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Planting season for many is right around the corner, if it hasn't already started. Meanwhile, the country is dealing with unprecedented times where schools, restaurants and businesses are closed to reduce the spread of the coronavirus, and we are encouraged to keep off social gatherings.

As farms, we simply can't halt upcoming farm production, and yet we also can't simply go about business as usual. We have to look at how to keep our families and employees safe.

Our first line of defence is constant communication as we adjust behaviours and expectations with our team. How we interact, how we handle being sick and how we sanitize our farms needs to be a focus, especially as we have multi-generations on the farms working together.

If you haven't already held a meeting with your team, whether that is composed of only family members or includes employees, now is the time to hold a deep discussion. As a team, hold a brainstorming session on ways to prevent the spread of viruses on your farm and outline what expectations you would like to see from one another. As a group, agree on what behaviours would keep the team the safest, including social distancing even on farms.

Masila Kanyingi



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Cereals

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**Corteva
Agriscience:
ESCA Growth
Journey Continues.**

The Cereals Magazine spoke to Corteva Agriscience™ Commercial Unit leader for ESCA Mr. Joseph Anampiu in a breakfast meeting. We engaged him on the progress following their successful launch and opening of their ESCA Nairobi offices last year. We discussed their state-of-the-art investments in Kenya, including a state of the art seed production facility in Nairobi, support to local repackers to provide smallholder farmers with small packs of crop protection products repacked locally and collaborations with public and private institutions and development agencies, Corteva Agriscience products and technologies, how technology can be used to boost output and support food security while taking care of emerging environmental and health concerns.

Corteva Agriscience™, the US based pure play agriculture company, has set up its East South Central Africa (ESCA) Commercial Unit headquarters in Nairobi. ESCA is a priority growth market with business presence in Ethiopia, Tanzania, Kenya (which supports Great Lakes), Zambia, Malawi, Mozambique and Zimbabwe. The success of Corteva in the region is a result of well positioned research and seed production facilities in Zambia, Zimbabwe, Kenya and Ethiopia. Joseph Anampiu serves as Commercial Unit leader for ESCA, supported by a strong team of Country Leaders.

Briefly discuss Corteva Agriscience

Corteva Agriscience is a leading global agriculture company. The company combines over two centuries of scientific achievement and agronomic expertise to African agriculture to provide farmers with the right mix of seeds, crop protection and digital solutions to maximize their yields and improve their profitability.

Corteva is headquartered in the U.S., with headquarters for Africa Middle East regional in Centurion, South Africa. Africa & Middle East has 4 Commercial Units with main offices in South Africa (Centurion), Morocco (Casablanca), Kenya (Nairobi) and Egypt (Cairo) acting as business centres for Southern Africa, North West Central Africa, East Africa and Egypt



National Youth Service Farm: Turbo Farm

Middle East respectively.

ESCA, Corteva Agriscience at a glance translates into 260+ Employees, 1 Regional Head Office, Country offices, 4 Production and Manufacturing Facilities and 3 Research and Development (R&D) facilities.

As part of that decision, we located our ESCA headquarters in Nairobi. We have a leadership team for ESCA region here — from where we are building a solid foundation for agriculture in the region. That's why we are placing a lot of emphasis in this part of the world. We are focusing on building our business in the region through our 2 seed brands (Pannar® and Pioneer™) and strong

crop protection portfolio of more than 60 Active Ingredients, including: Isoclast™, Surestart®, Spinetoram; Seed Applied Technology. Our crop protection solutions supporting ornamental and vegetable exports, help farmers protect their crop and yield from fall armyworm and other emerging pests such as false codling moth.

With changing environmental conditions, Corteva R&D team is working to produce products that are well adapted to local conditions. Corteva crop protection chemicals are also well supported by the stewardship team to ensure effective protection of the crops, the people and the environment.

Discuss your state-of-the-art facilities in Kenya?

Corteva has commercial, seed production and research facilities in Nairobi and Eldoret respectively. Currently, Corteva Agriscience has invested significantly in its Kenyan operation in relation to latest seed breeding techniques and expertise, scaled up local seed production and put up a seed processing and conditioning plant, equipped to meet the growing demand for high quality, high yielding seed locally, and adapted to Kenya's agro-ecological conditions.

The highland and mid altitude maize breeding station in Eldoret, Kenya sits on a 25 Acre piece of land with various satellites breeding nurseries spread between Kitale, Kakamega, Eldoret and Yatta. The station has full time research staff who spearhead the maize breeding program that supports Eastern Southern Central African countries.

The multimillion-dollar modern seed processing, conditioning and packaging plant located at Athi River Business Park, 23Km from Nairobi Central Business District has capacity to process and pack 5-7 tonnes of seed per hour. The factory has created employment for local Kenya engineers and machine operators.

The company has also aggressively scaled up local seed production by signing up local seed growers to scale up our seed production in Kenya.

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The future can only be brighter for Corteva in Kenya with ramping up seed production and enhanced seed and crop protection distribution in Kenya.

Other than physical investment, what else are you involved in?

Corteva Agriscience™, collaborates with partners to enrich the lives of those who produce and those who consume, ensuring progress for generations to come. In Kenya the company has invested significant resources towards increasing the livelihood of smallholder farmers through imparting agricultural best practices that guarantee food security, nutrition security and income security. This transformative approach is implemented through partnerships and collaborations with multiple and multi sectoral stakeholders across in private sector, public sector and development agencies.

Discuss some of the partnerships with public sector, development agencies and private companies to improve smallholder farmers' livelihood in Kenya.

Corteva Agriscience™, in partnership with various stakeholders in the agriculture sector and value chain are working to support smallholder farmers in Kenya to improve agricultural productivity and livelihoods. The company has several collaborations with various **strategic partners that include:** AGRA, CGA, FPC, FPEAK, National Potato Council, One Acre Fund, Farm Inputs Promotion Service (FIPs) Digifarm, SNV, Equity Bank Foundation, County Governments (Kakamega, Nakuru,

Meru, Murang'a, etc.), Ministry of Agriculture, various fertilizer & nutrition entities, USAID Kenya, National Youth Service, CYMMIT, KALRO and Public Universities just to mention but a few.

In addition to the physical investment and partnerships how else are you supporting the Kenyan Agricultural sector?

Corteva Agriscience™, collaborates across the food value chain, and continues to partner with various stakeholders to advance good agronomic farming practices and technologies to improve smallholders' livelihoods in rural Kenya. The main objectives include:

Managing Fall Armyworm (FAW):

In Kenya, we promote integrated pest management practices to help combat FAW, an invasive species that can destroy a wide variety of crops. By leveraging global collaborations with partners such we offer training programs, crop protection products and FAW management practices so that smallholder farmers can better protect their crops.

