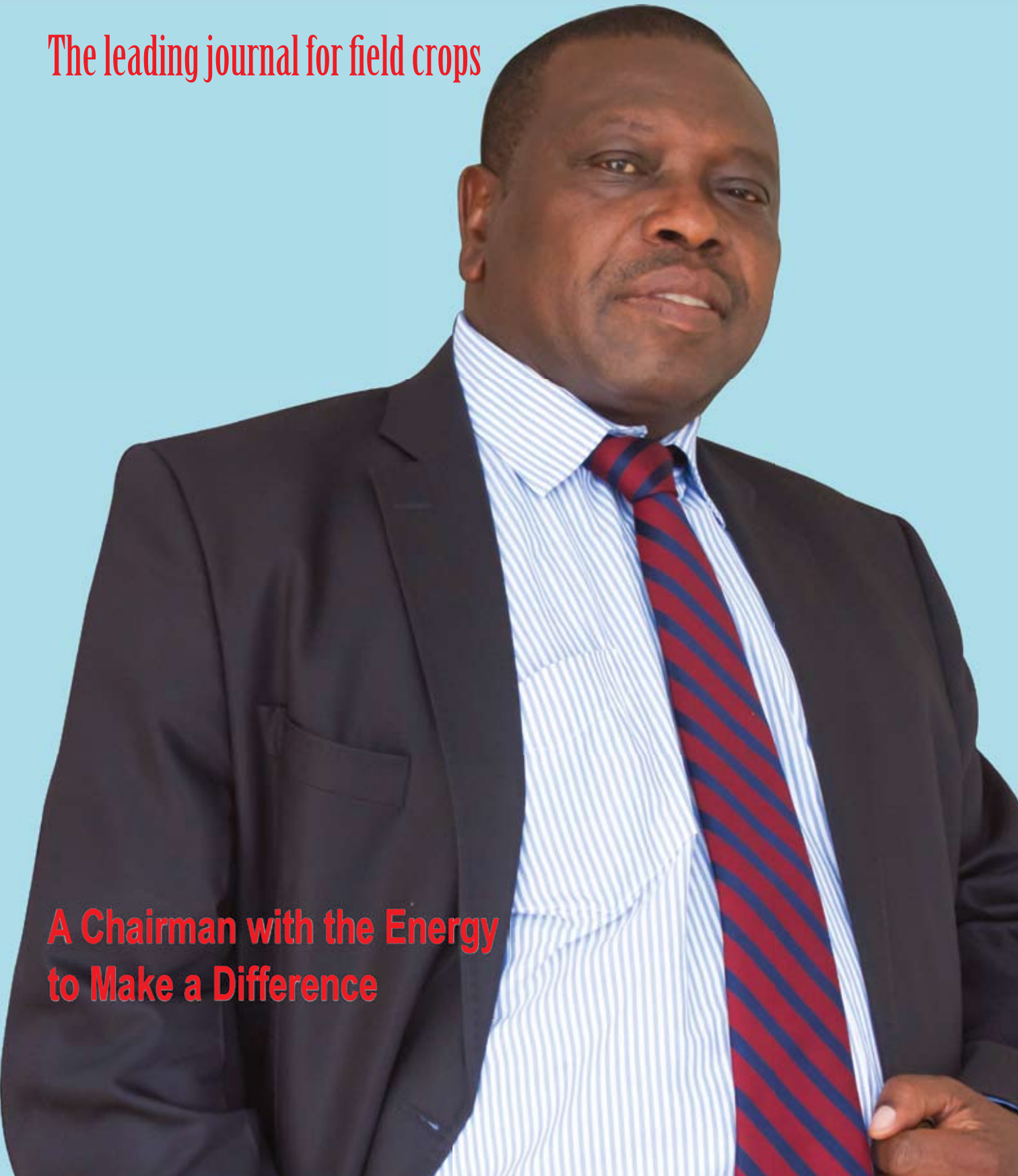


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Editorial

Agriculture can Spike Kenya's Industrialization



Kenyan agriculture has been the source of supply of our leading industries. Investment in agriculture, in irrigation facilities, tractors, ware houses etc. have been rising continuously, increasing the demand for industrial output and adding to the nation's capital stock. The significance of agriculture in Kenya arises also from the fact that the development in agriculture is an essential condition for the development of the national economy.

Economic growth means a higher rate of growth of Gross National Product and it is obviously impossible to attain a higher rate of growth in the economy unless there is rapid growth in both the agricultural and non agricultural sectors.

There is need for a strategy that will trigger more growth. Investment in quality inputs and technology will improve agricultural production and maintaining a high level agricultural production. Therefore, quality agricultural inputs and technology is necessary to bring about a phenomenal growth in the production and productivity of many food crops. This will increase food grain output per unit area and lead to a decline in the imports of food grains.

This revolution envisages several steps, such as, use of high yielding varieties of seeds, use of quality chemicals, fertilizers, pesticides, use of improved technology, multiple cropping, irrigation facilities, providing agricultural credit to farmers, suitable price mechanism for agricultural production and land reforms.

As a result production of food grains will increase a lot which ultimately will make Kenya a self-reliant country in food grains. This will not only make our country self-sufficient in food-grains but also improve the condition of our farmers.

Be part of this revolution.

Masila Kanyingi

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STAK Congress 2016 to Discuss Impact of Global Warming on Kenyan Farmers

A local seed industry players association has warned that climate change is a reality and not a myth anymore, and has called on farmers to prepare to respond to the phenomenon by putting in place mitigating measures.

“Global warming is here with us. The phenomenon of climate change in Kenya is now more apparent than has been before in recent history,” says Mr. Duncan Ochieng Onduu, the Chief Executive Officer, of STAK. The Seed Trader Association of Kenya (STAK) is one body that is not taking this for granted. To keep farmers and other stakeholders abreast of developments in this area, STAK will host an Annual Congress and Expo, from November 8-9, 2016, at Safari Park Hotel, Nairobi, Kenya. This year's theme is “Utilizing Agricultural Technology to Mitigate against Climate Change and Improve Agricultural Productivity”.

“While Kenyan farmers may for example not be able to agree on the scientific explanation of global warming, one thing that is clear is that they have experienced it first-hand, with the inability to predict the onset of rains unlike the case before. The sun is scorching and the environment unforgiving,” he said while announcing the details for the upcoming Congress.

The trade expo is expected to attract over 300 delegates involved in the seed industry, including government officials, development partners, research institutions, universities, agrochemical industry players, processors, machinery suppliers, farmers and the media. The Congress sessions will focus on the seed industry, policy environment for seed trade, climate change and agricultural productivity, seed production, marketing and technological issues.

The congress comes in the backdrop of the recently concluded African Green Revolution Forum that was held at the United Nations Complex in Gigiri, Nairobi, which underscored the critical role that agriculture plays in ensuring food security and livelihoods for the continent's population.

The Congress is also happening at a time when the UN is urging world nations to ratify the Paris pact on climate change, which was adopted by 195 parties to the UN Framework Convention on Climate Change last December in Paris. The agreement calls on countries to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future.

To date, STAK has organized four very successful congresses and expos. The STAK annual congress is an ideal platform not only to showcase available products, but also to sensitize the seed industry on pertinent issues affecting it. These forums provide a platform for experience sharing, and are a way of spurring growth and development, as well as addressing any pertinent issues affecting the seed value chain in any particular year.



Background

STAK is an association of Kenyan seed companies and organizations, registered to produce process and distribute seeds, as well as play other supportive roles to agriculture. STAK aims to promote the interests of seed enterprises through championing the use of quality seed. It is a member of both the African Seed Trade Association (AFSTA) and the International Seed Federation (ISF). STAK is a significant contributor in ensuring food security, in line with Government of Kenya Vision 2030's aim of transforming every aspect of Kenyan lives through agriculture, and in line with the UN's Sustainable Development Goals (SDGs).

STAK diligently represents its members and creates an enabling environment for the seed sector in Kenya, promotes the competitiveness, growth, and professionalism of the sector, and avails high quality seeds of the best varieties to all Kenyan farmers. It has represented its members' interests since 1982.

STAK also provides members with expert seed sector advocacy, timely and comprehensive information sharing, capacity building to improve competitiveness, networking opportunities, and promotion of the development of a formal seed trade.

Against this background, STAK has become the focal point for industry representation, promotion, and compliance to pertinent local and international standards, deemed necessary to secure, expand and sustain markets.

Makueni Research Farm Gets Sh10m Cold Room

Quality seed production is expected to increase following the launch of seed storage cold room facility to support maize research in Makueni County.

The \$100,000 (Sh10 million) project funded by Bill and Melinda Gates Foundation and implemented by International Maize and Wheat Improvement Centre (CIMMYT) and the Kenya Agricultural and Livestock Research Organisation (KARLO) will help breeding programmes to produce and store large quantities of valuable seeds with no loss in quality.

Martin Kropff, director-general of Mexico-headquartered CIMMYT, said diseases, insect-pests and climatic stresses including drought, and low soil fertility are reducing maize production, thus negatively impacting on the livelihood of maize smallholders in Africa.

“It is important to have a facility that will help breeding programmes to produce and store large quantities of valuable seeds with no loss in quality,” says Kropff.

“This cold room will help improve effectiveness and efficiency of our breeding work in Kenya and Africa,” he added. Director-general of KARLO said the facility will boost maize breeding work done by both KALRO and CIMMYT at the Kiboko station in Makueni, which serves as a major hub for maize breeding in Africa and expedite movement of improved maize germplasm to national partners and seed companies across Africa.

“For research work, seeds need to be stored between six months and 10 years for future use,” he said. “This requires high level of preservation and safety to enable breeders to work with more diverse materials, develop new maize germplasm, and store this effectively for further use,” he added.

Devolution Affecting Farmers’ Productivity

Devolution of agricultural services to county government has led to duplication of roles, according to a new report. Devolution also has brought confusion and people still do not know where they belong. “Extension services were devolved but there are counties that have employed their own agricultural extension officers who have less experience unlike those who were previously employed by the government,” Timothy Njagi a researcher at Tegemeo institute of Agricultural policy and development noted, adding that this has affected service delivery to farmers.



He added that as much as devolving majority of the functions to the county governments provided a great opportunity to transform small holder agriculture, there is need to clarify devolved functions. “The transition process was mismanaged, leading to the current confusion on mandates between the two levels of government. This confusion has further lead to weak planning and budgetary allocations processes, there is also poor coordination between county and national governments,” he said.

It sought to provide evidence based options to inform policy formulation and the effects of some of the programmes government has launched on agriculture. Though there has been increased funding to the sector, the report recommends increase funding to cater for increased functions at the county level. “There is need for county government to purposefully target improving smallholder farmers participation in planning and make their voices heard,” Njagi said.

He noted the agricultural sector in the national budget is below 10 per cent hence priority should be put towards strengthening budget and planning making processes at county level. “Counties should also address the human resource challenges as currently, the ratio of one agricultural extension officer is 1000 farmers as opposed to the required 1:400 farmers,” the researcher said.

East Africa Closer to Ending Maize Disease



East Africa is inching closer to eradicating Maize Lethal Necrosis (MLN) with a variety of seeds that can tolerate and resist the disease undergoing national performance trials in Kenya, Uganda and Tanzania to be ready for planting in 2018.

Scientists at the International Maize and Wheat Improvement Centre in conjunction with the Kenya Agricultural Livestock and Research Organisation have several promising inbred lines and pre-commercial hybrids with resistance to MLN in Naivasha, Kenya.

“Our vision of replacing a large set of commercial MLN-susceptible varieties with MLN-resistant hybrids is well on track. In three or four years, we hope to have at least 20 to 25 MLN-resistant hybrids released, scaled up and delivered to farmers in East Africa with the help of our seed company partners,” stated B.M. Prasanna, director of CIMMYT’s Global Maize Programme and the CGIAR Research Programme Maize.

They hope that using molecular marker assisted breeding, the more than 25 elite inbred lines that are susceptible to MLN but are parental lines of several prominent commercial maize hybrids in sub-Saharan Africa, will combat the lethal disease.

Farmers in the region have since 2011 been seeing massive losses caused by MLN with Kenya incurring a loss of Ksh4.1 billion (\$41 million) in 2014 alone, as the disease wiped out crops across the country.

Scientists have recommended several measures to curb the transmission of the virus, which is spread over long distances by beetles, thrips and leaf hoppers, especially windy conditions.

Crop rotation and diversification into other crops are some of the solutions being proposed to reduce losses but farmers are reluctant to change, arguing that other crops are not as lucrative as maize.

The disease causes an estimated 30-100 per cent crop loss in farmers’ fields, depending on the severity of the attack, and is also threatening to affect regional trade.

The disease presents itself as severe chlorosis, which is yellowing of leaves, vein banding and mottling of the leaves and cobs which lead to premature drying of the crop, even if the plant appears to have no disease or symptoms.

In addition, there is a failure to tassel (sterility) in male plants as there is no pollen shed on grains. Necrosis and leaf redding may also be observed in some plants. Maize is the main staple food for several millions of families in East Africa, with Uganda being the only East African country that produces more maize than it consumes.

Uganda produces about 2.7 million tonnes of maize a year against a demand of 1.5 million tonnes. The surplus is sold to South Sudan, Tanzania and Kenya.

A Vision for Safe, Affordable and Adequate Food



Kenya Cereal Millers Association collaborates with BecA-ILRI Hub to combat aflatoxin contamination *By Paloma Fernandes, CEO of the Kenya Cereal Millers Association*

Having a milling capacity of 1.6 million tonnes of maize per year and constituting 85 percent of the commercial flour on the shelves sold to about 10 million consumers annually, the Cereal Millers Association (CMA) bears the heavy responsibility of providing safe, affordable and adequate food for their consumers. This responsibility is at the heart of our vision as an association which comprises 27 of the largest millers in the country.

Our four-year relationship with the BecA-ILRI Hub's aflatoxin research project was borne out of our quest to bridge the existing gap in best practices for diagnosis of aflatoxins at the millers' level. In efforts to find a solution, we participated in various national forums on the control of aflatoxins in the food value chain in Kenya and eventually made the connection with the project.

Through our collaboration with the BecA-ILRI Hub, CMA staff members have received training on the proper use of aflatoxin diagnostics equipment to get the most accurate results. Visits by the BecA-ILRI Hub scientists, research technicians and project collaborators to three CMA mills has helped us ascertain the levels of testing, training needs and ways in which we can improve our storage, transport and testing facilities.

In order for us to take adequate measures in providing safe food for Kenyans, we have extended our collaboration to exploratory research on the types of aflatoxins we are dealing with at our mills and will provide samples of both wheat and maize to the BecA-ILRI Hub for analysis.

Through this partnership, we have also identified a consultant from Texas A&M University, USA, to develop and test the feasibility of maize sampling and aflatoxin testing protocols for use in Kenyan maize mills – an initiative in which many of our mills are involved.

The dream of CMA is to have a fully-fledged laboratory for testing of aflatoxins and we believe with the support of research institutions like the BecA-ILRI Hub, this dream is not very distant. Ultimately we hope that we can achieve our goal to provide safe, affordable and adequate food for all our consumers.

Experts Meet to Discuss How to Tackle Aflatoxin

Scientists from 13 African countries have agreed to use a biological product to fight aflatoxin in cereals. At a workshop in Dar es Salaam, the experts discussed progress of Aflasafe, a biological control product capable of reducing the deadly poison by 80-99 per cent in treated cereals.

According to Senior Plant Pathologist at the International Institute of Tropical Agriculture, Nigeria, Dr Ranajit Bandyopadhyay, participants discussed the current status of development of Aflasafe in different countries.

“The results of what we discussed was a collective understanding of the needs for future developments in biocontrol in Africa,” said Dr Bandyopadhyay, who is also team leader for Aflasafe projects.

The biological method of controlling aflatoxins was developed by the United States Department of Agriculture-Agriculture Research Services and implemented in Africa by the tropical institute and other national and regional organisations.

Using native strains of *A. flavus* that do not produce aflatoxins but are able to displace their aflatoxin-producing counterparts, it reduces aflatoxin infection in crops and in the environment.

Simple and Safe Protection

“Biological control products like Aflasafe give the farmers a simple safe method of protecting their crops from aflatoxins while in the farm and when stored, saving them the expenses of aflatoxin contamination,” said the developer, Prof Peter Cotty, who is also a research plant pathologist.

