

# SAYANSI

*All science information*

Issue No. 1

October 2014

## TOO SHORT FOR THEIR AGE

**A third of children  
under the age of  
five in Kenya are  
stunted**

### In this issue

- New tomato pest discovered in Kenya
- Technology developed to increase seed quality
- Alliance for climate-smart agriculture



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## Who we are

The Media for Environment, Science, Health and Agriculture (MESHA) was founded in November 2005 in Nairobi, Kenya and is an organization 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 and scientists among other stakeholders in Kenya.

The association emphasizes on rural journalism and communication.

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

MESHA believes that in a democratic society where science must be answerable to the public, there is real need to find new and innovative ways of more effective mass communication about the benefits of science, but also about 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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### Hospitals breeding grounds for diseases

It is embarrassing that such a simple but life-saving practice is not popular

10



### Tanzania to strengthen green laws

The four-year project, Policy Action for Climate Change Adaptation (PACCA), is led by the International Institute of Tropical Agriculture (IITA) and funded by the CGIAR

15



### Genetically modified organisms (GMOs)

Four questions to help understand genetically modified foods

18



### Editor's Note

## Kenya Needs to Promptly Give 2% of GDP to Research and Development

Kenya has moved faster than other African nations in passing a Parliamentary Act that stipulates allocation of two percent of the GDP to Research and Development. It was bold move that is bound to set pace for other African nations. The policy of allocation of at least one percent of the GDP has been sung by all African

nations for almost four decades.

However, Kenya's bold move may be another just another "drumbeat" if not implemented. MESHA strongly encourages scientists to remind policy makers that funds must be practically allocated and not downplayed because money seems to crop up for just about every non-scientific

issues, commissions and others. With the finding of oil Kenya should not assume it will develop without science. One just has to look at South Korea and Japan without oil and compare them with top oil producers in the Middle East and Africa where lives thrive on imported modernity that could vanish fast.

# MESHA's SAYANSI: Another Milestone in Science Journalism



BY OTULA OWUOR

The launching of the new publication SAYANSI that will mostly focus on Science Technology and Innovations within Africa is major milestone in helping closing the huge gap that exists in coverage of issues of science and development. From its humble beginnings, MESHA has managed to plan, organize and host major national and regional conferences bringing scientists, communication officers, government officials and journalists together to share their experiences on the role of various fields of science in socio-economic development. The launching of the publication will help capture scientific research and development activities that are never reported. MESHA is joining the few media associations that have their own publications and is keen on appropriate collaboration that will help in effective communication of information on various fields of science including

health, agriculture, environment, industrialization, biotechnology and others.

MESHA has played a major role in helping journalists sharpen or improve their skills and SAYANSI while playing its role as the people's watchdog is ready to help inform, educate and appropriately set agenda in various issues. In other words we shall continue to be the people's watchdog when it comes to aspects of science that deserve special attention. SAYANSI will help provide a rich training and mentoring ground for journalists seeking hands-on skills in reporting scientific issues with credibility. We shall play a role in helping place science at the top of Africa's development agenda something that lags behind despite promises by both scientists and policy makers. Unlike before, African scientists are increasingly willing to give information to the mass media and SAYANSI is well placed to do this in order

to contribute towards socialization of science.

It is the first step towards a long journey that will steadily entrench science journalism in Kenya and Africa. As MESHA, our deep seated belief is that it is science, technology and innovation that will help Africa overcome poverty, malnutrition, ill health and other aspects of underdevelopment. It is science that will enable Africa produce goods and services needed for competition in the global marketplace. This remains the major missing link. The sudden spread of EBOLA and the manner in which it has been handled show apart from myths, superstition and hypocrisy, Africa lacks skilled medics, equipment and relevant facilities needed for survival in 21st century. Home grown media should have been at the forefront of reporting such epidemics that could easily exterminate some communities.



A mother breastfeeds. Breastfeeding is necessary for healthy growth

## Too Short For Their Age

*A third of children under the age of five in Kenya are stunted*

BY TRUDY MBALUKU

When Jeremy was born nine months ago, Maggy and Boniface Okwaro sent happy messages that they had a bouncing baby boy.

Maggy had the intention of breast-feeding her son exclusively for six months but three months down the line, Jeremy could not be satisfied by breast milk only.

She slowly introduced him to mashed pawpaw, avocado and orange juice in between the breast-feeding.

“He seems to be growing fine,” says Maggy. “I hope he will be as tall as his father. I am too short,” she adds, laughing.

Maggy discloses that the last time she took Jeremy for clinic at six months; the nurse said his height was okay for his age but cautioned that she should continue breast-feeding to boost his immunity. Stunted and compromised immune systems are common among babies who stop breast-feeding prematurely.

Stunting is a medical term for children who are too short for their age. It is one of the poor growth indicators caused by poor feeding practices. In Kenya, a third of children below five years have stunted growth due to malnutrition.

### **Stunting blamed on supplementing breast milk early**

Maggy is just one of the many mothers in Kenya who risk the health and milestone growth of their children by supplementing breast milk too early. The practices are dangerous as caregivers tend to give incorrect proportions to a child, hence the child misses out on essential nutrients, risking malnutrition and increasing the chance of the child’s growth being stunted.

Little Jeremy is one among the many children who the Kenya Demographic Health Survey (KDHS) data review confirms that supplementing breast milk starts early in Kenya.

According to the latest findings by KDHS, three in five children between ages four and five months are already on complementary feeding.