Supporting Global Communities:

With over 100+ workforce, we have a deep breadth and depth of passionate individuals who volunteer their time and expertise. Corteva through a participatory selective process has sent volunteers on assignment through our fellowship program to AMPATH Eldoret, Kenya; Partners in Food Solutions; and USAID's Farmer-to-Farmer program.

Farmers also benefit from the best

management practices in maize production to increase productivity per hectare managed by Pannar and Pioneer in collaboration with One Acre Fund.

They also access Farm Inputs: Setting up distribution centres through AMPATH cooperative model, supported by Pannar seeds.

Improving Maize Seed Production:

We are developing a hybrid maize seed production system for Africa that will deliver a yield advantage over





FARMERS DAY: In partnership with Local Distributors and County Government in Kakamega



conventionally produced hybrids. This collaboration with the International Maize and Wheat Improvement Centre (CIMMYT), Kenya Agricultural & Livestock Research Organization (KALRO) and the Agricultural Research Council of South Africa also includes developing heat-tolerant varieties of maize for South Asia.

In addition, we are working to develop hybrids with resistance to Maize Lethal Necrosis in eastern Africa that will preserve the original genetic composition. Corteva are also pioneering the corn Silage Project for Dairy: In collaboration with SNV and Equity Foundation. We are also investing in hybrid conversion from OPV maize varieties to hybrids maize in collaboration with our partners. Access to high quality maize through partnerships with County Governments under their input subsidy programs.

Skills Transfer: Training of Ministry of Agriculture extension staff at County level on maize agronomy, pest and disease management.

Research work: Maize Lethal Necrotic Disease (MLND) in collaboration with CIMMYT, Kenya Agriculture and Livestock Research Organization (KALRO) under USAID Kenya funded MLND research centre.

Soil Nutrition Program: Toyota Tsusho Fertilizer Africa Limited, Crop Nutrition and Yara International

What does this mean to Kenya's Agricultural Sector?

Corteva values Kenya. With the

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most balanced portfolio of products in the industry, nearly a century of agronomic expertise, and an unparalleled innovation engine, we are creating a new agriculture company that will work together with the entire food ecosystem to produce a secure supply of healthy food sustainably and efficiently.

Other than the regional headquarters, we have also built a state-of-the-art seed production facility which we will be improving to higher standards, we have a research centre, that is part of the Africa Technology hub and we are investing in talent. We also house some of the Africa and Middle East offices.

Describe Corteva Products

Corteva represents the most comprehensive and balanced seed and crop protection portfolio in the world and a strong pipeline of new products that will enable us to continue to provide substantial value to farmers now and over the long term. Corteva is known for its Pioneer and Pannar brands in the seed category. In crop protection we have well established product brands like Surestart, Tracer and Radiant which is a good control for Fall Army Worms. Other than Herbicides and Insecticides, Corteva has also lined up some good fungicides. Our R&D is also lining up some very exciting products which will be launched between now and 2022 and beyond.

Final comments.

There is no one single solution that addresses the whole food security challenge. It is a multi-dimensional challenge that requires collaboration from companies like us, Government, partners and all stakeholders to ensure we feed a growing population. One thing that can make a big impact on this matter is technology. Other than high yielding resilient seed and quality crop protection products, we are also driving customer value through digitization by offering the most advanced digital solutions. When farmers use our products and services and get better harvest, they become part of the solution to food insecurity.

There is also tremendous opportunity of doubling productivity by enabling

farmers to access the right products and services. Technology is a great piece of the answer to food security. But for technology to reach the farmer, there is a need for enabling policies that allow companies to develop technology that is tailored for realities of the African farmers and put that technology in their hands.

Corteva Agriscience helps farms and farmers flourish, and together we forge meaningful relationships that advance agricultural industry. We are on the ground, innovating collaboratively with producers to help enable their success. We earn the trust of customers and consumers by doing what is right and delivering solutions that meet their changing needs. Partnering with Corteva will lead to a profitable farmer.



AMPATH Dow supported Grain Store for Waumini Community Based Organization in Eldoret

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The Cold, Hard Reality

The Long-Run Effects Of Locust Invasion *By Mark Limo*



Agricultural production in Kenya is facing an imminent danger due to locust invasion days after enduring a devastating drought, Fall Armyworm and floods that destroyed crops recently. Consequently, pastoral communities have not been spared either. They are also faced with the same predicaments. Large and vast pasture lands have been ravaged by the locusts leaving a trail of destruction with nothing for the livestock.

Despite farmers' efforts to maximize in the prolonged rainfall by planting food crops, however, the spread of the desert locusts across the country remains a thorny issue. There have been a general sense of dissatisfaction and near-despair across the country concerning the government, particularly the ministry of agriculture preparedness in mitigating such catastrophes in future. The government need to approach the subject more objectively.

According to the research by Ox-farm, the locust invasion is expected to be at its high in June. Everybody acknowledges that this is the worst invasion in 30 years. More than 15 counties affected.

Ultimately, we must admit the fact that the country might be hit by acute food shortage which will also have a devastating consequences on the

economy.

The complexity of the situation is compounded by the fact that uncharacteristically heavy rainfall coupled with inadequate control measures in Yemen and Somalia due to political instability, guaranteed definite migration of the locusts to Kenya and Ethiopia. We should have seen this coming from a way long off. But then the question begs, will the government learn from its previous mistakes even after being given a red-alert by the UN of the impending locust invasion way back? Time will tell.

Ideally, there is need to invest in forward-looking, defensive research that is aimed at addressing anticipated future risks and challenges in Agricultural production.

Scientist (ENTOMOLOGISTS) should be supported by the government and other international organizations e.g. DLCO-EA, ICIPE and KALRO in formulating new techniques and tracking systems which will prevent a second surge of locust invasion. This intervention is geared to stopping hoppers from becoming adults, as that leads to another cycle of infestation.

As the situation stands, however, it is as to whether the insecticides used to spray don't only affect locusts but also kill beneficial insects e.g. bees and

beetles. Bees are important component in pollination. The massive use of insecticides may create imbalance in the ecosystem and may lead to a vicious cycle.

However, the ministry of Agriculture says all the tests have been carried out and the products used during aerial spraying are safe for humans and animals.

It's a bit trite but probably true nonetheless that, the prolonged rains have complicated desert locust control as it is not suitable to spray insecticides during rains. Warm temperatures facilitates egg hatching and with the aid of the winds, the conditions are suitable for their spread and movement. In light of the above, other specialists have suggested harvesting the locusts for human consumption using pheromones and traps. Regrettably, at this stage of infestation, the priority and most appropriate control measure remains spraying.

Well-reasoned and, and pro-active measures should be put in place to safe-guard our agricultural systems. Researchers should come up with appropriate long term solutions that will safe-guard the economy as well as the ailing agricultural sector.