Aflatoxins are toxic chemicals, usually produced by fungi in food crops, causing cancer and liver diseases. They also diminish the body's immune system, retard children's growth and may lead to death in extreme cases.

Aflatoxin contamination is a major problem globally, causing losses of about \$1.2bn, \$450m of that amount emanating from Africa economies. It significantly hampers efforts of food supply and rural poverty reduction in the continent, causing economic losses and major fatalities in the region.

Recently, Kenya announced that 400,000 bags of maize in its strategic reserves had been contaminated, therefore unsafe for consumption while Tanzania reported deaths from aflatoxin poisoning. The workshop brought together 50 participants including farmers and policy makers.

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STAK Calls for a Robust Seed Sector to Achieve Kenya's Food Security



It is the position of The Seed Traders Association of Kenya (STAK) that the livelihood of Kenyan farmers, the health of our economy, food security, and the size of our foreign reserves depend upon the success of the partnership between research, policy, and regulatory entities in public and private sectors.

"Kenya's seed sector is faced with major challenges which must be addressed consultatively as we all agree failure is extremely costly," the Seed Traders Association of Kenya (STAK) CEO said this while announcing plans for its upcoming Annual Congress and Expo, that will be held in Nairobi, Kenya, in November between the 8th and 9th, 2016 at Safari Park Hotel. He urged players to work together to help make Kenya a food secure country. STAK says some of the major challenges facing the seed industry are:

Insufficient certified seed material

Apart from seed for the major grain cereals like maize, rice and wheat, the country still

experiences shortage of seeds e.g. legumes and vegetables.

Low adoption of improved seed and complementary technologies

It is estimated that apart from maize and vegetables, the informal seed sector accounts for about 80% of total seed used.

Inconsistent legal and regulatory framework

Though this has largely been addressed, the regulatory framework and lack of harmonized seed policies and standards in the region is still a major challenge.

Prevalence of adulterated seed in the market

The reviewed Seed and Plant Varieties Act provides for more deterrent penalties, while enforcement and persecution still remain weak.

Additionally, the sector is still faced with high costs of seed, inadequate suitable varieties

for marginal areas, insufficient technical skills and infrastructure for new technologies, low funding of seed research, and lack of centralized germplasm conservation and utilization centre, though this is to be partially addressed by the Plant Genetic Resources for Food and Agriculture (PGRFA) Regulations.

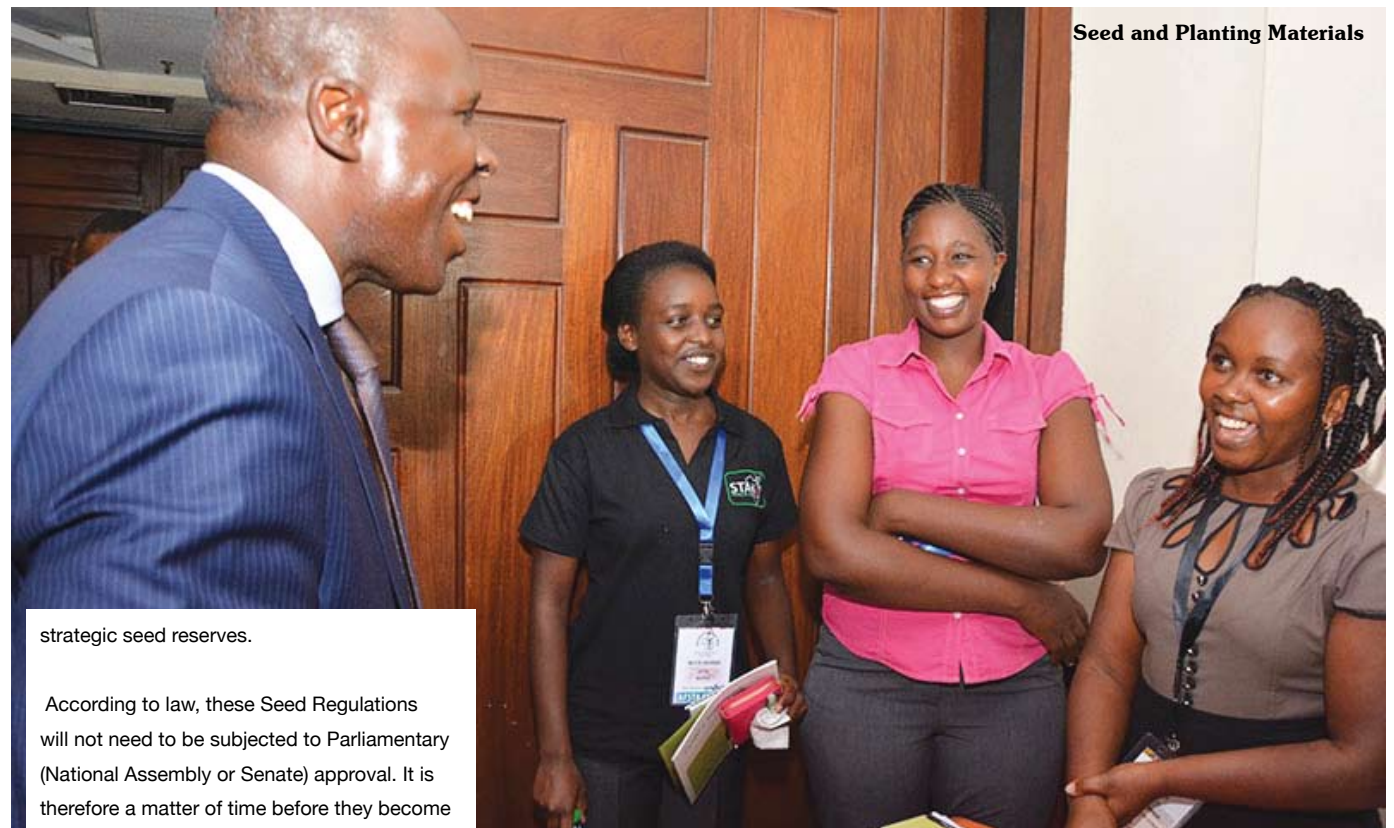
Policy, Advocacy and Training

To address this, STAK has engaged the government and come up with the following regulations: The Seeds and Plant Varieties (Plant Breeders Rights) Regulations 2016, The Seeds and Plant Varieties (Seeds) Regulations 2016, The Seeds and Plant Varieties (Variety Evaluations and Release) Regulations, 2016.

These regulations will provide for a sustainable financing system for research and development, germplasm conservation, extension, quality control and capacity building to fully exploit the potential of improved varieties and technologies, for increased agricultural and forestry productivity.

They will also establish an effective regulation to coordinate and manage all activities within the seed industry in order to tap synergies and maximize resources for enhanced efficiency, including eradication of prevalence of adulterated seeds. They will also build capacity and infrastructure within the seed industry to handle research and development, quality control, technology transfer, and other emerging technologies such as Genetically Modified Organisms (GMOs), and Information, Communication and Technology (ICT).

Enactment of these regulations will facilitate the creation of an enabling environment, through legal and policy reforms, for effective participation of both public and private sectors in the production of cost effective and quality planting material, harmonize regional seed policies and regulations to enhance cross border trade in seed, and monitor seed supply situations in order to ensure adequate



strategic seed reserves.

According to law, these Seed Regulations will not need to be subjected to Parliamentary (National Assembly or Senate) approval. It is therefore a matter of time before they become operational, but sign off from the Cabinet Secretary; Agriculture which will be a major achievement for STAK. This is now with the Attorney General office for drafting.

STAK is a member of African Seed Trade Association (AFSTA) and in partnership with other partner associations; they have been working on a COMESA Seed Harmonization Implementation Plan (COMSHIP). In a meeting held in September this year, member states presented update status and thereafter a work plan. Kenya presented the formation of a national technical working group that will oversee agreed activities for the next one year. The composition of the group includes STAK, Ministry of Agriculture Livestock and Fisheries (MoALF), Kenya Plant Health Inspectorate Service (KEPHIS), Kenya Agricultural and Livestock Research Organization (KALRO) and seed companies.

Through the Kenya ICC National Office, STAK is also a member of the International Chamber of Commerce (ICC), which is the largest and most representative business organization in the world. The International Chamber of Commerce (ICC) has established national committees worldwide and in 21 African countries, Kenya being the latest entrant. ICC provides a platform for its members to have

a global development advocacy platform that opens global markets, access to latest market intelligence and trade regulations.

Public-Private Partnerships

STAK is also a member of Kenya Private Sector Alliance (KEPSA), and they have participated in a number of forums through KEPSA, including the Presidential Round Tables, focusing on agriculture and irrigation. To ensure quality seeds into the market, STAK in partnership with other stakeholders in the industry is developing an operational framework for agro-dealers to weed out unrepeatable dealers from the industry.

One other challenge Kenya has been facing is lack of comprehensive seed usage statistics. To counter this, STAK is working with Agri-Experience funded by Kenya Markets Trust (KMT) to conduct an industry survey on trends in crop seed for the period 2013 to 2015. The information will provide the much needed statistics that will be useful for policy lobbying and influencing.

STAK says that for agriculture to succeed, it must be innovative and respond to farmers' needs, whilst it must also be profitable and efficient. One key challenge to ensuring this success is crop disease, especially Maize

Lethal-Necrosis. The disease has a negative impact on maize yields, which consequently affects both the economy and food security in the country. STAK has partnered with International Maize and Wheat Improvement Centre (CIMMYT) and African Agricultural Technology Foundation (AAFT), in addition to seed companies, to help manage the menace. It is in this view that STAK is collecting data on Maize Lethal Necrosis Disease (MLND) hotspot areas to aid the industry stakeholders in coming up with interventions to reduce risks of the disease.

Interactive Platforms

Seed Sector Platform Kenya is an interactive industry database on crop varieties, agro dealers and industry participants, plus more. This has evolved based on public and private partnership discussions among many players in the sector. Policy makers, KEPHIS, KALRO, crop seed companies, farmers, investors, industry support firms, agro dealers and many more have added their voices to a vibrant dialogue about the information needed to ensure that Kenya's farmers have access to critical resources which hold potential for great crop harvests: high quality seed of improved varieties suited to farmers' specific agro ecologies.

STAK is hosting MbeguChoice, an online tool with a searchable database on different crop varieties, with various desirable characteristics suitable for specific agro ecological zones. This tool ensures Kenyan farmers make the right seed choices for their farms by accessing information on the suitable seed types for their farms, and the company producing that seed. MbeguChoice is also accessed as an app on Google Play.

The results of this dialogue has been the development of three databases to support good decision making in the sector, namely, SeedWorks, SeedShop and Seed Industry Directory.

The African Seed Access Index (TASAI) monitors a variety of indicators that are essential to the development of a national seed sector. It is a useful tool for government policy makers, development agencies, seed enterprises and ultimately farmers. TASAI seeks to promote the creation and maintenance of enabling environments for competitive seed systems serving smallholder farmers. It is this enabling environment that TASAI seeks to measure, track, and compare across African countries. The intended outcome of this index is improved access to locally adapted, affordable, and high-quality seed of improved varieties by smallholder farmers in Sub-Saharan Africa.

Training and Creation of Awareness

Seed is one of the most critical inputs in agricultural production and has the greatest potential of increasing on-farm productivity and enhancing food security. The current national certified seed production is estimated at 40,000 metric tons. It is also estimated that about 80% of the seeds are still supplied by the informal seed sector. There has been a shortage of quality seed for crops like potatoes, wheat and some pulses, and even certain varieties of seed maize, especially those suited for arid and semi-arid areas (ASALs). Over the last years, there has been



observed a steady increase in volume of imported seed, particularly of horticultural crops which cannot be produced locally.

Quality seeds are the backbone of food security in the country. In Kenya, KEPHIS is the regulator for authorization and certification. However, it is a fact that a functional regulation system should have a strong component of self-regulation. This will lead to reduced costs, efficiency and profitability due to increased productivity. Self regulation will also reduce pressure on government and allow it to concentrate on regulation, policy oversight and play its oversight role.

Seed inspectors must be of high standard and integrity, and with good working relationship between players in the seed sector with a clear demarcation of the role of each player. To ensure this, STAK, in collaboration with KEPHIS, has invested in training seed inspectors to serve the growing seed sector. This will give official recognition to a person or organization who has met set standard or criterion to be seed inspectors. The trained personnel will be competent in field inspection, seed processing inspection and sampling, seed sampling and testing and labeling and sealing. The trained and registered personnel will be deregistered in cases of misconduct.

The trainings have been done and STAK and the parent ministry in partnership with Agri Experience and Kenya Market Trust have organized for an exchange visit to Zambia and South Africa. This, has provided an opportunity to learn from others where it has been operationized elsewhere.

STAK intends to have their own inspectors and one of its partners, Business Advocacy Fund (BAF), has approved funding support for the first batch of trainees. STAK is in the process of creating a technical division with seed inspectors as part of rolling out certification and inspection.

Labels and Quality Control

STAK has held numerous trainings in partnership with mPedigree to equip members on the use of labels. Trainings have drawn participation from seed companies' staff and these have been trained on ordering of labels, registration and opening of new accounts and activation of labels. mPedigree has a technical back up support system to ensure smooth operation of this system. There are ongoing consultations on a formal commencement date by all stakeholders when the use of the labels will be rolled out. This will be preceded by awareness creation and sensitization among farmers.

Crop Rotation and Alternatives to Wheat

In Kenya, a lot of wheat is grown. Is this simply because wheat is what we grew last year, and the year before and the year before that? Maybe we grow wheat because we love chapati and need baking flour. However, improvements in other crops have provided some options that we may need to examine.

Canola has received increased attention lately. It would seem to be an ideal crop to use in a rotation scenario with wheat. It has the same growing season as wheat, and we can use the same equipment for planting and harvesting. Canola is a broadleaf, so it provides the opportunity to clean up some grassy weeds that are difficult to control in a continuous wheat production system.

Canola also has a deep taproot to loosen and mellow the soil. In the past, problems with canola included winterkill and a lack of marketing points/options. Varieties have now been bred with improved hardiness. In addition, more buyers will receive canola than in the past.

Sesame is a relatively new and unknown crop. Like canola, it can be planted and harvested with the same equipment that we use for wheat. Plant breeding has also provided some better adapted varieties. Sesame is a summer annual crop that seems to tolerate hot, dry weather very well. As sesame acreages grow, the number of buyers handling it will also increase. Cotton was once a high input crop requiring multiple pesticide sprays to control insects and weeds. Now, with boll weevil eradication, cotton could once again be a desirable crop.

Many farmers are interested in growing corn or soybeans. I would not typically recommend these crops west of I-35 without irrigation. If irrigation is available, these may be options. Another option similar to soybeans is dry or edible beans such as black-eyed peas, cow peas or snap beans.

Grain sorghum is a crop that is often overlooked. If value is given to the grain production and the forage that can be baled after grain harvest, it can be a profitable crop. It may even provide income from lease hunting for dove after harvesting the grain crop.

Sunflowers share many of the same advantages as other rotation crops. They are a broadleaf crop, which provides different herbicide options than wheat

alone. They also have a deep taproot and are an oil seed, which may be used for feed or biofuel. The potential for lease income from bird hunters also exists with a sunflower crop.

Benefits of rotational cropping include breaking weed, disease and insect pest cycles; diversification to spread risk; different root systems to loosen compaction; possible nitrogen benefit from including a legume; and increased yields from the "rotation effect," even if the rotation does not include legumes. Including a summer annual that is not double-cropped also provides time between wheat harvest one year and planting the following spring, thus building up or banking soil moisture. Take some time to evaluate your operation and determine if a crop rotation would benefit you.



Be Ware, You May Loose Your Entire Crop

Throughout the late 1970s to early 1990s stem rust disease had been controlled in Kenya through the development of resistant varieties by Karlo Njoro. In the late 1990s, a new race called Ug99, highly virulent to most commercial varieties emerged. This race that was initially detected in Uganda in 1999 quickly spread to Kenya causing devastating crop losses in fields planted to popular commercial varieties then including Duma, Kenya Heroe, Chozi, Kenya Yombi. For Instance, total crop losses attributable to stem rust were reported by many farmers in Narok in 2007.