Baby Jeremy is not a unique case as exclusive breast-feeding is not common in the country as only a third of children aged below six months are exclusively breastfed, according to KDHS. “He seemed to enjoy pawpaw mash even at three months,” says Jeremy’s mother.

Exclusive breast-feeding up to six months is key in reducing malnutrition. The United Nations Children’s Fund (UNICEF) recommends that children be exclusively breastfed during the first six months until 24 months or more when the child is fully weaned. Breast milk is recommended because it is uncontaminated and contains all the necessary nutrients for physical and cognitive development of the child.

Regrettably in Kenya, only half of the children in their first month of life are exclusively breastfed, depriving the rest of the richness of breast milk, according to KDHS. Exclusively breast-feeding reduces as the child grows older. Infants of two to three months old suffer most as only seven in 50 of these children are exclusively breastfed. “This is the time most mothers go back to work after maternity leave,” says Dr Peter Chege, a nutritionist and a lecturer at Kenyatta University’s Department of Food and Dietetics.

He says: “Exclusive breast-feeding is a policy issue as a standard maternity leave lasts three months only. Mothers tend to introduce foods to feel less guilty for leaving the little thing at home.”

“Some middle-class mothers express the breast milk and leave it in the fridge for the minder to give the child when she goes to work. But some people feel as if handling expressed milk is like touching human fluid, so they pour it and give the baby cow milk if it is available.”

Mama’s breast milk is the best. However, between four to five months, three out of five infants are already on complementary feeding, reveals KDHS.

### **Malnutrition root cause of stunting**

Ebby Sande, a mother of three, says she started giving her children complementary foods at four months. Ebby, who works for Transparency International, says she had to go back to work after her three months maternity leave.

“I would express breast milk and leave it for my house-help to give to the babies when they get hungry,” she says. In addition, she bought baby formula for her babies to alternate with mashed matoke (bananas) with pumpkin, fortified porridge cooked in milk, pawpaw and mango juice. “With time, they would reject suckling,” adds Ebby.

Terrie Wefwafwa, a nutritionist and the Head of the Division of Nutrition, Ministry of Health, says that complementary feeding is a major contributor to malnutrition due to poor feeding practices. “This is largely so because caregivers add too much water to make the foods liquid for the baby to swallow with ease and get full faster. The baby’s 180-millilitre stomach gets full but deprived of nutrients.” In addition, complementary feeding reduces the baby’s urge to suckle and therefore reduces breast milk production.

In addition, the mother’s antibodies in breast milk provide immunity to children. Introduction of solid food to children at around six months is okay. This is the age, according to the demographic data, prevalence of malnutrition increases substantially.



Measuring a child’s height to assess growth

PHOTO: GERTRUDE'S CHILDREN'S HOSPITAL



**There is no supplement for mother's milk**

The introduction of supplementary food also poses the danger of food contamination during preparation, which Wefwafwa says may compromise the babies' delicate immune systems leading to diarrhoea, hence the child will become dehydrated and wasted, risking stunting.

### Malnutrition root course of stunting

In Kenya, a third of the children below five years have stunted growth due to malnutrition, according to data from health demographic survey. This makes them to have delayed growth milestones, for example delayed speech or fine motor coordination, susceptible to disease and potentially reduces their full potential earnings in adulthood.

Worldwide, malnutrition is the underlying cause of more than one-third of the under-fives' deaths. Data from the latest KDHS reveals that the growth of one in three children below five years is stunted, while that of seven in 50 in the same age bracket is severely stunted.

Nutrient deficiency leading to stunted growth includes iodine, iron, zinc and vitamin A.

Wefwafwa confirms that approximately 2.3 million children under five, a significant chunk of the population, have stunted growth.

Unfortunately, the effects of stunted growth are not just confined to vertical measurements. They are long-term and can be passed to the next generation, threatening the country's economic development. Wefwafwa says children who have stunted growth are usually underweight, have reduced physical capacity and weak immune systems, and are more susceptible to infections and diseases. In addition, they are more likely to have lower levels of educational attainment.

Estimates from longitudinal studies on the relationship between education and earnings taken from 51 developing countries among them Kenya, Tanzania and Ghana have estimated that children whose growth is stunted at age five earn 22

per cent less than their counterparts and do not perform as well in school.

"Part of the impact of malnutrition on earnings may be because of the effect on children's physical development. Several studies have confirmed the correlation between adult height and wages," adds Wefwafwa. In fact, another large cross-sectional study in Brazil found that a 1 per cent increase in adults' height was associated with a 2.4 per cent increase in earnings.

Unicef estimates that Kenya stands to lose Sh200 billion in Gross Domestic Product due to stunted growth of her children, a figure the children's body says is expected to double by 2030 if the Government does not address malnutrition.

"Once stunted growth occurs, it is irreversible. Regrettably, most of the interventions are done after birth," notes Wefwafwa. Later, improved feeding does not improve the Intelligence Quotient (IQ) of the child. She laments that in the past two decades, progress in tackling malnutrition has been pitifully slow.

Dr Akinyi explains: "The risk is higher in the poorest pockets of Kenyans and in the children born to mothers with low literacy levels as they lack knowledge to feed their children nutrient-rich foods."

### Effects can be felt for generations

The mother's nutritional status has implications, both for her health and that of the child, from the first day of her pregnancy to the time the child is two years old. In our interview, Maggy tells The Standard that she would feed on ugali and sukuma wiki (kales) every day for that is what her husband could afford. "I am just lucky that Jeremy has the right weigh now," she says.

