

SCIENCE

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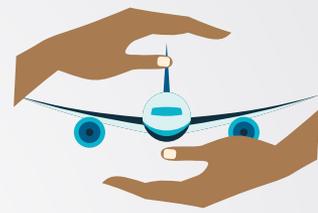
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The Media for Environment, Science, Health and Agriculture (MESHA) was founded in November 2005 in Nairobi, Kenya, and is an organisation that provides support to science journalists covering health, development, technology, agriculture and the environment. 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.

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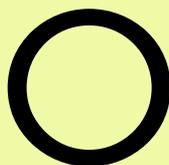
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Challenges limiting African seed sector



One key problem that the seed sector must train its eyes on are the rising temperatures in the world.

To me, a hotter Africa poses greater challenge to our industry hence a hungrier Africa. Today at only 1.1 degrees of warming globally, crops and livestock across the region are being hit and hunger is rising, with poor small scale women farmers, living in rural areas suffering the most. It only gets worse from here.

Natural disasters such as droughts and floods have been frustrating development in the African continent. Fluctuations in agricultural production due to climate variations along with inefficient agricultural systems cause food insecurity, one of the most obvious indicators of poverty.

Just three years ago, (2016) the El Niño phenomenon, which was super charged by the effects of climate change, crippled rain-fed agricultural production and left over 40 million people food insecure in Africa. Without urgent action to reduce global emissions, the occurrence of climate shocks and stresses in the African region are expected to get much worse.

The seed sector needs to be wary of the following facts as contained in a recent report by the Intergovernmental Panel on Climate Change (IPCC) called Global Warming 1.5 degrees;

There is mounting evidence that higher temperatures linked to climate change have worsened drought and humanitarian disaster in East Africa, including the 2017 drought which left over 13 million people dangerously hungry.

Even at 1.5 degrees of warming, climate impacts in West Africa would be devastating. Wheat yields could fall by up to 25 percent, and at 1.5 degrees Lagos in Nigeria could become a newly heat stressed city like Delhi in India.

In sub-Saharan Africa 1.5 degrees warming by the 2030s could lead to about 40 percent of present maize cropping areas being no longer suitable for current cultivars, and significant negative impacts on sorghum suitability are projected. Under warming of less than 2 degrees by the 2050s, total crop production could be reduced by 10 percent.

At 2 degrees of warming heat extremes never experienced before could affect 15 percent of sub-Saharan Africa's land area in the hot season, causing deaths and threatening farmers' ability to grow crops as well as seed production. If global temperature rises by more than 2 degrees by the end of the century, by 2050 this could see daytime temperatures in North Africa (and the Middle East) rise to 46 degrees on the hottest days, which can be deadly.

But lest we forget, Africa remains the continent with the highest Prevalence of Undernourishment (PoU), affecting almost 21 percent of the population (more than 256 million people) as has been proclaimed by FAO, IFAD, UNICEF, WFP and WHO (2018) *The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome, FAO.*

The seed sector must work hand in hand with governments and not tolerate interventions which will make our world a hotter place. We must join hands with stakeholders to ensure that no more challenges rock our industry, which basically provides food for the 1.3 billion who live in this continent.

Aghan Daniel

Cooking gas that comes from human wastes



Children in an informal settlement, play near a filthy water way oblivious of the danger it poses to them

By **George Juma** | jumageorge10@gmail.com

The increase of informal settlements in Kenya is a stumbling block to achieving universal access to water and proper sanitation by 2030, experts say.

According to the Kenya Water for Health Organization (KWAHO), over 2.5 million Kenyans occupy slum areas. The number is likely to increase going by estimation that by 2030, sixty percent of Kenyans will dwell in urban areas.

According to Mr. Patrick Alubbe, the executive director for KWAHO, sanitation in slums remains an issue which must be addressed for the country to attain the universal access to clean water and sanitation as envisaged in goal number six of the sustainable development goals.

Mr. Alubbe said Kenya loses Ksh27 billion due to sanitation related problems and Ksh 8 billion due to open defecation annually, an amount which can be saved if issues of sanitations are properly handled.

He said poor sanitation at the slums and generally within urban areas are consequences of many factors among them uncontrolled garbage disposal and inadequate land to build better latrines. Other factors include untreated sewerage system.

He added that out of the 12 percent of national sewerage coverage only 5 percent get treated. To achieve proper sanitation, experts says innovative technology needs to be employed especially in slum areas in the country like Kibera, Korogocho and Kariobangi all in Nairobi and even in other slums like Oruba and Pandpieri in Migori county among others.

Kibera slums in Nairobi was several years back known for flying toilets (people defecating in plastic bags and throwing them away anyhow in any direction and everywhere) because of lack of proper disposal of the faecal matter coupled with poor latrine cover.

The good news is, the whole situation has changed with the construction of nine biocentres within the slum areas. The centres, built by community groups with the support of Umande Trust have not only made steps in addressing sanitation issues at the slum but have also economically empowered many low income earners.

Mr. George Onyango, a member of Muvit group operating one of the biocentres at Kibera says the construction of the latrines, fitted with bio digesters which enabled them to also produce gas beside offering washrooms to the slum dwellers has saved many from the frequent outbreaks of sanitation related diseases in the slum. He said they averagely receive between 500 to 1000 people per day using their washrooms at a relatively low fee, a number he said used to defecate in the open using the "flying toilets."



Top View: A couple stands on a high ground to have a better view of the Kibera slums

According to Mr. Onyango, individuals who try to construct their own latrines in the slum have found it difficult to do so because of scarcity of land. Provision of an improved latrine for the slum dwellers is hence a reprieve to many who were defecating in the open.

He added that the use of the excreta to produce biogas which is used for cooking by slum dwellers at a very small fee has also helped them in managing the waste from the latrines. The project has seen 90 similar latrines which are also used in production of biogas constructed across the county.

However, an expert has warned that achieving open defecation free status is not an assurance to proper sanitation. Hygiene and sanitation specialist at Unicef, Engineer Sarh Kemoh has said. Stopping defecating in the bush and using latrines at home, he said brings the problem of poor sanitation closer to them unless improved latrines are constructed and better excreta disposal mechanisms are employed.

He said the number of toilets constructed does not translate to usage adding that complementary behaviour and practices which include hand

washing with soap and water, proper use of toilets, safely emptied, transported, treated and disposed waste.

His call for improved latrine comes as counties in Kenya struggle to achieve total open defecation free status by March 2019 deadline. Currently only three counties in Kenya - Busia, Siaya and Kitui have achieved the open defecation free status.

Migori county director of public health, Dr. Kennedy Ombogo says the urban total sanitation program has met many challenges including inadequate water in urban areas, lack of waste disposal sites, and poverty.

Dr Ombogo said landlords who are key in the urban total sanitation program especially in slum areas have not been accessible hence getting the right owner of rental houses has remained a big challenge in addressing sound sanitation.

Going forward the director public health said the department is in the process of developing better waste management mechanisms including producing biogas from the excreta and also coming up with punitive regulations on sanitation.

Slum dwellers on their side have blamed poor sanitation on lack of political good will saying that leaders have occasionally stopped the government from improving sanitation in some slum areas to protect their votes.



Kenya Science Journalists Congress 10 -12 November, 2019

Photo Credit: JOYCE CHIMBI



Domestic animals that feed on grains contaminated by aflatoxins also produce contaminated products such as meat and milk.

Experts: Technology cannot combat aflatoxin on its own

By Joyce Chimbi | j.chimbi@gmail.com

In the absence of concerted efforts to raise awareness on the dangers of aflatoxin to human and domestic animals, advances in technology for early detection of aflatoxin in cereals and seeds such as maize will come to naught, experts warn.

The first rapid aflatoxin testing kit is in the market for less than two dollars even as unscrupulous farmers continue to employ life threatening tricks in a bid to make more money.

John Cheruiyot, a maize farmer in Uasin Gishu County, Rift Valley region revealed that farmers pour water on maize post-harvest to manipulate its weight in order to dupe buyers into paying more than the grains are worth.

“Maize is sold based on kilograms and so by pouring water on the maize after harvesting and drying it later, when taken to the weighing scale, the maize will weigh more,” he explains.

It is not the loss of a few thousands shillings in manipulated weight that has stakeholders in the ministry of health, ministry of agriculture as well as food security experts at the Food and Agriculture Organization of the United Nations (FAO) concerned, but the real threat of deadly aflatoxin poisoning from such high moisture levels.

