This he says is available at certified cassava farmers spread in the cassava growing districts of Nakasongola, Lira, Masindi, Apac and Pallisa. He says this variety yields up to between 35-50 tonnes per hectare, well above the average production of 30 million tonnes.

Resistant varieties

Secondly, he advises farmers to grow resistance varieties, which are also with certified farmers spread across the same cassava growing areas.

"All new released varieties are resistant to pests and diseases," he reveals.

Alicai also calls for mechanisation, including use of tractors and spraying to control weeds, especially for farmers with large fields.

He roots for better agronomy, like planting of clean planting materials and sticking to standard spacing to maximise acreage.

He says these can help the country benefits from cassava as a commercial raw material and propel Uganda to Vision 2040.

Will cassava replace the cash crops?

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"We need to push production to a minimum of 10 million tonnes annually," he says.

Further support

Luckily, Uganda also hosts the regional Cassava Research Centre of Excellence (CRCoE), serving East Africa, Ethiopia and South Sudan, which can be leveraged for cassava research.

Apart from NaCRRI engaged in breeding resistant variety, the African Innovations Institute founded by Otim Nape, a former cassava breeder and director in the National Agricultural Research Organisation, has been an active partner in up scaling the adoption of the new cassava varieties.

Francis Alacho, the country manager of Cassava: Adding Value for Africa (C:AVA) at the African Innovations Institute, says the institute is helping 20,000 cassava farmers to adopt better agronomy and transform from subsistence to commercial farming. This can only be achieved if farmers practice effective post-harvest handling.

He told *New Vision* the institute is also helping farmers to dry cassava to the right moisture content of 12% using different technologies.

A farmer demonstrating how cassava is chipped using a machine. Chipping catalyses cassava's drying period and preserves its nutritional value



First, he says they are working with 50 small medium enterprises to have sun-drying racks. Here, farmers can easily dry and process cassava into white high quality cassava. This is for farmers with investments of about sh10m.

For the bigger cassava investors, the African Innovations Institute linked the farmers with flash dry machine manufacturers in Nigeria where the dry costs sh200m at factory price. Buyers have to incur costs for freight and taxes.

Two of the partner Windwood Millers of Lira and Adyaka Wholesalers Ltd of Apac have installed the flash dryer and they have increased their white cassava production. Ivan Okori, the managing director at Windwoods, says the flash dryer has helped

them increase their production to 80 tonnes per month from less than 20 tonnes when they were still using a solar dryer. He says they are now able to dry the cassava in 24 hours after harvest.

"We are able to dry it before it degrades and this helps us

Cassava products

Cassava is the basis of a multitude of products, including

- Brew ingredient in Ngule beer
- Flour: Used for food and preparing confectioneries, such as cakes
- Starches for sizing paper
- Chips, eaten dried or fresh
- Sauce paste, got from the dried leaves
- Peelings fed to livestock
- Starch: unmodified or native starch; modified (physical, chemical, biological) starches for industrial purposes; sweeteners, including high-fructose syrup and glucose (dextrin, monosodium glutamate, pharmaceuticals, etc.)

have good quality white flour," he said.

"Previously it was a nightmare. Solar drying was not giving a consistent quality product, especially during the rainy season," he added.

He said they are selling the white flour to Uganda Breweries, but they are also looking to exporting opportunities, especially in countries where cassava flour is being used as a wheat substitute.

World Food Day 2018

Zero Hunger: Our actions today are our future tomorrow

**By José Graziano da Silva
Director-General, Food and Agriculture
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Just three years ago, in September 2015, all United Nations Member States approved the 2030 Agenda for Sustainable Development. The eradication of hunger and all forms of malnutrition (Sustainable Development Goal number 2) was defined by world leaders as a cardinal objective of the Agenda, a sine qua non condition for a safer, fairer and more peaceful world.

Paradoxically, global hunger has only grown since then. According to the latest estimates, the number of undernourished people in the world increased in 2017, for the third consecutive year. Last year, 821 million people suffered from hunger (11 percent of the world population - one in nine people on the planet), most of them family and subsistence farmers living in poor rural areas of sub-Saharan Africa and Southeast Asia.

However, the growing rate of undernourished people is not the only big challenge we are facing. Other forms of malnutrition have also increased. In 2017, at least 1.5 billion people suffered from micronutrient deficiencies that undermine their health and lives. At the same time, the proportion of adult obesity continues to rise, from 11.7 percent in 2012 to 13.3 percent in 2016 (or 672.3 million people).

Hunger is mainly circumscribed to specific areas, namely those ravaged by conflicts, droughts and extreme poverty; yet obesity is everywhere, and it is increasing all around the world. As a matter of



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fact, we are witnessing the globalization of obesity. For example: obesity rates are climbing faster in Africa than any other region - eight of the 20 countries in the world with the fastest rising rates of adult obesity are in Africa. Furthermore, childhood overweight affected 38 million children under five years of age in 2017. About 46 percent of these children live in Asia, while 25 percent live in Africa.

If we do not call for urgent actions to halt the increasing obesity rates, we soon may have more obese than undernourished people in the world.

The growing rate of obesity is happening at a huge socio-economic cost. Obesity is a risk factor for many non-communicable diseases such as heart disease, stroke, diabetes and some types of cancer. Estimates indicate that the global economic impact of obesity is about USD 2 trillion per year (2.8 percent of the global GDP). This is equivalent to the impacts of smoking or armed conflicts.

This year, World Food Day (celebrated every 16th of October) aims to remind the international community of its fundamental political commitment to humanity - the eradication of all forms of malnutrition - and raise awareness that achieving a Zero Hunger world by 2030 (so in 12 years-time) is still possible. The experience of Brazil is a good example to have in mind.

According to FAO estimates, hunger in Brazil was reduced from 10.6 percent of the total population (about 19 million people) at the beginning of the 2000s to less than 2.5 percent in the 2008-2010 triennium, which is the minimum value in which FAO can make meaningful statistical inference. This reduction in the number of undernourished people was mainly possible due to the firm commitment of former President Lula and the implementation of public policies and social protection programmes addressing extreme poverty and the impacts of prolonged droughts in the northeastern part of the country.

In fact, governments have the most fundamental role in achieving Zero Hunger by ensuring that vulnerable people have sufficient income to buy the food they need, or the means to produce it for themselves - even in times of conflict.

However, world leaders have to bear in mind that the concept of Zero Hunger is broader and not limited to the fight against undernourishment. It aims to provide people with the necessary nutrients for a healthy life. Zero Hunger encompasses the eradication of all forms of malnutrition. So it is not just about feeding people but nourishing people as well.

Current global food systems have increased the availability and accessibility of processed food that is very caloric and energy-dense, high in fat, sugar and salt. Food systems must be transformed in a way so that all people can consume healthy and nutritious food. We need to address obesity as a public issue, not as an individual problem. This requires the adoption of a multisectoral approach involving not only governments, but also international organizations, national institutions, civil society organizations, the private sector and citizens in general.

It must be a collective effort towards healthy diets that include, for instance, the creation of norms such as labelling and the banning of some harmful ingredients, the introduction of nutrition in the school curriculum, the adoption of methods to avoid food loss and waste, and the establishment of trade agreements that do not hamper access to locally grown, fresh and nutritious food from family farming.

"Our actions are our future" is the message of World Food Day 2018. It is time to renew our commitment and, even more important, the political support towards a sustainable world free from hunger and all forms of malnutrition.