

**SCIENCE**

# SAYANSI

*All science information*

Issue Number Seven

May 2017



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high blood pressure**

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threaten food security**

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track sweetpotato data  
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## Who we are

**T**he Media for Environment, Science, Health and Agriculture (MESHA) was founded in November 2005 in Nairobi, Kenya, and is an organisation that provides support to science journalists covering health, development, technology, agriculture and the environment. It does so by offering training workshops, consultancies and encouraging networking through meetings and conferences among journalists, scientists and other stakeholders in Kenya.

The association emphasises on rural journalism and communication.

The idea for the formation of this association sprang up from the fact that there were many organisations and communicators in the fields of agriculture, environment, health and development. However, few organisations in the region bring journalists covering these issues together, for better reporting in the media.

MESHA believes that in a democratic society where science must be answerable to the public, there is need to find new and innovative ways of effective mass communication about the benefits of science, and other areas of concern to the general public.

MESHA aims to ensure continuity, sustainability and consistent coverage of science and development issues as they arise.

## SAYANSI

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P. O. Box 44199 - 00100, Nairobi  
email: [coordinator@meshakenya.org](mailto:coordinator@meshakenya.org)  
[www.meshakenya.org](http://www.meshakenya.org),



### Editor

Aghan Daniel

### Reviewers

Dr. Joseph Othieno

Agatha Ngotho - Omondi

# Support scientists to make sweet potato serve our health needs

Sweetpotato ranks as the seventh most important food crop in the world. In East Africa, it is the third most important food crop.

However, despite the crop being a nutritious major staple food throughout Africa, it remains one of the least marketed. This could be attributed to the long-held perception of sweetpotato as a poor man's food. However, new evidence hold it that urban consumers in Africa are becoming health and nutrition conscious as the incidences of chronic diseases typical of western countries rise hence a shift to this food crop as a healthy alternative, shedding off its image as a poor man's food.

Depending on the flesh colour, they are very nutritious crops rich in  $\beta$ -carotene, anthocyanins, phenolic compounds, dietary fiber, ascorbic acid, folic acid and minerals. Biofortified orange fleshed sweetpotato (OFSP) is very high in beta-carotene a provitamin A carotenoid.

This biofortified one is a good source of vitamin A with 125g providing 100% of daily vitamin A requirements for children under five years old. It is now being promoted and implemented as a sustainable food based dietary strategy towards the alleviation of vitamin A deficiency in Africa.

That this variety has low glycemic index, a measurement carried out on carbohydrate-containing foods and their impact on our blood sugar lends credence to it being important for diabetic patients in Africa where the rates of type 2 diabetes are on the rise.

Traditionally people in Africa consume sweetpotato in the boiled or roasted forms. Consumers in Africa are used to and prefer the white or yellow fleshed varieties, which have high dry matter contents.

Most OFSP varieties have low dry matter and have been used for infant and young child feeding. For adults, its flour has been used for making bread, buns, chapatti, muffins, fried products and porridges. The use of its flour at commercial level is not economically and nutritionally advantageous.

In countries with a rapidly growing middle class and rates of urbanization, such as Kenya, the growing demand for innovative and healthy foods has generated a new bread market. Kenya imports most of the wheat used in bakeries. At the International Potato Center (CIP), OFSP puree, made by mashing steamed sweetpotato, is being promoted to replace 20-50% wheat flour requirements in bread, buns and cookies.

By using this particular puree at 40-50% wheat flour substitution level, the country will save a lot of foreign currency. Demand for the puree will generate employment at farm level and puree processing facilities and improve the livelihoods of farmers from the income generated. Urban consumers will have additional options to healthier and acceptable bakery products rich in the crops' beta-carotene and fiber.

However, there are still many obstacles to the nation-wide adoption of biofortified orange fleshed sweetpotato puree for bakery applications. Many people are not aware of its availability, and its nutritional benefits. In some East African countries, there are no national policies for biofortification and there has been insufficient effort to promote biofortified orange fleshed sweetpotato puree among investors and current bakeries in Kenya and the region.

Until these obstacles are addressed, its potential to improve the health and wealth of Kenyan and indeed African households will be missed. There is a need to promote its continued production and consumption among vulnerable rural households and also urban consumers. Cooking demonstrations in both settings will increase the diversity of biofortified orange fleshed sweetpotato utilization beyond roasting and boiling. Governments should therefore invest more in sweetpotato breeding and availability of clean planting materials. Government and financial institutions should increase financing options available to youths and women interested in its agribusiness development.

*The guest editor, Dr. Tawanda Muzhingi, is the Regional Food Scientist at the International Potato Centre*



# Mama's dishes



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# Kenyan vets give hope to livestock farmers with new vaccine

By Zeynab Wandati | [zwandati@gmail.com](mailto:zwandati@gmail.com)

**S**upeyo Ole Saayoi owns 100 cows, 300 goats and 50 sheep. As a Maasai, he takes great pride in his livestock for they are an indicator of his wealth.

"I used to have a lot more cows," he says. "In fact, I had 150 cows. Then I lost 50 cows to this disease we call sambap. My cows started coughing, grew thin and died."

Several other herders in his village of Oloorien Lelemek in the County of Narok have had similar experiences, losing animals to a disease that makes the animal cough.

They've tried different remedies, they say, including government issued vaccines.

"I gave some of my animals that vaccine once. And you know what happened? The tail fell off!" Says Lesinko Koriata.

Such tales of horrible side effects associated with the Contagious Bovine Pleuropneumonia are what sent Kenyan veterinary scientists into the lab, to come up with a solution.

It is not every day that Kenyan scientists are celebrated for conducting research that will better the lives of farmers around the

world. In the next few months, though, a group of local scientists might just be the first in the world to develop an alternative vaccine for the Livestock Lung Disease, a nuisance to livestock keepers in dry lands mostly. An estimated 1.3 million Kenyan and 24 million livestock keepers globally are believed to be suffering the impact on their livelihoods due to the disease, costing the economy 6.4 billion shillings annually.

"It is a disease that communities know very well and there are local names for it.

For instance the Maasai call it Olkipyei, the Somalis call it Sambap and the Kikuyu call it Mahuri ma ng'ombe," says Dr. Salome Kairu Wanyoike, head of the Socioeconomics team under the Contagious Bovine Pleuropneumonia Project.

The current vaccine has been in the market for 20 years, but due to the side effects associated with it, livestock farmers avoid the vaccine, such that they hide their animals whenever the government is carrying out an inspection.

"That's not the only problem with that vaccine. It also requires that the animal is vaccinated at least three times a year for it to be effective, and that is expensive," says Dr. Wanyoike.

Over the past four years, local scientists have teamed up with those from Canada and South Africa to develop a better vaccine, and have even set up a lab dedicated exclusively for research on this disease. The lab is based at the Kenya Agricultural and Livestock Research Organisation in Muguga. It is fitted with a high through put processing machine, the first of its kind near Nairobi in sub-Saharan Africa.

"The machine allows us to test as many as 100 livestock diseases in a sample as small as a 50 micro litres of blood, in just 45 minutes, says Dr Nimo Gicheru, a post doctoral fellow on the CBPP project.

"This basically means that we control disease and also diagnose disease within a day and report back to farmers that this is the disease in your area, but also animal has these other diseases that you should treat for. This will bring down the cost of treatment because often people treat a disease based on clinical symptoms only," she adds.

Before this equipment was brought in, it took days to weeks to diagnose a disease, and often times the diagnosis would be wrong, because different diseases present with similar



symptoms.

"Currently we are only working on the CBPP vaccine, but as we progress, we are going to go for field trials because we'd like to do disease surveillance and deliver our vaccines together with any other vaccines that will be helpful to the farmers," Dr Gicheru says.

So far, 66 possible vaccine candidates have been tested, and scientists have narrowed down on five, with field trials conducted on Boran and Zebu cattle breeds in Kenya.

That is usually a clear indicator that the animal died of CBPP."

Contagious Bovine Pleuropneumonia is prevalent in the pastoral communities, but sometimes crosses boundaries into other areas as a result of livestock trade or during movements in search of pasture. The new vaccine research is funded by the International Development Research Centre of Canada. Besides the CBPP vaccine, the team is working on a second vaccine against four other diseases that are endemic in small ruminants. These diseases are the Lumpy Skin Disease (LSD), Peste Petit de Ruminant (PPR), Sheep and Goat Pox (S & G pox) and Rift Valley Fever (RVF).

"Where we are now, we are about a year away from a product that can be transferred to the industry for production. And we hope that it will have advantages over the current one in terms of transport. The one we are developing does not require cold chain storage like the current one that needs the cold chain. This disease is in the hot dry areas where maintaining cold chain is a nightmare," says Dr Wesonga.

But even as the scientists work to develop a vaccine, farmers' uptake is currently at just 20%, which the researchers are hopeful will improve once superior vaccine is released because if left uncontrolled, livestock lung disease can kill an entire herd.