According to FAO, aflatoxin contamination can occur when there are high moisture levels during

storage and transportation of grain particularly if not dried to the right moisture levels of about 13 percent.

Collins Omondi, a researcher at the Egerton University Department of Biochemistry explains that aflatoxins are highly toxic, cancer causing fungal that causes immune-system suppression, retarded growth, liver disease and even death.

“In maize for instance which is a staple food, aflatoxins occur on the farm through fungus containing high toxins in the soil, when there is insect damage, poor harvesting practices as well poor storage,” he said.

Further explaining that in the first three months of grain storage,



Handling maize: Experts now encourage farmers to embrace a new kit developed to detect aflatoxin on location before the grains enter the market

rural households lose 10 to 20 percent of grains and the losses can go up to 50 percent after six months.

It is within this context that experts such as Omondi are encouraging farmers to embrace the first aflatoxin kit to detect aflatoxin on location before the grains enter the market.

The kit can detect contamination in less than 15 minutes and is easy to use as it is based on the strip test such as those used to detect the HIV virus or glucose in human blood.

Cheruiyot, who has been trained on how to use the device, says that “if aflatoxin is present in the sample being tested, one pink line appears on the strip. But if the sample does not have aflatoxin then two pink lines will appear.”

While this technology has been lauded as a step in the right direction towards combating the aflatoxin menace in this East African country with the most severe cases of aflatoxin poisoning having been recorded in 2004 where 317 cases had been reported by July of that year with a fatality rate of about 39 percent, there are significantly low levels of awareness on aflatoxins and its prevention.

Within this context, FAO recently held training workshops in collaboration with the national and county governments of Nandi, Uasin Gishu and Trans Nzoia Counties on prevention of aflatoxins.

This was done through the ministry of health as well as the ministry of agriculture with the three Counties having been chosen because they are the country’s grain basket.

FAO continues to caution that the deficit in agricultural extension officers continues to frustrate efforts to empower farmers with information on how to embrace better harvesting and storage practices to effectively address the real threat of aflatoxin poisoning.

While FAO has recommended one extension officer for every 400 farmers, figures from the ministry of agriculture show that one extension officer caters for at least 1,500 farmers.

According to the ministry of agriculture approximately 70 percent of local maize is informally traded at the village level by subsistence farmers.

This poses a significant threat since maize is grown by at least 90 percent of the rural farm households.

FAO estimates that 25 percent of all crops in the world are affected by aflatoxin placing millions of people and domestic animals at risk of significant health problems and even death.

Experts such as veterinary epidemiologist Johanna Lindahl further caution that domestic animals that feed on grains contaminated by aflatoxins produce products such as milk and meat that are also contaminated with aflatoxin.

“Kenya is a hotspot for aflatoxin contamination especially in maize and farmers, traders and the general public need to be educated on the danger of aflatoxins. This will increase the use of the testing kit which does not require technical skills in testing and interpreting outcomes,” explains Lindahl.

The most recent major incident of aflatoxin contamination was in 2014 when 155 metric tonnes of maize were destroyed.

She emphasizes that the rapid aflatoxin test kit coupled with education on the dangers of aflatoxin will significantly contribute to the management and reduction of the entry of aflatoxins in the food value chain by critically improving diagnosis for local and export trade.

Consequently, experts say that the food processing industry will maintain low exposure levels in food products for local markets and continue to open regional as well as international markets that have largely remained hostile to countries such as Kenya which is a hotspot for aflatoxins.

Population rise in Africa worries sanitation experts



Engineer Sahr Kemoh



A youth enjoys tap water

By Anita Chepchep | anita@meshakenya.org

Sanitation experts are worried that the ballooning population in East and Southern Africa could worsen the already dire hygiene situation.

According to Sahr Kemoh, the United Nations Children's Fund (Unicef) regional specialist in hygiene and sanitation in East and Southern Africa, between 2018 and 2050, there will be 653 million new people in the region, translating to 20 million new born every year.

Unfortunately, this whopping figure that does not compare with the slow pace at which proper toilets and sewerage management connections are coming up. During a training done in Nairobi by Media for Environment, Science, Health and Agriculture (Mesha) and the Centre for Science and Environment (CEC) of India, the expert lamented that that at the moment, six out of ten people have been pushed to defecate in the open due to insufficient sanitation facilities. And the situation could get direr with the additional 653 million people.

"The alarming population growth would detrimentally reverse the gains made towards assisting households or villages access clean water and attain Open Defecation Free (ODF) status over the years. This situation, whose negative implication to water and sanitation in the communities affected, could even lead to death of up to half of that population," said Mr Kemoh. The World Health Organization (WHO) defines sanitation as the provision of facilities and services for safe disposal of human urine and faeces. Unicef figures show that about 57 million people practice open defecation (OD) with the rate of eliminating the practice estimated at 2.2 million people per year.

In order to effectively deal with it and eliminate open defecation by the targeted 2030 deadline, the elimination rate has to more than double to 5.5 million people in order to eliminate it by 2030. Only 14 percent of the population, ranging from just one percent in Ethiopia to 48 percent in Tanzania, wash their hands with soap.

Also 223 million people out of the 260 million from the region don't want their hands with soap and water.

WHO and Unicef note that overpopulation has resulted in poor sanitary conditions and the destruction of rivers and water bodies especially in sub Saharan Africa, Asia and other developing countries. The two organisations reported in 2004 that every year, unsafe water, coupled with a lack of basic sanitation, kills at least 1.6 million children under the age of five years.

Inadequate sanitation has been a major cause of diseases world-wide and it is feared that the population growth will heighten disease burden for communicable diseases like cholera, typhoid, infectious hepatitis and polio, most of which spread rapidly bringing sudden death to many people.

A 2014 World Bank report dubbed 'Impact of Demographic Changes on Inflation and the Macro-economy', indicates that rapid population growth is straining countries' budgets and ability to

cater for the basic human rights including nutrition, health services, clean water and environment. It is noted that most of the diseases resulting from sanitation have a direct relation to poverty.

In a study by Lixil Corporation, Oxford Economics and Water Aid, lack of proper sanitation costs the global economy a staggering over \$220 billion with the mortality rate accounting for \$122.8 billion, medical treatment \$56.6 billion, lost productivity \$16.5 billion and time spent finding a toilet \$27 billion.

Of the total \$220 billion cost, Africa accounted for about \$19.3 billion, of which about 75 per cent came from deaths related to sanitation.

In Kenya alone, the problem costs the economy over \$320 million annually, with nearly 20,000 Kenyans, including more than 17,000 children under the age of five, dying every year from diarrhoeal diseases directly attributed to poor water, sanitation and hygiene.

According to Usaid, access to water and sanitation in Kenya has not been keeping pace with population growth, as only 58 percent of Kenyans have access to basic drinking water and 30 percent have access to basic sanitation currently. Estimates suggest the population could double by 2050 relative to 2015 given current growth rates, while 30 million Kenyans (48 percent of the population) are expected to live in urban areas by 2030.

Mr Victor Ouma, a Coordinator of Kenya Water and Sanitation Network (Kewasnet) contends that universal health care cannot be achieved without proper sanitation and that there is an urgent need to improve sanitation in East Africa in order to reduce deaths and illnesses associated with poor hygiene.

“Our organization strives to promote good governance in the Water, Sanitation and Hygiene Sector (WASH). We need an all inclusive approach towards addressing Wash issues like educating communities on the importance of observing hygiene and also pushing for improved policies.

“We are working at both National and County Level to support policy development efforts to ensure that Wash and Water resource management are well captures and implemented,” said Mr Ouma.



Future leaders: Young school children queue outside an ablution block in Kibera

Tanzania is also currently focusing on ways to attain an open defecation free state. But they are going for rudimentary toilets which are not safe according to Mr Ibrahim Kabole, the managing director for WaterAid, an organisation that works with NGOs and communities to implement Wash projects in Tanzania.

“The rudimentary toilets affect the state of water bodies and groundwater in the region. Most of the regions are reporting cholera outbreak. Ministries looking after health and sanitation are blaming the ministry on water, but the problem is lack of coordination among them to take up the issue,” said Mr Kabole.

According to the East African Community portal, the provision of water and sanitation services in the EAC Partner States including Kenya, Tanzania, Uganda and Burundi, is gradually being privatised, a step which could make the sector more effective.

WHO, suggests that a more long-lasting solution like family planning was key to slowing unsustainable population growth that results in negative impacts on the economy, environment, and national and regional development efforts.