"A malnourished mother faces a higher risk of obstructive labour, is likely to give birth to a low birth weight baby, and her baby will have a higher risk of being born with poor brain development," states Wefwafwa. Brain growth and neurodevelopment begin in the womb. During this period of rapid growth, protein and energy from carbohydrates and fats are critical for the little brain.





**A mother's health affects the growth of the child**

Unfortunately, most of the interventions to curb stunted growth occur after birth while the preconditions for the anomaly are accelerated when a pregnant mother lacks essential nutrients.

Wefwafwa says: "Simply improving the nutrition status of adolescent girls and women such that once they become pregnant they give birth to healthy children, can go a long way in averting stunting the growth of our children."

Research shows a higher prevalence of brain abnormalities at two years of age among children affected by fetal under-nutrition, leading to shrinking of brain cells due to a lack of nutrients.

According to a Save The Children report titled Tackling Child Malnutrition to Unlock Potential and Boost Prosperity 2013, key micronutrients are crucial for brain development of the budding life. The neural tube in the brain responsible for good memory starts to form 16 days after conception and resembles the adult brain within seven months.

"For babies, stunted growth can only be averted in the first two years, with

proper feeding practices. Unfortunately in the country, this period is often marked by growth faltering, micronutrient deficiencies. Sadly, once stunted growth occurs, the affected population is not sensitive to changes in dietary intakes," explains Wefwafwa. "We must move from child survival to child development."

### **Educating mothers**

Malnutrition results from poor feeding habits; but it is a trend that is hard to reverse in a country that is deprived of nutritionists and dietitians.

Besides food insecurity and feeding practice knowledge gap, fighting malnutrition in the country is also hampered by a human resource gap for nutritionists and dietitians within public health facilities. By visiting antenatal clinics, mothers can get free information on breast-feeding and proper feeding practices from the limited government nutritionists and also get iron supplements from them. According to the Kenya Nutrition and Dietician Institute, there are 1,920 nutritionists, with only 600 working

in public health facilities. This translates to one nutritionist for every 31,000 people.

Although the number of children with stunted growth has been declining globally, according to the Countdown to 2015 report, Africa is the only major world region where the absolute number of the children increased in the last decade because of continued rapid population growth.

Dr Chege says that the Government needs to address the knowledge gaps in feeding children as this is the future workforce.

For the arid and semi-arid areas in Kenya, the rate of children with stunted growth is higher due to food insecurity. This also occurs in Eastern and Coastal regions but culture is mainly responsible in the Western region. "You leave your infant with the mother-in-law and she feeds the baby with too much soup until the baby is too full to breastfeed."

Mrs Sande now has a two-week-old baby. She plans to resume her evening classes at NIST International University. She is already expressing stocks of her breast milk to be preserved in the fridge to feed the baby when she is away.



Children wash hands using soap: Evidence shows that there is poor hand hygiene compliance in hospitals

# Hospitals breeding grounds for diseases

BY TRUDY MBALUKU

**T**he on-going hands hygiene campaign targeting school children to prevent diarrhoea and other diseases should also target doctors.

Washing hands with soap, clean water or thoroughly rubbing hands with a sanitizer that contains 60 per cent alcohol prevent disease-causing germs from spreading from patient to patient or healthcare providers to patients and vice-versa.

However, it has emerged that hand-washing is unpopular among healthcare workers. Evidence reveals that compliance among healthcare providers is regrettable.

According to medical experts, hand hygiene compliance in a hospital environment requires health workers to: wash their hands before and after touching one patient before touching another, after blood fluid exposure and generally when

in a patients' environment to prevent transferring germs from one patient to another or from a doctor to patient and vice-versa.

Notably, in a study by the Centre for Disease Control and Prevention (CDCP), only seven in 50 of all healthcare workers wash their hands after touching a patient.

This increases the likelihood of a patient acquiring a new disease during a visit to the doctor.

"It is embarrassing that such a simple but life-saving practice is not popular," says Dr Linus Ndegwa.

"Cases of patients being discharged from hospitals only to return after two weeks with a new infection may be attributed to such patients contracting the infections in the hospital environment," says Dr Ndegwa, the Infection Control Programme Manager

at CDCP.

Further, in the study titled: The Deadly Combination of Antibiotic Resistance and Lapses in Infection Control in Resource Poor Setting, only one in 50 healthcare workers wash their hands after blood fluid exposure, therefore compromising the health of the patient. Doctors are the least likely to wash their hands. The CDCP disease surveillance data shows that only one out of 14 doctors would wash their hands after touching a patient. Nurses score better, though, according to the study, a shy two out of five adhere to the practice.

Dr Ndegwa attributes some cases of patients being infected in hospital to inadequate hand hygiene items such as antimicrobial soaps, clean running water and hand sanitizers.

“Health facilities are concentrated with people with different infections, most of them infectious. Infections acquired in health facilities often complicate healthcare delivery,” he says.

To comply with basic infection control measures such as hand hygiene, a health facility should have adequate soap and running water or disinfectants, sharp boxes for disposing off used syringes, surgical knives and latex gloves.

However, in the 2010 Service Provision Study (SPA), only three in 25 hospitals in the country have all infection control items – soaps and running water or disinfectants. Soap and running water, one of the sanitation must haves, are the least items likely to be available in a health facility, reads the SPA study.

When a health facility lacks basic sanitation items like soap, running water and sanitizers, patients are more likely to pick new infections.

According to the study, in the health facilities surveyed including hospitals, dispensaries, clinics, health centre and stand-alone Voluntary Counselling Centres (VCTs), seven out of eight do not provide full sanitation in all treatment areas.

In fact, for health facilities in Nairobi, only three out five have running water throughout the year, according to the survey.