Mark Limo is an entomologist at KALRO



Locusts: Urgent Action Needed

*In just one day, a swarm of locusts the size of Paris
can eat the same amount of food as half the population of France*





Stop Locust Invasion In Eastern Africa

Swarms are increasing in numbers and density as we speak they could increase 500 times in numbers by June.

A donor conference in Rome was asked to pledge \$70 million to tackle a plague of desert locusts critically threatening rural livelihoods in a region where tens of millions of people already face extreme hunger.

Swarms of the insects sweeping across eastern Ethiopia, neighbouring areas of Somalia, and are pouring into Kenya, destroying crops, pasture, and forest cover throughout the region on an unprecedented scale.

“This has become a situation

of international dimensions that threatens the food security of the entire subregion,” said UN Food and Agriculture Organisation Director-General Qu Dongyu.

“Authorities in the region have already jump-started control activities, but in view of the scale and urgency of the threat, additional financial backing from the international donor community is needed so they can access the tools and resources required to get the job done,” he said.

Unusually heavy rains late last year favoured breeding, triggering a locust outbreak that is the worst Ethiopia and Somalia have faced in 25 years – and the most

extreme Kenya has experienced for 70 years.

Swarms – capable of travelling 150 kilometres a day – are heading through Kenya and may spread into South Sudan and Uganda.

“Swarms are increasing in numbers and density – they could increase 500 times in numbers by June,” Daniele Donati, co-chair of FAO’s desert locust task force says.

As locusts mature into their so-called “gregarious” phase, they become voracious eaters, stripping whatever vegetation they find, and able to consume their body weight in a day. A single small swarm can



contain 150 million insects.

One super-swarm in northeast Kenya was estimated at 2,400 square kilometres, with the potential capacity to eat in day the same quantity of vegetation that could feed as many as 84 million people.

“We must act now,” UN

humanitarian chief Mark

Lowcock said in a statement, announcing the release of \$10 million from the UN’s Central Emergency Response Fund to support FAO.

The allocation will fund a “massive scale-up in aerial operations to manage the outbreak,” the statement said, referring to the deployment of pesticide-spraying planes that can wipe out the swarms.

Coordination needed

Six planes can cover 1,000 square kilometres in a month, which “would be adequate for the time-being”, noted Donati.

But, at the moment, Ethiopia and Kenya only have four spray planes each, and the insecurity in Somalia means any form of control measures are risky.

“The region is not prepared for this scale of infestation,” Jasper Mwesigwa, a food security analyst with the Regional Climate Predictions and Application Centre, says. “No single country has the capacity to manage this on their own – so many resources are required.”

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A critical issue is coordination. Swarms don't obey national boundaries, and agreements would need to be struck to manage the region's airspace and allow spray planes to cross borders.

And while there are sufficient supplies of pesticides, there will need to be cooperation so stocks can be shared and deployed to where the need is greatest.

"It's in the region's interests to coordinate the response," said Donati. "Otherwise, the consequence is an ineffective response."

Lasting consequences

The Horn and East

Africa has been hard

hit by drought and, late last year, flooding. Locusts are yet another burden that will make recovery among already struggling rural communities all the harder.

In some parts of Ethiopia there have been 100 percent crop losses. In others, farmers knew the locusts were on their way and harvested too early, before their crops had matured. Locusts are currently moving towards the Rift Valley, the country's bread basket.

"We will feel the consequences of this for several seasons," FAO Subregional Coordinator for Eastern Africa David Phiri said. "But the longer [locust] control doesn't happen, the greater the losses."

Rains in March through to May will see a surge in locust numbers as vegetation thickens and damp soils allow egg-laying. It will be the critical time to check the outbreak –

otherwise this will become a multi-year crisis, according to Phiri.

In June, dry weather in much of the region will act as a natural break, but it will be wet in parts of Ethiopia and Somalia, allowing locust swarms to regenerate.

With large areas of the country out of bounds to the government and aid agencies because of insurgency, Somalia provides the locust with a particular window of opportunity.

"For Kenya, the worry is the lack of control at source," said Mwesigwa. "The locust invasion is coming through parts of Somalia and the Somali region of Ethiopia."

The risk to both pasture and crops in 2020 "remains high and critical given the ever-expanding areas affected," FAO warns. Given the favourable ecological conditions, the desert locust population is expected to continue to grow in the north and migrate south. Over the next six months, more than 100,000 hectares will require some form of direct control.

The UN's Food and Agriculture Organisation warned that the swarms, which have reached Somalia, Kenya, and Ethiopia, could spill over into more countries in Eastern Africa.



Irrigation Proposals Promise Farmers more Powers

Sweeping changes are expected in the initiation, funding and management of irrigation schemes if proposed regulations are anything to go by.

The proposed changes place more powers over schemes in the hands of farmers who will be required to organise themselves. The Ministry of Water, Sanitation and Irrigation expects to have 1.2 million acres of land put under irrigation.

Some of the notable changes touch on specifications for setting up water storage for irrigation, a move that could deter proliferation of dams and water pans without proper planning. This move is meant to operationalise the Irrigation Act 2019.

The changes will ensure sustainability through local involvement. One of the biggest contributory factors to lack of sustainability of irrigation schemes developed has been poor management of irrigation schemes, which has partly been attributed to weak farmer organisation.”

Prone to drought

For instance, farmers seeking to harvest water for irrigation in areas prone to drought will be required to ensure the dam can collect water that will last at least three months. “Any individual or entity intending to carry out



or are carrying out irrigation where availability and reliability of water is not guaranteed shall implement water harvesting and storage measures capable of storing flood water sufficient to meet three months water demand,” the regulations state. Delegates from farmers, national and county governments met in Nairobi to agree upon rules that will govern the sector.

Rain-fed agriculture is no longer sustainable and Kenya has to find ways of driving the agricultural sector. One of the ways is through water harvesting.



‘This is Huge’: Locust Swarms in Africa are Worst in Decades

The locusts are destroying farmland and threatening an already vulnerable region with devastating hunger.

The hum of millions of locusts on the move is broken by the screams of farmers and the clanging of pots and pans. But their noise-making does little to stop the voracious insects from feasting on their crops in this rural community.

The worst outbreak of desert locusts in Kenya in 70 years has seen hundreds of millions of the bugs swarm into the East African nation from Somalia and Ethiopia. Those two countries have not had an infestation like this in a quarter-century, destroying farmland and threatening an already vulnerable region with devastating hunger.



Researchers use supercomputer to predict potential breeding areas as food security fears grow



“Even cows are wondering what is happening,” said Ndunda Makanga, who spent hours trying to chase the locusts from his farm. “Maize, sorghum, cowpeas, they have eaten everything.”