It however reckons that 53 percent of women of reproductive age in Africa have an unmet need for modern contraception despite feeling the need to plan their family.

“An estimated 222 million women in developing countries would like to delay or stop childbearing but are not using any method of contraception. The unmet need for contraception remains too high,” it says.

In Asia, and Latin America and the Caribbean regions -with relatively high contraceptive prevalence-the levels of unmet need are 21 percent and 22 percent, respectively against Africa’s 53 percent.

If the family planning needs were met, then 222 million unintended pregnancies and childbirth would not occur hence it will help minimise the speedy pace of population growth and its effects on health and sanitation, it states.

Meeting the unmet need for family planning could reduce fertility by 20 per cent in the Arab states and eastern and southern Africa, and 15 per cent in Asia and western Africa.

According to Mr Moses Mulomi, Deputy Governor for Busia County, whose villages have been declared Open Defecation Free, whereas many communities stopped practicing open defecation, they are stuck at using unimproved sanitation facilities and smelly toilets yet it is the improved toilets that can only humans from excreta.

He said there was also need for complementary behavior and practices of hand-washing with soap and water, Proper use of toilets which are safely emptied, transported, treated and disposed, for proper sanitation to be achieved.

A May 2018 report, *WASH in Kenya* by Twaweza East Africa notes that addressing sanitation problems was critical considering that two-thirds of the world’s population is projected to be living in cities by 2030, many in informal settlements with limited water and sanitation facilities.

It further notes that the levels of access to clean and safe water in urban areas had been declining from around 90 per cent in 1990 to about 78 per cent today.



Medics examine patients for Ebola

Curbing frequent Ebola outbreaks in the Congo

By **Lominda Afedraru** | lominda25@gmail.com

On August 1, 2018, the Ministry of Health in the Democratic Republic of the Congo declared a new outbreak of Ebola virus disease in North Kivu Province which borders Uganda.

So far, statistics by World Health Organization (WHO) indicate that 267 people have been confirmed to be infected with the virus since the outbreak, with actual confirmed cases estimated at 232, with 35 probable cases and 170 deaths reported.

Since Kivu Province of the DRC borders Uganda, the Ministry of Health and its partners have implemented Ebola preparedness and readiness activities in about 22 neighbouring districts. This is meant to prevent the disease from crossing into Uganda and, in the event that it does, to ensure early detection and minimal human infection.

Activities that have been implemented in these districts include strengthening surveillance, capacity building in contact tracing, laboratory diagnostics, infection, prevention and control, and clinical management of patients, including psycho-social care, safe and dignified burials, enhanced risk communication and community engagement and cross-border surveillance.

Ugandan medical scientists are highly regarded in controlling Ebola outbreaks in Africa as well as conducting research in developing vaccines to control the situation. Research effort to combat Ebola is led by scientists at Uganda Virus Research Institute and Medical Research Council (UVRI/ MRC) at Entebbe, funded by the government of the United Kingdom to the tune of 5.1 million British pounds.

This funding was announced by Harriett Baldwin, the UK Minister of State for Africa at the Foreign & Commonwealth Office

and Minister of State for International Development during a recent visit to the Uganda Virus Research Institute and Medical Research Council (UVRI/ MRC) at Entebbe.

The minister was in Uganda to visit some of the development projects supported by the UK government including the research institute where she toured the laboratories to see ongoing research activities to strengthen the country's preparedness in combating Ebola.

"My visit here is to see how medical scientists at the Institute are conducting research work to develop an Ebola vaccine. I am aware of the frequent outbreak of Ebola from the Democratic Republic of Congo that borders Uganda. In order to stop spread of the virus to Uganda, there is need to support the scientists who are at the forefront in helping to curb Ebola spread in the



Ebola patient or not: Uganda imported 3,000 vials of vaccine administered on people at border points of Eastern DRC

region. Notably, UK has strong research collaboration with Ugandan scientists, implemented through the London School of Tropical diseases to fight outbreaks of emerging diseases, including Ebola," she noted.

The Director of UVRI/MRC Prof. Pontiano Kaleebu appreciated the minister's visit, noting that the institute has a long history of collaborating with the UK government which has funded various research activities including support for cancer and later the 1980s research on HIV/Aids.

Today, Prof Kaleebu said, UVRI/MRC receives annual funding for its activities that is estimated at 10 million pounds. This is drawn from various sources, half of which comes from the UK government.

Remarking on ongoing activities to prevent Ebola outbreaks, he explained that scientists at the institute get samples from the Democratic Republic of Congo with the most recent one arriving at the Institute on October 4th, 2018 for them to analyze. The scientists have identified different Ebola strains, such as the DRC Ebola strain, Sudan Ebola strain and Bundibugyo Ebola strain. They analyze these strains and advice the Ministry of health on which vaccine to administer for a particular strain.

The samples from DRC are tested at the Uganda Virus Institute because it is the centre of excellence for testing and analyzing the virus in the East African region.

"One of the vaccines we are testing is based on the vesicular stomatitis virus which was genetically modified to express a surface glycoprotein of Zaire Ebola virus, known as either VSV-EBOV or rVSV-ZEBOV. It has been developed by the Public Health Agency of Canada with the development subsequently taken over by Merck Inc Company mainly to tackle the strains from West Africa," Prof Kaleebu added.

His team is testing another vaccine developed by the Janssen Pharmaceutical Companies of Johnson & Johnson aimed at creating longer-lasting immunity through the administration of multiple vaccine doses which can later be administered to individuals.

So far, Uganda has imported 3,000 vials of vaccine that are being administered on people at border points of Eastern DRC. According to Prof Kaleebu, one of the most effective ways of curbing an Ebola outbreak is to vaccinate people to build immunity and reduce chances of getting infected with the virus.

Scientists say Ebola is spread by bats and monkeys, which are susceptible to the virus. However, efforts by the scientists, government and partners have contributed towards keeping the virus at bay. Only two suspected cases have been reported with the latest patient admitted in Kanugu Hospital in Western Uganda but tests turned negative

Initiatives of surveillance

In a WHO report the Uganda Representative, Dr Yonas Tegegn Woldemariam, stressed that: "The only way we have ensured that no alert or suspected case goes undetected is to put in place teams to support the different components of the preparedness. All components are instrumental to an effective response".

Border entry screening at all major border points in all very high-risk districts has been implemented, using volunteers trained by the WHO and Red Cross. Ultraviolet thermometers have also been provided for checks-ups at crossing point into Uganda from DRC. Those found with high body temperatures are further screened for any other Ebola-like symptoms.

With a number of people living on the border having homes and relations on both the Uganda and DRC side, there is need for heightening active search to detect any suspected cases.

Ebola Treatment Units have also been set up at Bundibugyo General Hospital, Bwera Hospital in Kasese, Rwebisengo Health Center in Ntoroko among others. These are fully equipped and on standby to manage any alerts as well as suspected or confirmed cases.

Risk communication and community engagement is also ongoing. Teams are engaged in door to door visits and distribution of Information Education Communication material including TV and radio sensitization communication.

WHO has supported the Ministry of Health to build capacity of 40 laboratory technicians in the five very high-risk districts in-sample collection, packaging, handling and transportation. Additionally, 19 technicians from the national reference labs were trained in diagnosis of Ebola virus disease using GeneXpert and rapid diagnostic tests.

MESHA leadership elected for the next three years



**Ms Violet Otindo,
MESHA Chairperson**

By Thomas Bwire | thomas.bwire2015@gmail.com

The Media for Environment, Science, Health and Agriculture (MESHA), now has a new board.

The new officials were picked after a 2 hour Annual General Meeting which saw the 12 year old giant African science journalists association hold its fourth elections which were declared free and fair by the returning officer, Mr John Ombugu.

The board consists of a mix of old hands and new faces. The chairperson of the association, Ms Violet Otindo was elected unopposed to serve her last term as the Chair of the fledgling association. Her vice chairperson will be Mr Allan Obiero who joins the board for the first

time after serving for nearly six years as the leader of Kisumu Chapter. Mr Aghan Daniel, who had earlier requested the members to replace him, was elected the Secretary to also serve his last term in that position. He will be deputized by Ms Agatha Ngotho of The Star Newspaper, who was elected in absentia. Nation Media Group's Francis Mureithi, who is based in the Rift Valley retained his seat of treasurer. His assistant, also a new entrant in the board, will be Mr Bozo Jenje, a freelance journalist based at the coastal town of Mombasa.