Kariobangi North Health Centre is not a unique case. In the patient’s latrine and one of the consultation rooms, water taps have turned brown, an indication that there water is rare. Residents in this area buy water from vendors. David Juma, one of the subordinated staff at the facility, told us that the health centre is not spared either. Two 2,500-litre tanks lie on the compound



Doctor washing his hands

waiting hoisting to the roof of the facility to supplement the unpredictable Nairobi City County water flows.

The presence of running water and soap is not a guarantee that health workers will wash their hands. However, having running water may increase the likelihood that they will.

Additionally, a study done last year by physicians in Virginia Commonwealth University found that high compliance with hand hygiene and having proper waste disposal items reduce, by 95 per cent, rates of Staphylococcus aureus also known as MRSA that are likely to be transmitted from a hospital environment.

Observing hand hygiene eliminates thousands of invisible germs, but according to the disease control body, doctors are the worst culprits.

“Patient’s safety is the key benefit to hand hygiene. We found that it not only prevents MRSA but other infections that are transmitted via contact. Hospital hygiene saves patients’ hospital bills,” reads the study.

“Cases of a patient not being operated

because there is no water in the theatre are not uncommon,” says Dr Victor Ng’ani, the chair, Kenya Medical Practitioners and Dentists Union, urging the Government to ensure a year-round supply of water in health facilities.

For lack of running water, some health facilities have sanitizers, but Dr Ng’ani says a sanitizer can never replace water. “You cannot adhere to hand hygiene when the water is not there,” says Dr Ng’ani: “Failure to wash hands increases incidences of transferring viruses, fungus and bacteria in the hospital environment – a leading cause of drug resistance as hospital-acquired infections tend to resist treatment.”

Commenting on “doctor in compliance”, Dr Ng’ani says that many a time, doctors are forced to concentrate on treating patients without observing basic hygiene, pointing a finger at the Government’s failure to provide constant running water in health facilities.

“This compromises both the patient and the health personnel’s health,” states the ICU doctor.



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A farmer attends to his tomato crops. Right, tomatoes damaged by *tuta absoluta*

# Imported pest devastating tomato in Kenya

BY ZEYNAB WANDATI

Imagine investing over half a million shillings in tomato farming, hoping to get it all back in six months, but even before that time comes, your tomatoes start to look like they are burnt.

You try everything you know to treat them, but they only seem to get worse. And so you watch helplessly as they wither...dry...and eventually die. Sounds devastating, right? Well, that is the situation that tomato farmers in Kirinyaga County have found themselves in, after a foreign pest, the *tuta absoluta*, attacked their tomatoes.

"I noticed that my tomatoes were being eaten by some kind of a caterpillar I have never seen before, that wasn't responding to any chemical that we normally use," says Elijah Gitari, a farmer in Mwea.

Evanson Gachoki says when he first saw it on the 15-acre farm that he manages, he thought it was something else.

"I thought it was just the normal cold that the tomatoes suffer from time to time. Because when you look at how the leaves are drying, this is exactly how the cold affects tomatoes," he says.

*Tuta absoluta* is said to have originated from Peru in South America in 1917 where it stayed for many years before spreading to Spain. From Spain, it spread across Europe like wildfire, and entered Africa in 2008 through Morocco.

The Sahara Desert slowed down its spread to the rest of Africa, but by last year, it had reached Ethiopia. And now it is in Kenya, and moving fast, with Kirinyaga County being among the worst-hit areas.

"It looks like a moth, a very small one, about 2 to 3 centimetres big," Dr Nayem Hassan, the head of research and development at Russell Integrated Pest Management in London, explains. "You might even confuse it with a potato tuber borer. How you'll know for sure that it is tuta is to look at the larvae when they are feeding on the leaves. If you see a dark red colouring on the head, then that is tuta."

Dr Rangaswa Muniappan, the director for Integrated Pest Management at Virginia State University, says that the *tuta absoluta* pest flies during night time, and hides during the day. "It lays eggs on the leaves, sometimes even on the fruit. And when it

hatches, the tiny caterpillar that comes out mines the leaf and then the whole plant turns brown."

"It actually looks like someone lit a fire and burnt down your tomatoes," says Dr Lusike Wasilwa, who is the Assistant Director of Horticulture and Industrial Crops at the Kenya Agricultural Research Institute (KARI). "When it comes to the extent of the damage in the affected areas, we are getting up to 100 per cent yield loss; because what is happening is that the symptoms also look like late blight. So, when farmers see it, they start to spray fungicides and that doesn't help," he says.

Elijah Gateri says that from the two acres on which he had planted tomatoes, he harvest less than 100 kilogrammes.

Evanson Gachoki, on the other hand, wasn't so lucky. He invested nearly Sh500,000 to put two acres under tomatoes and lost everything. Not even a kilogramme of tomatoes was harvested.

"The issue about this pest is that it affects the crop at all stages of development. It doesn't matter whether it is just germinating or flowering. As long as it is a tomato, it will be attacked," says Dr Wasilwa.

# Technology developed to increase seed quality

The *tuta absoluta* pest, which is also known as a Peruvian Leaf Miner, completes its life cycle in 25 days, and it moves mostly with wind currents. And because it is barely visible to the eye, scientists say farmers can set pheromone-based traps at night to test the presence of tuta in their fields. The farmer must pay special attention to the leaves closer to the ground, and if the temperatures there feel a little higher and humid, then it is likely that tuta is present.