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**20**  
No. of years the  
current vaccine  
has been in the  
market

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"After an animal dies of CBPP, we conduct a post mortem and what you'll notice is that a diseased lung is almost twice the size of a normal lung," says Dr Hezron Wesonga, a Principal Research Officer at KALRO and also the lead scientist of the CBPP project. "Also, the lung is surrounded by a layer of fat that looks like fried eggs. Much like scrambled egg.



## Shrinking farmlands threaten food security

By Joyce Chimbi | [jchimbi@gmail.com](mailto:jchimbi@gmail.com)

**K**enya's shrinking and crowded farmlands are giving many small scale farmers in high potential areas sleepless nights.

Kiprui Kibet is one such farmer, his future as a maize farmer in the fertile Uasin Gishu in the Rift Valley region, seems very bleak.

"From 3,200 bags a harvest, now I only produce 20 bags, at times even less," he says.

Besides limited finances, inadequate human capital, challenges in accessing information on good crop husbandry, like Kibet, many small scale farmers have to contend with reducing farmlands.

Experts now say that as land ownership across the country is fragmented into small parcels of land owned by many small farmers, a food crisis looms. "I used to farm on 40 hectares but now I only have 0.8 hectares. My father had 10 sons and

we all wanted to own a piece of it. Sub division led to many portions of fences which also ate into the actual farmland," Kibet says.

Kimani Njoroge, an agricultural independent researcher in Kenya says that extensive land sub division is now emerging as a significant threat to food security in Kenya.

Statistics by the United Nations' Food and Agricultural Organization (FAO) show that the land to person in agriculture ratio is decreasing in a number of counties that are often perceived as the country's food baskets and this is largely in the Rift Valley and parts of Central Kenya.

"As Kenya begins to invest in more climate change resilient crop varieties, little is being said about extensive land sub division into individualized parcels for intensive use," Njoroge explains.

Amos Thiong'o who works for Agri-ProFocus Kenya, a network of many organizations working in agribusiness explains that extensive land sub division is affecting mechanization of agriculture.

"Smaller farmlands will require very intensive production technologies such as the hydroponic production where plants are grown in a mineral solution rather than in the soil," he says.

"Some flower farms in Naivasha, Rift Valley are already using this technology. But it requires a lot of water," Thiong'o says.

He also says that intensive production technologies require a significant amount of capital beyond the reach of the Kenyan small scale farmer.

Statistics from the Ministry of Agriculture show that farming is carried out on farms averaging 0.2 to 3 hectares, largely for commercial

purposes with small scale production accounting for an estimated 75 percent of total agricultural output.

Titus Rotich, an agricultural extension officer in the Rift Valley region explains that “farmlands are becoming so small that with time, farming will no longer be economically viable. In fact, a significant number of farmers have less than a hectare.”

According to a USAID report on emerging land issues in Africa, 25 percent of young adults who grew up in rural areas did not inherit land because there was no land to inherit.

“Most families who 10 to 20 years ago had over 40 hectares now have to contend with less than a hectare. This means that the land is only used to set up a homestead, grow a few backyard vegetables and rear a few chicken,” says Rotich.

With reducing farmlands, so has the revenues and the desire to continue producing cash crops, adds Rotich.

“In Kenya 0.4 hectares can produce 28 to 38 bags of 90 kilogram maize. One such bag is sold at Ksh 3,500 to Ksh 5,000 depending on the region,” he says.

Kenya Agricultural & Livestock Research Organization (KALRO) says that at least 10 million people lack sufficient food.

Thiong’o therefore says that smaller farms have impacted negatively on specialization of production.

“As farm sizes have reduced, it has become difficult to produce a surplus. We are now seeing more farmers with 0.4 to 0.8 hectares using their small parcels to the maximum,” he says.

“Their homestead occupies nearly half of the land, where they rear chicken, plant bananas, maize and vegetables,” he adds.

Due to too much activity on the farm, Thiong’o says that this kind of farmer can only produce for subsistence use only.



Against this backdrop, agricultural experts are calling for sound legislation and practice to cushion the country against destructive land sub division. Dr. Thiong’o adds that Kenya’s extensive land sub division is both a symptom and a catalyst of the threat posed by ungoverned land use to land productivity, and by extension food security.

While the act legally, agricultural land should not be subdivided below 0.8 hectares though this law continues to be disregarded.

Agricultural experts such as Isaac Maiyo of the Schemers, Community Based Organization says, “In many parts of the Central region, previously considered the country’s breadbasket, farming is done on less than 0.4 hectares.”

The Ministry of Agriculture statistics show that today, three-quarters of the population live on one-fifth of all agricultural land that is classified as high-potential or arable land.

World Bank statistics show that only about 17 percent of Kenya’s land is arable but nearly 80 percent of the population is settled on it, while the expansive 83 percent is only home to nearly 20 percent of the population, which is often pastoral community.

“There is clearly a need to invest in these lands to help the country achieve food security. A majority of food insecure people are in pastoral communities,” Maiyo observes.

Experts further say that problems of poor water management, soil erosion, declining soil fertility continue to limit farm yield and compound land-related conflicts, and the extensive sub division of land is the final straw.

Maiyo saying adds that Kenya requires a comprehensive Act of Parliament to promote and maintain a agricultural stability.

“A comprehensive agriculture land act is key as it provides for the conservation of the soil and its fertility to boost production,” he observes.

Experts have raised further concerns that as farmlands continue to dwindle, with farmers encroaching into forests, acquire the lands in order to consolidate their farms into larger units “this will lead to massive environmental degradation and consequently impact on climate change.”

Maiyo says that small scale farmers with 1 to 2 hectares are targeting marginal, particularly forest lands, to boost their farm sizes to a medium of 10 hectares to large farms of about 30 or more hectares scale farming.

Kenya’s land issue remains thorny, not even in the face of starving and food insecure families have the governments both national and county established sustainable solutions to eradicating extreme poverty and hunger.

# Contractual agreements set to change farmers fortunes

By Alessio Colussi

**F**armer groups in Kenya's arid and semi-arid lands (ASALs) are increasing their incomes and making much better margins through contractual agreements facilitated through the United Nations Food and Agriculture Organization (FAO) and other partners.

As the European Union funded project marks two years since its inception, 3,500 farmers have been assisted to access markets. The total value of products contracted to the farmers by these markets is in excess of 25 million US dollars.



An estimated seventy percent of Kenya's population depends on agriculture for formal and informal employment, with women accounting for about seventy percent of the agricultural labour force. The sector, dominated by smallholder farmers, accounts for close to sixty-five percent of Kenya's exports and directly contributes about thirty percent to the National Gross Domestic Product (GDP). The sector has however performed below its potential with low economic and employment growth and declining productivity rendering close to half of the population unable to afford basic necessities such as food, housing, clothing, health care and education. Rural livelihoods are predominantly dependent on agricultural growth which employs more than forty percent of the total population and more than seventy percent of the rural population. Yet the fruits of this labour have often benefited the middle man.

With a low history of commercialisation, middle men often fill the gap towards markets and exploit the farmers who get caught up in a vicious cycle of poverty as they remain permanently indebted. In such situations the farmers are basically price takers and have no platform for negotiation. There are many instances where farmers have had to sell off their product at a price that does not cover production costs. FAO's project has set the conditions for the farmer groups to sign their contracts directly with the end buyers to achieve better prices, plan appropriately and have stable prices in a long-term perspective.

**Alessio Colussi is the Head of Crops and Agribusiness Sector of the Food and Agriculture Organization of the United Nations Representation in Kenya.**

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# Mozambique plants first GM maize field trial



By Joan Conrow

**M**ozambique has planted the first field trial of genetically modified (GM) maize in the Chokwe District of Gaza Province in the southern part of the country on February 18, 2017. The GM maize plants were planted in the Confined Field Trial (CFT) run by the Mozambican Agricultural Research Institute (Instituto de Investigação Agrária de Moçambique, IIAM) as part of the Water Efficient Maize for Africa (WEMA) program. The trial will test the tolerance of GM maize to drought and insect pests.

WEMA Country Coordinator in Mozambique, Dr. Pedro Fato, said, "This will be added value for our farmers who are greatly in need of new technologies for production and productivity, to keep up with the new

dynamics imposed by climate change. These technologies should cope with drought and insect pests which have had such a negative impact on crops in Africa, particularly in Mozambique."

Dr. Sylvester Oikeh, WEMA Project Manager says that under moderate drought conditions, WEMA's drought tolerant and insect-pest protected maize can increase yields by 20 to 35 percent, compared with varieties developed in 2008 when the project started.

WEMA is a public private partnership launched by the African Agricultural Technology Foundation (AATF) in 2008 with financial support from the Bill and Melinda Gates Foundation, the United States Agency for International Development (USAID) and the Howard G. Buffett Foundation. Its aim is to develop and deploy drought tolerant

and insect-pest protected (climate-smart) technologies to farmers in five African countries, namely: Kenya, Mozambique, South Africa, Tanzania and Uganda.