For the board members slots, the positions went to seasonal television journalists, Ms. Zeynab Wandati of NTV and Mr. Philip Keitany of KTN.

The new office bearers pledged to bring in more efficiency to association to ensure MESHA continued to scale the heights of African science journalism. They asked members to support the association by engaging actively in all the activities the office organizes given that visibility is key for the work being done by the association.

MESHA is a network of science journalists in Africa that promotes responsible science reporting through organized workshops, conferences and science cafes in partnerships with relevant partners. The association also runs the only Science Magazine by an association of science journalists known as Sayansi that is published every three months.

Renowned scientist calls for increased use of PrEP



Dr Nelly Mugo of KEMRI addresses science café participants on PrEP organized within the precinct of the African Conference of Science Journalists III

By **Mike Mwaniki** | mikemwaniki2016@gmail.com

People most at risk of HIV infection have been urged to enrol on Pre-exposure prophylaxis (PrEP) to protect themselves from the disease.

Speaking during a science café, Kenya Medical Research Institute (KEMRI) chief research officer, Dr Nelly Mugo revealed that studies showed PrEP conferred over 90 per cent protection against HIV infection when taken regularly.

PrEP is a combination of two drugs that people most at risk can take before sex to prevent HIV infection.

Existing evidence, Dr Mugo noted, shows that people who take tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC) as PrEP have a 90 per cent lower chance of being infected with HIV than people not taking it.

The Health Ministry is offering PrEP free-of-charge in selected public health facilities as part of a combination HIV prevention programme for people most at risk of HIV infection.

Dr Mugo identified these high-risk groups as young people, serodiscordant couples, people who inject drugs and sex workers.

“Journalists have a crucial role to play in mitigating against barriers—which include myths and misconceptions—on the use of PrEP...

“As scientists, we are particularly concerned over the high rate of new HIV infections occurring among our youth aged between 15 to 24 years who are contributing 50 per cent of the infections,” Dr Mugo noted.

The KEMRI chief research scientist added: “At the same time, I would like to urge journalists to be protective especially on our young girls while covering sexuality issues...

“As a country, it is also high time that we should also rethink on the introduction of sexual education for our youth in our schools to enhance awareness,”.

At the same time, Dr Mugo also warned of an upsurge of sexually transmitted infections (STIs) in Kenya such as syphilis, gonorrhoea, chlamydia and mycoplasma genitalia which cause infertility and were especially difficult to detect in women.

According to a newly released World Health Organisation (WHO) report titled “Coming of age: Adolescent health” the world now has more young people than ever before—of the 7.2 billion people worldwide, over three billion are younger than 25 years making up 42 per cent of the world population.

Around 1.2 billion of these young people are adolescents aged 10 and 19 years.

Young people can also face sexual health issues such as sexually transmitted diseases or teenage pregnancies.

At the same time, the Kenya Aids Indicator Survey (2012) warns that young people take higher risks in general including having unprotected sex.

Dr Mugo asserted: “We have a responsibility to protect our youth—whose population is huge-- by making it our business to know what they are doing in protecting themselves...

“Although the number of new HIV infections among new borns has declined drastically, we are extremely worried at the increased cases among our youth,”.

Earlier, while speaking to this writer, the National Aids and STI Control Programme (NAS COP) Deputy Head, Dr Irene Mukui revealed that Kenya has recorded the highest number of people in Africa taking PrEP.

Currently, more than 20,000 people are taking the drugs, which were rolled out by the Ministry of Health in May 2017.



Mr Otula Owuor, Patron MESHSA, Mrs Kathrynne Toure of IDRC and Mr Godfrey Kalerwa during the opening ceremony of the African conference last December

MESHA hosts Pan African science journalists' conference again

By Faith Tanui | faithtanui@gmail.com

It was pomp and pageantry as science journalists from across Africa gathered in Nairobi last December for the third edition of the African Conference of Science Journalists.

The one-of-a-kind three-day conference, convened by the Media for Environment, Science, Health and Agriculture (MESHA), brought together young and experienced journalists.

Nearly 60 science journalists were in attendance. The theme of the conference was Science Journalism for Progress and Sustainability in Africa.

Dr. Godfrey Kalerwa, Deputy Director in charge of research at National Commission for Science, Technology and Innovation (NACOSTI) opened the continental meet which ran from December 13 to 15 2018.

During the event, senior scientists unveiled the latest breakthroughs in scientific findings in animal health, agriculture and environment.

The conference also provided a platform for stakeholders to discuss the current status and future of science journalism in Africa; in addition to disseminating latest updates in research and development affecting the continent.

"The meeting was a continuation of MESHSA's work – that of bringing scientists, journalists, communication officers and other actors under one roof to discuss science that impacts directly on human life," said Aghan Daniel, the secretary of MESHSA, Africa's most active science journalists association.

According to the chairlady of the association, Ms Violet Otindo, MESHSA seeks to showcase the excellent work that scientists in Africa do amidst dwindling funding and sometimes unsupportive policy environment by holding such gatherings.

The conference came against a backdrop of growth and development in the digital sector in Africa. It provided an

opportunity to explore how technology can transform the way communication is disseminated and received. A member of the association, Mr Francis Mureithi, said the African Conference for Science Journalists is a meeting all science journalists look up to every two years. "Science journalism in Africa is undergoing a rejuvenation, after decades characterized by inadequate coverage, poor reporting and weak scientists-journalists relationships," said Eng Wangai Ndirangu of WaterCap, a think tank that deals with water issues, "and the conference sought to sustain the momentum, that scientists and journalists must continuously talk to each other to reverse trends in uptake of products of science," he added.

While addressing the organisers of the conference recently, Dr Stephen Karimi, Head of Research at the National Council for Science, Technology and Innovation observed that science journalists must take advantage of the renewed interest and commitment to science journalism by governments, donors and the private sector.

"The role of the science journalist is increasingly being acknowledged as key to the achievement of African countries' individual and collective development agenda. Furthermore, the radically transformed technological and media landscape in Africa, increasing support to training for science journalists, and closer researcher-journalist partnerships all point to the great potential for science journalism to play its part in the continent's progress and sustainable development," he added.

Previous African science journalist's conferences, all organized by MESHSA, have served as eye openers to the need for regular African science journalists meetings, where journalists and others working in scientific communication, advocacy, and research have exchanged ideas. The first African Conference of science journalists was held in 2012. MESHSA also publishes SAYANSI, the only science magazine by a science journalists' association in the world.



Kairiro Kamau, a farmer shows the portion of land where he recently harvested the Mulberry leaves

Coming soon: A life changing berry for farmers in Kenya

By **Musembi Nzengu** | nzengumj@gmail.com

For the past six years, Kiriro Kamau, a farmer in Saba Saba area of Murang'a County, Central Kenya, has been a happy man since abandoning maize farming and turning to Mulberry tree growing.

"I feel that I made the right decision because the yearly economic returns from the one acre of land where I plant the Mulberry trees far outstrip what I used get from the maize I had grown on the same piece of land for years," said Kamau last week.

He was speaking to a group of journalists who had visited his farm in company of officers from Thika Sericulture Centre in Central Kenya, nearly 60km from the city of Nairobi. The delegation was led by the Sericulture Centre Director, Dr. Muo Kasina.

Kamau said that as opposed to the about Ksh. 100, 000 (USD1000) he would realize from the sale of 36 bags of maize harvested from the one acre plot, the Mulberry trees on the same plot fetch him between Ksh. 300, 000 (USD3000) to Ksh 400,000 (USD4000) in two years.

The best maize yield I have harvested from this plot is about 18 bags which is sold at Ksh 3000 (USD30) which comes to Ksh 54,000 (USD540). Now compare it with Ksh 400,000 (USD4000) for two harvests of mulberry," said Kamau, adding that he harvests the leaves from the Mulberry trees and sell them as fodder for animals. He added that the leaves are also used to make tea due to their medicinal values. "Consumption of tea from the leaves reduce aging, they lower both blood sugar and pressure and it is a potent anti-oxidant. The tea is popular with many residents who know its value," he said.

The farmer's observations were echoed by Dr. Kasina who had earlier For the past six years, Kiriro Kamau, a farmer in Saba Saba area of Murang'a County, Central Kenya, has been a happy man since abandoning maize farming and turning to Mulberry tree growing.

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Dr. Kasina (right), feeding silkworms in a rearing house

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The farmer's observations were echoed by Dr. Kasina who had earlier served the visiting media team with the Mulberry leaf tea soon after they arrived in his office. Dr.