With the rains bringing new vegetation across much of the region, the numbers of the fast-breeding locusts could grow 500 times before drier weather in June curbs their spread, the United Nations says.

“We must act immediately,” said David Phiri of the U.N. Food and Agricultural Organization, as donors huddled in Kenya’s capital, Nairobi, a three-hour drive away.

About \$70 million is needed to step

up aerial pesticide spraying, the only effective way to combat them, the U.N. says. That won’t be easy, especially in Somalia, where parts of the country are in the grip of the al-Qaida-linked al-Shabab extremist group.

The rose-colored locusts turn whole trees pink, clinging to branches like quivering ornaments before taking off in hungry, rustling clouds.

Astonished by the finger-length insects, children dash here and there, waving blankets or plucking at branches to shake the locusts free. One woman, Kanini Ndunda, batted at them with a shovel.

Even a small swarm of the insects

A single swarm can contain up to 150 million locusts per square kilometer of farmland, an area the size of almost 250 football fields, regional authorities say.

can consume enough food for 35,000 people in a single day, said Jens Laerke of the U.N. humanitarian office in Geneva.

Farmers are afraid to let their cattle out for grazing, and their crops of millet, sorghum and maize are vulnerable, but there is little they can do.

“This one, ai! This is huge,” said Kipkoech Tale, a migratory pest control specialist with the agriculture ministry. “I’m talking about over 20 swarms that we have sprayed. We still have more. And more are coming.”

A single swarm can contain up to 150 million locusts per square kilometer of farmland, an area the size of almost 250 football fields, regional authorities say.

One especially large swarm in northeastern Kenya measured 60 kilometers long by 40 kilometers

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wide (37 miles long by 25 miles wide).

Kenya needs more spraying equipment to supplement the four planes now flying, Tale said. Ethiopia also has four.

They also need a steady supply of pesticides, said Francis Kitoo, deputy director of agriculture in southeastern Kenya's Kitui county.

"The locals are really scared because they can consume everything," Kitoo said. "I've never seen such a big number."

The locusts eat the fodder for animals, a crucial source of livelihood for families who now worry how they will pay for

expenses like school fees, he said.

His own concern about the locusts? "They will lay eggs and start another generation," he said.

A changing climate has contributed to "exceptional" breeding conditions, said Nairobi-based climate scientist Abubakr Salih Babiker.

Migrating with the wind, the locusts can cover up to 150 kilometers (93 miles) in a single day. They look like tiny aircraft lazily crisscrossing the sky.

They are now heading toward Uganda and fragile South Sudan, where almost half the country faces hunger as it emerges from civil war. Uganda has not had such an

outbreak since the 1960s and is already on alert.

The locusts also are moving steadily toward Ethiopia's Rift Valley, the breadbasket for Africa's second-most populous country, the U.N. says.

"The situation is very bad but farmers are fighting it in the traditional way," said Buni Orissa, a resident of Ethiopia's Sidama region. "The locusts love cabbage and beans. This may threaten the shaky food security in the region."

Even before this outbreak, nearly 20 million people faced high levels of food insecurity across the East African region long challenged by periodic droughts and floods.

As exasperated farmers look for more help in fighting one of history's most persistent pests, the FAO's Locust Watch offers little consolation.

"Although giant nets, flamethrowers, lasers and huge vacuums have been proposed in the past, these are not in use for locust control," the U.N. agency says. "People and birds often eat locusts but usually not enough to significantly reduce population levels over large areas."

Still, it offered recipes. One suggested seasoning in Uganda is chopped onion and curry powder. Then fry.

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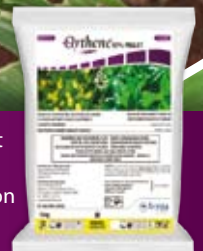
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Locust Swarms and Climate Change

*Interview with
Richard Munang,
United Nations
Environment
Programme expert
on climate and
Africa*

East African nations have been battling with swarms of desert locusts since the beginning of 2020. In what is being called the worst outbreak the region has seen in decades, the Food and Agriculture Organization of the United Nations warns that rising numbers of desert locusts present an extremely alarming threat to food security and livelihoods in the Horn of Africa. *An Interview with Richard Munang:*

What is the relationship between locusts and climate change?

During quiet periods desert locusts are usually restricted to the semi-arid and arid deserts of Africa, the Near East and South-West Asia that receive less than 200 mm of rain annually. In normal conditions, locust numbers



decrease either by natural or migration.

However, the last five years have been hotter than any other since the industrial revolution and since 2009. Studies have linked a hotter climate to more damaging locust swarms, leaving Africa disproportionately affected—20 of the fastest warming countries are in Africa. Wet weather also favours multiplication of locusts. Widespread, above average rain that pounded the Horn of Africa from October to December 2019 were up to 400 per cent above normal rainfall amount. These

abnormal rains were caused by the Indian Ocean dipole, a phenomenon accentuated by climate change.

How can countries and individuals be better prepared?

Africa stands out for climate change vulnerability which is driven primarily by the prevailing low levels of socioeconomic development. Persons living in poverty face compounding vulnerabilities to climate change impacts because they lack the resources to quickly recover from its effects. In this case, desert locusts are ravaging crops in the field before harvesting,

wiping out livestock and wildlife feed, and with them savings, assets and livelihoods.

Deployment of climate action solutions such as decentralizing solar dryers to agro-value chain actors can ensure that they can earn up to 30 times more by being able to preserve their harvest and sell during the offseason or gives them flexibility to compensate for unpredictable events such as these locust swarms. It can also create enterprise opportunities for auxiliary value chains of fabricating these solar dryers. Interventions like these are critical to increase climate resilience for some of the most vulnerable communities across the continent.

How can locusts be controlled?

Controlling desert locust swarms primarily uses organophosphate chemicals. Extensive research is

ongoing regarding biological control and other means of non-chemical control with the current focus on pathogens and insect growth regulators. Control by natural predators and parasites so far is limited since locusts can quickly move away from most natural enemies. While people and birds often eat locusts, this is not enough to significantly reduce population levels over large areas.

What is the role of the United Nations in locust control?

The United Nations' response to locust attack control is multi-agency in nature. While the immediate sector at risk is food security, climate change plays an exacerbating role.

One of UNEP's roles is to disseminate the latest science on emerging climate trends to inform cross-sectorial policies and ensure resilience is built in the

relevant sectors. The role of the World Meteorological Organization is to forecast the more immediate weather changes that may exacerbate the locusts' attacks.

While the traditional form of control considered is use of pesticides, the impact of these chemicals on the environment and other critical ecosystems key to food security—such as bees and other insects, which not only pollinate up to 70 per cent of our food but also may have an impact on human health—cannot be overlooked. The World Health Organization's role is to classify potential risks of different chemical agents to enable governments to invest in the safest one.