WEMA is a public private partnership launched by the African Agricultural Technology Foundation (AATF) in 2008 with financial support from the Bill and Melinda Gates Foundation, the United States Agency for International Development (USAID) and the Howard G. Buffett Foundation.



## Livestock rearing: A lesson from New York

By Joseph Opuku Gakpo

A few months ago, I had the opportunity to visit Marks Farm, a dairy (specifically fresh milk) producing farm at Lowville - New York State, USA. The farm is run with some of the most advanced technologies for producing milk from cattle (cows) that you can think of. There are about 10,000 cattle on the farm with less than 100 employees running activities.

A lot of the work on the farm is mechanized. All the cows are tagged with electronic identification cards with which managers monitor how much feed they consume, how many steps they walk each day, their health conditions, among others. The farm is located on a 10,000 acres land but the cattle do not go grazing on the field. They are kept in enclosed areas and feed is prepared for them

to consume on daily basis there. Their only task is to produce fresh milk.

There are no bulls (male cattle) on the farm. So, in order to get the cows pregnant for enhanced milk production, they are artificially inseminated with semen. Once they give birth, the calves (babies) are taken from them and then they get into milk production state. Three times a day, they are marched through metallic cages to a mechanised milk collection point, where their udders (breasts) are sucked with no human intervention.

On Marks Farms' website, I found that it makes 28 million US dollars every year. That is more than the entire amount of 91.54 million cedis (23 million US Dollars) that the Government of Ghana made available to the Ministry of Agriculture in 2015.

Meanwhile, this is only one of the more than 47,000 dairy farms in the US and Marks Farms is not even one of the largest. Also, the Farm produces about 340,000 pounds (40,000 gallons) of milk daily. This translates into more than 600,000 cups of milk each day. We only need three 'Mark Farms' to provide enough milk on daily basis for all the 1.6 million kindergarten school pupils in the entire Ghana. One farm. Owned by one family. So, so productive.

### Stark contrast

I found the work on this farm particularly interesting because that is not the kind of dairy farming activities you will find on this side of the world. Several centuries after the world moved on from "hunting and gathering" to "domestication" as a sustainable form of agric production,



herds of cattle led by 'fearless' herdsmen continue to roam bushes in Ghana, threatening the very stability of communities like Agogo in the Ashanti Region.

We are all witnesses to how cattle have destroyed hundreds of farms; herdsmen have allegedly killed farmers who try to protect their farms from the cattle and the demonstrations that have erupted in such communities as a result; as well as the unsuccessful police cum military operations to flush out these guys that have cost millions of cedis.

Farms like the Amrahia Dairy Farm on the Accra – Dodowa Road which was started by former president Dr. Kwame Nkrumah have virtually collapsed. In Ghana's second biggest city, Kumasi, the Boadi Dairy/Cattle Research Station, by the prestigious Kwame Nkrumah University of Science and Technology.

This is a dairy farm with few cows which produce what we call "fresh yoghurt" for sale on campus as an internally generated fund (IGF) raising means.

The funny part is this; this dairy farm imports powdered milk from Europe and other parts of the world and dissolves into fresh milk for sale. When their colleagues dairy farmers and researchers are busy milking cows. Estimates by the UN Trade Statistics are that as at 2011, Ghana spent more than 80 million US dollars importing milk and milk products annually.

**The number of cattle over the 60 year period had reduced by about 60 percent, but amount of milk had increased by about 300 percent**

### **Intensified Dairy Farming**

Dr. Alison Van Eenennaam of the Department of Animal Science at the University of California, as at 1944, there were 26.6 million cattle producing 53.1 billion kg of milk in the US annually. As at 1997, the number of cattle reduced to 9.2 million because of closure of lots of the farms. But the amount of milk produced yearly rose to 84.2 billion kg of milk.

The number of cattle over the 60 year period had reduced by about 60 percent, but amount of milk had increased by about 300 percent. This, she attributed mainly to improved genetics as a result of artificial insemination.

**By Joseph Opoku Gakpo / Agric and Environment Journalist / [www.josephopokugakpo.wordpress.com](http://www.josephopokugakpo.wordpress.com)**

# Don't Understand Clouds? But You Should!



**By Baher Kama**

Obviously, there are so many issues and phenomena that have been brought up by growing impact of climate change that one would likely not think about. Some of them, however, are essential and would be good to learn about. For instance, the fact that clouds play a “pivotal role” in weather forecasts and warnings.

Today scientists understand that clouds play a vital role in regulating the Earth’s energy balance, climate and weather, says the leading UN organisation dealing with meteorology.

They help to drive the water cycle and the entire climate system, the World Meteorological Organization (WMO) tells.

And assures that understanding clouds is essential for forecasting weather conditions, modelling the impacts of future climate change and predicting the availability of water resources.

Throughout history, clouds have inspired artists, poets, musicians, photographers and countless other enthusiasts, WMO rightly says. However, they are much more than that: clouds help to drive the water cycle and the entire climate system, it explains ahead of the World Meteorological Day on March 23.

On this, the WMO secretary general, Petteri Taalas, emphasise that clouds play a vital role in regulating the Earth’s energy balance, climate and weather. They help to drive the water cycle and the entire climate system.

In short, understanding clouds is essential for forecasting weather conditions, modelling the impacts of future climate change and predicting the availability of water resources, he adds while reminding that throughout the centuries, few natural phenomena have inspired as much scientific thought and artistic reflection as clouds. Consequently, the international body has opted for “Understanding Clouds” as the theme of this year’s World Meteorological Day. The purpose is to highlight the enormous importance of clouds for weather climate and water.

See what it says: “Clouds are central to weather observations and forecasts. Clouds are one of the key uncertainties in the study of climate change:



we need to better understand how clouds affect the climate and how a changing climate will affect clouds. Clouds play a critical role in the water cycle and shaping the global distribution of water resources.”

Anyway, on the lighter side, the World Meteorological Day provides an opportunity to celebrate the inherent beauty and aesthetic appeal of clouds, which has inspired artists, poets, musicians, photographers and countless other enthusiasts throughout history.

## An International Clouds Atlas

Most notably: the Day marks the launch of a new edition of the International Cloud Atlas after the most thorough and far-reaching revision in its long and distinguished history.

The new Atlas is “a treasure trove of hundreds of images of clouds, including a few newly classified cloud types. It also features other meteorological phenomena such as rainbows, halos, snow devils and hailstones.”

For the first time ever, the Atlas has been produced in a digital format and is accessible via both computers and mobile devices.

The International Cloud Atlas is the single authoritative and most comprehensive reference for identifying clouds, WMO continues. “It is an essential training tool for professionals in the meteorological community and those working in aviation and shipping. Its reputation is legendary among cloud enthusiasts.”

The Atlas has its roots in the late 19th century, and it was revised on several occasions in the 20th century, most recently in 1987, as a hard copy book, before the advent of the Internet.

Advances in science, technology and photography prompted WMO to undertake the ambitious and exhaustive task of revising and updating the Atlas with images contributed by meteorologists, cloud watchers and photographers from around the world.

## Classifying Clouds

The present international system of Latin-based cloud classification dates back to 1803, when amateur meteorologist Luc Howard wrote *The Essay on the Modification of Clouds*.

The International Cloud Atlas currently recognises ten basic cloud “genera,” which are defined according to where in the sky they form and their approximate appearance.

As one of the main modulators of heating in the atmosphere, WMO informs, clouds control many other aspects of the climate system. “Limited understanding of clouds is the major source of uncertainty in climate sensitivity, but it also contributes substantially to persistent biases in modelled circulation systems.”

“Clouds, Circulation and Climate Sensitivity” is one of seven Grand Challenges of the WMO World Climate Research Programme.

Learn how to identify cloud types by using this flow chart from the International Cloud Atlas. Clouds are divided into 10 fundamental types known as genera, depending on their general form.

The genera are then further subdivided based on a cloud’s particular shape, structure and transparency; the arrangement of its elements; the presence of any accessory or dependent clouds; and how it was formed.

# Treatment for all people who test HIV

By Florence Dzame | [fdzame@pedaids.org](mailto:fdzame@pedaids.org)

**W**alking along the corridors of Ndhiwa sub county hospital in Homa Bay Western Kenya, Julius Omuga greets patients with hearty handshakes creating an air of familiarity and warmth. Omuga is a HIV testing counsellor whose job entails linking people who test HIV positive to treatment. Through counselling he helps patients who suffer shock and denial after learning their HIV status to understand the benefits of treatment and start anti-retroviral therapy (ART).

The death of his wife through AIDS related complications, he revealed, drove him to become a champion to help people living with HIV get on treatment. "By the time my wife died in 2003 she had not accepted her HIV status and was not on ARVs," said Omuga. Omuga provides counselling after testing on adherence, disclosure and positive living. He also follows up clients who defer starting treatment



**Julius Omuga - Linkage officer  
Ndhiwa sub-county hospital**



through phone calls and home visits, and links them to their facility of choice.