The Kirinyaga County has at least 1,978 hectares under tomatoes, which earn it more than Sh1 billion ( USD 1.1 million) annually. And with nearly all the crop affected, the prices of tomatoes are already beginning to rise. Kari says the pest has reached Oloitokitok and crossed into Tanzania, and if it isn't brought under control, tomatoes will be the most expensive vegetables by the end of this year. But the good news is, *tuta absoluta* is controllable.

"We have to attack this pest by any means," says Dr Muniappan. "We use cultural control such as sanitation. There's also a biological control but sometimes we use chemicals."

"It is absolutely important that we carry out farmer education," says Dr Hassan. "They need to understand that they must not wait to see the damage on the fruit before they seek help. It will be too late to save their tomatoes."

Given how long *tuta absoluta* has been around the world, scientists have been working on integrated pest management plans to deal with it, but the plans aren't always the same for different parts of the world. In Kenya, however, the plan is still in design stage, but farmers are advised to use Collagen, which is applied at 14-day intervals until the pest is gone. If you suspect that your tomatoes are affected, or they exhibit symptoms unfamiliar to you, contact Kari for help.



**Bead dried maize 4 months in moisture tight storage containers**



**Bead treated maize 4 months in moisture tight containers**

**I**t will soon be possible to dry seeds efficiently and store them in moisture-proof packaging to preserve their quality for long periods (up to years) at ambient temperatures thanks to a new technology, the 'Drying Beads.'

The technology is currently undergoing an international demonstration in Kenya and Tanzania.

"This technology is an alternative to sun or heated-air drying and uses desiccants to absorb moisture from seeds," says Dr Daniel Karanja of CABI, Nairobi.

According to Dr Peter Jackson of Tanzania Official Seed Certification Institute (TOSCI), preserving seed quality is a major problem in tropical and subtropical regions, where the combination of warm temperature and high ambient relative humidity (resulting in high seed moisture content) causes rapid deterioration and loss of seed viability.

"In actual sense," says Dr Razia Sultana of Department of Seed Science & Technology, Acharya N. G. Ranga Agricultural University, India, seed longevity is reduced by nearly half for every 1% increase in seed moisture content or 5°C increase in temperature, and the effects are additive." For example, seeds stored at 10% moisture content and 30°C will last only one-quarter as long as seeds stored at 9% moisture content and 25°C. When seeds are stored in warm, humid conditions, they lose quality and viability rapidly and perform poorly when planted.

"This technology seeks to ensure we attain excellent seed quality," he added.

He noted that Drying Beads® has been developed by Rhino Research in Thailand to address this scenario.

Drying Beads® is being demonstrated in an international collaboration with the University of California, Davis, and including CABI Africa in Nairobi, Kenya, and TOSCI in Morogoro, Tanzania, supported by U.S. Agency for International Development (USAID) Horticulture Innovation Laboratory project.

The Drying Beads will absorb water (up to 25% of their weight) from the air and hold it tightly when enclosed in a container with the seeds, removing water from the seeds and drying them to low moisture content for safe storage. The beads can be reactivated repeatedly by heating to release the absorbed water and reused indefinitely without losing their effectiveness. Simple, inexpensive methods are also available for monitoring seed moisture content by measuring equilibrium relative humidity in storage containers or plastic bags.

Seed growers and the seed industry can now efficiently dry seeds using the technology, and then store them in moisture-proof packaging to preserve their quality for long periods (up to years) at ambient temperatures. Furthermore, simply drying seeds can prevent insect infestation and growth of fungi (and production of mycotoxins) in storage without pesticides. Implementation of this "dry chain" to dry and store seeds in humid climates could greatly improve seed quality and extend viability.

*(For more information please visit [www.dryingbeads.org](http://www.dryingbeads.org).)*



Mechanical farming

# Climate-smart agriculture is corporate green-washing, warn NGOs

BY THALIF DEEN

UNITED NATIONS, Sep 24, 2014 (IPS)

**O**n the sidelines of the U.N.'s heavily hyped Climate Summit, the newly-launched Global Alliance for Climate-Smart Agriculture announced plans to protect some 500 million farmers worldwide from climate change and “help achieve sustainable and equitable increases in agricultural productivity and incomes.”

But the announcement by the Global Alliance, which includes more than 20 governments, 30 organisations and corporations, including Fortune 500 companies McDonald's and Kellogg's, was greeted with apprehension by a coalition of over 100 civil society organisations (CSOs).

It is a backhanded gesture, warned the coalition, which “rejected” the announcement as “a deceptive and deeply contradictory initiative.”

“The Global Alliance for Climate-Smart Agriculture will not deliver the solutions that we so urgently need. Instead, climate-smart agriculture provides a dangerous platform for corporations to implement the very

activities we oppose,” the coalition said. “By endorsing the activities of the planet's worst climate offenders in agribusiness and industrial agriculture, the Alliance will undermine the very objectives that it claims to aim for.”

The 107 CSOs include ActionAid International, Friends of the Earth International, the International Federation of Organic Agricultural Movements, the South Asia Alliance for Poverty Eradication, the Third World Network, the Bolivian Platform on Climate Change, Biofuel Watch and the National Network on Right to Food. Secretary-General Ban Ki-moon, who gave his blessing to the Global Alliance, said: “I am glad to see action that will increase agricultural productivity, build resilience for farmers and reduce carbon emissions.”

These efforts, he said, will improve food and nutrition security for billions of people.

With demand for food set to increase 60 per cent by 2050, agricultural practices are transforming to meet the challenge of food security for the world's 9.0 billion people

while reducing emissions, he asserted.

But the coalition said: “Although some organisations have constructively engaged in good faith for several months with the Global Alliance to express serious concerns, these concerns have been ignored.”