One of the mandates of the Food and Agricultural Organizations is to provide information on the general locust situation and to give timely warnings and forecasts to those countries in danger of invasion. The organization operates a centralized desert locust information service. In addition, empowering communities with technologies for value addition such as solar dryers—which are also climate action solutions—enables them to preserve their harvest. This makes it possible for an early harvest at the onset of attacks to ensure they save most of their yields.



Coronavirus lockdown leaves farmers struggling to plant

The truth, the coronavirus comes at a particularly bad moment for cereals and maize farmers in Kenya.



Food and Agriculture
Organization of the
United Nations

SUSTAINABLE
DEVELOPMENT
GOALS

Wha

- Food Supply chain is a complex web of interactions and of actors: producers, inputs, transportation, processing plants, shipping, etc.
- As the virus spreads and cases mount, and block downs increase there are seemingly countless ways the food system will be tested and strained in the coming weeks and months.
- Today, no supply shock in sense of availability but there is starting to be a supply shock in terms of logistics of movement of food.
- Upstream staple supply chain less vulnerable because is capital intensive than high value supply chain



Food Systems Transformation

It has been a tumultuous period these four or five years in agriculture. It has pushed many smaller farmers to the brink of bankruptcy. I fear that it's going to be considered the last nail in the coffin ... it will be the straw that broke the camel's back. The epidemic is the latest in a string of difficulties facing Kenya farmers, agriculture experts said, after huge swarms of desert locusts and heavy rains halved production. Kenya's agricultural production highest contributor to the GDP - government data shows, with much of the produce being used to supply local supermarkets, retail stockists, hotels and restaurants. The entire agri-food system is suffering at the moment.

Coronavirus could not have hit Kenya at a worse time as farm workers need to prepare fields for crops in the crucial economic sector. Kenya added new restrictions to strict controls imposed on travel to fight Kenya's worst coronavirus outbreak, ordering bars and restaurants and a curfew after 7pm. It is the sowing season, such as maize and other cereal products are planted. There are many jobs in the fields and the blocks forcefully limit the actions of farmers. The curfew

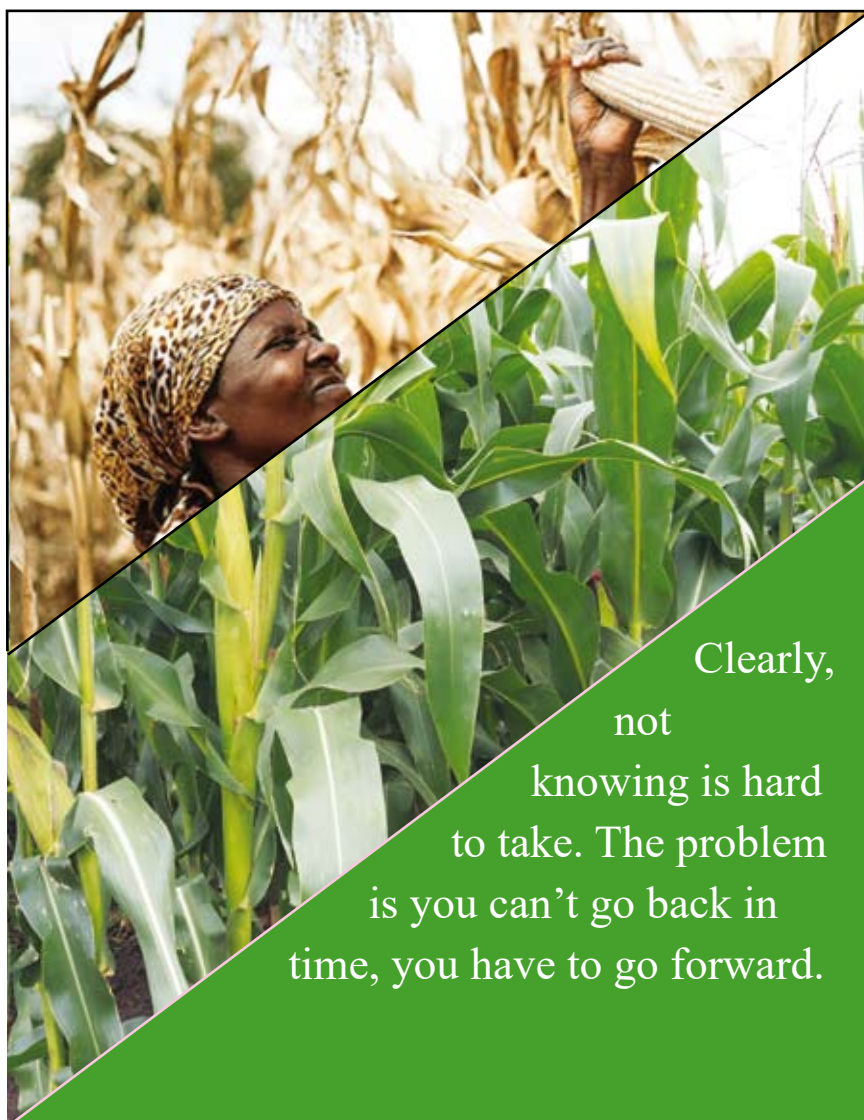
could jeopardize the process because tens of thousands of seasonal workers are not housed.

Kenya has hundreds of thousands of farms and much of the manual work is done by casual workers, who do not live on the farms but travel between towns or villages, often in groups. Farmers need people in the field ... for putting fertiliser, pruning, weeding or harvesting some early crops - and that's all becoming an issue with whether people can move. It is really unfortunate because this is occurring at the same time where farming operations are starting.

Though the extent of the blow to Kenya food production is unclear—and will depend on how long the pandemic and countermeasures last—widespread food shortages are unlikely anytime soon, several researchers say. Farmers must still adhere to social-distancing requirements and can be buffeted by regulations and other changes along the food supply chain, such as the shuttering of restaurants.

Some work can easily continue with little interruption. For example, large scale farmers producing staple crops, including wheat and Maize, do so with mechanized tools that already limit human-to-human contact.

The ongoing coronavirus epidemic has shifted Kenyan markets, changed typical spending patterns, and closed international borders. While industry experts promise it has not led to a food shortage—despite the empty supermarket shelves—it is adding a lot of uncertainty to the food and farming industries and could tee up a long-term crisis down the line.



Clearly,
not
knowing is hard
to take. The problem
is you can't go back in
time, you have to go forward.

Planting Season

Like the seasons, the agriculture industry runs on a set schedule. Maize, Kenya's main staple food is typically planted in March, harvested in July, and then sold to the government NCPB, millers, distributors or local retailers, from which food eventually gets to your plate. But signs are emerging that the coronavirus could cause a substantial disruption to this process, starting with getting crops in the field.