Following renewed threat posed by emerging races of stem rust including UG99, an alarm was raised led by, among others, the Nobel Laureate Dr. Norman Borlaug for a concerted global effort to combat the threat. This effort culminated in the creation of the Borlaug Global Rust Initiative (BGRI), which brought together many international institutions including Karlo (Then KARI) with the objective of systematically reducing the world's vulnerability to stem, yellow, and leaf rust of wheat and facilitating the evolution of a sustainable international system to contain the threat of wheat rusts.

An international screening site for rust disease resistance was established at KARLO Njoro. The organization works with other collaborators to combat the stem rust disease menace that remains a key deterrent to wheat productivity in the country and the region.

The Cereal Disease Laboratory (CDL) at the University of Minnesota has partnered with KARLO to profile the local stem rust

pathogen populations to inform variety development and deployment processes. Each growing season KARLO researchers collect isolates of the pathogen in wheat fields and dispatches those to CDL for analysis. Results both from KARLO's own research and those from CDL have helped identify the stem rust race



change. Accordingly, this joint research has established that beside the original Ug99 stem rust race discovered in the region over a decade ago, there are other similar races that infect specific wheat varieties. Evidence from rust disease survey activities carried out across by KARLO scientists in the country have been informative and helping advice farmers on what varieties to grow across the wheat zones.

Varieties developed jointly with The International Maize and Wheat Improvement Centre, commonly known by its Spanish acronym, CIMMYT, and released by

KARLO includes Eagle10, Kenya Kingbird and Kenya Korongo. They are not only high yielding and of good grain quality, but also possess moderate to high stem rust resistance, depending on seasonal rust pressure.

These are suitable candidates for many wheat growing areas in the country under an integrated host resistance, chemical, and cultural management approach. Notably, Eagle10 and Kenya Kingbird are suitable for lower altitude regions such as lower Narok and some parts of Laikipia whereas Kenya Karongo is best suited for medium to high altitude zones.

The latest international project, "Delivering Genetic Gain in Wheat", presently underway at KARLO Njoro continues to spearhead discovery of new genetically superior wheat material, and many such promising wheat varieties are in the pipeline.

Beyond establishing infrastructural capacities to combat wheat rusts diseases in the country and beyond, a key focus has been on training of the next generation of plant scientists especially with regard to cereal rust diseases and breeding for resistance. Many graduate students are being trained between KARLO-Njoro and Egerton University, and a few have proceeded to Cereal Disease Lab and the University of Minnesota, USA for short term training and for doctorate level courses. A similar engagement is in place between KARLO and CIMMYT, Mexico.

An integrated disease management approach would be the most feasible in environments, which favour stem rust disease proliferation. Such an approach spans critical cultural practices, appropriate chemical use, coupled with growing seed of less susceptible varieties.

Some of the cultural practices that farmers need to employ are proper land preparation prior to establishing new wheat crops in a bid to getting rid of any volunteer wheat plants that may be holding the disease. This might also involve rotation of wheat

with a suitable crop, say canola, as well as clearing bushes around the wheat fields which too could be harbouring growing wheat plants from previous crops that are likely sources of initial stem rust disease spread in new crops. Moreover, in some instances early or timely planting helps a crop mature in time before disease epidemics build up. Neighbouring farmers can plan to plant their crops at nearly the same date and implement other operations like spraying concurrently. This might reduce accumulation of stem rust inoculum and contribute to managing the rigours of the disease.

Appropriate chemical used entails, firstly choosing the right fungicide among many that might be in the market, applying the recommended rates, spraying at the right crop growth stage when the plants are likely prone to initial attack.

Chemical intervention is also helped by systematic scouting for early symptoms of the stem rust disease, which before

spreading to other parts of the plant manifests as reddish pustules or lesions on wheat stems. Considering that stem rust can lead to 100% yield loss if it landed on a susceptible variety only 3-4 weeks to harvest, close monitoring and scouting for the disease is a highly recommended practice so that immediate action is taken. In combination with proper cultural and chemical application regimes, farmers are highly encouraged to use certified seeds of moderately to highly resistant varieties available at KARLO-Njoro, for example Eagle10, Kenya Kingbird, and Kenya Korongo.

Planting seed of unknown identity puts the farmer at the risk of establishing a rust susceptible crop, with the possibility of total yield losses, build-up of the disease inoculum that spreads to other fields, and the undesirable events of the stem rust disease changing rapidly to give rise to new virulent races, a sort of a vicious cycle.

Courtesy- KARLO



The Relationship Between Humalite, Leonardite, and Fertilizers.

What are the differences and how do they work together?

To begin we need to first understand the difference between humalite and leonardite. Both are referred to as 'Humate' products, and both comprised of similar materials. They are great sources of humic and fulvic acid, but per volume Humalite holds more of the active ingredients (Humic and Fulvic Acids), less of the undesirables such as ash and heavy metals, and is more easily extracted.



The Differences Between Leonardite and Humalite

Leonardite ranges considerably in humic and fulvic acid content. For example, deposits can have as low as 10% humic acid content and as high as 78%. It's derived from Lignite based coal and was formed in salt water deposits. The other 20-90% of the product that isn't the active ingredient is made up of ash and heavy metals. The comparison of the two is more clear when you take into consideration the enhanced nutrient quality and properties Humalite has over Leonardite.

Humalite is a name given to the humate material. It is singled out because the material has a different composition and is not derived from Lignite. It is derived from weathered sub-bituminous coal, and opposite of leonardite, it is formed in a fresh water environment, not a salt water one.

When humalite is harvested, the resulting final product averages 87% humic acid. Each batch is individually tested to ensure that it maintains the quality and guaranteed 80% humic acid content that it is known for. This means more humic and fulvic acid content, and considerably less of the undesired ash and heavy metals that are found in Leonardite.

The main benefits of Humic Acids are that they stimulate microbiology, enhance the uptake of nutrients, and condition the soils parameters such as Carbon, pH, CEC. All of this works to create a fertile soil environment where the seed can germinate easier and produce a high yielding, nutrient dense crop.

Fertilizers and Humates

We all know that fertilizers are analyzed on the basis of their value of Nitrogen, Phosphorus and Potassium or Potash (N-P-K). They provide and enhance nutrient sources for the plant, but the difference between the two lies in the benefits to the soil itself. Some of the downfalls of fertilizers in agriculture is how hard they can be on the soil health, how much of it gets washed away by water and deposited to water bodies like rivers or lakes, and how it's effectiveness is compromised in sub-optimal soil conditions. Overtime the chemicals and overuse can take its toll on fields and many farmers suffer these unfortunate effects.

This is where the relationship between fertilizers and humics comes to play. Humics are best known as a soil conditioner, and make your soil perform better, even when they are applied in marginal soil conditions. Humic products

helps to retain water, promote nutrient uptake into the root systems and plants, and build a fertile soil that promotes a healthy growing environment.

Together, humics can help the longevity, uptake, and efficiency of fertilizers by holding them in the root zone longer while increasing the uptake and retention of nutrients into the plant. They work as compliments to each other and the benefit you see is a more efficient use of your fertilizer and the money you have spent to add it.

Understanding the differences and the role each can play in your fertilization program can help you get healthier soils and higher yields. Adding humics to a farmer's existing process is one of the best ways to begin a more balanced approach to help restore soil and plant health.

There are many different products and applications to choose from that apply to different growth stages and crop types. Seed planting, germination, mature growth, pre-harvest nutrition, and soil health between seasons can all be enhanced with a proper understanding of the products. Be sure to talk to a specialist to get the right application of each and begin your process to healthier soil conditions, more effective fertilization, and fuller crop yields.

Irrigation Agriculture is a Noble Venture



Any society is as dignified as its ability to feed itself. By the same token, no society can aspire to lasting honour with begging bowls in hand. It is against this backdrop that the quest for Kenya to feed her people through irrigation agriculture model is a noble venture that deserves support by all stakeholders.

Drawing from glowing precedence across yonder, the entire population of Israel is fed on one million acres of irrigated land. That same acreage contributes \$2.08 billion per annum in exports. Absolutely nothing stops Kenya from entertaining, conceptualising and, indeed, implementing thoughts of a project of similar prospects.

Once fully developed, irrigation projects will contribute phenomenally to the local and national economies, provide direct and indirect employment opportunities to Kenyans in their tens of thousands and, no doubt, trigger a multiplier effect that will surely reverberate across sectors such as commerce, industry and many more in the service sector.

More importantly, the project's dividends will directly enhance the country's food security and also provide raw material to agro-industries in the entire

region. In the fullness of time, irrigation agriculture will make Kenya a net exporter of food and livestock products. The conceptualisation and planning of the projects should be painstakingly followed through as embedded in official policy whose overarching objective is aligned to goal number two of the Sustainable Development Goals that calls for an end to hunger, achievement of food security and improved nutrition and promotion of sustainable agriculture.

Irrigation projects should be strategically identified as key projects that would help the country attain food security. Closer home, Galana-Kulalu is a government flagship project whose philosophy is embedded in both the Vision 2030 blueprint document and in the subsequent Agricultural Sector Development Strategy that aimed at making the agricultural sector a key driver in the attainment of the 10 per cent annual growth rate.

Contrary to popular perception, the government has not bitten more than it can chew. Through a consultative process with key stakeholders, there is an agreement to continue with the completion of the project through a phased development with the first stage aiming to develop some 10,000 acres of the Galana-Kulalu project.

To move with exactitude, the government has conducted trials on 500 acres that are part of the 10,000-acre model farm. On harvesting the maize, dyed-in-the-wool pessimists went to town with misinformation meant to 'expose' a white elephant!

But die-hard critics closed their eyes to simple facts. Planted on the 500-acre farm were 13 varieties of maize seed on trial basis. Any honest scientist will confess that whenever one engages in an experiment, he or she is bound to attain results that do not necessarily support his or her hypotheses.

Through this, it is believed the government realized wide-ranging performance of the varieties. Government statistics show that the average production was 17 bags per acre, more or less, Kenya's national average maize production per acre.

There are all indications that the project will enable Kenya cut, by a significant margin, the Sh50 billion that is used each year to import food. As far as maize is concerned, Kenya has an annual deficit of 10 million bags that is sourced from other countries, especially Uganda and Tanzania. Irrigation projects can comfortably cover the shortfall once we open up the rest of the project and other projects to the private sector.

This should enable a significant reduction of the price of unga per two-kilogram packet; enabling the government stabilize the cost of foodstuff for its citizenry.

The envisaged price drop will be facilitated through employing the latest cost-reduction technology in growing and processing maize and other crops. Already, it has been demonstrated that the cost of production under irrigation is cheaper compared to the conventional way of growing maize. For once, it will be possible to guarantee that the majority of Kenyans have sufficient, safe and nutritious food that meets not just their dietary needs but also their preferences for an active and healthy life.

A Chairman With the Energy to Make a Difference



In matters of seeds and grains, he is unquestionably an authority, and he commands the respect of his peers, colleagues and competitors alike. His understanding of the business has been gained through his commitment to give the best service to his country. Captain (Rtd) Gichanga Karanja, himself a respected business manager with an entrepreneurial leaning could not have been more resourceful than serving the sector he loves most, the seed sector as their chairman. Mr. Masila Kanyingi, Editor Cereal Magazine had a 30 minutes tete-a-tete with him.

In a nutshell describe the seed sector in Kenya

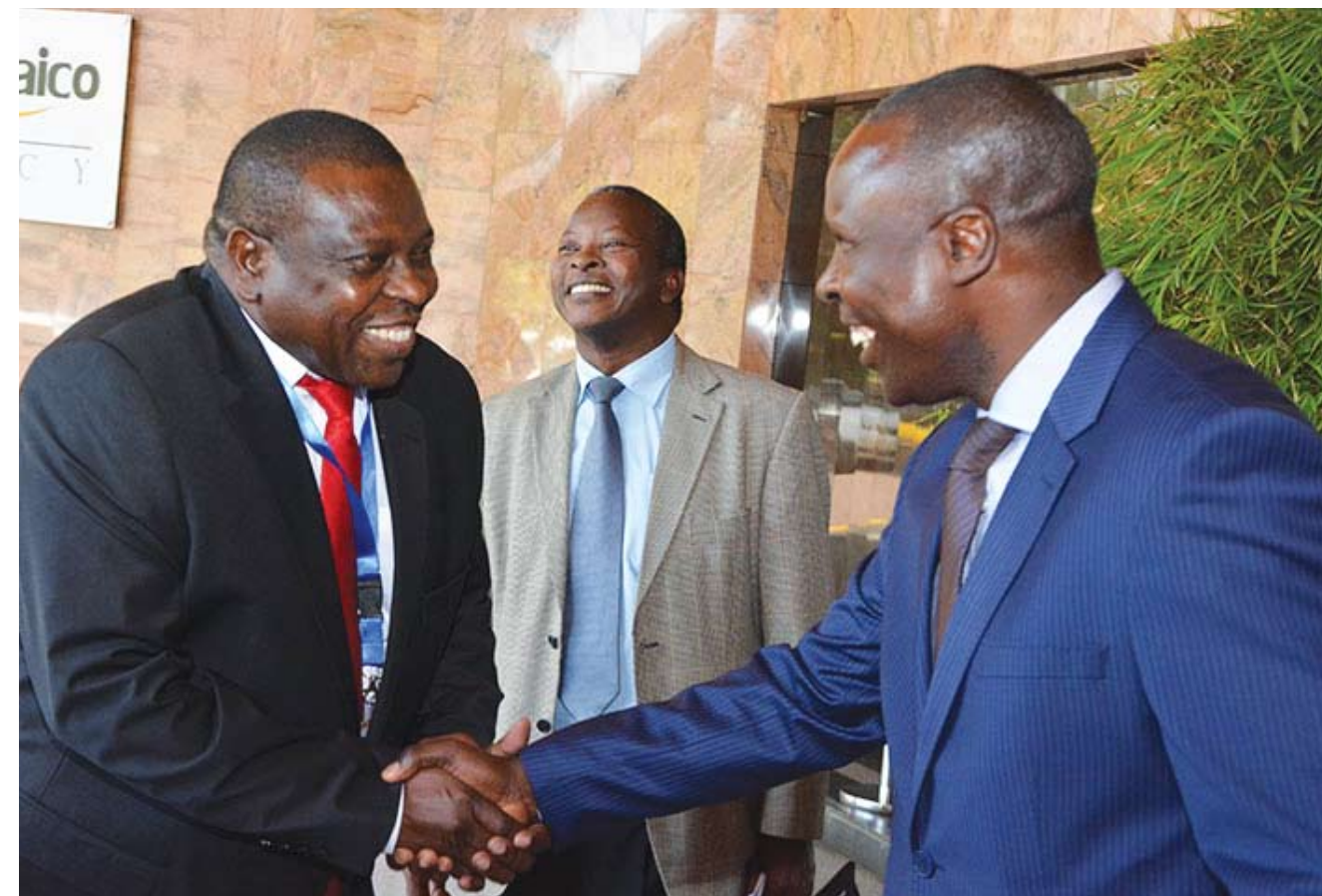
The seed sector is the backbone of Kenya's economic growth. Farmers need to get quality and the right seed variety for higher production per unit. Costly and time-consuming regulations make it harder for farmers to get the best available seed. They also limit farmers' access to exciting innovations such as drought-tolerant crop varieties. This hurts agricultural productivity, which is Kenya's best hope for boosting food security, employment, and economic development.

We need to make our national seed industry more efficient, innovative, and competitive so that it can offer farmers a wider range of high-yielding crop varieties. Without many bureaucratic hurdles, companies can produce a higher volume and wider range of high-quality, affordable seed.

Discuss Genetically Modified Seeds

Genetically modified organisms (GMOs) can be defined as organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination.

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. GM seed developers have concentrated on innovations that bring direct benefit to farmers (and the food industry generally).



One of the objectives for developing plants based on GM organisms is 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.

Is GM Seeds Safe for Kenyan Market?

Genetically Engineering seed production is a global exercise and some of the major producers are the largest multinationals in the Kenyan Market. Government and Research Institutions in collaboration with private companies in bio-engineering should assess individual GM seeds and their safety on a case-by-case basis but not a general statement on the safety of all GM seeds.

Global warming is a phenomenon the country should prepare for and the only

way out is a broad based approach. Government, research institutions and private companies in bio-engineering seeds research should team up to mitigate climate change, promote resistant and tolerant varieties as one of the ways of addressing food insecurity.