Kasina added that the tea reduces the risk of cancer, lowers cholesterol in the body and reduces inflammation.

"I encourage each one of you to take this Mulberry leaf tea as many times as you can in a day. Its medicinal benefits is not only incredible but invaluable to humans," said Dr. Kasina. He added that the Mulberry tree is ideal for the breeding of Mulberry caterpillar worms that produce the raw material for silk. Disclosing that the core business of Thika Sericulture Centre which he heads is to produce silk, Dr. Kasina noted that the Mulberry caterpillar worms are bred at the institution to produce silk.

He explained that at the caterpillar stage, worms produced by moths are fed on Mulberry leaves at the Centre. He said research at the Centre had shown that growing of Mulberry trees in large scale not only increases the production of the coveted silk clothing materials but also boost the economic wellbeing of the farmers.

"In every cycle of worm breeding on an acre of the Mulberry trees, a farmer can feed worms that can produce between

7 to 10 kilogrammes of silk for which a kilogramme would fetch at least Ksh. 1000 (USD100) translating to Sh. 10,000 (USD1000)," he said. The caterpillar worms weave a silky cocoon around themselves as they enter the pupae stage and the cocoons are thus collected for the processing to produce silk.

"We have been doing small scale worm production and silk production for demonstration but in 2019 we intend to reach out to farmers for massive production of silk," said Dr. Kasina. He disclosed that a silk processing factory is being erected at the Thika Sericulture Centre and he envisaged that at least 10,000 acres of land in the neighbourhood would be put in Mulberry trees growing and the associated silk worm breeding.

Dr. Kasina said 4000 seedlings are required for every acre of land. One seedling, if sold from the Sericulture Centre, goes for Ksh. 10 (USD 1 cent) but said that concession is given to farmers who purchase more than 4000 seedlings as the cost would be Ksh. 5 (USD 0.5 cents) apiece.



Prof. Bancy Mati, director and founder Water Research and Resource Centre, Jomo Kenyatta University of Agriculture and Technology during the interview.

Technology boosts farmers' rice yield, with less water

By Clifford Akumu | akumu.clifford@gmail.com

The aroma and the picturesque view of rice fields is a sight to marvel at as you enter Mumbara village, Tebere section in Mwea, Kirinyaga County.

Being a rice harvesting period, machines roar in the expansive fields as farm workers too engage their sickles in the rice paddy.

Moses Kareithi, 45, one of the pioneer farmers who adopted the System of Rice Intensification technology that drastically utilises less water is all smiles as we meet him in his one acre farm in the village.

Before he started using this method, Kareithi used to harvest 4-5 tonnes of rice per acre. Today, he is able to get up to 8 tonnes per acre with the technology.

Kareithi grows Basmati 370 rice variety in three and a half acre plot of land.

A growing number of farmers who have adopted the technology in Mwea Irrigation Scheme are reaping the benefits, with majority recording up to 20-30 per cent increase in rice production.

The technology has also helped in reducing water used for irrigating the paddy. "When the project started back in 2009, there used to be shortages in most irrigation blocks. The number has now drastically reduced because the farmers have adopted the use of less water to irrigate their rice fields" said Kareithi adding that farmers are now aware that too much water is bad for the plant.

Prof Bancy Mati, director and founder Water Research and Resource Centre, Jomo Kenyatta University of Agriculture and Technology (JKUAT) said the project has helped rice farmers grow more rice in small pieces of land leading to food security.

SRI technology main aim is to stimulate the root system of rice plants that helps in increasing yields. This is contrary to the conventional way of using improved seeds and synthetic fertilisers.

Rice is traditionally planted in large clumps in flooded fields. One kilo of rice typically requires about 660 gallons of water. SRI, on the other hand, needs at most half of that.



Farmers at work in a rice paddy: A technology whose main aim is to stimulate the root system of rice plants that helps in increasing yields is now available in Kenya

At the same time, SRI, in contrast, involves the careful spacing of fewer but younger plants, keeping the topsoil around the plants well-aerated by weeding, using manure and avoiding flooding.

The technology was introduced in Kenya at the Mwea Irrigation Scheme in August 2009, through the efforts of Prof Mati. The project has since been replicated in other schemes across the country at various levels including Ahero, West Kano and Bunyala rice schemes.

"The process starts from nursery preparation, with the yield increasing when planted from nursery then seedlings..."

"In the old days, the nursery would remain there for one month then farmers plant a tall seedling, but under SRI we encourage a very young seed of 8 -15 days. Research has shown that rice produces best when planted in the nursery then seedlings," Prof Mati explains.

The younger seedlings, she continues, are planted at a wider spacing. This is followed by wetting and drying of the paddy.

With these technology the farmers only wet and dry the paddy for one week depending on the weather compared

to previously when they used to wet the paddies for three months every day. The drying helps in root aeration as compared to the once submerged in water for three months.

Weeding is preferably conducted using rotary weeder machine. The use of these machines helps in stimulation of the rice root growth.

The technique works with all rice varieties but, she notes, high yielding varieties like BW (Sindano) perform better than low yielding ones.

Kareithi joined the project in 2009 in a demonstration plot where he used to only produce a maximum of 8 bags of rice of around 90kgs.

But after trials, the small plot yielded good results. He got 11 bags that produced more than 100 kgs and this inspired other farmers. He has never turned back.

"By 2010, the farmers on this technology had increased to above one hundred. In 2011, the number had increased to over 200 farmers, today over 50 per cent of farmers in Mwea scheme have adopted SRI,"he adds.

Cyrus Mbogo, a water technician at National Irrigation Board based in Mwea, said the programme has enabled the scheme to increase area under rice production.

We have been able to expand acreage under production in the scheme to about 4,000 acres, said Mbogo.

The use of SRI has also increased milling grade quality of the rice, he adds.

Mbogo further explained that rice blast, caused by too much humidity, is a major challenge facing farmers in the area.

He, however, advises farmers to follow right cropping programme and agronomy practices to prevent incidences of pests and diseases.

"To get high yields, farmers must practice field hygiene to ward off incidences of pests,"he said.

The University has also conducted research on how this technique impacts on mosquito breeding areas. That research, the professor noted, has shown that adoption of this technology can have help in reducing malaria incidences across the region.

"If more farmers adopt SRI, they can disrupt the development of mosquito larval stage hence reduce incidences of malaria," she added.

Post-harvest losses stifle food security globally



A farmer sells her produce to customers after a good post-harvest

By George Juma | jumageorge10@gmail.com

About 1.3 billion tonnes of food produced globally goes to waste annually, the International Development Research Centre (IDRC) Senior Programme specialist, Dr Jemimah Njuki says.

Speaking during a three day African Conference of Science Journalist Dr Njuki said the wasted food is capable of feeding 1.6 billion hungry people.

“There is need for Kenya, Africa and the entire world to focus on minimising wastage of farm produce.”

Dr Njuki decried that little effort has been put to prevent post-harvest losses resulting in countries to suffer from food insecurity.

She called on countries including Kenya to invest in new agricultural technologies to help minimise the post-harvest losses.

In 2017, for example 1.9 million tonnes of food amounting to Sh.150 billion went to waste due to poor storage and handling, transport among others in Kenya.

The coordinator said there is also need to give focus on small scale farmers by improving their information access on matters of agriculture to address the information gap.

She said the contribution of the small scale farmers is key in addressing food shortage in Kenya and globally.

Dr Njuki said farmers needed to be empowered with skills, mentorship and business support services to increase their output.

In 2017, for example 1.9 million tonnes of food amounting to Sh.150 billion went to waste due to poor storage and handling, transport among others in Kenya.

Millions to suffer from drug resistance globally by 2050

By Suzgo Chitete | chitetesuzgo@gmail.com

About 700,000 people die annually due to drug resistance globally and the number is expected to increase to 10 million people annually by 2050, a health expert has warned.

A Kenya health ministry official in charge of Antimicrobial Resistance (AMR), Dr Evelyn Wesangula said cases of resistance have become more common not just in Kenya but in the sub-Saharan Africa region.

The World Health Organisation (WHO) warns that the prospect of the world entering a 'post-antibiotic era', where common infections can no longer be cured, is real.

Speaking during a MESHA conference held on Thursday at Ngong Hills Hotel, Dr Wesangula said increased cases of drug resistance is posing a threat to the significant gains made in the fight against diseases, a health expert has warned.

While there are many causes of antimicrobial resistance, Dr Wesangula singled out both over use and underuse of the antibiotics as some issues which led to this public health concern.