Research has shown that starting ART early for people who test HIV positive has many benefits among them prolonging life, keeps them healthier and reduces the risk of transmitting the virus to partners.

Challenges linking children and adolescents

Stigma and discrimination are contributing factors low uptake of HIV testing and counselling services and poor enrollment into treatment especially among the youth, said Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) Technical Advisor for Prevention, Polycarp Musee. "Some parents feel that ARVs may be too strong for their child so they put off starting their children on treatment until they are very sick," he said.

EGPAF endeavors to promote access to HIV treatment and ending AIDS in children. The Kenya AIDS Indicator Survey 2012 showed that 16 percent of people living with HIV and in need of ARV treatment in Kenya, are adolescents and youth.

Following the launch of the new treatment guidelines in July by the National AIDS Control Council, anyone testing HIV positive will be put on treatment immediately which means many more Kenyans will now qualify to start ART. "Around 84000 clients including 5491 children currently on care are now eligible for ART initiation according to the Kenya Health Information System June 2016," said Michael Waweru, EGPAF Director of Strategic Information and Evaluation.

EGPAF through the county government supports 188 HIV testing counsellors in Homa Bay.



## 42 million Kenyans have high blood pressure

By Francis Mureithi | [mureithifrancis1964@gmail.com](mailto:mureithifrancis1964@gmail.com)

**T**he first ever non-communicable disease (NCD) survey to be conducted in Kenya has revealed that 92 per cent which translates to 42.3million Kenyans have a raised blood pressure.

The shocking statistics from the Ministry of Health further indicate that the affected population is not on medication.

At the same time the survey dubbed "Kenya Stepwise Survey-2015" says that only five per cent which translates to 2.3million Kenyans are on medication and have a raised blood pressure.

The survey painted a gloomy picture as only three per cent or 1.3million Kenyans are on medication and have a normal blood pressure.

The critical survey comes at a time when high blood pressure is increasingly becoming the most common killer disease in the country.

According to Dr Gladwell Gathecha who is the head of violence and injury prevention unit at the Ministry of Health, the study sampled 4,500 Kenyans of the age between 18-69.

"The main objective is to gather information on NCD risk factors to help plan programmes and intervention," said Dr Gathecha.

She says in the past one year alone two millions Kenyans were diagnosed with raised blood pressure

The survey which was conducted between April and June 2015 shows that 52 per cent in the age bracket of 60-69 are the most affected.

At least 43 per cent in the age between 45-59 are at risk while 13 per cent of the age group of between 18-29 which forms the majority of the working bracket are also at risk while 25 per cent in the age bracket of between 30-44 are facing the danger.

The disease is largely associated with lifestyle and the survey indicated that many Kenyans were

not involved in physical activities and good eating habits to keep away the disease.

The low consumption of fruits and vegetables was also attributed to the rise to the disease as only six per cent of the population had access to the fruits and vegetables.

High usage of salt, eating processed food high with salt and high usage of sugar were other reasons for the increasing cases of the disease.

At least four million Kenyans are suffering from severe hypertension while another three million with severe hypertension are not on medication.

3.3million women and 3million men in the country were working but were not involved in any physical activity increasing the chances of getting the disease.

The report further revealed that the prevalence of obesity and overweight was common among women as 16million were affected while 8million men were also struggling to keep fit.

# Study: Major maize producers free from lethal disease

By Brenda Wawa | [b.wawa@cgiar.org](mailto:b.wawa@cgiar.org)

CD.Hodson/CIMMYT

**T**hree major commercial maize-growing and seed exporting countries in southern Africa are still free from the deadly maize lethal necrosis (MLN) disease, according to a surveillance carried out by national plant protection organizations (NPPOs) supported by the International Maize and Wheat Improvement Center (CIMMYT).

The three countries Malawi, Zambia and Zimbabwe export nearly 7,000 metric tons of maize seed to a number of African countries for commercial cultivation by millions of smallholder farmers whose households rely on maize as a staple food.

These include Angola, Botswana, Democratic Republic of Congo and Ethiopia. Other countries which benefit from the three are Kenya, Malawi and Mozambique yet Rwanda, Swaziland and Tanzania complete the list.

Results from farmers' fields, commercial seed production fields and agri-seed dealers, showed negative results for the presence of maize chlorotic mottle virus (MCMV), the most important causative agent of the maize lethal necrosis disease.

The MLN surveillance techniques and protocols used across all the three countries were similar, making it possible to effectively compare the results. MLN diagnostics and sampling techniques were used in the study. Further surveillance will be conducted this year.

Although the MLN disease has not been detected in the southern Africa region, the risk of incidence still remains high through various means, including insect vectors,



**Maimouna Abass, a plant health inspector at Zambia Agriculture Research Institute collects leaf samples to test for MCMV in a practical session during the MLN surveillance and diagnostic workshop held in Harare, Zimbabwe. D. Hodson/CIMMYT**

contaminated seed, and cross-border grain transfers. Therefore, continued caution and stringent surveillance, monitoring and diagnostic measures are required to prevent the possible incidence and spread of MLN into the non-endemic countries.

MLN surveillance using harmonized protocols will also be undertaken in the MLN-endemic countries,

namely Ethiopia, Kenya, Rwanda, Tanzania and Uganda. Through systematic surveillance efforts, NPPOs, seed companies and policymakers can clearly understand the prevalence of MLN in specific areas in an endemic country for targeted management. Also, seed companies will be able to target production of commercial seed in MLN-free areas.



**Participants receive instructions from L.M Suresh, a maize pathologist at CIMMYT, during the MLN surveillance and diagnostic workshop. D.Hodson/CIMMYT**

B. M. Prasanna, director of the CGIAR Research Program on MAIZE and CIMMYT's Global Maize Program as well as Leader for the MLN Diagnostics and Management Project, emphasised the need to intensively deploy MLN-tolerant/resistant varieties not only in the MLN-endemic countries in eastern Africa, but also in the non-endemic countries in sub-Saharan Africa.

"We have 22 new, high-yielding, MLN-tolerant or resistant hybrids that are presently under national

performance trials in Kenya, Tanzania and Uganda. We encourage seed companies in southern Africa to take up promising pre-commercial hybrids with MLN tolerance or resistance from CIMMYT, for release, scale up and deployment to the farmers," Prasanna said. "Diagnostics and surveillance have to go hand in hand with deployment of new improved varieties that can effectively respond to the MLN challenge."

In the East African countries of Kenya, Tanzania and Uganda, seed companies have already

released MLN-tolerant varieties. While one hybrid is already being commercialized in Uganda, three more are expected to reach farmers in Kenya and Tanzania from 2017.

"There is also now a very urgent need to deploy MLN resistant varieties in Rwanda and Ethiopia. We need to convey this message to the government and seed companies and work closely to get the seed of MLN resistant varieties to the farmers as soon as possible," Prasanna added.

# Lethal disease can be controlled, expert



**Anne Wangui, a seed health technician at CIMMYT demonstrate DAS-ELISA method used for detecting MLN-causing viruses. B.Wawa/CIMMYT**

**By Brenda Wawa | [b.wawa@cgiar.org](mailto:b.wawa@cgiar.org)**

**T**he maize lethal necrosis (MLN) disease poses a major concern to researchers, seed companies and farmers in sub-Saharan Africa. The impact of MLN is massive in the affected countries, especially at the household level for smallholder farmers who can experience up to 100 percent yield loss.

Concerted regional efforts through a project funded by the U.S. Agency for International Development (USAID) over the past have helped in prioritizing and targeting efforts to stop the spread of the disease from the endemic to the non-endemic countries in sub-Saharan Africa. The project target countries are Ethiopia,

Kenya, Rwanda, Tanzania and Uganda (currently MLN endemic), while Malawi, Zambia and Zimbabwe are MLN non-endemic but important commercial maize seed producing countries where the project implemented extensive MLN surveillance efforts.

Determining exactly how the MLN causing viruses, which include maize chlorotic mottle virus (MCMV) and sugarcane mosaic virus (SCMV), are transmitted in the field through insect-vectors, infected plants and seed lots, has made diagnosis a key element in the efforts to halt the spread of the disease. If the viruses, in particular maize chlorotic mottle virus, the major causative agent, are introduced into a new area

through contaminated seed and infected plants and not diagnosed and destroyed immediately, MLN can spread rapidly. Insect vectors in the field can play a significant role in transmitting viruses to the neighboring healthy maize fields.

In order to manage MLN at a regional level, partners in the project are developing harmonized diagnostic protocols to test, detect and prevent its spread through available mitigation measures. Monica Mezzalama, head of the CIMMYT Seed Health Laboratory in Mexico and a plant pathologist, shared her views on MLN testing and diagnostic methods that can be adopted to test maize plants and seed lots in the following interview.