Instead, the Alliance “is clearly being structured to serve big business interests, not to address the climate crisis,” the coalition said.

The coalition also pointed out that companies with activities resulting in dire social impacts on farmers and communities, such as those driving land grabbing or promoting genetically modified (GM) seeds, already claim they are climate-smart.

Yara (the world's largest fertiliser manufacturer), Syngenta (GM seeds), McDonald's, and Walmart are all at the climate-smart table,

it added. “Climate-smart agriculture will serve as a new promotional space for the planet's worst social and environmental offenders in agriculture.

“The proposed Global Alliance on Climate-Smart Agriculture seems to be yet another strategy by powerful players to prop up industrial agriculture, which undermines the basic human right to food. It is nothing new, nothing innovative, and not what we need,” the coalition declared.

Meenakshi Raman, coordinator of the Climate Change Programme at the Malaysia-based Third World Network, told IPS the world seed, agrochemical and biotechnology markets are dominated by a few mega companies.

She said these companies have a vested interest in maintaining monoculture farming systems which are carbon intensive and depend on external inputs.

“These companies will do all they can to maintain their market dominance and prevent genuine agroecology agriculture from gaining ground in countries,” she said.

It is vital that such oligopoly practices are disallowed and regulated, said Raman. “Hence the need for radical overhaul of the current unfair systems in place with real reform at the international level.”

Meanwhile, the Washington-based Consultative Group on International Agricultural Research (CGIAR), said the world's foremost agriculture experts have determined that preventing climate

## || Climate change ||

change from damaging food production and destabilising some of the world's most volatile regions will require reaching out to at least half a billion farmers, fishers, pastoralists, livestock keepers and foresters. The goal is to help them learn farming techniques and obtain farming technologies that will allow them to adapt to more stressful production conditions and also reduce their own contributions to climate change, said CGIAR.

These researchers are already working with farmers in sub-Saharan Africa and South Asia to refine new climate-oriented technologies and techniques via what are essentially outdoor laboratories for innovations called climate-smart villages.

The villages' approach to crafting climate change solutions is proving extremely popular with all involved, and now the Indian state of Maharashtra (population 112.3 million) plans to set up 1,000 climate smart villages, CGIAR said.

Asked for specifics, Bruce Campbell, director of the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS), told IPS countries in the tropics will be particularly impacted, especially those that are already underdeveloped because such countries don't have the resources to adapt and respond to extreme weather conditions.

These include many countries in the Sahel region, Bangladesh, India and Indonesia, plus countries in Latin America.

Asked if these countries are succeeding in coping with the impending crisis, he said there are good cases of isolated successes, but in general they are not coping.

For example, one success is in Niger where five million trees have been planted, that help both adaptation and mitigation, but an enormous number of other activities are needed, he added.

Raman told IPS there are many rules in the World Trade Organisation's (WTO)

agriculture agreement that threaten small-scale agriculture and agroecology farming systems in the developing world.

She said developed countries are allowed to provide billions of dollars in subsidies to their agricultural producers whose products are then exported and dumped on developing countries, whose farming systems are then displaced or threatened with artificially cheap products.

Many developing countries, she pointed out, were also forced to remove the protection they had or have for their domestic agriculture, either through the WTO, the World Bank policies under structural adjustment and free trade agreements.

"These policies do not allow developing country governments to protect small farmers and their domestic agriculture," she said. Such rules and policies are unfair and unethical and should not be allowed as they undermine small farmers and agroecology systems, Raman declared (IPS)

# Tanzania to strengthen green laws

BY CATHERINE NJUGUNA

**A**n initiative to enhance the capacity of the Tanzania Government to develop and implement policies on climate change adaptation in relation to food security in the country was launched at the end of last week, in Dar es Salaam.

The four-year project, Policy Action for Climate Change Adaptation (PACCA), is led by the International Institute of Tropical Agriculture (IITA) and funded by the CGIAR Research Programme on Climate Change, Agriculture and Food Security (CCAFS). It is being implemented in both Uganda and Tanzania. In Tanzania, the project will be implemented in partnership with the Environmental Management Unit (EMU) of the Ministry of Agriculture, Food Security and Cooperatives.

The project was officially launched by the Deputy Permanent Secretary in the Vice-President's Office, Angelina E.A. Madete, at a stakeholders' meeting that brought together different actors



Demonstration plots in Tanzania

working in the area of climate change adaptation from the Government, NGOs, and international and national research institutes.

Madete noted that the impact and vulnerabilities of climate change were undermining national and local strategies to achieve sustainable development. She observed that the country was particularly vulnerable to climate change due to its

dependence on climate-sensitive economic sectors such as agriculture, and commended the project for tackling the global challenge that demands concrete mitigation and adaptation measures.

"We are all aware of the dangers climate change poses to our country. We have all witnessed heavy rains and floods; prolonged and severe droughts, and landslides.

We need to develop and implement integrated strategies expeditiously in the country," she said.

The project was also welcomed by the Deputy Permanent Secretary in the Agriculture ministry, Dr Yamungu Kayandabila, who officiated the closing ceremony of the workshop. He assured the project partners of the full support of his ministry to tackle climate change and food security issues in the country.

The project coordinator, Dr Edida Ampaire from IITA, Uganda, said the project seeks to strengthen the cooperation between the scientific community and policy-actors in formulating policies on climate change.

"The aim of the project is to understand the policy-making and implementation processes in the area of climate change and food security in Tanzania and Uganda, identify any gaps, and suggest ways to overcome them. It will also identify appropriate mechanisms to facilitate generation and sharing of knowledge among the different actors working in the area of climate change within and between the two countries," she said.