She said the free-for all access of drugs in pharmacies, drugstores and market places, unregulated prescription in health facilities and from animals to humans as among causes for resistance.

Dr Wesangula said apart from long hospitalisation due to drugs resistance many lives are lost– a situation which should compel governments to act.

"It is a problem with a wide range of consequences. Those who have resistance will face long hospitalisation or will have to try different medicines which is costly.

"This also has an implication on their personal economy and development. If you come to think of sub-saharan region, we have a higher disease burden hence resistance to antibiotics must be a serious cause for worry." she explained.

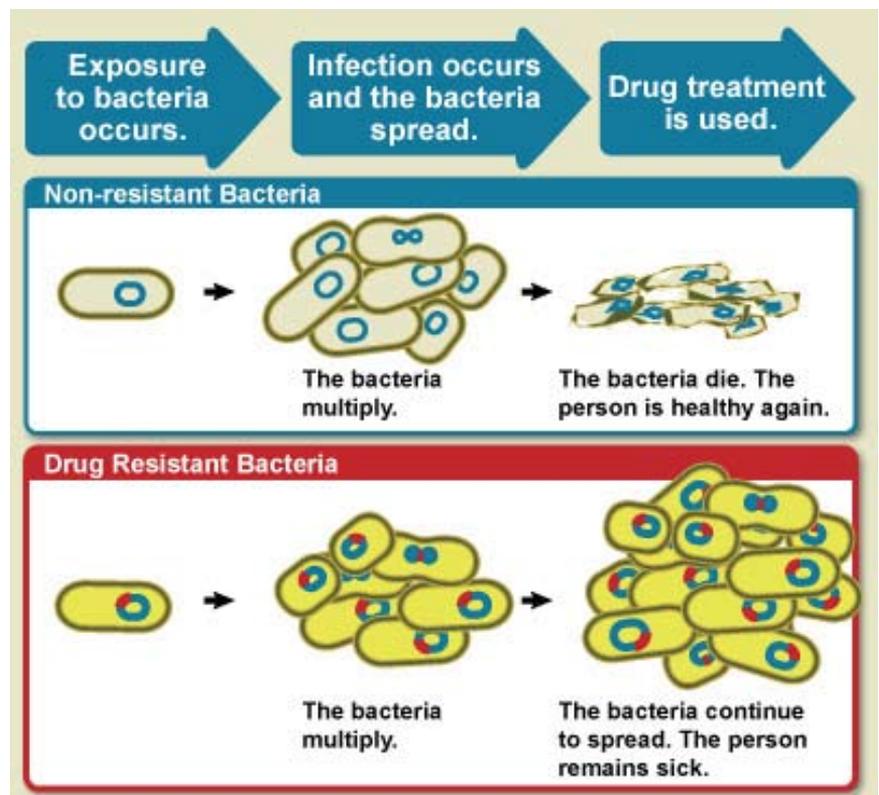
According to WHO, AMR occurs when micro-organisms (bacteria, fungi and viruses) change when they are exposed to drugs such as antibiotics leading to prolonged untreated illnesses.

Dr. Wesangula, there is need to intensify efforts such as enforcement of the law to have adhered to prescription procedures for antibiotics.

Like, Kenya, Malawi has similar challenges such as free – for – all access to antibiotics due to weak enforcement mechanisms of the law.

But National Coordinator for AMR in the Ministry of Health in Malawi, Dr Watipaso Kasambara said one strategy they have employed is raising public awareness on the gravity of drug resistance as well as equipping medical staff with appropriate knowledge so as to manage prescription of antibiotics in hospitals among other interventions.

"Creation of a special unit to look at AMR is one effort by the Malawi government which demonstrates commitment in dealing with the problem at hand," according to Dr Kasambara.





A child is taken through some exercises to help assess his thinking capacity in Kawangware, Nairobi. At least 270 million children below 5 years do not meet their potential in the world

Study: Millions of children still miss their potential

By David Charo | kakafadhi@yahoo.com

Millions of children in low and middle income countries do not meet their potential globally, a study has shown.

The study by Children development in marginalized community program (CDMC), show that at least 270 million children in middle and low income countries in the world do not get the right potential due to various reasons.

According to Prof Amina Abubakar, lead researcher of the program, CDMC, this means the levels of stunting and malnutrition are increasing to a level of alarming.

She said that has led to Malnutrition and stunting which deters the thinking capacity of the children due to low Intelligence Quotient.

This means the children affected cannot think properly hence making them perform badly in their studies which has a long term effect where poor education increases hence increasing poverty levels in the countries.

Speaking in Kawangware, Nairobi where the CDMC program is plying its trade currently, during the third African Science Conference,

Professor Amina said the situation needs urgent interventions by various stakeholders to enhance proper children growth and development for a potential future.

"We are in a bad situation because the number of children missing out on their potential in increasing rapidly due to various factors such as poverty where food is inadequate and not recommended for children below five years," Professor Abubakar said.

"This has led to diseases, malnutrition and stunting. But since the inception of this organization which has partnered with DARAJA organization for the program, we have managed to get in the region of seven hundred mothers from Kenya, Burundi, Dr. Congo and Southern Sudan. Globally our research shows that at least 270 million children in low and middle income countries are missing out on their potential i.e food, water, formal and informal education leading to poor mental development of the children," she added.

She said the program is also aimed at coming up with -intervention strategies which would help father and mothers on how to bring up their children on the best way possible.

"We decided to start our program with Kawangware in 2017 because it is an urban informal settlement where children are passing through difficult situations such as inadequate food, lack of fresh water and poverty, but the number of people here is increasing and we feel we have to come up with a strategy to counter it," she said.

Kilifi though has been on the lime light with high levels of stunting and malnutrition.

According to a Standardized Monitoring and Assessment of relief and transitions (SMART) Survey of 2016 done by the Kilifi County government nutrition department, the levels have dropped from previously 39 percent to 35.9 percent which is still on the high.

According to Kilifi County Nutrition Director Ronald Mbunya, this means that within ten children four of them are stunted.

"We did the survey in 2016 and found out that it has dropped but still on the high because its more than even the national level of 26 percent," Mbunya said.

However, the process of getting the mothers into the program has been not easy.

According to Joyce Wesonga, DARAJA Civic Initiative Form program's manager, poverty, awareness and accessibility has been a stabling block to getting the mothers enrolled on the program.

"Many mothers have been hard to open up on their family situations because they believe it's so personal to share with other people," Joyce said.

"This has made it difficult to get them because they don't believe we have a good motive with them. Accessibility has also been a problem as the areas are slams with no roads. Another thing is that they prioritize their daily activities than our initiative as they need to get something for their families and this makes it difficult to get them," she added.

Nutritionists say there is a fear that should no more effort done, the situation would be very worse in the near.

But they also say the government and the non-governmental organizations should prioritize sensitization of the community on how to curb poverty which is the main contributing factors to malnutrition and stunting where they will be able to feed their children well and adhere to the nutritional requirements on children of below five years from conception.



HIV advocates: Many experts are worried that young women are highly affected by HIV hence the urgent need to get a young female champion

Experts decry young female face of HIV

By Joyce Chimbi | j.chimbi@gmail.com

During a recently held Media Café in Nairobi experts raised alarm that years of HIV interventions throughout Africa have failed to stop infection among young women 15 to 24 years old.

"Prevention is failing for young women", says Lillian Mworeko, HIV expert with International Community of Women Living with HIV based in Uganda.

Among women in East and Southern Africa, more than four out of ten new HIV infections among women aged 15 years and over are among young women 15 to 24 years, according to the Joint United Nations Programme on HIV/AIDS (UNAIDS).

"In some countries, the HIV prevalence among young women is much higher," said Prof. Kenneth Ngunjiri, a lecturer at Jomo Kenyatta University of Agriculture and Technology (JKUAT) during a recently held Media Café in Nairobi.

Take South Africa for instance, the HIV prevalence among women aged 20-24 is three times higher than in men of the same age. "HIV infections among young women are double or triple those of their male peers," Prof. Ngunjiri emphasized.

Equally alarming are surveys showing that fewer than two in ten young women aged 15-24 know their HIV status.

Young women more affected

Experts attribute this high HIV prevalence to gender inequalities, violence against women, limited access to health care, education and jobs, and health systems that do not address the needs of youth.

Biology does not help. Teenage girls' immature genital tract is more prone to abrasions during sex, opening entry points for the virus, says Dr Milly Muchai.