The National Biosafety Authority which implements the Cartagena protocol on Biosafety in order to address safety for the environment and human health in relation to modern biotechnology has been busy regulating research and commercial activities involving GMOs. Still under confined trials and not open farmers fields for open trials are some drought tolerant maize and cotton varieties. A research institute has applied for open field trials but it is yet to be licensed.

The Authority has tried to establish a transparent science-based and predictable process to guide decision making on applications for approval of research and commercial activities involving GMOs. As

an industry, technology is good in terms of increasing production per unit area.

STAK is open for new technologies whether conventional or genetic engineering based. All technologies should be evaluated and thoroughly re-evaluated on their effects on human beings, animals and environment. The industry urges both public and government to be ready to accept new technology when need arises.

Briefly Discuss the Impact of Counterfeits to the Seed Sector

This is a very good question. Counterfeits are the biggest competitors to the formal and informal seed players. Established criminals use well known and established brands to cheat on consumers. This is slowly fighting government's effort towards food security in the country. It is a barrier for the nation to produce enough and feed its own citizens. Any barrier towards self sustainability must be fought with the pangs it deserves. Counterfeit is among

Farm Machinery and Sustainable Agriculture Must Evolve Together

Movers & Shakers

them, it touches peoples' lives.

The unscrupulous businessmen cheat out consumers, sabotage the economy and discredit both our products and professional ethics. On consumer level, the impact is great to their health and crops.

The companies producing seeds are also affected dearly by the crime. On the other side the government is also loosing through revenue, scaring of investors and some investors may also close shop. The impact is huge and if unchecked could lead to fatalities.

So, what is STAK doing to ensure that the menace does not get out of control?

By a stroke of a pen, no one can rid off counterfeits, as said earlier, it is an established industry by itself. But having said that, let me point out that statistics show a reducing figure. This is as a result of an all inclusive approach with the industry, regulatory bodies, government enforcing arms and the public participating. The media has also played a key role.

STAK has also partnered with seed regulatory authority to introduce electronic labels/tags on seed packs. This gives room to the farmer to send a Short Message System (SMS) and confirms that the seeds inside the pack are genuine and are from a recognised seed company. They can also confirm whether they have been inspected and authorised by KEPHIS. Members have also gone further and introduced advanced seed grain kernel marking methods which farmers can easily identify.

Secondly information is power. STAK has invested in disseminating information to create public awareness. In this we are using the both mainstream and social media, farmer and agro-stockist trainings among other means. In this act we have empowered the people. As a continual process members are advocating and training on good ethics and dangers posed by use of counterfeits daily in radios and other communication channels. STAK also

took part in lobbying for the new punitive legislation to anyone convicted of the offence. The legislation has also ensured all loopholes have been sealed.

Farmers have complained of expensive farm inputs, Discuss

Responsibility, commitment and integrity are key virtues of human beings. Despite the sensitivity of this matter, each side (Government, farmers and millers) has been pulling on its end and blaming the other. It has turned into a game of cards. But we all seem to be in agreement on the end result: We want agriculture to thrive for the benefit of Kenya's people and economy. What we need to do now is formally agree on the best way to achieve this goal. So, let us face the fact. Inputs are expensive in all fronts.

The government needs to do what many countries have done - get rid of regulations that make it expensive to supply farmers with quality seed. In their place, set high standards for seed quality and stiff penalties for non-compliance. And then let the industry decide how best to meet these standards. These regulations will not only ensure competitive prices for agricultural production inputs but also allow competition.

The government also needs to clean up the inefficiencies of the public grain buying authorities in addition to regulating against grain cartels and open the market. The government has kept on saying they have subsidized fertilizers. But the channel used will never help the farmer. Efficient subsidy of seeds, fertilizers and agrochemicals should be done through the agro-dealers and other private players. This will ensure farmers get the right quality and quantity in time.

We need to make our production more efficient, innovative, and competitive so that we can improve on production cost per unit and stop crying on better prices. Efficient farming methods will add yield per unit area. Take, for example, maize

which is the main crop in Kenya. There is room for farmers to improve productivity to 30 bags per hectare. This will need professional advice from extension staff and quality inputs purchased in time and at government subsidized prices.

In the same wave length farmers need to take farming as a business not as a by the way activity and give it a serious approach (feed themselves and sale surplus to make money). Both the national and county government should help farmers plant what does well in their area (Crops and Varieties). Maize is not the only crop for all small scale farmers; sorghum is better in semi-arid areas and also more nutritious and marketable. Farmers should also understand their rain patterns, soil type among many other basic things many small scale farmers need to know to increase yield per unit.

How do you see the future of the seed sector?

The seed sector is the backbone of Kenya's food security agenda. It will remain vibrant with more players coming in. However, the importance of research cannot be gainsaid with the current changes happening globally. There is need for government to increase research funding to the universities and other research institutions in addition to more collaboration with private players.

Give your final remarks

Innovation is the key to production as well as processing of knowledge. Indeed a nation's ability to convert knowledge into wealth and social good through processing information determines the future of any nation. The purpose of innovation is to create a new value for individual, team or organization, or for a society at large. New values could be in form of breakthrough products or services, new strategies, new policies, new processes and new methods of organization. Kenya needs dissemination of information to the farmer to make him knowledgeable for better production per unit area.

Machinery's role in an environmentally sustainable future is a main concern. Farm machines have revolutionized agriculture and reduced drudgery for millions of farm families and workers, but the machinery of tomorrow will have to do more than that – it will also have to contribute to agriculture that is environmentally sustainable.

There is need to explore the inexorable rise of the use of machinery in farmers' fields, drawing lessons for policymakers and economists from some of the big winners and also the regions lagging behind. For example, Kenya went from using human muscle and ox power to being a mechanized agricultural economy in Africa, with low-power 2-wheel tractors, and diesel powered irrigation pumps and widespread mechanized crop threshing.

Comparatively, other regional countries, which have comparatively the most abundant land resources, have less than 10 percent of mechanization services provided by engine power. About 25 percent of farm power is provided by draught animals and over 60 percent by people's muscles, mostly from women, the elderly and children.

There is need to draw lessons from these trends, with in-depth studies of mechanization in countries and regions in Africa, Asia, the Near East, South America and Eastern Europe, as well as chapters on themes such as development needs, manufacturing and information exchange.

There is also need to delve into many aspects of farm mechanization, not only how machines will contribute to an environmentally sustainable future, but also what policies will put machines at the service of family farms so that they too can profit.



Future of agriculture.

This investment should consider the future; arguably, the design of agricultural machinery must evolve in parallel with the roll out of Sustainable Crop Production Intensification (SCPI). That means fewer chemicals, more efficient use of water, and more efficient use of machines.

Farm machinery needs to be intelligent, lean, precise and efficient in order to minimize the impact on the soil and the landscape. Two of the farming activities that have the greatest impact on the environment are soil tillage, because it can severely damage soil ecology, and pesticide application.

Conservation agriculture is an approach that reduces or eliminates soil tillage and pesticide use. To control weeds, conserve soil moisture and avoid soil disturbance, a mulch layer of crop residue is retained on the unploughed field.

Special machinery is needed to plant seeds and apply fertilizer through the mulch at the correct depth without disturbing the crop residues. An added advantage to this type of mechanization is that, without the need for high-draught tillage, lower powered and therefore cheaper tractors can be used. These lighter machines have the added advantage of not compacting and therefore damaging the soil like a heavy tractor would.

The use of agrochemicals for the management of insect pests, disease and weeds can have a significant impact on the environment. Besides reducing pesticide use overall through integrated pest management including biological control, when chemicals are necessary they can be used with greater precision since it is estimated that about 50 percent of all pesticides applied do not reach their intended target. Many technological innovations exist to improve this situation,

for example, low drift nozzles and spray shields.

In irrigation, technologies such as micro sprinklers or drip irrigation that save water and consume less power are the environmentally friendly way of the future, according to the book.

Defeating poverty

For proper mechanization for rural development, government policies should encourage the agricultural machinery sector to develop markets for agricultural mechanization, especially for conservation agriculture, and to establish the required infrastructures.

Such support, especially to the smallholder sector, can have a dramatic impact in moving farm families out of poverty into a more profitable, commercially oriented agriculture.

The global agricultural machinery industry should provide more support to smallholder farmers with equipment designs and models that better suit the needs of smallholder farmers and service providers.

Without this change in the machinery sector, the needs of developing countries for food security, poverty alleviation, economic growth and environmental protection cannot be achieved.

Opportunities in Value-added Grains

The Production and Marketing of Value-added Grains

The interest in value-added grains is increasing among farmers, elevators, and processors. In this article I outline the major forces driving this interest in value-added grains. I also discuss some of the specialty types currently being developed and insights into some that may be developed in the future.



Changes in the grain industry

Several forces now at play will create changes in the grain production and marketing systems of the future. Three of them are discussed below. These changes will occur at an accelerating rate over the next decade. Taken together, these developments are likely to propel significant increases in the production and use of specialty grains over the next decade.

Increasing diversity of production systems

The first force is the increased diversity developing at the farm level. The similarity among farming operations of 40 or 50 years ago is rapidly fading. It is widely recognized that huge size differences have developed among farms. But the differences don't stop there. Big differences now exist in tillage programs, production practices, financial structure, leasing arrangements, and a host of other farm characteristics. Unlike the 1950s, there is no longer a one size fits all strategy for farmers. Looking over the fence doesn't guarantee the right answer anymore. As farmers seek the best strategy for their specific situation, the answers that emerge are likely to be different from the ones their neighbors use. A good strategy for success on one farm could be a total bust for other farm operations.

Changing genetics

Genetics is a second strong force now propelling changes in the grain production

and marketing system. While there has been a long and steady stream of significant genetic improvements over the past 50 years, the flow has accelerated during the past decade. As the heavy investments now being made in genetics research begin to pay off, most experts expect even more sweeping genetic breakthroughs during the next decade. In addition, the focus of genetics programs is becoming much broader. Breeding and genetic engineering programs are looking well beyond the traditional traits (such as yield, dry-down, maturity, and ear drop) into the chemical traits contained in the grain itself.

Changing demands of end users

The third force is the changing demands end users are beginning to express. The needs and expectations of intermediate and end users are becoming much more specific. They often focus on the presence or absence of specific physical or chemical traits. Up to now, processors and end users have been willing to accept broadly defined commodity corn and soybeans. They simply adjusted their processes or feed ingredient formulations based on the average composition of product received.

Processor demand -- Although processors have long recognized the value of specific traits to end users, they have also needed to source large volumes of grain on a continuous basis to keep their plants operating efficiently. Getting the precise traits needed in the proper quantities has

proven difficult or impossible in the high volume bulk commodity marketing channel. Without advance planning and coordination in the marketing channel, grain with the desired traits is mixed and remixed as it moves through the channel.

Feed industry demand -- End users in the feed industry also see potential benefits from specialty grains. Like processors, feeders are in the business of converting grain into products for end users in this case, meat, milk, poultry, and eggs.

Different nutritional requirements for, cattle, and poultry have long been recognized and a great deal of emphasis has been placed on combining ingredients for the specific diets needed by each species. However, the level of precision in animal diets has been blunted by the variability in specific traits contained in commodity grain and meal. Use of average values for grain and meal means that some lots may contain somewhat more than the required level of nutrients while others may be slightly deficient. But this is likely to change for both processors and feeders as we move through the next decade.

Different marketing procedures

Producing and marketing specialty grains is likely to involve several changes in marketing system. It will affect both producers and buyer (or first handlers).

Separate Storage

First and most obvious is the need to keep specialty grains separate in order to preserve the desired traits. Some specialty grains that may be produced in large volumes may be handled similarly to commodity corn with a greater degree of commingling and bulk handling. But for more specialized grains or grains with very specific stacked traits, strict segregation and identity preserved handling practices will be necessary.

Purchasing

Purchasing is another area where significant change is likely to occur at the buyer level. Grains with special traits generally require more planning and coordination as they move through the distribution channel. Buyers will need to offer marketing contracts to farmers for these products well before the seed is purchased and the crop is planted. For specialized grains with low volumes, the flow of product will need to be matched with the users ability to use it. They may need to use buyers call provisions where the end user dictates when grain will be delivered to properly regulate the flow of product to the user.

Grain testing

Buyers will need to do more sophisticated testing of specialty grains. For traditional commodity grain, sampling and testing has routinely been done to determine moisture, condition, and foreign material. However, specialty grains typically require additional tests for proteins, oils, and starch content.

For the most specialized products, amino, fatty acid, and starch profiles will need to be identified and measured. In most cases, these tests will have to be done by the buyers (at delivery) and will require more technical skills and equipment than is currently available.

Economics of specialty grains

The economics of producing and marketing specialty grains is different than the economics of producing undifferentiated bulk commodity grains. While the most common advantage of producing specialty grains is a premium price for the special trait grain, some specialty products (and the various contract arrangements to produce them) may carry additional advantages for you.

Risk management

Some types of contractual arrangements can reduce your marketing risks and allow greater diversification of production risks. In other cases, your financial risks may be reduced through specialized production arrangements between you and the

seed company or the end user. These arrangements may involve risk sharing for yields and profits.

Economic costs and management requirements

You may be faced with different costs and management requirements if you enter these specialty markets. Depending on the type of grain produced, there may be added seed costs, and/or differences in fertility, tillage, spraying, cleaning, or conditioning involved. In nearly all cases, harvesting (and handling) equipment will need to be cleaned before special quality grain is handled and special traits must be preserved through the storage period in a separate bin.

Establishing the Value of a Grain Bid: Think of Transparency in the Grain Market

Grain companies look at variables in their market place on a daily basis to arrive at a single bid for the commodities they handle. The goal is to arrive at a value which is fair to the producers. Transportation, markets and direct costs are complex factors that make up the local cash price of the commodity. Transportation is a variable cost which moves on a daily basis and can greatly affect the value of commodities. Truck freight can move up or down depending on the supply and demand. Rail freight is another variable which affects all markets, including those not tied directly to a rail line.

Carry and inverted markets are two different structures affecting cash grain prices. A carry in the market occurs when grain is worth more in the future than it is today. The combination of a large harvest and the ability to meet the demands of end-users can create this carry. Carry markets mean someone needs to pay to hold grain off the market. The value of holding this grain off the market becomes a variable in which each participant has to figure into the cash price of the local bushel. An inverted market occurs when grain is worth more today than in the future. A small harvest and high end-user demand can cause an inverted market, creating an immediate need for the commodity and leaving very little opportunity to hold the grain. Market participants are penalized if they hold their grain too long.

Analyze profit potential

To be a successful producer of specialty grains, you will need to be fully aware of the costs and returns (profit per acre) for the specialty products you are producing. This is essential in order for you to make this new enterprise fit into your overall farm production and risk management strategies.

Conclusion







Over the next decade, you will have an unprecedented opportunity to produce value-added or specialty grains in addition to (or instead of) the standard commodity grains - and to share in the higher value these specialty trait grains carry.

Inverted markets allow buyers one chance to make revenue and this is considered when determining the cash value of grain.

Personnel costs, asset improvement, and regulations are costs which are somewhat harder to measure but must be taken into account when setting values of the cash grain. We often hear our customers comment on the importance of retaining good employees. Finding good help in all industries continues to be harder and paying a competitive wage is paramount in this battle. Improving assets to keep up with the producer's move to bigger and faster equipment is important to meeting the needs of our current and future customers.

The idea of building speed and space and replacing 50-year old facilities is an expensive and daunting challenge. Existing facilities which are quite aged will continue to require maintenance and repairs until they are replaced. Increased regulations continue to be a major change to our industry. Although we wish these regulations would decrease over time, this expense will most likely continue to increase. With all these moving pieces our commodities markets are still some of the most efficient and transparent markets in the world and we've seen little change in margins over the years. Marketing grain is more about timing and understanding trends rather than nickel and dime transactions.