Most farmers require human labour to plant and apply fertilizers. In Kenya, a large portion of those workers are

seasonally employed. About 90 percent of the seasonal worker population comes from the neighbouring villages. This year farmers worry that coronavirus restrictions could mean even fewer casual workers and therefore less crop to bring to market—especially for the fast-approaching maize planting season.

Market

Then there's the question of what sales will be like for the commodities that do make it to market. Already some

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farmers who rely on direct sales of their wares to restaurants or schools are suffering from mandatory closures across the country. Many of the local farms that typically sell to farm-to-table restaurants or to companies that provide free meals to employees are having to find new outlets for their food. Those farmers are struggling with an unusual surplus.

“People are cooking at home and not going to restaurants as much, so if the farmers had regular purchasing set up with restaurants, they lost those sales,” adds Mr. Koech.

According to a research, Kenyans typically spend the majority of their food income outside the home at restaurants, not on groceries. And for many farmers, it’s not easy to find new buyers at supermarket chains. One outlet still open to local farmers is farmers markets, which the government has deemed essential.

Fear of Unknown

As planting season approaches, farmers across the food basket are ramping up for the growing season—hiring workers, purchasing materials and taking orders. But measures to rein in the COVID-19 pandemic may derail some of those efforts, experts say. “Everybody is scrambling to figure out what to do,” he says. There’s just a lot of disruption.



“Clearly, not knowing is hard to take: not knowing whether or not you’re going to have a market for a crop and not knowing the extent of this virus and the resulting economic impact across the board,” said Mr. Koech a maize farmer. “They say the stock market doesn’t like uncertainty. Farmers don’t like it, either.”

If somebody had asked me a month ago if there was going to be a glitch in our food system, I would have never guessed it. But something like this has put a huge spotlight that we have to rely on our roadside farmers,” he said. “What’s the fastest way to fill shelves? Local farms.”

International markets are yet another conundrum for the agriculture industry. Whether countries overseas reeling from the pandemic will still accept foreign goods remains a giant open question. The biggest confusion is what happens when countries we’d export to or import to shut down inside for months at a time. At least one quarter could experience a decline in

trade due to a winnowing of consumer spending habits.

All of these unknown variables the coronavirus brings are yet another challenge for farmers who’ve already suffered from increasingly variable weather patterns, as well as the desert locust. Asked what the best-case scenario might be for farmers during the current pandemic, Koech was at a loss. “The problem is you can’t go back in time, you have to go forward,” he said. “Farmers aren’t different from anyone else. We want to see a quick resolution, but that doesn’t appear on the horizon. It’s nice to be optimistic, but reality has to set in, too.”

For now, the country’s food supplies and processing companies and a widespread distribution network are assured. There is no need of shoppers rushing to stock up on food this week. “We want ... people to keep calm. Yes, this is a difficult moment but ... there is no problem in the production,” said the Government Spokesman.

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Solidarity in times of coronavirus

Fear of the coronavirus may drive people to exclude others, call for extreme measures or refuse to face reality. Corona affects not only individuals, but fear also undermines the whole of society. This is why we must solve the crisis as a community. In addition to balanced government policy, solidarity, compassion and shared responsibility are indispensable in these uncertain times. What does solidarity look like for you?



The global outbreak of the novel coronavirus has societies facing tremendous challenges and ethical issues. For example, to what lengths may a government go to curb the spread of the virus. Far-reaching measures are needed. But at the same time, the government must protect people's freedom as much as possible.

"But the best way to stimulate solidarity is to show our resourcefulness and to show how many initiatives we are taking to support each other. The news bulletins will hopefully continue to highlight this." Marcel Verweij, professor of Philosophy

Still, if we base our view of ourselves and our society on solidarity,

protecting public health need not be directly opposed to the freedom and wellbeing of individuals. This prevents us from thinking in terms of infected individuals, as opposed to society as a whole.

Care for each other

The virus directly impacts the health of individuals and society at large. We are affected as a community and must solve this as a community.

Thus, we must shoulder the burden of preventing infection together and curb the risk of infection as much as possible. Solidarity means we must face the risks together. And when someone is affected by the disease, we should consider this a blow to society, and gather around him or her. Simple message: think about others, care for

each other and take responsibility for each other.

Threatening

The paradox of infectious diseases is that we must distance ourselves from others to protect our community. We must isolate ourselves. For example, no getting together in groups, no visiting grandparents, and no sharing the same space. And many people are quarantined as a preventive measure if they show symptoms.

These measures, the isolation and limited freedom of movement, may feel threatening. Besides, people fear the disease itself. This fear may cause them to exclude others. A fact that was clearly demonstrated by the vandalism and threats directed at Chinese students in an international

institution. People originating from an Asian background were targeted by discrimination linked to the coronavirus.

Denial or hoarding

Fear of the virus causes people to have to fend for themselves. Some try to flee affected areas; others are in denial and pretend nothing is going on. Both these reactions contribute to the spread of the virus. We have also seen a tendency towards hoarding. This puts others at risk. I read somewhere that people working in crucial jobs are applauded. But at the same time they are unable to restock groceries after their shift because supermarket shelves were empty.

Fear also leads to the demand for stricter measures; the philosopher continues. 'While most stringent measures are not always the most effective. The quarantine Japan imposed upon the cruise ship *Diamond Princess*, for example, resulted in exposing the passengers to an increased contamination risk which led to further spread of the disease.'

Science and compassion

The government must respond to fear with a well-substantiated policy, supported by experts. Trust in the government's approach, and the scientific knowledge about infections helps curb the fear. But



strong emotions cannot be met purely with science. We also need unifying emotions, such as compassion and solidarity.

We see many heartwarming expressions of support between citizens. From people offering to walk dogs or do grocery shopping, to children putting up drawings of rainbows in the windows in Italy, where neighbours also sang for each other from balconies. We see flowers handed out to health care professionals and banners hoisted to show support. There is a veritable flood of initiatives from people sharing their expertise online in areas such as education, hobbies, or home gym exercising free of charge. Many health workers that left the profession are returning to the work floor, despite the risk of infection. Many people are willing to shoulder extra burdens and responsibilities to help others.

Solidarity with doctors

Given the increasing number of corona

patients, our society must also show solidarity with doctors working on the intensive care units (ICUs). If there is a shortage of beds, doctors are faced with impossible choices of life and death. How can we distribute the available capacity in such a way that we can save the highest number of lives? This consideration is not just a medical issue; it is a societal responsibility. Although there are national ICU guidelines, these have not yet been supported and established in government policy. It would have been better if parliament had discussed this years ago. The debate currently being held is terrifying to many people.

Does the government have a role in fostering solidarity among citizens? 'The call for solidarity is essential, as this contributes to the general tone. But the best way to stimulate solidarity is to show our resourcefulness and to show how many initiatives we are taking to support each other.'