During the workshop, the participants identified some of the gaps and areas that the project should address to strengthen climate change policies in Tanzania. Topping the list was the lack of a comprehensive policy on climate change in the country. Currently, issues on climate change are handled under the environmental policy of 2004 under the Vice-President's Office and in the Environmental Management Unit (EMU) of the Agriculture ministry.

Other challenges identified were a general lack of adequate coordination of the different actors working on climate change and food security issues, lack of sharing of knowledge and information, and a general low level of awareness of the importance of climate change across various sectors from the policy-makers to the general public.

Another gap was linked to inadequate human and financial resources put aside for climate change. The participants also identified the root causes of these problems and made recommendations for further action. (IITA)

## || Climate change ||

# Climate change poses risk to food security, say experts



Effects of climate change on agriculture

BY ZEYNAB WANDATI

**M**ost Africans don't understand what climate change is, yet it is the single-biggest threat to life.

Its adverse effects are being felt and seen in all parts of the world.

And Kenya is one of the countries said to be the most vulnerable to climate change, especially when it comes to food production, because it not only affects the availability of food, but also the stability of food supply. Never mind that Kenya's contribution to climate change is barely noticeable.

But what remains as an undisputed scientific fact is that global temperatures are on the rise, and human activity is to blame. Experts say that if man doesn't change his ways soon, global temperatures will rise by an additional four degrees by

the end of this century. The bad news is, countries such as Kenya that have little to do with the changing climate will be the worst hit.

In Kenya, for instance, the drought cycles have reduced from 20 years half a century ago, to just about two years. This in turn has affected productivity, especially since Kenya's agriculture is largely rain-fed. Cases of floods have also increased six times around the world, between the 1980s and today. These changes have a huge impact on the world's food basket.

Some climate change experts argue that agriculture is not only affected by climate change, but also contributes to it through the emission of greenhouse gases. This is due to improper use of fertiliser in farms, thereby resulting in the emission of methane and nitrous oxide gases.

Also, the habit of farmers to burn crop residue after harvest releases carbon dioxide into the atmosphere, contributing to climate change.



## || Climate change ||

The solution, experts say, lies partly in conservation agriculture, which basically means farming without removing the mulch; to shield the ground from the heat of the sun. The ground cover preserves the moisture in the soil, thereby reducing evaporation. So, the farmer should just prepare the ground only where the seed will go, and then return the ground cover once the seed is planted.

Better management of natural resources such as land and water is another solution to climate change. The more temperatures rise, the drier the more arable land shrinks, and scaling up irrigation – especially in Arid and Semi-Arid areas – to boost moisture on the land under food production, is a step in the right direction.

Many a time governments have been accused of slowing down the adaptation and climate change mitigation efforts, by underfunding the agriculture sector – especially in research. On the other hand, scientists have pointed the finger at farmers, for being unwilling to adopt new technologies

to climate-proof their agriculture. But the good news is that Kenya has a National Climate Change Action Plan 2013-2017, which intended to ensure that the country takes steps to reduce vulnerability to climate change and adopts a low carbon development path. This will in turn address pressures related to economic and population growth, urbanisation and resource use.

The plan also aims at reducing vulnerability to disasters by using climate risk information in development planning and policy-making, especially considering that at least 70 per cent of natural disasters that happen in Kenya are related to extreme weather conditions.

The Kenya Agricultural Research Institute is currently using the climate in selected regions in the Arid and Semi-Arid areas of the country, to represent the future climate in other parts of the country, such that the climate-proof technologies developed for the sample regions could be used for the rest of the country in a few years' time. This way, the country is better-prepared for climate

change and thus able to feed its people.

Experts say that climate change will affect different places differently, such that places once considered fertile and better-suited for certain crops will be too hot, while those already hot will get cooler.

A recently-released International Food Policy and Research Institute report suggests that in the next few years, Kitale, which is one of the country's bread baskets when it comes to maize production, will be too hot for maize to grow. While Samburu, which is currently too hot for maize farming, will have cooler temperatures – cool enough to support maize production.

Even as scientists say that some farmers are unwilling to adopt new farming methods, experts say that the problem lies not in unwillingness, but in lack of information to farmers. I have met a number of farmers who say they have heard of climate change but they have no idea what it is or what they can do to insulate themselves from its effects, yet the information is not available in any library near them.



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# Genetically Modified Organisms (GMOs)

## Four Questions to help understand genetically modified foods



To help us understand genetically modified organisms (GMOs) also called genetically-engineered or transgenic food, the World Health Organisation (WHO) in response to questions and concerns by a number of WHO Member State Governments with regard to the nature and safety of genetically modified food prepared the following questions and answers which journalists can use as a tool in understanding and reporting GMOs.

### **What are genetically modified (GM) organisms and GM foods?**

Genetically modified organisms (GMOs) can be defined as organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally. The technology is often called “modern biotechnology” or “gene technology”, sometimes also “recombinant DNA technology” or “genetic engineering”. It allows selected individual genes to be transferred from one organism into another, also between non-related species.

Such methods are used to create GM plants – which are then used to grow GM food crops.

### **Why are GM foods produced?**

GM foods are developed – and marketed – because there is some perceived advantage either to the producer or consumer of these foods. This is meant to

translate into a product with a lower price, greater benefit (in terms of durability or nutritional value) or both. Initially GM seed developers wanted their products to be accepted by producers so have concentrated on innovations that farmers (and the food industry more generally) would appreciate.