OUR WHEAT & BARLEY SPRAY PROGRAMME

Crop Stage	Target	Product	Application Method /Rate
1. Zero Tillage / Pre-plant	Common weeds	Wipeout 360 SL & Aurora Turbo 70 	For total control of all weeds use a tank mix of Wipeout (1.5L/ Ha) and Aurora Turbo 70Sg (400gsm/Ha)
2. Seed	Soil borne pest and diseases including dumping off, fusarium and nematodes	Seed coat 	Seed dress at a rate of 25mls/kg of seed
3. Early Tillering	Over 20 actively growing grass weed species including <i>Alopecurus mysuroides</i> , <i>Apera interrupta</i> , <i>Avena Ssp.</i> , <i>Phalaris Ssp.</i> , <i>Setaria Ssp.</i> , <i>Snowden polystacha</i> , <i>Sorghum halpense</i> , <i>Zea Mays</i> , <i>Bracharia phatyphylla</i> , <i>Digitaria Ssp</i> , <i>Echnochloa crus Gali</i> , <i>Eleusine indica</i> , <i>Leplochlea chinensis</i>	Foxtrot 	Foliar spray at 1 Litre/Ha
4. 2nd Node Detectable Stage 7-10days after foxtrot application	Broad leaved weeds <i>Amaranthus Spp.</i> , <i>Argemone mexicana</i> , <i>Bidens pilosa</i> , <i>Capsella bursa-pastotis</i> , <i>Chenopodium album</i> , <i>Commelina benghalensis</i> , <i>Conyza stricta</i> , <i>Datura stramonium</i> , <i>Solanum nigrum</i> etc.	Aurora Turbo 70 SG 	Foliar spray 0.6Litres/ Ha. Tank mixed with Natural Wet only
5. Beginning of tillering	To promote and increase tillering	Synergizer 	Foliar spray at 1.5Litres per hectare
6. At Tillering	Septoria Tritici, Powdery mildew, yellow rust Ryncho etc (preventive dose)	Smash SL 	Foliar spray at 4Litres per hectare

Crop Stage	Target	Product	Application Method /Rate
7. After Tillering	Incase of Septoria Tritici, Powdery mildew, yellow rust Ryncho etc.	Shafi 125 SC 	Foliar spray at 0.75Litres per hectare
8. Booting & Early Flowering	To promote flowering and grain formation	Synergizer 	Foliar spray at 1.5Litres per hectare
9. First sign of insects' infestation	Russian wheat aphid, thrips, caterpillars, bores, scales and mites	Marshal 250EC 	Foliar spray at 1Litre per hectare
10. Before Flowering	Caterpillars, aphids, thrips, mites	Either Talstar 100EC 	Foliar spray at 0.1Litres per hectare
	Caterpillar, aphids, thrips, mites, cutworms and chaffer grubs	or Brigade 	Foliar spray at 0.4 Litres per hectare
11. Tillering & Mid-Tillering	Copper deficiencies	RovaCop 	Foliar spray at 1.2Litres per hectare

NB: Inclusion of natural Wet in sprays improves efficacy



DISCLAIMER: IT IS IMPORTANT TO FOLLOW INSTRUCTIONS ON THE APPROVED LABEL WHEN HANDLING, STORING OR USING ANY PEST CONTROL PRODUCT.

FROM: **Juanco SPS Ltd**



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Julie Borlaug

New generation of hunger fighters needed



Encouraging youth willing to become “hunger fighters” to take up the challenges of farming despite erratic weather caused by climate change, drought, dwindling water supplies and nutrient-depleted soil, is key to future food security, said Julie Borlaug, associate director for external relations at the Norman Borlaug Institute for International Agriculture at Texas A&M University.



CIMMYT Fifty Years Celebrations in Nairobi

The International Maize and Wheat Improvement Center (CIMMYT) held its eastern and central Africa 50th anniversary celebrations on 9 – 10 September, 2016. The event was hosted by CIMMYT’s regional office in Nairobi, Kenya, bringing together over 150 stakeholders, partners, dignitaries, donors and staff to take stock of achievements made in the region and lessons learned through five decades of partnership, with a focus on the future of maize and wheat research in the region.

CIMMYT Director General Martin Kropff led the event and encouraged staff to share CIMMYT’s impact in eastern and central Africa and strategic vision the organization has adopted for the future. Guests also had an opportunity to view CIMMYT and partner activities in the three major research sites in Kenya and give feedback on CIMMYT’s work.

Seed companies, national agricultural research organizations and long-serving CIMMYT staff were presented awards recognizing the long and fruitful collaboration between them and CIMMYT. A tree was planted in honor of the late Wilfred Mwangi, who was CIMMYT’s Regional Liaison Officer in Africa.

These hunger fighters must embrace technological innovation, creativity, bold ideas and collaborate across all disciplines, while also effectively engaging smallholder farmers and private and public sectors to come up with sustainable solutions, Borlaug said, adding that the average age of a farmer in the United States and Africa is well over 50 years.

Julie Borlaug, the granddaughter of 1970 Nobel Peace Prize laureate Norman Borlaug, a former key wheat breeder at the International Maize and Wheat Improvement Center (CIMMYT) known internationally as the father of the Green Revolution addressed delegates at the CIMMYT 50th anniversary conference on “CIMMYT’s future as a Borlaug legacy.”

After 50 years, CIMMYT remains relevant in the fight for food security and an important part of the Borlaug legacy, Borlaug said, adding that technological innovation is needed to address agriculture and the challenge of climate change. “Since the seven years of his passing, I know my grandfather would be pleased by the leadership team and all at CIMMYT. As hunger fighters and the next generation, they have made CIMMYT their institution and continue to advocate strongly for improvement in science and technology to feed the world,” she said.

Organization profile

Her grandfather, who started work on wheat improvement in the mid-1940s in Mexico, where CIMMYT is headquartered near Mexico City, led efforts to develop semi-dwarf wheat varieties in the mid-20th century that helped save more than 1 billion lives in Pakistan, India and other areas of the developing world. In his Nobel Peace Prize acceptance speech, Norman Borlaug paid tribute to the “army of hunger fighters” with whom he had worked.

Borlaug shared some views on CIMMYT and the future of agriculture in the following interview.

What are the key challenges the world faces into the future?

In my opinion, the entire agricultural community should focus on addressing three major challenges: the first is climate change and erratic weather patterns. Droughts and a decline of limited natural resources such as water and soil are of major consequence to agricultural productivity. The second major challenge is the societal resistance to new technologies and innovation. And the third major challenge we are facing is how to engage the next generation to work in the agricultural sector.

To address the first challenge, we must have biotechnology and technological innovation across the board to address issues that will stem from climate change. The utilization of drought, heat and saline tolerant crops, informatics, and other innovations will be a necessity. Technology will be part of the integrated solution that creates better farming systems, more nutritious foods and addresses all the issues that come with climate change and sustainability.

It is important to understand the societal resistance to new technologies and innovation. I understand their skepticisms and confusion. It is important to note that when speaking to these critics, we keep in mind the campaigns that have been mounted against our industry and have spread fear and inaccurate information

that the public has accepted as fact. In my opinion, the agricultural industry has to improve in explaining to the public why modern agriculture is so important to our future and why the opposition to it cannot be permitted to deprive millions of people of its promise.

What is significant about CIMMYT:

What role has CIMMYT played in your area of work?

CIMMYT is both personally and professionally significant to me. Personally, I have grown up knowing how deeply invested, protective and grateful my grandfather was to the role CIMMYT played in his career, the Green Revolution and as a leader in international maize and wheat research. CIMMYT was not just a place in which my grandfather was employed but part of his family. All who met, worked with my grandfather or had the opportunity to have an early morning CIMMYT breakfast with him, remember the deep interest he had in their careers and research as well as his often too candid assessment of their current & future work. His passion for CIMMYT never faded and in the end of his life his return “home” to his Yaqui Valley wheat fields in Sonora, Mexico, gave him hope for the future of CIMMYT, the CGIAR system as a whole and international research and development in agriculture. Professionally for me, CIMMYT has helped me learn more about my grandfather professionally but it has also broadened my depth and knowledge of maize and



wheat research as well as the importance for the CG system. At the Borlaug Institute at Texas A&M, we work in international agriculture development and have had the opportunity to partner with CIMMYT on many occasions. I promised my grandfather that I would help to bring all the Borlaug Legacy Institutions together to work collaboratively and not competitively as we once had. CIMMYT was the first Borlaug legacy institution to join us in working collectively towards my grandfather legacy to end hunger and poverty.

Background

CIMMYT grew out of a pilot program sponsored by the Mexican government and the Rockefeller Foundation in the 1940s and 1950s aimed at raising farm productivity in Mexico. The wheat specialist in that program, Norman Borlaug, worked with Mexican researchers and farmers to develop hardier, short-stemmed wheat varieties that resisted devastating rust diseases and yielded much more grain than traditional varieties. The new wheat lines were bred and selected at various Mexican locations in a range of climate conditions, which meant they were adaptable to a range of farm settings. The higher yielding varieties helped Mexico attain self-sufficiency in wheat production in the 1950s. Additionally, the varieties were imported by India and Pakistan in the 1960s



to stave off famine, soon bringing those countries record harvests. This led to the widespread adoption of improved varieties and farming practices, which became known as the “Green Revolution.” CIMMYT was formally launched as an international organization in 1966. Borlaug, who worked at CIMMYT as a wheat scientist and research leader until 1979, received the 1970 Nobel Peace Prize because, more than any other single person, he helped to provide bread for a hungry world. He remained a distinguished consultant for the center until his death in 2009.

Operations

CIMMYT works throughout the developing world to improve livelihoods and foster more productive, sustainable maize and wheat farming. Their portfolio squarely targets critical challenges, including food insecurity and malnutrition, climate change and environmental degradation.

Through collaborative research, partnerships, and training, the center helps to build and strengthen a new generation of national agricultural research and extension services in maize- and wheat-growing nations. As a member of the CGIAR consortium of 15 agricultural

research centers, CIMMYT leads the CGIAR Research Programs on Maize and Wheat, which align and add value to the efforts of more than 500 partners.

Turning research into impact

- By conservative estimates, this work provides at least \$2 billion in annual benefits to farmers.

- CIMMYT alumni include a Nobel Peace Prize laureate and three World Food Prize winners.

- CIMMYT’s success depends on the longstanding partnerships and trust of public agricultural research systems, private companies, advanced research institutes and academia, and non-governmental and farmer organizations.

- More than 70 percent of the wheat grown in developing countries and more than 50 percent of improved maize varieties derive from CIMMYT breeding materials.

- More than 10,000 scientists have trained at CIMMYT and gone on to become leaders in their own countries. The center empowers thousands of students, extension workers and farmers through

Organization profile

courses, workshops and field days.

It starts with seed

CIMMYT crop-breeding research begins with its Germplasm Bank, a remarkable living catalog of genetic diversity comprising over 28,000 unique seed collections of maize and over 140,000 of wheat. From its breeding programs, each year CIMMYT sends half a million seed packages to 600 partners in 100 countries. With researchers and farmers, the center also develops and promotes more productive and precise maize and wheat farming methods and tools that save money and resources such as soil, water, and fertilizer.

CIMMYT is governed by its board of trustees, director general and a management team who work together to determine scientific goals, policies and strategies of the organization.

Overall, about 1,250 people work at CIMMYT, including 570 at our headquarters in El Batán, Mexico, near Mexico City. Additionally, 510 people work in 19 countries throughout Africa, Asia and Latin America.

Some 160 international scientists and specialized staff work at CIMMYT. CIMMYT employs about 400 nationally-recruited personnel in 15 countries selected for their talent and expertise.

Awards

CIMMYT scientists have won many awards for their research and field work, including the prestigious Nobel Peace Prize in 1970 and the World Food Prize in 2000 and 2014.

The large number of trophies, titles, certificates, commemorative plaques, medals, badges, pins and ribbons acknowledging scientific excellence at CIMMYT over the past 50 years are too numerous to list

Courtesy : CIMMYT

Technology; Future of Rural Areas?

Simply put, rural Kenya is different from the rest of the country," A Professor told his fellow university and Extension agricultural economists attending a conference. While the economic recovery is generally slow and steady in much of the nation, recovery of the rural economy is a mixed bag, he added.

Rural Kenya is drought affected a lot sooner than urban areas, and because of that, job growth has turned positive in rural areas before it has in urban areas. On the other hand, rural economies have taken a beating.

"In this jobless recovery, rural communities are actually enjoying some job gains," he says. "After falling more sharply, rural jobs rebound a bit faster than urban job gains, posting positive job growth. The leading pace of rural job gains is supported by the agricultural sector.

Additionally, rural job gains have been paced by stronger activity in service-producing firms, rural manufacturers face the brunt of the challenges, with available jobs in the goods-producing sector falling.

This highlights the challenges rural Kenya faces in a global economy. Building competitive advantages on low-cost land and labour will not work in a regional economy where neighbouring countries have cheaper land and labour."

"Rural Kenya is becoming a service-based economy, and that industry is making gains while the goods producing industry is falling. This declining agriculture and factory base means rural Kenya needs a new economic engine that will be built on new technological innovations. If rural Kenya is going to compete, it is going to have to develop a new, competitive advantage."

Recently, almost 10 percent of agricultural land has been converted into real estates resulting to mass layoffs were due to large scale farms closures, something not witnessed in the urban areas. "These jobs are not coming back. And small scale agriculture, the cornerstone of our economy, is suffering.

The two have one thing in common; they compete with the world for low-cost land and low-cost labour. With globalization, can we compete on these two things anymore?"

The answer to this question may be no. Production costs are increasingly cheaper in neighbouring countries. In addition, less than 10 percent of rural farmers in Kenya can afford quality inputs, and only a handful of those can feed themselves leave alone commercial agriculture. Value-addition, or product-based agriculture, is the key to future growth in the Kenya's agricultural industry.

Kenya's grain production has not recovered from drought crisis of yester years, but the impact has fallen primarily on bulk commodity production. Value-added imports continue to rise. If Kenya's agriculture is going to compete in a global economy, competitiveness may rest on using technology to produce value-added agricultural products. Technology is the answer, as it always has been."

For example, some sorghum growers are turning their commodity into animal feeds, while other producers are growing oil grains. Farmers are growing oil grains in rotation to traditional grains like wheat, and they're making cooking oils from sub-urbanised areas.

And for every 1 shilling it takes to produce quality animal feeds traditionally, it takes only 50 cents to produce sorghum animal feed. On a broader scale the nation's economic

recovery, while slow and steady, will not necessarily equate to job recovery unless Kenyans invest in value addition agriculture.

Overall, economic activity is rising, spending is firming among individuals, businesses and governments, but the labour markets remain weak, which is why we don't feel like we are in a recovery.

Despite economic growth, unemployment is still rising, and much of the nation is in a jobless recovery. Unemployment levels are low by historical standards, but they are still rising and are still quite high. This is the time to think of value-addition factories in the rural Kenya.

The reason for this phenomenon is a surge in grain productivity. Kenyans are producing less with more due to our turning to export crops like flowers in the expense of grain agriculture. This has been driven primarily by strong growth in the E.U market, which has been growing to support stronger economic activity. While grain productivity gains have edged back a bit, the population has been slowly growing.

One major difference between high value export leaning agriculture and grain agriculture is the economic recovery is weaker in the export because there is no investment in agro-processing. We're growing; we're just not growing as fast as we were prior to the recession."

Consumer spending holds the country together during tough times. Now, corporate profits need to raise enough to spur business investments in physical assets and structures in the rural areas. Investing in rural value addition agriculture and agro-processing is the first step in beginning to see businesses that are finally confident enough in a recovery to spend some of their money.

Positioning Kenya's Floriculture in the Global Market



Richard Lesiyampe
P.S Agriculture

Have You Received a Copy of the Current Floriculture Magazine?

Seize

The Moment to End Hunger Globally

For the first time in human history, the end of hunger is well within our reach. While courageous and passionate individuals have been working to end this scourge for decades, a recent confluence of political will, public-private partnerships and funding has made this ambition possible.

By Kofi Annan

We have, of course, a long way to go. Almost 800 million men, women and children will not have enough food to eat today. But the achievement of halving the proportion of malnourished people since 1990 has shown us just what can be achieved.

Look, for example, at Africa. When I was UN Secretary-General, I called for a “uniquely African Green Revolution” to transform agriculture and the life chances of hundreds of millions of people on the continent. Progress has been remarkable.

For over a decade, African countries have put a much greater emphasis on investment in agriculture and supporting the continent’s farmers. The Comprehensive Africa Agriculture Development Program (CAADP), launched by African leaders in 2003 and reiterated in the Malabo Declaration of June 2014, provides a clear framework to accelerate investment and coordinate countries’ efforts. International donors have thrown their weight behind these national efforts.