Maize Shortage Fears over Excess Rains

Kenya may suffer from its staple maize shortage following excessive rains that continue to pound the country, delaying harvesting and triggering aflatoxin contamination, several county ministers of agriculture have said.

In both Eastern and Mt. Kenya regions, maize was harvested late as farmers waited rains to ease.

Already, the Kenya Meteorological Department has forecast rains up to June, leaving the county ministers of agriculture to seek alternative options of getting food out of farm under excess rainfall. Harvesting of maize usually happens in February in most parts of the region.

Maize is usually grown in lower zones where coffee and tea do not do very well, and provide household food security to families for a better part of the year.

However, with the current threat, there is a risk of the maize crop rotting in the farm, or upon

harvest due to wet and cold conditions, which will force households to buy maize, affecting their household budgets.

This puts more burden to households because of disruption of the rice market, the second staple food, following President Uhuru Kenyatta's direction that most of it is bought by the government for further distribution and at a higher price.

By february maize was ready for harvest but the heavy rains had hindered harvesting.

Wait and see tactic "We have advised our farmers to give it a little more time to see whether the weather may

improve and give them time to harvest their crop," a CEC said. He said problem is further worsened by the fact that farmers lack proper storage facilities and would lose their crop if the rains persist.

"Farmers do not have driers. Most of them

**Consistent rains
maize harvest th
the farms becau**



"The rains have continued through December to February, the time which farmers harvest maize, subjecting the crop to rotting and risk of getting aflatoxin,"



s have ensured a bumper ere is a risk of it rotting in se of the excessive rainfall.

rely
on
the sun
to dry their
produce. With
these rains, we are just
hoping it is going to stop
for the maize to dry," he said.

"Farmers are ready to harvest, but the exercise has been hampered by the ongoing rains," he said.

Some counties have mobile driers which the farmers can utilise but they will not be enough for the farmers in the entire county.

"We
are
making
plans to step
up the use of our
mobile driers to help
framers to dry their grain,"
a CEC said. He said farmers
can also take advantage of the
driers at the National Cereals and
Produce Board to dry their maize at
a fee.

Farmers should also be educated on
how to handle their harvest to make
sure is free of aflatoxin.

He said farmers should not dry the
maize on the ground but should use
a raised platform where there is free
flow of oxygen even as the drying
takes place gradually" he said. Maize
yields are expected to reduce by at
least 10 percent because excessive
rains have led to their being affected
by the head smut disease, a fungal
infection, despite what was expected
as a bumper harvest.

The
rains
have
continued
through December
to February, the time
which farmers harvest maize,
subjecting the crop to rotting and
risk of getting aflatoxin.

Counties should consider constructing
driers for the maize growing areas to
avert such problems in future.

While consistent rains have ensured a
bumper maize harvest there is a risk
of it rotting in the farms because of the
excessive rainfall.

By March hope crawled in because
the weather had become warmer.
However farmers are cautioned
against harvesting their maize until
warm weather is realized to avoid the
risk of contamination by aflatoxins.

"Farmers just need to ensure that the
maize is completely dry before they
store it.

The ongoing rains will persist in
several parts of the country until June,
the Director of Meteorological Services
Stella Aura said when releasing
the March-May weather outlook
at the Meteorological department
headquarters in Nairobi.

Farming Success Depends on Farm Business Planning

It's hard to be successful at farming or any other enterprise without a plan. Many hail the romanticism of farming, but in reality, farming is a business, in most cases, a multimillion dollar business, and one that often involves multiple generations or partners.



Managing a farm business goes beyond the annual profit/loss. It's more than controlling costs or even knowing how to get the most benefit from tax laws.

Here you will find insight into some of the key issues about the business end of farming, from marketing strategies to personnel management and passing the operation to the next generation.

Beyond the Basic Business Plan

Farming is fraught with challenges. Weather, market fluctuations, family, and production issues all have the potential to put a kink in even the best-laid plans. That's where having a whole farm plan that outlines the farm's mission and objectives comes in.

Meeting a farm's labor needs begins with hiring the right person. The process starts with assessing where the business is headed and the best path to get there.

A bird's eye view of the operation can help you address all components and how they connect, from the strengths and weaknesses of family members, to taking stock of assets and investments, to creating a retirement and succession plan. Having a comprehensive plan in place will help guide the farm when the unexpected occurs.

Some find that a SWOT analysis can help facilitate the process. The SWOT approach outlines Strengths, Weaknesses, Opportunities and Threats to the farming operation, as it increases communication amongst family and other members of the business team.

Managing Labour Resources

Managing agricultural workers can be one of the biggest challenges for today's farm operators. Near-record low unemployment in many areas of the country increases labour costs, while labour laws can inhibit the flexibility a farm needs to operate efficiently. As farms grow larger, more hired labour – often skilled labor – is needed, adding attention to recruitment and retention to the mix.

Meeting a farm's labour needs begins with hiring the right person. The process starts with assessing where the business is headed and the best path to get there. Survey your needs, and what employee traits will be beneficial, then look at what you are willing to pay. While farm workers are looking for a paycheck, the number one reason they stay, according to the experts, is job satisfaction. Periodic assessments that involve healthy discussions about job expectations and challenges will

help to reduce turnover and keep the operation running smoothly.

It May be Beneficial to Diversify

Diversification can be key to the survival of today's farming operation. Existing farms can have an advantage in niche markets. Often it's a matter of making a small change in production or marketing strategies. Sometimes it involves identifying a creative local market or adapting agriculture business ideas picked up from other farmers.

Like any farming operation, having a successful agriculture side business is dependent on producing a consistent quality product.

Launching an agriculture side business requires research. There are many number of crops that can fit into an existing operation, it's a matter of determining which one is right for you. Options range from non-GMO varieties of traditional crops, to vegetables and crops like cereal that can also serve as a cover crop to prevent erosion.

What is the Cost of Farming?

Farming takes money. Lots of money. For new farmers obtaining adequate working capital can be one of their greatest obstacles. Experts estimate entering into grain farming business with no family backing could require upwards of Kshs 5 million. If that beginning farmer chooses to get a four-year college degree, add another Kshs1 million

There's equipment, buildings, and planting inputs. And don't forget land. Even a combination of owned and

rented land at today's prices quickly reaches an astronomical number.

Maintaining Sufficient Working Capital

Farm capital needs go beyond start-up expenses. Farmers must be able to weather drought and market fluctuations as they work through day-to-day and year-to-year operations.

Available credit is tightening, with agriculture lenders increasing scrutiny of farm balance sheets and their own lending policies.

Once capital is exhausted, farmers can quickly find themselves in a tight spot with their banker.

Sometimes an outside source is needed to take a fresh look at the farm's situation. Using expertise, financial software, and face-to-face consultation, creative solutions can be found to ease the crisis.