**Q: What is the role of diagnostics in managing MLN in Africa?**

**A:** The role of sensitive, reliable, reproducible, affordable and standardized diagnostic tools is fundamental to the management of MLN in Africa. Only with an appropriate diagnosis tool, can we effectively detect and prevent further dispersal of the disease to the non-endemic areas through seed.

**Q: What is the progress for detecting MLN in seed lots?**

**A:** At the moment, detection in seed lots is still a weak link in the MLN management chain, although detection methods are available, such as ELISA and several versions of PCR, which are serological and molecular based, respectively, for the detection of MLN viruses. Extracting the pathogen from seed is more difficult than extracting it from leaf tissue, making it more time consuming to obtain clear and reliable results. Additionally, scientists are on the verge of resolving the significant issue of "sampling intensity," which refers to the proportion of the seed sampled from the presented seed lots.

**Q: What are some of the practices CIMMYT has adopted to ensure MLN-free seed production across regional centres in Africa?**

Since 2013, CIMMYT has implemented several effective measures to ensure healthy MLN-free seed production and exchange. An aggressive strategy against the disease has been adopted at the main

maize breeding station at Kenya Agricultural Livestock and Research Organization in Kiboko, by introducing a maize-free period of two months annually on the station as well as in the surrounding areas in close interaction with the farming communities in the neighboring villages. This action taken for two consecutive years drastically reduced the incidence of MLN infected plants. In addition, a very thoughtful sensitization campaign was carried out, explaining how to effectively apply insecticide to control vectors, how to avoid the spread of the pathogen from one field to another by advising workers to change their clothes and shoes after working in an infected field. Also, management of planting dates has been implemented to avoid peaks of vectors populations or physically avoiding the arrival of the insects by planting according to the wind stream direction. In Zimbabwe, CIMMYT has also invested significant resources by establishing an MLN Quarantine Facility at Mazowe, near Harare to enable safe exchange of MLN virus-free breeding materials in southern Africa.

**Q: Based on your experience with various diagnostic tools, what options would work for Africa's seed companies and regulatory agencies to help detect MLN-causing viruses?**

**A:** For detection of MLN viruses in green leaf tissue, immunostrips, ELISA and PCR techniques work very well and they can be adopted according to the level of specialization of the operator, infrastructure and financial

resources available. As far as detection in dry seed is concerned, at the moment the ELISA technique is the most reliable and affordable. PCR methods are available, but still some improvement needs to be done in the extraction of the viral RNA from the seed matrix.

**Q: What factors do the relevant actors need to consider in the process of harmonizing diagnostic protocols across MLN-endemic and non-endemic countries?**

**A:** Harmonization of protocols and procedures are needed not only for MLN, but also for effective design and implementation of phytosanitary aspects related to the exchange of commercial seed and vegetative material across borders. This is a hard task because of the number of actors involved, including national plant protection organizations, seed companies, seed traders, farmers, and policy makers.

Nevertheless, the most important factors that should be taken into consideration for consensus on harmonized protocols and where the efforts should focus on are: avoid the spread of the disease from country to country, and from the endemic to non-endemic areas within the same country; implement a well-coordinated and integrated package of practices for effective management of MLN in the endemic countries; reduce as much as possible economic losses due to the restriction on seed exchange; implement serious and effective seed testing and field inspections of the seed multiplication plots to prevent the incidence of MLN and for timely detection and elimination of infected plants.

At the moment, detection in seed lots is still a weak link in the MLN management chain, although detection methods are available, such as ELISA and several versions of PCR, which are serological and molecular based, respectively, for the detection of MLN viruses.



**Women do demonstrations during a Food and Agriculture Organization (FAO) Farmer Field Schools training in Zimbabwe. Credit: Sally Nyakanyanga/Source:IPS**

# Investing in Zimbabwe's Smallholder Farmers

By Sally Nyakanyanga

**T**o take his mangoes to Shurugwi, 230 kms south of Harare, requires Edward Madzokere to hire a cart and wake up at dawn. The fruit farmer sells his produce at the nearest “growth point” at Tongogara (the term for areas targeted for development) where the prices are not stable.

“As a fruit grower, I have been forced to sell the fruits for very little rather than let them rot,” he told IPS.

“LFSP is improving farmers’ ability to buy inputs and sell their products by strengthening farmer groups, improving farmers’ access to financial services,

connecting farmers to national and regional markets.” -- FAO’s Ali Said Yesuf

The poor performance of the economy has not made life easier for Madzokere, who struggles to provide for his family’s basic needs.

“I wish to have knowledge to make mango fruit jam or to be able to dry fruits for selling,” he said. Madzokere believes with better information and the creation of links to outside markets for his produce, he can go a long way in this sector.

The U.N. Food and Agriculture Organisation (FAO) has highlighted the concentration of smallholder farmers in subsistence farming rather than farming

as a business, which means they have low demand for inputs, resulting in few incentives for input suppliers to reach the farmers.

For Elias Matongo, an agribusiness dealer in Shurugwi, it’s the same story. Matongo has been struggling to convince financial institutions to give him enough capital to expand his business. So far he has only managed to raise 2,500 dollars, which isn’t enough.

“Agricultural inputs are very expensive, I need to get a loan for 5,000 dollars and more to be able to make farming inputs available and closer to farmers,” Matongo told IPS.



**Zimbabwe's Productive Asset Creation Project supports smallholder farmers to establish irrigation schemes and conservation farming practices**

FAO notes that 68 percent of Zimbabweans live in rural areas, where the economy is dominated by agriculture. In 2012, 76 percent of rural households were found to be poor. The agency further states that smallholder farmers often live in remote locations where infrastructure is poor and where input suppliers and buyers do not travel.

Ali Said Yesuf, FAO's Chief Technical Advisor, told IPS that his organization, with financial support from the United Kingdom's Department for International Development (DFID) of 72 million dollars, has launched the Livelihood and Food Security Program (LFSP) to increase agricultural productivity, increase incomes, improve food and nutrition security, and reduce poverty in rural Zimbabwe. The project, which commenced in 2015, will ultimately be implemented in eight districts in the country.

"LFSP will actively address the specific constraints that smallholder farmers face in raising the productivity of their farms and creating markets for their farming produce," says Yesuf.

More than 349,000 Zimbabweans are expected to be reached by 2018, selected based on poverty levels, food uncertainty and potential for market development.

Another key player, the World Food Program (WFP), is also working with FAO to support 5,389 smallholder farmers with the production of drought tolerant small grains, in order to strengthen their resilience. Last December, 93 percent of the planned 646 hectares were planted in selected areas in the country, including extension services, as WFP and FAO provide farming inputs such as seeds and fertilizers to small-scale farmers.

Eddie Rowe, WFP Country Director, said integrated strategies for reducing and mitigating risks are essential to overcome hunger, achieve food security and enhance resilience.

"Building resilience before, during and after disasters is necessary for supporting the government of Zimbabwe to achieve food security and adequate nutrition for all people by 2030, in line with the Sustainable Development Goals," Rowe told IPS.

FAO believes smallholder farmers play a critical role in food and nutrition security in Zimbabwe as they account for the bulk of the food that is produced in the country. Zimbabwe's has since put in place its Country Strategic Plan (2017-2021) to enable smallholder farmers to have increased access to well-functioning markets by 2030 supporting initiatives that promote efficient and profitable marketing.

In Manicaland Province, the Extended Nutrition Impact for Positive Practice (ENIPA) has been introduced. The program is a nutrition behaviour change methodology for promoting identified good nutrition and health practices. The approach encourages the participation of men to so that they become the change agents and champions in the communities.

"Men's participation is transformative as it transforms the household decision-making dynamics. It's turning out that a man who understand the importance of consuming nutritious food will support his wife to purchase/grow the same," Yesuf said.

The project is providing training in nutrition-sensitive agriculture through modules such as healthy harvest where there is selection, production, processing and preparation of diversified food types.

Supporting small holder farmers in the country is a certain path to sustainable production, with farmers like Madzokere already learning new concepts, broadening their horizons and focusing on outside markets. In this context, investing in agriculture simply makes good business sense.



# Farmers eke out a living from local forests

By Agatha Ngotho | [angotho@gmail.com](mailto:angotho@gmail.com)

**F**armers in Nyeri County, located in the central part of Kenya are making millions of the shilling from farming in local forests as they plant indigenous trees and take care of them during their formative stages.

Daniel Muhito Muchiri is one of the farmers who have been making a living from the forest for the last 12 years. Muhito, who sells buns and tea in his small shop, owns three private cars and is currently constructing a storey building with five floors in his home town in Jua Kali area from the proceeds of this type of farming.

The 40 year old man from Gathiuru sun location completed college in hospitality industry in 2004.

He later worked in hotels as a casual labourer and later as a chef in a tour firm, but he did not derive any satisfaction. Muhito says he felt incomplete and wanted to do something that would change his fortunes from merely subsisting to living a fulfilling wealthy life.