From a surge in donor investment stemming from the 2009 G-8 Summit in L’Aquila, Italy, to the agreement by the global community to prioritise hunger and malnutrition in last year’s Sustainable



Development Goals, the tide is turning.

With the help of the Bill & Melinda Gates Foundation and Rockefeller Foundation, the Alliance for a Green Revolution in Africa (AGRA) was created in 2006. In just a short period of time, it has become a preeminent leader in transforming Africa’s agriculture and food systems. Recently African leaders met in Nairobi on agriculture Nutrition vital to childhood development in Africa

Thanks to the partnerships it has formed, the research and development it has supported and the initiatives on the ground it has launched, smallholder farmers have obtained access to better seeds, sustainable agricultural techniques and financing, while thousands of agri-businesses have been created and expanded.

The last few weeks have given more reason to celebrate. In a rare show of bipartisan cooperation, the United States Congress in July passed the Global Food Security Act.

This significant legislation reaffirms the United States’ commitment to ending global hunger, poverty and child malnutrition through President Obama’s Feed the Future Initiative by supporting developing countries to improve their agriculture and broader food systems. It is hoped that the passing of the Act encourages other



traditional donor countries to take similar actions.

This latest good news came as African heads of state, international donors and hunger fighters from around the world gathered in Nairobi, Kenya, for the African Green Revolution Forum. It is an opportunity not only to celebrate collective progress but also to commit ourselves to step up the battle against hunger and malnutrition.

We must seize on this critical moment and build on the incredible progress that’s been made in recent years. We all gain if we get this right. Increasing food security not only lifts the shadow of hunger from hundreds of millions of our fellow human beings. It also builds up economies and trade and minimises the risk of political instability.

I believe there are four main keys to tipping the scales and sentencing global hunger to history.

The first is the continued political will to place and keep this issue high on domestic and international agendas, for no country can be strong when its people are weakened by hunger.

The role of civil society in constantly encouraging governments to make agriculture a priority is vital here as well.

Second is partnerships, for no one individual, group or government can take on this monumental challenge alone. We have seen over the last few years just how quick and significant progress can be when we have the vision to work together.

Thirdly, we must retain and strengthen country ownership. Developing countries – who suffer disproportionately from food insecurity – must take the lead in defining their own path to prosperity.

Finally is the recognition of the critical importance of financing. The impressive progress so far will not be sustained and accelerated without new investment from both the private sector and developing countries themselves, in addition to traditional donors.

Developing country leaders, private sector companies, donors, NGOs and others now have the chance to achieve something incredible within our lifetimes.

This time and into the future, I challenge my colleagues working in global development, especially heads of state and private sector leaders, to prioritise this issue. Working together – across sectors and disciplines – we can make hunger history.

TAXATION

One of the ways that the Kenya Government can support farmers and consumers is through the zero-rating of inputs, and processed food, eliminating the additional cost that would result from such charges.



A decision by government to tax some agricultural inputs and processed foods has affected the agricultural sector negatively. Not only does it increase farm input prices and reduce affordability, but it also has the potential to increase food prices, a situation which hurts an already burdened population. An analysis of the potential effects on farm production costs and consumer prices of maize and maize meal can inform policy makers. This will ensure that any dire consequences are avoided, and more significantly, that Kenya continues to ensure food security for all its citizens.

BACKGROUND

Increased agricultural productivity is key to food security and poverty reduction. A major

impediment, though, has been the low use of productivity enhancing inputs in the form of quality inputs, due to limited capital to finance such expenditures, and in some cases, low returns to inputs used. A candid discussion with growers reveal that most farmers who do not use quality inputs are constrained by the high cost of the inputs relative to price of the output. To ensure increased food supply and low food prices for consumers, governments must be frugal in their interventions by making agricultural inputs and food affordable, particularly for smallholder farmers and consumers in the low income categories respectively. One of the ways that the Kenya Government can support farmers and consumers is through the zero-rating of inputs, and processed food, eliminating the additional cost that would result from such charges.

Imposing Tax on agricultural inputs would effectively lead to higher input prices. Higher input prices will have two possible effects. First, farmers at the margin will not be able to meet the additional cost, and will either reduce the acreage under cultivation or use less inputs per given crop area. Either possibility will result in lower farm output and hence reduced national supply. Secondly, households that can afford to meet the increased cost of input, will ultimately face a higher cost per unit of output, a cost they will likely pass on to consumers in form of high output prices. Thus the real implications of imposing tax on inputs will go beyond the increase in input prices and reduced affordability to affect consumers through its effects on food prices. This multiplicity of effects is likely to have significant implications on food insecurity and poverty, particularly among poor and vulnerable consumers.

POTENTIAL EFFECTS OF IMPOSING 16% VAT

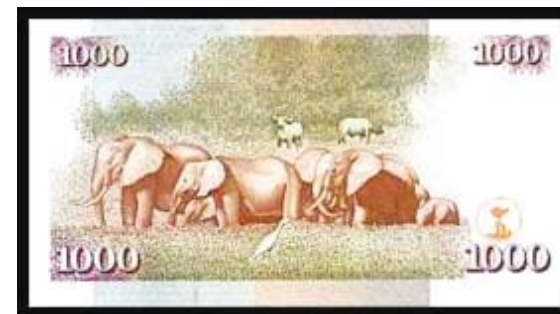
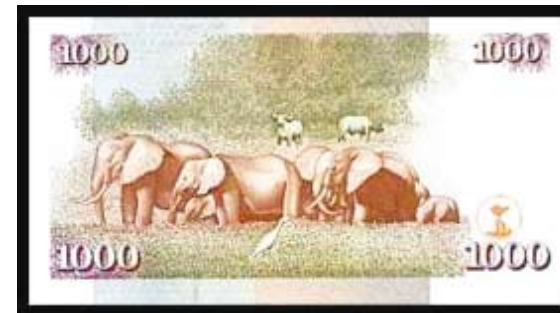
Farm Level Effects

Increased costs of Inputs

Using data collected randomly on maize production costs, the cost of maize production per acre range from about KES 30,000 to KES 33,000 with VAT it will raise to Ksh.35,000/=, which translates to a unit cost per bag of KES 1,837 to KES 2,109. The results show that the cost of producing a bag of maize increased by between 5% and 7% depending on the scale of production when comparing production costs of taxed and untaxed.

Reduction in input use and maize yields

As discussed above, the immediate effect of taxation on inputs will be an increase on inputs prices. The increase in will lead to the following scenarios, farmers will reduce the input application rate and maintain the area under maize compared to previous season, resulting in lower yields and increased cost of production; ii) farmers will reduce the area under maize and maintain the same input application rate, leading to a decline in production and supply of maize in the



market and the consequent higher maize grain prices; and iii) farmers will maintain the same area under production and input application rate but transfer the costs to the consumer, implying that the price of maize grain will increase.

Decline in national demand of Inputs

Growth in agricultural productivity is largely a function of the use of improved agricultural technologies. With the increase in the price, the demand will decline.

Consumer Level Effects

Increase in price of maize grain

As discussed earlier, cost of maize production will increase. The effect this would have is on the wholesale and retail prices of maize grain in the Nairobi market. According to the Ministry of Agriculture, Marketing Information Bureau, the average wholesale maize grain price in Nairobi average KES 1980 per 90 kg bag, while the average retail price average KES 2250 (Kenya National Bureau of Statistics).

Assuming that the mark-ups (margins) of producers, wholesalers and retailers remain the same after the increase in production cost, the new wholesale and retail maize prices in Nairobi would increase by 5%. The new wholesale and retail prices would be KES 2079 and KES 2363 respectively.

Increase in the price of sifted maize meal

The increase in the cost of maize grain implies

that millers' costs of purchasing grain will rise. Assuming miller and trader/retailer margins are maintained, the average price of sifted maize meal would increase by 5% from KES 58 to KES 60 per kilogramme. When 16% VAT is reduced on the sifted maize meal, price would increase to KES 50 per kg. This implies that the consumer will pay around 22% more for a kilogramme of sifted maize meal because of the effects of VAT.

Estimated price elasticity of sifted maize meal in the urban areas of Nairobi as -1.85. Based on this elasticity, imposing tax will lead to a decline in demand for sifted maize meal of 30%. For poor households that mainly rely on maize meal for food, a decline in demand basically implies that

these households will have to adopt various coping mechanisms as a result of the increase in the price of sifted maize meal. These could include skipping meals, taking smaller portions of food, and diversifying to less preferred foods, among others.

POLICY IMPLICATIONS

Subjecting farm inputs to taxation increases the cost of agricultural production, and therefore increases the cost of producing food commodities. This in turn raises prices of food commodities; consumers will ultimately bear this tax burden. In addition taxation on inputs raising food prices by 5%, taxation on processed food commodities result in a further increase in prices of 16%.

By having a negative impact on the cost of food production and prices of food commodities, taxation on inputs and food commodities affect domestic food supply and its affordability, hence food security.

Given the government objective of ensuring food availability for all its citizens, parliament must seriously consider the implications of any policy move that would further increase prices of food commodities. An increase in food prices will exacerbate the food security situation of poor households whose expenditure on food constitutes about 60% of their income.

Food Security Requires Acceleration of Advanced Science, Not Just “Feeding,”



Lindiwe Majele Sibanda of Food, Agriculture and Natural Resources Policy Analysis Network delivers a presentation at the CIMMYT 50th anniversary conference.

CIMMYT/Alfonso Cortes

By Julie Mollins

The agriculture for development sector must begin “nourishing” families with nutrition-sensitive interventions instead of focusing on “feeding,” said a leading food security expert at a conference in Mexico City hosted by the International Maize and Wheat Improvement Center (CIMMYT), which is celebrating its 50th anniversary.

“We’ve spent a lot of time in the last 50 years in the comfort zone of ‘feeding,’” said Lindiwe Majele Sibanda, who is the chief executive for the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) in southern Africa.

On a panel of experts, which included

researchers, policymakers, farmers and the private sector, Sibanda urged almost 1,000 delegates attending the three day conference to consider the potential risks of focusing solely on boosting yields and fortifying grains with micronutrients and vitamin A, rather than developing strategies for increased dietary diversity.

The panel also discussed topics related to agricultural research and development such as food security and nutrition, climate change, the social tensions that are both cause and result of migration, scientific developments and new technologies.

After the first day, a mixture of formal and celebratory activities at the CIMMYT research station in El Batán outside Mexico City,

delegates relocated to the city to tackle such wide-ranging topics as nutrition, the newly approved portfolio for the CGIAR system of agricultural researchers to which CIMMYT belongs, funding, scientific developments, new technologies and technical innovations..

We are not yet on the right trajectory when it comes to nutrition and health outcomes, said Juergen Voegelé, senior director, agriculture global practice World Bank and CGIAR System Council Chair. “Without a CGIAR there would be 100 countries in conflict and not the 60 that we know today,” Voegelé said. “The CGIAR has a major role to play in ensuring nutrition security and peace and conflict resolution.”

He said that productivity increases achieved in the 1980s and 1990s were ahead of population

growth, but are currently lagging behind, leading to the necessity to increase funding for the CGIAR. Currently, for every dollar invested in the CGIAR, the return is \$17, in some programs rising up to \$100.

“At the current trajectory, we will not solve the world’s food challenges,” he said, adding that recent reforms have contributed much to focusing the efforts of the CGIAR towards the U.N. Sustainable Development Goals, 15 measurable targets aimed at reducing poverty, and reaffirmed the World Bank’s commitment to championing and supporting CGIAR research.

The challenges are vast, said Martin Kropff, CIMMYT’s director general. “We have more people, less land, greater demand, all in the face of climate change.”

at least two essential ingredients to feeding a growing population –innovation and farmers – and we must do a better job of connecting the two,” said Paul Schickler, president of Dupont Pioneer

The technology will be put to use first to challenge Maize Lethal Necrosis disease in sub-Saharan Africa, which first emerged in Kenya in 2011 and affects almost a quarter of total maize production with annual losses of about \$110 million and up to 90 percent yield loss on individual farms, Schickler said. “Usually, cutting-edge technologies benefit farmers in high income countries first,” said Marianne Banziger, CIMMYT’s deputy director general, commenting on the agreement between CIMMYT and Dupont Pioneer.

“The public-private partnership allows us to

the University of Barcelona spoke of a virtual revolution where phenotyping assessments are moving from the ground-based time consuming assessments to much more rapid assessments using drones and airplanes.

Other scientists, such as Ken Giller from the University of Wageningen described his work evaluating farm-level technology adoption. “The fast-growing population of Africa is pushing down farm sizes, making it less likely that food security can be achieved in the near future,” Giller said. “We need to find new approaches to ensure that the combination of off-farm and on-farm incomes achieve household food security and, more, get farmers out of poverty.”

Mexico’s sub-secretary of agriculture, Jorge Armando Narváez Narváez, was among the many international agriculture experts and government officials who spoke at the conference, emphasizing the need to have reliable and market-oriented agricultural research and development platforms.

The benefits of global agricultural research that made improved hybrid maize seeds and fertilizer available to smallholders in the 1980s were illustrated by development economist and Cornell University Ph.D. graduate Ed Mabaya, who grew up on a hillside maize-livestock farm in rural Zimbabwe.

He recounted a meeting he had with a childhood friend whose fate was to remain in the village, struggling to survive and feed his family.

Mabaya concluded that his parents’ use of improved seed and farming practices derived from agricultural research helped open a pathway out of poverty for his family, with similar experiences for other progressive farmers in the community.

Reporting by Bianca Beks, Connie Castro, Ricardo Curiel, Jennifer Johnson, Mike Listman, Genevieve Renard, Miriam Shindler and Sam Storr

Courtesy: CIMMYT



For food prices to remain constant, annual yield gains for maize would have to increase from 1.2 percent to 1.7 percent. For wheat they would have to increase from 1.1 percent to 1.7 percent.

A new agreement signed by CIMMYT and agri-seed company Dupont Pioneer at the conference, which will use CRISPR-Cas advanced breeding technologies to develop improved crops by using the best characteristics native to the plant, aims to streamline research into plant breeding and disease.

“It has become abundantly clear that there are

extend such benefits much more rapidly to farmers in low- and middle-income countries, addressing problems they uniquely face, giving them equal opportunities. As a result, we democratize access to new technologies.” Among many recent scientific advancements, innovative remote sensing and satellite imagery technologies for assessing the effectiveness of research results in the field are increasingly being used.

Scientist David Lobell of Stanford University said that he uses satellite images to estimate which crops are being grown by farmers and the yields they obtain. Jose Luis Araus of

Who Will Feed the World?

Against a background of increasing food insecurity, agriculture in developing countries must undergo a significant transformation in order to increase production and respond to climate change. It is estimated that feeding 8.2 billion people – an additional 1.4 billion – in 2030 would require raising overall food production by some 50 per cent between 2005 and 2030. Feeding a larger urban population in a context of increasing scarcity of land and water, while also adopting more sustainable production methods, is a daunting challenge. In Africa, where it is predicted that population levels will double during the same period, the challenge will be even more acute.

The uncertainty concerning the future of food supply has propelled a growing number of investors and finance companies to acquire large parcels of productive land in many developing countries, particularly in Africa, for the purposes of commercial production, long-term investment, or speculation. Investors expressed interest in 42 million ha of land globally in 2009 – of which 75 per cent were in sub-Saharan Africa. A conservative estimate is that at least 6 million ha of additional land will be brought into production each year up to 2030.

It should be noted that hunger and malnutrition are due not so much to the unavailability of food as to the inability of the poorest members of society to access it at an affordable price. Feeding the world by 2030 requires on the one hand efforts to increase food production and therefore food availability, and on the other measures to ensure that the poorest and most marginalised sectors of society have the purchasing power to access what food there is available.

Seventy-five per cent of the world's poor and undernourished people are located

in rural areas and depend on agriculture directly or indirectly for their livelihoods. Five hundred million smallholder farms worldwide are supporting around two billion people, or one third of humanity. There is an extensive literature and persuasive evidence to suggest that measures to improve smallholder farmers' capacity to increase food production and productivity, as well as to link to markets, will not only enhance their purchasing power but also increase wider food availability and so contribute to global food security.