Muchai, a reproductive health expert in Kenya, says it is not just sex that drives HIV infections among young women but the age of the male sexual partner.

"The risk increases steadily with male partners aged 20 years and over," she explains.

Older men are more likely to have HIV than teenage boys. Research shows that male HIV prevalence remains low and stable until the age of 24, when it shoots up significantly.

Due to intergenerational sex, women in this region are acquiring HIV five to seven years earlier than men, says Dr Muchai, because these relationships are often characterised by multiple sexual partners and low condom use. In transactional sex, the young woman receiving gifts or money loses power to negotiate safe sex.

Kenya not a unique scenario

In Swaziland, Lesotho and Botswana, more than one in 10 females aged 15 to 24 are living with HIV, according to UNAIDS.

UNAIDS research further shows that in spite of countries making remarkable progress in treatment and reduction of new infections, HIV prevalence is still a girls and women epidemic due to gender inequality and unequal power dynamics.

The risk is however not confined to the youth, experts now say that as teenage girls become older, the risk of infection rises.

In Swaziland, HIV prevalence is six percent for girls aged 15 to 17 but rises to a whopping 43 percent by age 24. In Lesotho, HIV prevalence of four percent among adolescent girls skyrockets four-fold to 24 percent by the time they are 24.

A package of interventions

Dr Muchai says that many of the issues - poverty, lack of secondary education, few jobs, rape and intimate partner violence - that underpin the unacceptably high HIV prevalence among young women are bigger than what HIV programs alone can address.

Mworeko observes major gaps in reproductive and sexual health services for young people, when they are neither children nor adults, in the region.

“Whether it is prevention, treatment, care and support services, young people do not have a youth friendly corner,” she says.

Experts such as Prof. Ngure recommend investments in behavioral change.

Mworeko says that this means investing in sexuality education. “The regional average of comprehensive knowledge of HIV and AIDS stands at 41 percent for young men and 33 percent for young women,” she said.



A young woman from Turkana, Kenya, addresses a past meeting for clinicians in Kenya



Ms Mercy Mutonyi, the AVAC Fellow 2019 explains a point during a science media café recently

Experts agree there is no one single solution to protect young women and a combination of interventions is needed. “These include preventive measures such as the use of rings and pre-exposure prophylaxis to prevent HIV,” said Prof. Ngure.

Addressing restrictive laws on the age of consent for HIV testing and for access to sexual and reproductive health services would be another good place to start, experts say.

Promoting gender equality and providing jobs for young people are part of the solution.

In Tanzania, HIV infection among girls more than triples between 15-19 and 20-24 years.

This fact underpins the importance of orienting HIV prevention and economic livelihoods interventions during her transition to adulthood, Dr Muchai says.

“We need a major movement to protect adolescent girls and young women,” emphasizes.

Fast facts on HIV and young women in East and Southern Africa

- In **Tanzania**, HIV prevalence jumps from one percent among girls 15-17 to 17 percent when they are 24 years old.
- In **Botswana**, the number of women newly infected with HIV (6,200 in 2012) has only declined by 14 percent since 2009.
- The age of consent for marriage is 15 years in **Malawi** and **Tanzania**.
- Nearly half of all girls in **Malawi** are married by age 19.
- In **South Africa**, within the 25- 29 year age group, HIV prevalence among women is 28 % and 17 % among men (UNFPA)
- In **Tanzania**, young women are almost three times more likely to be HIV positive than young men
- In **Malawi**, the number of women acquiring HIV infection has not decreased since 2009, at 29,000 per year.
- In **Sub-Saharan Africa**, adolescent and young women account for one in four new infections.

Source: UNAIDS

Want to keep fruits fresh? Try these Malian innovations



Brick evaporative cooling

By Faith Cheronu | faith.tanui@gmail.com

The sight of rotting mangoes in a few weeks' time will be awash in the country. Mangoes, a second fruit crop in Kenya, is a seasonal crop with high and low seasons. In most counties the seasons start from December and peaks in January to February.

Interestingly, this scenario predisposes fruit farmers, especially small-scale farmers from Makueni, Kitui, Kilifi,

Murang'a and Embu counties in Kenya to exploitation by traders who offer very low prices for their produce.

Post-harvest experts estimate that 40-50 per cent of fruits and vegetables produced in Kenya are lost or wasted along the value chain. In Kenya alone, 80 per cent of the mangoes are eaten while still fresh, hence the need to increase their shelf life. The losses are majorly caused by lack of access to affordable and appropriate technologies for handling and storage of the highly perishable commodities. However, these ugly scenarios will soon be averted through the use of simple technologies that fruit and vegetable farmers can adapt and use in the farm to curb the losses of agricultural produce hence supporting livelihoods and food security.

Adopting low-tech post-harvest innovations for storing fruits and vegetables could save Kenyan farmers unnecessary wastes by prolonging the shelf life of their fresh farm produce, adds the experts.

Evaporative cooling technologies for improved fruit and vegetable storage from Mali would be most effective in helping farmers increase farm produces' shelf life in Kenya and other countries. The low-cost technology will enable farmers attain the quality, quantity and consistency required by mango traders hence the ability to increase profits by negotiating for better prices.

Unlike Kenya, Mali farmers have explored widespread use of brick, straw and sack evaporative cooling chambers (ECC) and pot-in-pot, round pot-in-dish and cylinder pot-in-dish clay pot coolers. A survey on evaluation of various low-cost vegetable cooling and storage technologies in Mali that looked at the impact of evaporative cooling on vegetables shelf life, painted a promising picture on its benefits to farmers.

Conducted between May and July 2017, the study was led by Dr Eric Verploegen of the D-Lab and Dr Ousmane Sanogo and Dr Takemore



Pot-in-pot evaporative cooling technology



Cylinder pot-in-dish evaporative cooling chambers suitable for fruits and vegetables



Straw evaporative cooling chambers

Chagomoka former World Vegetable Center-Mali scientists among farmer groups in Sikasso and Mopti regions in Mali. The study titled “Evaporative Cooling Technologies for Improved Vegetable Storage in Mali” looked at the seasonal temperatures and humidity profiles of the two regions in Mali and how it affected the shelf life of vegetables including eggplant and tomatoes.

To gain insight into *evaporative cooling device use and preferences, the team conducted interviews in Mali* with users of the cooling and storage systems and with stakeholders along the vegetable supply chain. They also deployed automatic sensors to monitor product performance parameters.

According to results from 80 respondents involved in the study, the shelf life of eggplants and tomatoes were significantly longer in Sikasso than Mopti for all vegetables. This difference, says the authors, is likely due to the significant variations in climate conditions between the two regions, which affect the storage conditions experienced by the vegetables in the ECCs.

The eggplants and tomatoes in the straw and sack ECCs in Sikasso were stored in conditions that were an average of over 2 °C lower and 20 percent higher humidity than the vegetables in the straw and sack ECCs in Mopti. “Similarly, the average ambient conditions throughout the study period were more favourable for vegetable storage in Sikasso than in Mopti,



Low-cost evaporative cooling innovations used in Mali to increase shelf life of fruits and vegetables

as Sikasso is situated in the Sudan-Savanna zone while Mopti is part of the hotter and dryer Sahel-Saharan zone in Mali,” reads the study.

Just like Mali, intermittent power supplies and lack of proper storage facilities mean that a lot of farm produce often goes to waste before it arrives in the market in Kenya. But the researchers, now think, that by exploring such eco-friendly off-grid innovations farmers can manage without electricity. In pot-in-pot technology, a small clay pot is inserted into a large one leaving space between the two. The cavity is then filled with sand, which serves as a medium for holding water for the evaporative cooling. The innovation, adds the authors, is also best suited for household use because of the small volume of produce storable.

However, warns Dr Sanogo, one of the authors of the report, evaporative cooling devices are not appropriate for all settings. He adds,

“It is best suited to communities where there is access to water and fruits and vegetable storage needed during hot and dry weather.”

Automatic data sensors used in the study revealed that users were more inclined to water the cooling devices in the dry season and reduce the usage of the devices as the rainy season started. The decrease in the temperature, along with the increased humidity and protection from pests provided by the devices, resulted in significant increases in shelf life for commonly stored vegetables including tomatoes, cucumbers, eggplant, cabbage, and hot peppers.

As Kenya gears up for another mango fruit glut and other successive vegetable seasons, the Mali experience is quite an eye opener and potential in aiding small-scale farmers address many of the challenges that face rural households and farmers in need of improved post-harvest vegetable storage.