At this juncture, he told this writer, he decided to venture into farming. At the start of this new journey, he started by farming maize, wheat and potatoes. Quite unlike his expectations, the returns were appalling given that the yields were poor though what he got was better than the little he was earning from the casual jobs.

"After one season, I harvested 19 bags of potatoes in a quarter acre of

land and got Sh13,000 (USD 130) and used it to buy a bicycle," said Wahito, who has been farming in the forest thanks to the Plantation Establishment and Livelihood Improvement Scheme (PELIS).

This form of farming replaced the Shamba System that the late Nobel Laureate, Prof Wangari Mathaai lobbied to be scrapped by the government citing it as a big impediment to forest conservation.

Jane Waruguru, another beneficiary of PELIS, grows potatoes and beans on a one acre farm. She started farming in the forest in 2008. Since then, her efforts have enabled her to educate her children up to secondary school while her last born son is in a primary school academy



where high fees are paid. Besides, she has bought a piece of land and built a permanent stone house for her family of four.

Eustace Muturi is a bee keeper but he also started with farming potatoes and beans from 2005 till 2008 when he bought 13 acres of land. The farmers are part of community members who continue eking a living and have made more than Sh840 million (USD 8400) in the last six years.

The community also benefit from grazing, collecting firewood at designated areas, selling thinning and pruning from the forest.

According to Muchiri Mathinji, the Kenya Forest Service conservator in Nyeri County, over 4,000 farmers have benefited from the established forest plantations in both Mount Kenya and the Aberdare forests.

He said that under PELIS, farmers grow low food crops like potatoes and beans as they assist in tree production. Speaking last month to journalists under the aegis of the CSE Media Fellowships Programme

in Gathiuru forest in Nyeri, Mathinji said that the scheme was introduced after enactment of the Forest Act, 2005.

"It is a governance scheme that seeks to help increase forest cover and restore degraded forests in the country. Communities adjacent to the forest benefit from the scheme as they are allocated plots to plant seedlings, take care of them till the area form a closed canopy while they practice agriculture on the farms," said Mathinji.

He however cited challenges such as forest fires which he attributed to severe drought in parts of Kenya. "This condition has an impact to the forests because once you have prolonged drought, the water volume decreases and there is ready materials for fire. The prolonged dry spell also impacted on the seedlings that were planted in January hence minimal survival rate," said Mathinji.

This year, he said, priority will be given to 17,000 acres that were affected by the fires in Aberdare

forests. He added that with the current rains being experienced in some parts of the country, farmers should replant tree seedlings and recover what they lost.

Under the scheme, farmers get about half an acre of land where they grow low crops as they plant and take care of the tree seedlings for a period of up to three years. Each farmer pays a fee of Sh250 (USD 3) to KFS every year. Mathinji added that the scheme is good for forest plantation and the farmers get to benefit and it has proved possible that indeed communities can conserve the forests if it benefits them.

Reports show that this initiative has helped increase forest cover in the county to 38 percent. Their target is 42 percent forest cover. "An increase of four percent will require this county to have not less than 30,000 hectares of land. This land may not necessarily be under gazetted area but much of the land is in the farm land," said Mathinji.

# Simple kit fast tracks data collection for sweet potato



By Christine Bukania | [c.bukania@cgiar.org](mailto:c.bukania@cgiar.org)

Armed with nothing but umbrellas and their mobile devices, a group of monitoring and evaluation (M&E) officers from different countries of the Sub-Saharan Africa (SSA) region disembark from a bus in Gakenke, Rulindo district in Northern Rwanda. They have a date with farmers, and the April showers will not prevent them from keeping it. On field visit days like this, they would normally be carrying notebooks, sheets of papers mounted on clipboards, pens and/or pencils and erasers. But this time, all that package is replaced by a single mobile device – a tablet.

In the group is Ignatius Abaijuka who works as a Monitoring, Learning and Evaluation Specialist for HarvestPlus, and is based in Uganda. He supports the HarvestPlus' partners in planning, monitoring and evaluating orange-fleshed sweetpotato (OFSP) projects in 25 districts of Uganda. Along with M&E staff from other countries, Abaijuka is here to practice how

Open Data Kit (ODK), a free open-source set of tools, that are loaded in his mobile device can be used to collect data on sweetpotato root yield in a decentralised vine multipliers' (DVMs) field and to conduct many of the routine monitoring activities.

## **ODK: an open-source suite of tools for collecting and managing data**

The use of ODK was first piloted in 2014 for sweetpotato by Luka Wanjohi, who is in charge of data management for the Sweetpotato Action for Security and Health in Africa (SASHA) project led by the International Potato Center. It provides a cost-effective and easy to use, modify and scale-up method of field data collection. Users can build data collection forms, collect data on mobile devices and send it to a server. The collected data can then be aggregated and then extracted and used in different formats, as needed.





# Demand for fresh sweetpotato roots spurs the pre-basic seed market in Tanzania

By Christine Bukania

**W**hen the Tanzania Horticultural Association (TAHA) entered into a ten-year deal to supply a foreign company with fresh range-fleshed sweetpotato roots for the export market, they immediately opened up opportunities for hundreds of people in the country to benefit from the sweetpotato value chain.

The critical requirement for sustainable profitability of any enterprise is an established market. So immediate concern was to find a strategic market partner. In 2015, the organization established a market relationship with an Israeli company that produces and distributes horticultural products to European countries.

TAHA signed a contract with the company to supply up to 200 tonnes of fresh sweetpotato roots per week to five different market destinations in the European Union - France, the UK, The Netherlands, Sweden and Switzerland.

The first phase of the venture was to test components of the value chain which were seed multiplication sites, good agronomic practices, harvesting, curing, storage and packaging and logistics systems venture.

To start off, TAHA had to test some varieties that are in high demand. Two hectare trial plots were established in three regions: Arusha, Manyara and Kilimanjaro. At this point, a partner had to be found who could provide clean, disease free planting material of Jewel, Kabode and Mataya that could be evaluated.

## **CBS: Supplier of clean, disease-free planting material**

This is where Wilfred Mushobozi's Crop Biosciences Solutions (CBS) Ltd. came in. The company, which was established in 2011, is located at Kisongo in Northern Tanzania. CBS receives disease-free *in vitro* sweetpotato materials from the Kenya Plant Health Inspectorate Service (KEPHIS) Plant Quarantine and Biosafety Station (PQBS), for further *in vitro* multiplication. After this, the plantlets are taken into the hardening chamber, where they are acclimatized to normal growth conditions. These plantlets are then planted out in the trial sites selected by TAHA.

TAHA is a member-based organisation that facilitates the development and inclusive growth

of the horticultural industry in Tanzania. It works to ensure that the agricultural environment is conducive for farmers, through technical support, advocacy, access to markets and trade facilitation. For this commercial venture, the production model consists of a nuclear farm that is run by TAHA and 500 small scale farmers, who will be engaged as outgrowers.

In Kimashuku, Hai district about 60 km along the Arusha-Moshi road, one of the small-scale farmers, Shaban Sho has dedicated one hectare (2.5 acres) of his farm to the trial, and has planted Kabode, Mataya and Jewel OFSP varieties. While he says that he is satisfied with the progress he has made, he would still like to understand more about how to control pests and diseases.

Crop management is another area in which the commercial partners are collaborating. While CBS ensures that farmers start off with disease-free planting material, the agronomic officer of TAHA, Gilead Daniel, provides them with day-to-day support to improve their farming practices properly. Gilead is not alone in this. He receives technical support and clear guidelines on the accepted agronomic practices from the client. Among other things, these guidelines provide direction about spacing, fertiliser use, controlling sweetpotato root sizes and so on.

Amani Temu is the Deputy Chief Executive Officer and Commercial Director at TAHA. He says that at the end of the first season, the trial results were exciting. The yield was 37 tonnes, which was within the range of 35 and 40 tonnes per hectare that the client had stipulated as a pre-requisite for the deal.

Temu admits that while the high yield was a great first achievement, he realised that dealing with an entirely new value chain would not come without its share of challenges. A good example was the rather sticky



affair of harvesting roots in the rainy season. It took sixty people ten days to harvest one hectare. “We couldn’t mechanise harvesting during the rainy season, because the tractors could not pass in the mud and machines do not work well in wet soil. Harvesting manually was tedious and the roots got bruised when they were pulled out. We had to wash 37 tonnes, root by root,” he recalls with a wry smile.

The curing process was another point in the value chain that was not straightforward. Curing is supposed to be undertaken at 30 degrees centigrade for five days. After that, the roots are stored under 12-14 degrees centigrade until they are freighted to Europe. However, the machines they used during the trial period did not work as expected. “There was a lot of fixing and modification to ensure that we meet the standards. After curing, we sort, grade and pack the roots,” explains Temu.

At least there is one area where TAHA will not have such a steep learning curve. For a long time, the organization has run TAHAFresh

Handling Ltd., a horticulture logistics solution that provides air freighting, trucking, clearing and forwarding, and perishable ground handling services. This company is expected to ensure reliable transportation of the cured sweetpotato roots to their consumers.