Nevertheless, this vision does not go unchallenged. The surging investors' interest in Africa has triggered a debate over the relative advantages and disadvantages in Africa, and worldwide, of large-scale versus small-scale farming models. The debate has been further stimulated by the leading development economists, who argue that much of the focus on smallholders might actually be hindering large-scale poverty reduction, and that current policies ignore one essential factor for labour-productivity growth: successful migration out of agriculture and rural areas. According to them, the international food system and agricultural production technology have changed in favour of larger-scale ventures. The benefit of size is that it facilitates commercialisation.

Debates which polarise small-scale versus large-scale models, or, if we consider the systems of production, 'LEI – Low External Input' agriculture versus 'HEI – High External Input' agriculture have obscured the potential of building on complementarities and the existence of multiple pathways to achieve agricultural growth and sustainability. Betting on one model only and adopting a one-size-fits-all approach is unlikely to be appropriate, given the heterogeneity of institutions, and agro-ecological, farming and demographic conditions across developing countries.



Achieving the objectives of increased food production and food accessibility, and at the same time protecting the environment, requires adopting a different blend of policies, a four-pronged approach, aimed at the following:

- Supporting subsistence (family) farmers to cope with risks and vulnerability.
- Empowering small investor farmers with the necessary capacity, finance, and regulation to increase their productivity, production, and competitiveness, and in turn to contribute to food security.
- Making large investments pro-poor, by setting the right framework.
- Building on complementarities between large and small farms, when possible.

A four pronged approach is instrumental at achieving food security from the production angle, increasing productivity, resilience and sustainability of farming systems. It should be noted though that important gains can be achieved also looking at demand side, processing of food, waste management, consumption patterns and habits. Nevertheless, the analysis of these important aspects goes beyond its scope.

Starting from a definition of small-scale

farmers (which include subsistence (family) farmers, and small investor farmers) and large-scale farmers, as well as a definition of production systems (LEI and HEI agriculture), Thereafter we will attempt to compare the advantages and constraints of these systems and assess the economic, social, and environmental impacts so far.

A major challenge confronting farmers is to increase agricultural productivity on existing farmland, both to meet growing demand for food and to offset the climate-change yield losses. Adopting LEI farming methods is crucial to achieving future food-security and climate-change goals. Scale does not dictate the approach to be adopted. Indeed, LEI agriculture approaches may lead to successful results when applied in both large-scale and small-scale farming.

In terms of prospects for developing countries' agriculture, supporting small-scale farmers would achieve the greatest impact in terms of income creation and food security, in particular when associated with LEI agriculture methods. Discussing strategies to reduce the vulnerability of subsistence (family) farmers, and provide a review of ways and lessons learned to help small investor farmers to overcome limitations of capacity, finance, and infrastructure that hamper their growth.

In countries where labour supply constrains smallholder expansion, large-scale industrial farming can be a successful option to promote food security (through a reduction in prices, thanks to high productivity and reduce poverty (through the creation of employment). In addition, when LEI methods are applied, they minimise harm to the environment. However, evidence so far proves

that unless strong regulation is in place to secure property rights, discipline land acquisition, and ensure transparent and participatory negotiations, adverse social and environmental effects outweigh the benefits.

The need for investment in technology, infrastructure, market access, and institutions suggests that private investment could contribute in many ways which do not involve large-scale land acquisitions. On the contrary, a variety of institutional arrangements can be used to combine the assets of investors (capital, technology, markets) with those of local communities and small farmers (land, labour, and local knowledge). Greater opportunities and important economies of scale for private domestic or foreign investors can be achieved in terms of output processing, packaging, and marketing, rather than in production. These measures include a wide range of more collaborative arrangements between large-scale investors and local small-scale farmers and communities.

Private investment through inclusive out-grower schemes can promote smallholder diversification into high-value crops and export-market production, and can support productivity gains. There are pros and cons in all these different approaches, and the conditions for success or failure are very context-specific and contingent on a country's institutions, tenure, policy, culture, and demographic considerations.

Whatever mix of the four-pronged approach is adopted, major commitment and investment by governments, development agencies, and private-sector actors, reversing the trend of the past 20 years, will be essential to achieving sustained agricultural growth and to making a major dent on poverty and hunger.

Millers' Association Roots for Liberalised Grains Market to Enhance Competitiveness



To cushion the ever increasing maize flour prices in the country, an industry lobby group is proposing some raft of measures they say will help improve the competitiveness of the grains market and create price stability.

The Cereal Millers Association (CMA), says that the liberalisation of the grains market would create price stability as well as increase investment opportunities in the market. This would further be supplemented by ensuring that more maize is released into the market by the farmers as well as the National Cereals and Produce Board (NCPB).

Consumption

According to available data, Kenya's annual maize consumption stands at between 40 – 43 million bags, against a production capacity of 34 million bags from the 2014/15 crop. The deficit, which averages 10 million bags annually, is subsidised by cross border trade from Uganda and Tanzania.

However, maize imports from the East African neighbours are at times not sufficient due to restricted supply and therefore forcing millers to be reliant on local maize which is limited in supply. In addition, most of the millers cannot access

maize from outside the East African region since these imports incur 50% duty.

Post Harvest Losses

Some of the causes identified for the maize grain deficit include post-harvest losses, where it is estimated that about 30% of the maize harvest is lost due to improper drying and inadequate storage facilities.

To curb this is to have NCPB provide drying facilities to farmers for free as well as provide special financing to farmers to access storage facilities.

Millers want the government to introduce a subsidy for local wheat to make it cheaper and lower the cost of grain products.

Yellow Maize

We still have a large portion of the maize grown locally used for the production of animal feeds. The government needs to allow duty free importation of yellow maize specifically for animal feeds, which would in turn release about 2.7 million bags of the locally grown maize for human consumption.

Government Subsidy to wheat Growers

Cereal Millers Association also proposes a government-managed subsidy to bridge the difference between import and local prices to enable millers to procure domestic products at a lower cost.

Millers normally prefer imports as they are cheaper compared to local commodity that is highly priced. The government managed subsidy programme should be a direct 'make-up' payments to farmers on differential between import price and targeted local price.

A 90-kilogramme bag of wheat from the international market is currently landing in

Nairobi at Sh2,600, compared with Sh3,500 that local farmers are demanding for their grain, making it more attractive for millers to import.

The price of import is inclusive of the 10 per cent duty levied on wheat from outside the country as well as the cost of transport.

The millers also want the government to urgently address the high cost of production that has made Kenyan wheat costly. A report by the Ministry of Agriculture indicates the minimum cost of producing a bag of wheat in the North Rift is Sh3,200. This can rise to Sh3,400 in areas such as Narok.

Kenya is a wheat-deficit country relying on imports to meet the growing demand. It ships in two-thirds of total requirements to meet the annual consumption of 900,000 tonnes. Only 350,000 tonnes are produced locally each year. Growers claim the millers' prices do not guarantee farmers a return on their investment as they are way below the production cost.

The Cereal Millers Association was formed in 2000 and comprises of 25 of the largest millers in the country with varied wheat, maize, rice and feed millers in Mombasa, Machakos, Eldoret, Kitale, Nairobi, Thika, Kisumu, Mwingi amongst others and its membership is still growing. CMA has been very involved in the push for liberalized grain markets with regard to maize and wheat.

CMA's vision has been to provide safe, affordable and enough food for consumers. They have been in the forefront of the fight against aflatoxins and have been self-regulating as an Association for the past four years. They are also involved in the food fortification programme that has been rolled out by the Government.

Bayer and Monsanto to Create a Global Leader in Agriculture

Monsanto's Board of Directors, Bayer's Board of Management and Bayer's Supervisory Board have unanimously approved the agreement. Based on Monsanto's closing share price on May 9, 2016, the day before Bayer's first written proposal to Monsanto, the offer represents a premium of 44 percent to that price.

"We are pleased to announce the combination of our two great organizations. This represents a major step forward for our Crop Science business and reinforces Bayer's leadership position as a global innovation driven Life Science company with leadership positions in its core segments, delivering substantial value to shareholders, our customers, employees and society at large," said Werner Baumann, CEO of Bayer AG.

"Today's announcement is a testament to everything we've achieved and the value that we have created for our stakeholders at Monsanto. We believe that this combination with Bayer represents the most compelling value for our shareowners, with the most certainty through the all-cash consideration," said Hugh Grant, Chairman and Chief Executive Officer of Monsanto.

Enhanced Solutions for Growers

This transaction brings together two different, but highly complementary businesses. The combined business will benefit from Monsanto's leadership in Seeds & Traits and Climate Corporation platform along with Bayer's broad Crop Protection product line across a comprehensive range of indications and crops in all key geographies. As a result, growers will benefit from a broad set of solutions to meet their current and future needs, including enhanced solutions in seeds and traits, digital agriculture, and crop protection.

The combination also brings together both companies' leading innovation capabilities and R&D technology platforms, with an annual pro-forma R&D budget of approximately EUR 2.5 billion. Over the mid to long-term, the combined business will be able to accelerate



Value Creation

Pro forma sales of the combined agricultural business amounted to EUR 23 billion in calendar year 2015. The combined company will be well positioned to participate in the agricultural industry with significant long-term growth potential.

Beyond the attractive long term value creation potential of the combination, Bayer expects the transaction to provide its shareholders with accretion to core EPS (earnings per share) in the first full year after closing and a double-digit percentage accretion in the third full year. Bayer has confirmed sales and cost synergies assumptions in due diligence and expects annual EBITDA contributions from total synergies of approximately USD 1.5 billion after year three, plus additional synergies from integrated solutions in future years.

innovation and provide customers with enhanced solutions and an optimized product suite based on analytical agronomic insight supported by Digital Farming applications. These are expected to result in significant and lasting benefits for farmers: from improved sourcing and increased convenience to higher yield, better environmental protection and sustainability.

"The agriculture industry is at the heart of one of the greatest challenges of our time: how to feed an additional 3 billion people in the world by 2050 in an environmentally sustainable way. It has been both companies' belief that this challenge requires a new approach that more systematically integrates expertise across Seeds, Traits and Crop Protection including Biologicals with a deep commitment to innovation and sustainable agriculture practices," said Liam Condon, member of the Board of Management of Bayer AG and head of the Crop Science Division.

"We are entering a new era in agriculture – one with significant challenges that demand new, sustainable solutions and technologies to enable growers to produce more with less. This combination with Bayer will deliver just that – an innovation engine that pairs Bayer's crop protection portfolio with our world-class seeds and traits and digital agriculture tools to help growers overcome the obstacles of tomorrow.

Together Monsanto and Bayer will build on our proud tradition and respective track records of innovation in the agriculture industry, delivering a more comprehensive and broader set of solutions to growers," said Grant.

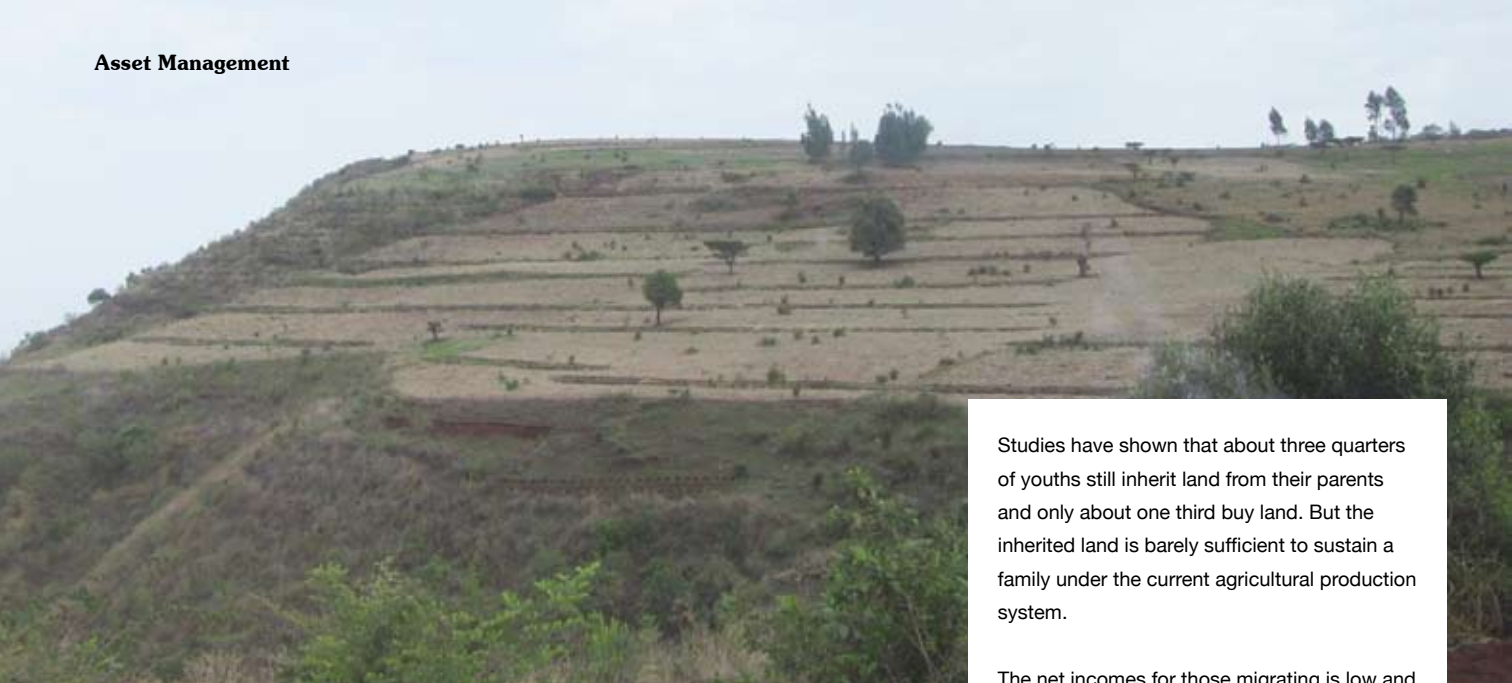
Headquarters and Employees

American commercial headquarters in St. Louis, Missouri, its global Crop Protection and overall Crop Science headquarters in Monheim, Germany, and an important presence in Durham, North Carolina, as well as many other locations throughout the U.S. and around the world. The Digital Farming activities for the combined business will be based in San Francisco, California.

"This combination is a great opportunity for employees, who will be at the forefront of innovation in our sector. This transaction also enhances Bayer's strong commitment to the U.S., building on our 150-year history with operations across 25 states employing more than 12,000 people in the country. I am convinced that Monsanto will flourish as part of one of the most respected and trusted companies in the world," said Baumann.

Bayer has extensive experience in successfully integrating acquisitions from a business, geographic and cultural perspective, and remains committed to its strong culture of innovation, sustainability and social responsibility.

Courtesy: www.news.bayer.com



Access to Land will Convince Our Youth to Become 'Agripreneurs'

A survey by the World Bank found that by 2030, serving the food demands of Africa's growing middle class alone will create a market worth \$1 trillion (Sh101 trillion).

African "agripreneurs" can own that market if we tap the two assets that should be an unbeatable combination: the world's largest population of young people, and the world's largest holdings of uncultivated arable land.

In fact, Tegemeo Institute has conducted a study that has found access to land could dramatically increase youth participation in agriculture, particularly for young women farmers.

There are about one million youths entering the labour market annually. They can contribute to significant food security in Kenya if they are gainfully employed in agriculture where increasing population, low agricultural productivity and decreasing arable land in the high and medium potential areas are a threat to food security.

Their participation in agriculture has, however, been constrained by limited access to land in the rural areas. Unlike the rural areas, innovative urban farming takes place even on

0.25 acres of land.

This allows rearing of poultry, rabbits and having green houses in urban areas where land is scarce. Such innovative approaches can involve the youths more, especially where land is scarce. Involvement of the young people in farming requires development of positive attitude towards agriculture.

This will help reduce unemployment among the youths because political and social consequences of unemployed youths can be extensive as witnessed by political unrests globally.

Relevant Skills

This would involve equipping youthful "agripreneurs" with relevant skills to build a sustainable and resilient agricultural innovation system that will respond to unique challenges within their counties.

The average age of small-scale farmers owning land in Kenya is 49 years and the youths who make up 67 per cent of the Kenyan population have no access to land. As such, they are unable to exploit opportunities in farming. This excludes a great majority of the youths, who have the capability to work and produce more from land.