Indigenous knowledge is Kenya's best bet against erratic weather

By Joyce Chimbi | j.chimbi@gmail.com

Kenya's agriculture faces significant climate change with potentially crippling effect on food security, livelihoods and the economy.

Researchers like Professor Mary Abukutsa-Onyango now warn that there has not been a significant "reduction in negative emissions due to the continued conversion of forests into agriculture leading to adverse effects on the ecosystem."

Abukutsa-Onyango is a professor of horticulture at Jomo Kenyatta University of Agriculture and Technology whose work focuses on African indigenous food crops.

Against a backdrop of potential food crisis and loss of Kenya's market share due to poor production of foods, agricultural experts now claim that Kenya does not need new innovations or strategies to build resilience in the face of erratic weather patterns.

Other options on the table

While government statistics show that agriculture accounts for about 25 percent of the country's Gross Domestic Product (GDP) and at least 60 percent of all exports, farms are still not producing optimally.

"One hectare of land now produces one tonne instead of 5 tonnes of food," says Joshua Kosgei, an agricultural officer in El burgon, Rift Valley.

Biodiversity expert Gathuru Mburu, who has served as the coordinator of the African for Biodiversity Network says that: "The solution is in reverting to indigenous knowledge which promotes a



Prof Mary Abukutsa-Onyango

broad based grass root agro-ecological movement. An approach that brings together strategies of farming that do not use chemicals."

Mburu further explains that to build resilience around the farming system in the face of drastic climate change, "farmers must first heal the soil."

"Farmers are producing inadequately due to overuse of chemicals. Agro-ecology uses animal manure. Leftovers from a previous harvest can also be ploughed back as manure," Mburu explains.

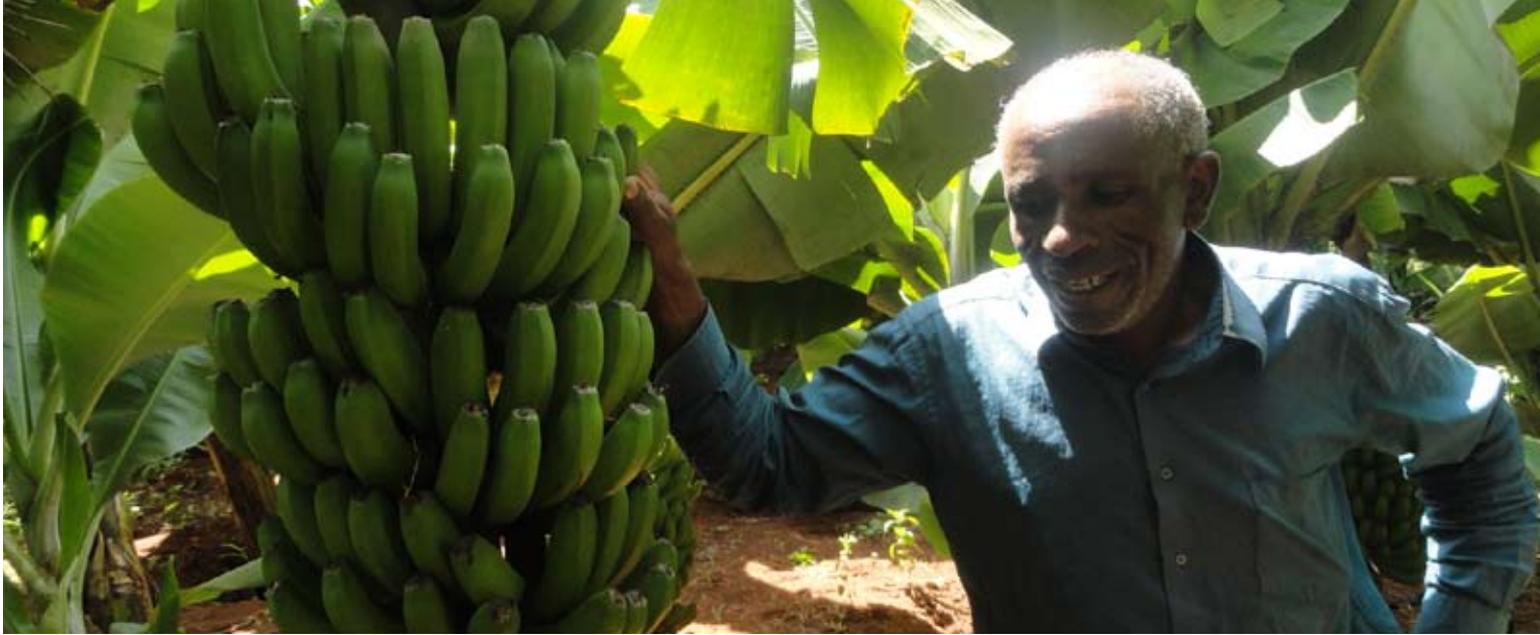
Prof. Abukutsa-Onyango agrees and further explains that other interventions include "rain water harvesting, embracing

indigenous food crops which farmers have developed over a long period of time and organic farming which curbs excessive use of chemicals."

While there are those who believe that indigenous knowledge is the solution, others disagree.

"Criminalizing chemicals is not the solution. Farmers must embrace scientific innovations," Josephat Ndunda, a biodiversity researcher explains.

"We need genetic modification which will enable us to produce seeds that can withstand higher temperatures and heavier rainfall," he adds.



Grassroot framers push for indeginous knowlegde to counter unpredictable weather. Photo Credit | JOYCE CHIMBI

Locally brewed solutions

Nonetheless, Mburu warns against depending on the West for strategies to combat climate change saying that doing so has not borne any fruits in Africa.

In the 1980's and 90's, farmers were under the supervision of agricultural extension officers, "but when the World Bank and International Monetary Fund introduced the Structural Adjustment Programmes (SAPs) many government employees including the extension officers were retrenched," Mburu explains.

This, he says, "affected clinical services among livestock farmers, as well as agricultural extension services" since these services were largely privatized.

Although the Food and Agricultural Organization (FAO) standards demand that there should be one extension officer to serve 400 farmers, currently, one extension officer serves an estimated 2,000 farmers.

"From the extension officers, we learnt how to space seeds while planting, crop rotation, how to measure fertilizer and so on. Without this knowledge, agriculture will not survive the climatic changes," Kanyi Kameni, a farmer in Central Kenya explains.

Mburu emphasizes that there is need to revive the agricultural extension services to build the capacity of farmers.

He says that "before SAPs were effected, extension officers routinely visited farmers. Now they do so on demand."

Kanyi says that he has not been visited by an extension officer in ten years. "Even the few that are said to be offering services on demand are nowhere to be found," says Kanyi.

As a result, Kosgei explains that farmers are groping in the dark "farmers use about 30 kilos of fertilizer in one hectare of land while they should be using 100 kilos. This definitely affects yields." Rather than looking to the West for solutions, Mburu explains that the government should instead honor regional treaties.

Boosting national budget for agriculture

Citing the Maputo Declaration of 2003, Mburu calls on the government to allocate at least 10 percent of the national budget to agriculture.

"African governments are abdicating their financial responsibility to the agricultural sector, creating room for multinationals to provide funding," he says.

He adds that farmers traditionally depended on each other for seeds "the issue of sharing seeds was an important aspect of food security. But the issue of zoning has made it difficult for farmers to depend on each other."

"I used to borrow seeds from relatives in parts of Eastern region, now their seeds do not grow on my land. Also, these seeds grow under specific chemicals which small scale farmers are unable to afford," Kanyi expounds.

Kanyi says that governments have enabled the development of policies that hurt the small scale farmer in spite of the fact that they produce at least 70 percent of food.

Criminalizing informal sector?

"Multinationals are behind various policies to criminalize the informal sector, in other words, the small scale farmers such as the Seed law and the Anti-Counterfeit law," Mburu explains.

"The Anti-counterfeit law is really about certified seeds. Our people who are using indigenous seeds (non-certified) are greatly affected," he adds.

The Seeds and Plant Varieties Act

Chapter 326 prohibits the selling of seeds which have not been certified.

Little known Crops Act passed in 2015 further seeks to harmonize the growth and development of agricultural crops. The law prohibits the growing, drying, sorting, processing or selling scheduled crops without a license.

Mburu says that these seeds "have nothing to do with climate change. These seeds are controlled by multinationals and they are not suited to our ecosystem compared to indigenous seeds."

Nonetheless, Prof. Abukutsa-Onyango calls for a more conciliatory tone to find solutions to climate change.