### Looking ahead

According to Temu, the organization plans to aggressively seek market opportunities within the local processing industry to absorb roots that do not meet export standards. Buoyed by the first big harvest, he feels confident that the international market could also expand with time. “In five years’ time, when people go to supermarkets in the international market, we want them to see and consume our produce,” he says.

Large-scale commercial success is what Mushobozi knows will also drive his sweetpotato seed enterprise. “From TAHA’s program, you can see the whole value chain growing and suddenly, the demand of the clean sweetpotato planting materials is higher,” he says.



## Taking the steps needed for a TB-free future

By Dr Jackson Kioko

**M**abel is a 52-year-old grandmother and farmer from one of Kenya's coastal counties and lives with her daughter and several grandchildren.

She took care of her husband when he had tuberculosis (TB) about ten years ago and is currently caring for one of her grandchildren who is ill with TB at age six. Mabel's daughter is coughing now, along with another grandchild; the two have been tested for TB.

The results are positive. They know what to expect; at least six months of daily treatment for TB. It is a long struggle that they know all too well.

Kenya is a high-burden TB country. In 2015, Kenya had over 81,000 cases of TB, some of whom are infected with both TB and HIV. The number of people who die from TB has risen steadily since 2010, reaching almost 5,000

in 2015. There are also a growing number of drug-resistant TB cases.

At least one million children become ill with TB every year around the world with 140,000 losing their lives. Nearly 7,000 infants and children in Kenya had TB in 2015. Those under the age of five are at a greater risk of having severe forms of TB and dying from the disease.

Caregivers infected with TB have few options but to keep caring for children throughout their own illness. Children contract TB from them. TB in children can present like other childhood conditions such as pneumonia and malnutrition. This can lead to under-diagnosis thereby undermining the true impact of the disease in children.

Children, have faster metabolism than adults and require higher doses of the TB medicines. But until now, no manufacturer had stepped forward with a product that matched the WHO dosing recommendations. As a result, parents, grandparents and other caregivers have had to split or crush

a number of unpleasant tasting pills to approximate the correct dosages for children.

However, we are not sitting on our hands and doing nothing. Starting in October, Kenya become the first country in the world to nationally distribute improved, pleasantly-flavored TB medicines for children.

For Mabel, TB treatment meant half a year of combining and crushing pills then coaxing her granddaughters to take the medicine. At least now they both have treatment in the right doses that are easier to give.

In Kenya, we have much more work to do in combating TB. Rolling out the improved pediatric TB medicines is the first of several initiatives focusing on populations most at risk for TB. Integrating TB screening into maternal and neonatal childhood services will help identify all children with TB. New diagnostic technologies will make it much easier for healthcare workers to detect TB in children.

Everyone working in the healthcare sector should join these efforts and ensure that no child dies of TB. Now that we have the appropriate tools, we need to increase detection efforts so that we can find children with TB who are hiding in plain sight and improve their treatment and survival. It is time for all of us to take the steps needed, accelerate this progress and vanquish this ancient epidemic. This has to start with our children; they should be our first TB-free generation across the continent.

Even in the midst of bleak pictures, hope can always grow. Perhaps it can start with the simple victory of a child-friendly TB treatment—for Mabel's grandchildren, and others in Kenya as well. If we can tackle an endemic disease of poverty and make sure that children get treated, we can take this momentum and do much, much more.

The future holds so much promise—much of it could even be fruit-flavored.

***Dr Jackson Kioko is the Director of Medical Services, Ministry of Health Kenya.***

# Natural incubators saving infants lives

By Mercy Ngoya | [megoya88@gmail.com](mailto:megoya88@gmail.com)

In 2003, the World Health Organization published guidelines on the use of Kangaroo Mother Care. This is the skin-to-skin care of infants born prematurely and underweight.

The Organization says that in developing nations like Kenya, modern technology like incubators is either unavailable or insufficient or not used properly due to shortage of skilled staff. Thus, good care of the low birth weight infants is difficult exacerbating new-born mortality.

The WHO further says that incubators separate babies from their mothers, and thus Kangaroo Mother Care, where the mother holds the baby between her breasts without a single clothe between them is a more natural way of bonding besides meeting other baby's needs like warmth, breastfeeding and protection from infection.

In Kenya, Kangaroo Mother Care, which has its origins in Colombia since 1978, is used in several health facilities. It especially came in handy during the recent doctors' strike. In Nairobi, St Mary's Mission hospital in Langata became the go to place for low income women, and the Hospital was soon overwhelmed, not only by the mothers delivering, but with a number of infants born prematurely and with low weight.

"We had to quickly allocate a room for Kangaroo Mother Care which at any given time was always full," says Dr Kimani Ngaruiya, the Medical Director at St Mary's, "I believe we saved many infants lives." a county to the west of Nairobi city – to make the sentence read as ff In Bungoma, a county nearly 400km to the west



of Nairobi city, which, according to the Kenya Demographic Health Survey 2014 lags at number 41 out of 47 Counties in the number of women delivering at a health facility contributing to high neonatal mortality deaths, Kangaroo Mother Care is seen as the saviour. It has been adopted by the County Government in partnership with development organizations.

It is in one of Bungoma's sub-county's, Webuye, where we meet mothers whose children were saved by the care named after the marsupial animals, Kangaroo, who care for their young ones, born prematurely in a thermal-heated pouch.

Sylvia Nasambu tells us that her daughter Precious Esther was born too soon. She weighed one and half kilograms, which is below the ideal weight, two and a half kilograms, of a new born.

But thanks to the 'natural incubator,' the Kangaroo Mother Care, today Precious at six months has added six kilos.

"I was 19 years old when I gave birth to my daughter," says Nasambu at the Webuye Referral Hospital, "she weighed one and a half kilograms, and the doctors showed me how to keep her warm using my body, so that she could develop further as if she was still in the womb."

Bramwel Wafula, the Nursing Officer at the Webuye Referral Hospital takes over explaining the process saying that it has been proved to work even better than incubators. She adds; "The baby is wrapped on the mother's bare chest where there is direct transfer of heat from the mother to the child which helps in keeping its heartbeat alert."

Preterm births, like Precious happen in different pregnancy complications, including teenage



pregnancy and lack of expectant mothers visiting antenatal clinics.

But Nasambu says she attended five antenatal clinics, surpassing the recommended four. According to Janepher Masai, a government nurse in charge of Bumula Sub-County Hospital, a pregnant woman needs to attend at least four visits the first one being at 16 weeks, the second at 16 to 28 weeks and the third between 28 to 32 weeks, with the fourth coming at between 32 to 40 weeks.

During these visits, mothers undergo different tests including malaria, HIV and AIDs and the rhesus factor.

With the help of the Kangaroo Mother Care, Nasambu says her Precious never had infections due to reduction in the number of people handling the baby as she kept her close to herself and observed cleanness.

Also she praised the method for helping in the breastfeeding of the baby, "Mtoto wangu hakika kangaroo ilimsaidia akanyonya vizuri kwa sababu sikuwa namkamulia bali alikuwa analala tu kwa kifua akinyonya, akakua haraka nikaachiliwa mapema ju ilimsaidia kuongeza uzani haraka" (kangaroo mother care really helped my baby

to breastfeed well because she would suck directly while on my chest and she added weight so quickly that the nurses allowed me to be discharged early) said the happy Nasambu.

Though everything new comes with a challenge Nasambu says while at home people would condemn her for tying her baby on the chest but she did not give them much attention.

According to Bungoma County Chief Nurse Getrude Wanyonyi, there is an increase in pregnancies among girls between the age of 9 to 19 years, an age bracket that medics say result to a high number of premature babies. In Kimilili sub-county alone, Wanyonyi says 1500 teenagers have been impregnated while Sirisia has recorded above 2000 girls in 2016.

To cater for the increased number of preterm births, overwhelmed health facilities are relying on Kangaroo Mother Care as incubators are too expensive. Grace Oniang'o who is a registered Kenyan nurse in charge of the new born unit at the Webuye Referral Hospital says KMC is efficient and preferred to the machine as it helps the child in bonding with the mother and in some instances the father, if they are at hand to help.

Oniang'o adds that the Bungoma County in partnership with Save the Children has taken the services to other health facilities at the same time training community health volunteers about the benefits of KMC.

"KMC is better than the machine, because with it, there never is power failure. Also, with machines, there is human error, whereas the natural warmth of the mother is perfect for faster growth."

Within the Kangaroo unit we also meet with 22-year-old Lorna Simiyu who has her one-week-old daughter, born weighing one and a half kilograms, close to a chest. She has been using Kangaroo, and in one week the baby has already added 500 grams.

Dr Mutoro Wambasi, the Medical Superintendent, Webuye Referral Hospital applauds the initiative of Kangaroo Mother Care and also urges men to help mothers as it also helps in bonding.