Studies have shown that about three quarters of youths still inherit land from their parents and only about one third buy land. But the inherited land is barely sufficient to sustain a family under the current agricultural production system.

The net incomes for those migrating is low and with little surplus income to afford buying land. The majority of parents (90 per cent) in the rural areas have recognised that their farms are the main sources of land access for their children and usually hand down at least part of their farms to them while they are still alive. And even when they buy or access land, the most common land size that's accessible to them is two acres. It is uneconomical to farm two acres through telephone farming for this group.

The other alternative means of accessing land is through renting, which only a small fraction of the youth population does.

Majority rely on family land. The resulting inequitable distribution of land, particularly among the younger generation alienates them from meaningful participation in farming. The only way to involve them is to provide credit for those willing to farm.

Exploiting the Kenya government's effort of offering the Agri-Vijana loan from one of its state corporations—the Youth Enterprise Development Fund—is one way of empowering the youths to access land.

This will create a win-win situation between landlords and their tenants, with resultant increase in food production. Such a land market will be key to increasing access to land for the youths.

Dr. Dennis Otieno is a research fellow at Tegemeo Institute; dotieno@tegemeo.org.

CIMMYT at 50



CEREAL FARMERS IN KENYA

COMPANY/FARM	CONTACT PERSON	TEL	E-MAIL
Barlow Anthony	Barlow Anthony	050-4015470	
Chemusian Farm Ltd	-	07220-212127	
Kapkabai Farm	John Chemweno	0722-724990	
Simba Estates Ltd	H.S. Dhillion	0722-822723	
Kisima Farm Ltd	Martin Dyer	0722-741039	martin@kisima.co.ke
Wangu Investments C o. Ltd	Dr. Ndegwa	062-31330	
Kijabe Ltd Kijabe Ltd		051-2021008	
Soyonin Farm Ltd	B.K. Kipkulei	0722-823675	-
Sergoit Farm	Farnie Kruger	053-63352	
Kiili George Kiprono			
Ntulele Estates Ltd	Lawi Kiplagat	0722-530794	
Kabarak Limited			
Mohammed Kaityany	Mohammed Kaityany	053-62234	
Lengetia Ltd	Sessions	0722-332647	
Lochab Brothers	A.S. & R.S Lochab	053-312701	
V.A.R Luis	V.A.R Luis	051-212070/1/3	
Marania Farm Ltd	George Murray	064-41275 064	
Shimo Ltd	Kevin Neylan/Elsa	051-851291	
Oi Donyo Farm	Brian Llewelyn	062-41033/41025	
Country Motors Ltd	Country Motors Ltd	0722-764763	
Rose Brothers Agricultural Co.	Steve Rose	051-343027	
R.M Patel	Sanju		
South Sioux Farm	Amrik Singh	0722-49011	
Lesiolo Grain Handlers Ltd	Tundo Frank	051-850918	admin@lesiolo-grain.co.ke
Ndakaini Farm Ltd	Ndakaini Farm Ltd	0733-76769	
Vyas Brothers Ltd	Viney Vyas	053-63065 053	
Olerai Farm	Hugo Wood	0722-882847	hugo@olerai.co.ke
Agricultural Development Corp.		0722-338349	
Tumili Ltd	David Beak	0722-823543	
Twajenga Holdings Co. Ltd	Martin Baymgartner	051-52482	
Norman B. Pim	Norman B. Pim	0722-761350	
Francis K. Cheptoo	Francis K. Cheptoo		
Kenya Ordinance Factories Corp.			
Echuka Farm Ltd	Albert Thuo Chege	0722-567643	
Chemweno William Kiptonui	Chemweno W.Kiptonui	053-61191	
Redstart Limited	Redstart Ltd	051-210331	
Eldoret Packers	Eldoret Packers		
Elgeyo Saw Mills	Elgeyo Saw Mills		
Govin Enterprises	Vivian Njoki Njoroge	051-213508	
Gogar Farm Ltd	Simon Sayer	051-32416/7	
Hughes Tony	Hughes Tony	0722-808058	
Mungi Investment	David Kariithi	020-311202	
Shiv Enterprises (EA) Ltd	Albert Kimwaten	053-62631/61165	

CEREAL FARMERS IN KENYA

COMPANY/FARM	CONTACT PERSON	TEL	E-MAIL
Augustine Kipsang Kiptoo	Augustine Kipsang Kiptoo		
Kiplagat C. James	Kiplagat C. James		
Kalahari Dusters	David Beak		
Kogo Doreen J.B.	Kogo Doreen J.B.	0722-313090	
Kamanda E. Ngute	Kamanda E. Ngute		
Karo Farm	Mr. Nasir Pirani	054-62251	
Kandie Immaculate C	Kandie Immaculate C		
Krischi Investments Limited		0722-448272	
Kibor Magdaline Jepkemboi	Kibor M. Jepkemboi		
Kamau K. Stephen	Kamau K. Stephen	0733-838381	
Kindi Ole Muriaso	Muriaso Ole Kindi	0733-792997	
Kimwaten Paul Kimutai	Kimwaten Paul Kimutai	0733-768640	
Kamoche Peter Mburu	Kamoche Peter Mburu	051-6107226	
Karonei Simion Kiptanui	Karonei Simion Kiptanui		
Elfam Ltd Elfam Ltd			
Lolchoki John N.	Lolchoki John N.	0722-518239	
Lalabur Limited		051-52103	
Milwar Enterprises	Gordon Miller	0512020050/20962	info@livewire.co.ke
Gloucester Vale	Gloucester Vale	054 - 44086	
William K.A. Mosenik	William K.A. Mosenik	051-212079/215900	
Engineer Mbau Paul	Engineer Mbau Paul	0722-330330	
Minoti Samuel Gituma	Minoti Samuel Gituma		
Kenana Farm	Oliver Nightingale		
David K. Nyenjeri	David K. Nyenjeri	0722-601286	
Menengai Feedlot	Menengai Feedlot	051-42147	
Ngetich Jackson Kipruto	Ngetich Jackson Kipruto	053-33437	
James Onyango Ondeng	James Onyango Ondeng		
Olosiriari Reuben Kisheyan	Olosiriari Reuben Kisheyan		
Charles Makorey Rigoro	Charles Makorey Rigoro	0733-716418	
Gideon Mutua Ruteere	Gideon Mutua Ruteere	0722-741273	
Robiks Investment Company			
Technology Farm	Technology Farm	051-211995	
Smith George Alfred	Smith George Alfred	053-63619	
Sanare Henry Ole	Sanare Henry Ole	051-214297	
Sammy Kandie		0722-741778	
Lucas Sang		0733759957	
Sarpau Limited	Paul Berthelsen	0722-725215	
Western Seed Co. Ltd	Saleem Esmain	054-30722/32	
Tunoi Jepchumba Elizabeth	Tunoi Jepchumba Elizabeth		
Silas K. Tiren	Silas K. Tiren	053-61907	
Wadhwa Danesh Ved Prakash	Wadhwa Danesh Ved Prakash	0722-342468	
Yator Moses C	Yator Moses C		
Loldia Ltd Rick Hopcraft			
Madrugada Limited	H.P. Barclay	0722 848320	

My Day with the Village Supreme Court

Early Saturday, PMQ 700 AM was ready to snake through the deep forest. This death trap will boil before doing 100kms, why can't you call for a cab? Why are you so mean? You have been given the last chance to appear in the commission of inquiry, yet you are risking. You are even taking mileage to launch for a claim. God forbid, you gave me a sting for a husband? Eve's descendant complained. I did not answer any of the questions for I knew every answer will lead to another question.

Thank God PMQ was on a rhino charge mood, he roared like a four by four by far. In no time, it had hit 100kms per hour. Eve's descendant sat quietly looking at the dailies which she had bought to keep her busy in case we stalled. In less than 2 hours we had done 180Kms with only five to go. Suddenly PMQ started coughing, then croaked, jerked and suddenly stalled. "I knew it, I knew it", Eve's descendant laughed. "The problem with you is you cannot listen", she complained as she stood a Kimbo by the road side.

Some passersby helped me push it to the edge of the road. "Mzee tupange", their spokesman said. "Yes", a colleague added, "Hii Kazi tumefanya si bure, harakisha tunachelewa na case". I gave them a two hundred shillings note and they left. I had two important phone calls to make, so I reached for my phone. I was shocked to find my sophisticated gadget had no network. Two old passersby asked what had happened and I explained to them. "Let me help you my son, this phones you keep on pushing up using a finger do not work well in the village. The network around is only fo Mulika Mwizi, so use my phone", said one of them.

I called Simba my mechanic. The man who calls himself engineer though he never entered the classes whose pupils carry packed lunch laughed. He started issuing instructions, "open the bonnet, Pull the pipe that comes from the fuel tank to the carburettor, sip a mouthful of petrol then vomit it on top of the air cleaner. It will go direct to the carburettor, the car must start". The first sip went direct into my stomach with some little coming out through my nostrils. This gave me a black out for some few minutes. The second worked

and the car started. Simba requested for his consultation fee.

All this time, the two men were conversing in low tones a few metres from the car and the village pastor was praying in a language I did not understand hitting the car with the bible. He then smeared some liquid on the boot and the bonnet, took a broom and swept in front of the car. He then instructed me not to reverse but engage a forward gear. "Mimi nimekwambia siku nyingi, panda mbegu na hizi shida zitaisha, sasa toa sadaka, kisha ununue hii mafuta niliyopaka gari na hiki kifagio kwa shillingi mia mbili" he added. After paying, he left and the two elders called me for what they termed "men talk". "Our son", the elderly of the two started. "Next time never use this road, your enemies had sent the village witch doctor, he picked some soil from the road last night. Immediately your car stepped on the spot, it stalled. This was to make sure you will not get to the Supreme Court in time. In addition when you get there, do not sit on the chair they will show you, request for another". As usual, they requested for some airtime and consultation fee which I paid. I joined Eve's descendant in the car and Slowly we snaked into the village square where the hearings were to be heard in public.

On arrival, I found men in different groupings conversing in low tones. Immediately, the chairman called the meeting to order. However, one of the elders intervened and informed him that elders are never kept idle and therefore I had to pay a bee hive full of bees or Kshs 1000, for them to quench their thirst, I did.

The chairman called the petitioners to state his case. "Our Lords, elders of the village, I stand to represent a group of farmers who had entered this year's cereal competition. We have noted with a lot of concern that the respondent has been winning the competition for the last four years. Despite changing the Electoral commission he still wins. This is because he uses witch craft, money, intimidation and all sorts of tricks to rig the competition. Allow me to present exhibit SD 01, these are the seeds he buys for his neighbours which we believe he takes them to a witch doctor before. I also present exhibit SD 02, a photo of him taking tea in the village

hotel with one of the commissioners. Exhibit SD 03 is another photo of him in dark glasses with a cowboy hat pointing to one of the commissioners during the competition day. This was a sign of intimidation".

The chairman then called me to respond to the allegations. "Our Lordship, village elders I greet you all. It is true, I buy seeds and distribute them to my neighbours whom we compete for the best cereal harvest. However, I do not take them to any witch doctor. As you all know, most cereals are cross pollinated and the only way I can attain the best harvest is by ensuring my neighbours plant quality variety to avoid cross pollination of inferior quality".

I added, "for a start, I use trichotech and mytech to protect the seedlings from soil fungal pathogens and plant paristic nematodes. To win my battle against broadleaf weeds, I visit Dow Agrosociencies where I buy Lancelot 450 WG. For the grass, I pass through Amiran Kenya Ltd for a dose of clodigan 240 EC. You cannot get quality produce if you do not take care of your diseases; therefore I constantly give my cereals a royal treatment by visiting BASF for a dose of Osiris. This ensures the control of foliar and ear disease in wheat".

Lastly, "I can't always be there for my crop but Prosoaro can, as it delivers unrivalled disease control on *septoria* and other leaf diseases. For the powdery and yellow rust, Shafi 125 SC distributed by Juanco SPS Ltd, ensures am covered through its rapid intake and quick translocation into the plant. After taking care of my diseases, I pass through Syngenta East Africa Ltd and get a dose of Engeo 247 SC, a new insecticide for total control of sucking and chewing insect pests in wheat.

"My Lordships I kindly request my competitors to stop wasting their time in requesting for a disbanding of the Electoral Commission and invest in the above". With those few allow me to rest my case. The elders requested for time to deliberate and make their decision. All my competitors ran to me and apologised and also requested me to buy some of the products for them. So next time when you meet PMQ 700 AM squeaking, you rest assured am serving my community.



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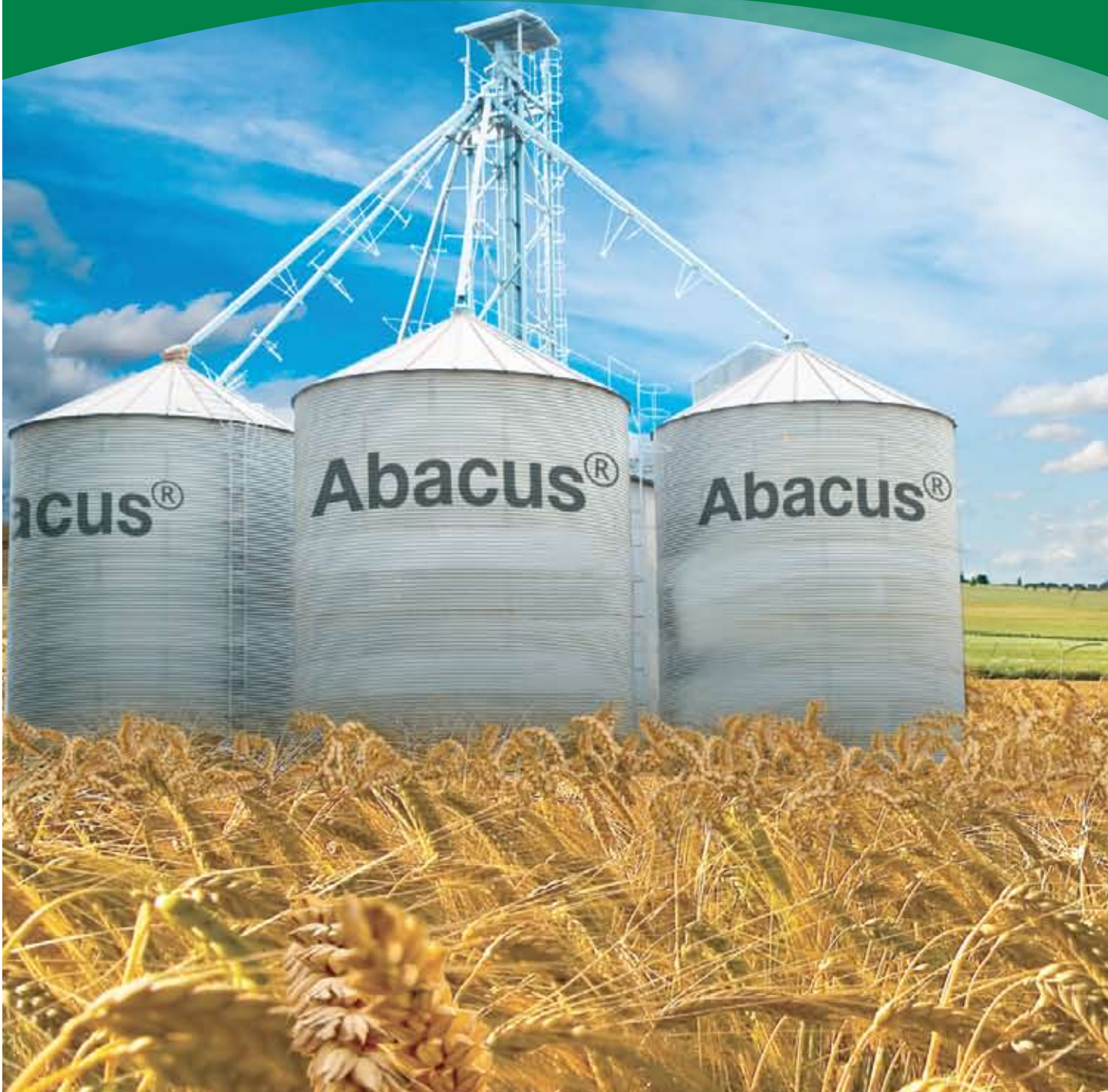


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