The initial objective for developing plants based on GM organisms was to improve crop protection. The GM crops currently on the market are mainly aimed at an increased level of crop protection through the introduction of resistance against plant diseases caused by insects or viruses or through increased tolerance towards herbicides.

Insect resistance is achieved by incorporating into the food plant the gene for toxin production from the bacterium *Bacillus thuringiensis* (BT). This toxin is currently used as a conventional insecticide in agriculture and is safe for human consumption. GM crops that permanently produce this toxin have been shown to require lower quantities of insecticides in specific situations, e.g. where pest pressure is high.

Virus resistance is achieved through the introduction of a gene from certain viruses which cause disease in plants. Virus resistance makes plants less susceptible to diseases caused by such viruses, resulting in higher crop yields.

Herbicide tolerance is achieved through the introduction of a gene from a bacterium conveying resistance to some herbicides. In situations where weed pressure is high, the use of such crops has resulted in a reduction in the quantity of the herbicides used.

### **Are GM foods assessed differently from traditional foods?**

Generally consumers consider that traditional foods (that have often been eaten for thousands of years) are safe. When new foods are developed by natural methods, some of the existing characteristics of foods can be altered, either in a positive or a negative way. National food authorities may be called upon to examine traditional foods, but this is not always the case. Indeed, new plants developed through traditional breeding techniques may not be evaluated rigorously using risk assessment techniques.

With GM foods most national authorities consider that specific assessments are necessary. Specific systems have been set up for the rigorous evaluation of GM organisms and GM foods relative to both human health and the environment. Similar evaluations are generally not performed for traditional foods. Hence there is a significant difference in the evaluation process prior to marketing for these two groups of food.

One of the objectives of the WHO Food Safety Programme is to assist national authorities in the identification of foods that should be subject to risk assessment, including GM foods, and to recommend the correct assessments.

### **How are the potential risks to human health determined?**

The safety assessment of GM foods generally investigates: (a) direct health effects (toxicity), (b) tendencies to provoke allergic reaction (allergenicity); (c) specific components thought to have nutritional or toxic properties; (d) the stability of the inserted gene; (e) nutritional effects associated with genetic modification; and (f) any unintended effects which could result from the gene insertion.

Source: WHO website

# The African Conference of Science Journalists: Reflections from the secretary

BY AGHAN DANIEL

**N**AIROBI, OCTOBER 2014 - At the end of 2005, I returned to Kenya from Tanzania after nearly a year of an environmental journalists' exchange program. What I learnt from Tanzania was that a well run journalists network could work. I was attached to the Journalists of Environment Association of Tanzania (JET) who somehow made it happen in the world of environmental journalism.

In the meantime, many communication officers in Kenya, were feeling very frustrated that they could not bring themselves to network effectively with science journalists. Not only were there few science journalists but the few who were there had a lot of shortcomings in terms of effective reporting. Something had to be done and after few email exchanges, we decided to meet as communication officers and a few journalists active in the media.

The meetings culminated into formation of the Media for Environment, Science, Health and Agriculture (MESHA). The major objective of MESHA was by then to provide a platform where journalists and communication officers could meet and talk professional matters. To kill professional loneliness. We wanted to go out and tell scientific institutions that to him/her that little is given, little is expected. They had to invest in science journalists if they wanted to turn around the standard of reporting science in the country.

And how time flies, it is now nearly ten years since this giant network was born. Of all the achievements that we have had, bringing science journalists from all over Africa, now two times in two years really stand out. The journey to hosting these conferences has not been smooth either.

Tired of holding annual general meetings, the membership decided in 2010 that moving forward, they would invite scientific organisations to talk to them during their annual gathering on what research they do that touch lives.

Today, we are proud to have hit the more than 100 mark in membership, up from 12 in 2006. We also need to remember that in 2007, we partnered with Panos South Africa to bring together 40 journalists from Eastern and Southern Africa to Lusaka, Zambia to discuss issues of climate change and the Millenium Development Goals. It is in 2007 that we changed the way science journalists' conferences are done. We took the approach of making the conferences busy, by ensuring that each journalist and delegate published a substantive story each day. We organised and took journalists to a radio station and worked overnight on stories that were sent to radio stations in the morning, thanks to Marilyn Minderhoud from The Netherlands. Basically our conferences are not talk shops, they are busy and rewarding.

As we hold the 2014 second African Conference of Science Journalists from Oct 13 to 15, 2014 in Nairobi, we want to reflect on where we want to go as a network that is growing each day. Just how busy will the participants to this Conference be? Each day we will be sending clips to TV stations and sit well past midnight doing a daily bulletin. Besides, we expect every participant to send at least ten tweets per session. Given that we have 8 sessions per day, we expect a total of 800 tweets per day from the Conference and over 50 posts on facebook and 10 blogs per day.

To our members and partners, I must confess that mobilising resources for this year's conference, much unlike Nakuru



2012 has been the biggest challenge for our secretariat. First, we were greatly destabilized by the change of venue from Mombasa to Nairobi. We not only lost time but also lost a great host in the Kenya Coast Development Program. They had big plans and support for the conference, but once again, science journalism was shaken by terrorism. We are everyday grateful to the partners who have always trusted us and believed in us. All their logos will be on our website shortly. What happened to our Conference can happen to any other major event and so my appeal goes to African scientists to start adding their voices to issues of peace.

For 2015 and beyond, we look forward to greater partnerships to allow us train our members on skill based areas such as writing effective commentaries; resource mobilisation for science journalism; photography and advocacy journalism.

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