With the expense that comes with the incubators and congestion in public hospitals and remote areas where electricity is still a problem. Kangaroo Mother care could be embraced to save lives of new born babies and reduce mortality rate.

# Where motor cycles work like ambulances



**A motor cyclist explains how he uses his Boda Boda as an ambulance for pregnant mothers. He is available 24/7 so as to take women to the clinic on time.**

**By Gabriel Ingubu | [gabringu@gmail.com](mailto:gabringu@gmail.com)**

It's 10am at Kaptanai Dispensary in Sirisia sub-county in Bungoma, one of western Kenya's 47 counties. The facility, which is flanked by the gentle slope of Mount Elgon is already teeming with patients, mostly mothers carrying babies, the old shuffling along but somewhat comforted by the long shadow cast by the Mountain.

This area is remote, nearly 50 kilometres from Bungoma town where nothing newsy hardly happens. The patients hail from the neighbouring villages, some on the

mountain and the ridges. You rarely see vehicles here. The main means is either on foot or use of the handy but notorious motorcycle taxis locally referred to as boda bodas. But it is here in Kaptanai that we find some Boda boda riders who are defying the notoriety to save lives.

Yes, they are even referred to as Boda boda where motor cycles work like ambulances, ready to rush pregnant women in the throes of labour to the nearest health facility.

One of the riders is John Wambuka, better known in his village Binyenya which is about

five kilometres from the Kaptanai Dispensary, as Moss Moss. Dark-skinned and well built, Wambuka is wearing a reflector jacket written in bold at the back, "No life should be lost while giving life."

"I was trained by MANI on the basics of maternal health," he says, referring to the Maternal and Newborn Health Improvement project, the brains behind the 'Boda boda ambulances; "the training included on how to handle and carry the pregnant women, so that they get safely to the nearest health centre."

Gladys Ngeno of MANI says that they also partnered with the Kenya Traffic Police, who trained the select Boda boda riders on road safety measures. While most operated without licenses, for this project dubbed, Transport Subsidy, the riders are issued with one, plus protective gear, after training successfully.

"We had to go this length so as to generate facility based demand for maternal and health services," says Ngeno quoting United Nations Population Fund, UNFPA, which says that in 2014, Bungoma was number eight of Kenya's 15 counties which have a higher burden of maternal deaths.

Similarly, the Kenya Demographic and Health Survey 2014, says that only 46 percent of women delivered at health facilities, and only 40 percent were assisted to deliver by a skilled health care provider. The rest would give birth at home, most times assisted by untrained and now outlawed Traditional Birth Attendants.

We meet one such woman, Pauline Nangila, from the same village who previously gave birth to three children at home.

A young mother in her 30s, you can confuse Nangila, a small scale farmer to be in her mid- forties. She takes her eight-month old twins under her arms and leads us to a seat under a shade. Smiling, she narrates of how Nehema Mukhwana and Mulongo Nehemia arrived.

"Nilipigia simu CHV (Community Health Volunteer) wakati uchungu ulianza (on the onset of labour, I called the CHV)" she begins, adding that it was at 9pm, when the Boda boda arrived, and immediately took her, accompanied by her husband to the Kaptanai Dispensary.

Ngeno of MANI explains the CHV connection, saying that the volunteers go around the villages identifying pregnant women.



They then carry out a poverty analysis, and if an expectant mother is found in need, she is given a voucher, which she presents at the health centre during delivery.

Continues Nangila, "At 10pm, I gave birth to a son, then I heard the nurse exclaim that there was another baby! I gave birth to twins."

In retrospect, she remembers how she gave birth to her first born by the roadside. She was then seventeen years-old.

"I was helped by my mother-in-law; God is good there were no complications," she says in faltering Swahili, adding that she always wonders what would happen if she was to give birth to twins on the roadside.

As Nangila narrates her story, Wambuka, the Boda boda rider is keenly listening. He is the one who took her to the Dispensary.

"Aliponipikia simu, nilichukua almost dakika kumi kufika ingawa kulikuwa kumenyesha na matope ilikuwa mingi, nilijikakamua nikafika salama hospitalini" (It took me like ten minutes to get to her house. Though it was raining, I tried my level best and we reached the hospital safely).

Wambuka is a happy man. He says besides his daily income from ferrying people, he now has a steady payslip from MANI, as he gets paid for every expectant mother he takes to the health centres. He says that in average, he ferries about six women every week.

The idea has become so attractive that other riders are seeking to sign-up with MANI. One of them is Custon Wasike, Nangila's husband. "When I saw how my wife was easily assisted, I wanted to be a part of this."

And everyone seems to be happy, including the health workers. The Kaptanai Dispensary Clinical Officer who is in charge, John Wabomba, says that before 2015 when the Boda boda project started, they would have about five deliveries at the centre which has increased to an average of 25 in a month.

MANI says that from their records, they have seen an increase of about 20 percent. They add that since October 2015, they have trained over 350 riders, and distributed over 15291 vouchers of which 10,230 have already been used at health facilities.

# Toolbox to connect health journalists and researchers



Science journalists during a past training on infectious diseases

By Aghan Daniel | [aghan@meshakenya.org](mailto:aghan@meshakenya.org)

A health toolbox which aims to connect local journalists to researchers, including the wider science journalism community, fast and on demand, is currently undergoing its test phase among science journalists.

As a start, partners in the project have embarked on developing a database of communication officers working in health research institutions who will act as the link to the institutes.

The communication officers stand to benefit from this web based tool as they will be key in helping journalists to source accurate and timely information from health experts from their research institutes. Developers of the tool are working on the premise that at times local journalists may be unaware of key research results publications of public interest or they may altogether not know of research being carried out – a gap that this tool, with partnership from the communication officers, seeks to fill.

This digital solution will provide support to communication officers and researchers to connect to credible local journalists, and vice versa as well as support journalists to accurately and, in a timely manner, highlight research centres scientific knowledge and expertise. Besides, it will monitor emerging projects and issues in the targeted regions.

Health toolbox is a simple and easily accessible digital environment which will increase the accessibility and uptake of data and knowledge

from health related scientific research, and link up local journalists to the wider science-health research community.

It will be available in English and in French as well as be responsive for Android and IOS smart phones, tablets (2G, 3G, 4G) and websites. Its contents will also be accessible offline. It will enable those journalists to easily access and report using credible science information and data and visualization tools.

A resource centre will cover basic data on infectious diseases, including 11 factsheets covering basic facts on Infectious Diseases (ID) such as Ebola, Hepatitis C, malaria and pandemic influenza. Others includes yellow fever, Avian flu, MERS SRAS and tuberculosis. Besides, information on AIDS, ZIKA, Measles and Dengue will also be presented. Currently the team is also considering inclusion of global health modules on dementia, vaccines and AMR.

Each factsheet will contain basic ID information that every journalist needs to know, including causes, symptoms, mortality, transmission routes, epidemiology, drugs, vaccines, etc. The available information will be easily understandable for people without any scientific or medical background, explaining difficult concepts and avoiding jargon as much as possible.

Each sheet will follow the same structure: What is the ID? What are the symptoms? How does it spread? How is it treated? How can it be prevented? What's the long-term outlook? The fact sheets will also provide links to reliable resources among others.

According to the Executive Director of WFSJ, Damien Chalaud, plans are also at an advanced stage to test a serious game to help journalists review basic science concepts when covering an infectious disease story.

The Federation hopes to develop an Open Verification Toolkit for Journalists to be known as WFSJ lab which may aid them to verify scientific data and detect misinformation and skewed research which usually spreads like wildfire. This component will offer a checklist of functions for checking scientific data, research results and sources.

Apart from the above scenario, it is important to develop a tool to help in monitoring of emerging health issues in different regions. When there are emerging issues or new streams of information and content, the WFSJ lab will overlap journalists' localisation, to help connect the dots on new stories or lead to potential collaboration.

Partners in the project include the Canadian International Development Research Centre (IDRC), Johnson & Johnson, Concordia University, On Our Radar, CREO and MESHA.

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## HELP BEATRICE WALK AGAIN

*This is a call for financial support*

Beatrice was injured in a bus accident while travelling to Kakamega in September 2011 and sustained a subtrochanteric fracture on the left femur for which she has undergone ten operations to date with various forms of internal fixation devices ranging from plate osteosynthesis, Interlocking Nail, Locking plates etc.

She also sustained injuries on her left shoulder and knee which require surgery too. All her movements are met with pain in the left proximal thigh which persists even at rest. Till now there has not been a day when Beatrice has not been in pain. Currently she has an interlocking nail in situ with only one proximal screw.

At the moment, Beatrice's body is rejecting the metal implant and as a result the left side of her body is getting numb. Her doctor recommends that she undergoes **immediate surgery** to remove the existing nail with conversion to Left Hip Arthroplasty with a Modular stem like S-ROM (**TOTAL HIP REPLACEMENT**) which is not available in Kenya. His recommendation is that she seeks treatment in India.

**YOUR CONTRIBUTIONS WILL HELP HER FAMILY  
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