The most important aspect can often be identifying problems early, and in all farming enterprises, from the traditional to the experimental, farmers need to know the costs of production, overhead, and family living expenses, and plan accordingly.

With a solid business plan and an open mind to new opportunity and problem solving, farm operators can weather the storms of a volatile agriculture industry, allowing multiple generations to enjoy rural life and the satisfaction that comes from feeding the world and a job well done.

For Bumper Harvest, we Must get it

While breeders have the scientific knowledge and methods, farmers are good at identifying traits that suit their particular environments and resource levels.

With a rapidly growing population, food demands are increasing pressure on the fixed and dwindling land resource, not to mention the rising degradation of the environment coupled with uncertainties resulting from climate change.

To complicate the matter further, low yields are rampant across the African continent, Kenya included.

According to the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) 2011 report, the average yields of maize in East Africa is 1.5 tonnes per hectare (t/ha) compared to global average of 4.5 t/ha. This is closely linked to unavailability of planting materials.

To increase production, the solution lies in seed enhancement or improvement technology through plant breeding to generate the best quality seeds that are more productive and are pest and disease-resistant.

As opposed to natural selection where only the strongest seeds survive, germplasm is a

deliberate scientific process of improving seed quality and using this for production. It ensures that seeds of lower quality are removed from circulation.

Germplasm production is fundamental to modern agriculture. Crops and livestock are established from seeds with seed quality having major impact on potential yields. Production should understand farmers' needs in terms of the crops they prefer as well as the varieties they like and should be well-adapted to the various environments as well as resistant to prevalent diseases and in affordable prices and proper packaging.

Seed



enhancement technologies include coating by application of materials on the seed surface that contains protectants such as fungicides and film coating, which reduces loss of active material from seeds during transport and handling.

Then there is pelleting, which delivers a range of beneficial additives including micronutrients and plant protection and is also used to alter seed shape, surface properties, density and size to enable more precise seed singulation and placement in the planting tray and soil and priming, which is used to increase germination rate and uniformity and overcome seed dormancy. The following recommendations are useful in guiding seed multiplication:

Research: There is need to develop robust crops adapted to wide range of agro-ecologies. Varieties developed should allow farmers to conserve natural resources.

Conservation: Seed systems should integrate conservation of farmers' varieties on smallholder farms. This will help in sustaining evolutionary systems that are responsible for the generation of genetic variability.

Right on Seeds



Investments in seed production:

There is need for investments towards increasing availability of improved seeds by producing foundation seed, investing in storage facilities and production of sufficient quantities of quality seeds that meet the market demands.

Private sector participation: There is need to create an enabling environment for private sector participation in seed trade through versatile policy environments. The private sector has the initial capital and capacity to make a difference in seed availability over a long time.

Rationalisation of seed trade policy:

Harmonisation of seed policies, laws and regulations is important in facilitating flow of seeds across national boundaries. This

increases choice of quality seed for farmers leading to increased productivity.

Seed policy: There is need for integrated holistic agricultural policies that would promote and implement global diversity of seed cultivars, support the development and spread of agricultural systems based on a holistic approach, where human, crop, animal, microbial biodiversity are an indispensable tool for increasing productivity, efficiency, and resilience of farming systems. Payment of royalties to plant breeders is important as motivation and incentive.

Seed Trade Associations: There is need to strengthen associations since their role in the sector is critical. They are responsible for protection of genuine seed procedures and farmers through strict enforcement of national seed laws, lobby and advocacy and promotion of regional formal seed trade.

Rethink traditional local varieties:

There is need for more research on improved varieties of traditional food staples.

Coordination between breeders and farmers:

While breeders have the scientific knowledge and methods, farmers are good at identifying traits that suit their particular environments and resource levels.

Dr Mutunga is CEO Kenya National Farmers Federation (KENAFF)



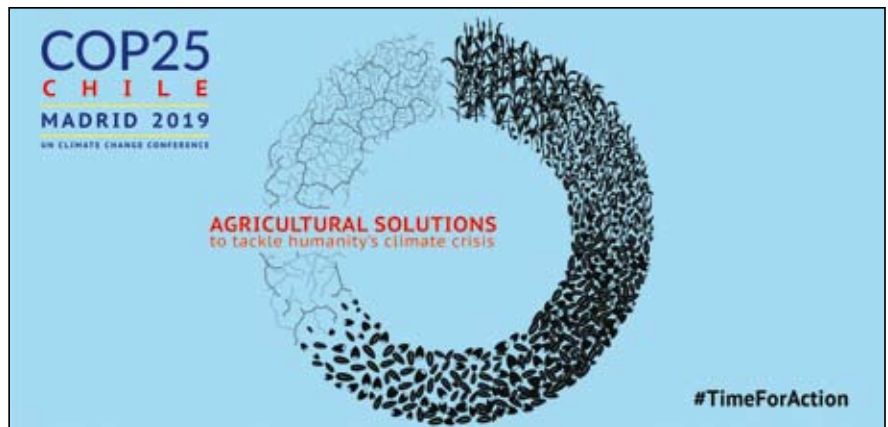
Changing Weather Patterns in Kenya and What's Needs to be Done. *By Mr. Ongoma*

Kenya's weather patterns are changing. The change in rainfall patterns has a huge impact on Kenya because 98 per cent of the country's agriculture is rain fed. The major challenge that farmers face is timing. It is critical for them to know when rains start and stop so that they know when to plant or harvest their crops.

Most parts of Kenya experience two rain seasons; March to May's long rains and October to December's short ones. The months of June to August are mainly cool and dry over most parts of the country, except for some areas in the western region that get rain.

Hot and dry conditions are normally observed in the entire country in January and February. In recent years, delay in the coming of rains has been the norm. In other years, rains came on time but then stopped earlier than anticipated. Such lead to massive crop failures.

Other than rainfall patterns, studies show a reduction in the amount of rainfall, especially during the March to May long rains' period. This is a worrying trend; given that this is the main planting season.



The changes in Kenya's rainfall patterns have been linked to climate change. Global warming is known to cause an overall warming in the atmosphere and the ocean, resulting in complex shifts that affect our planet's weather and climate systems. Research shows that rainfall is reducing while temperatures are on the rise in Kenya, as is the case in other countries in the Horn of Africa.

Delayed rains

In the case of Kenya's delayed rains, another culprit has also been identified; cyclones. It is normal for cyclones to happen on the southern African coast between February and March.

But their magnitude is dictated by sea surface

temperatures.

These warm as a result of increased emission of greenhouse gases in the atmosphere, leading to global warming. This means the intensity and frequency of cyclones is likely to increase.

The most recent cyclone was Idai and it occurred in the western Indian Ocean in March last year. The cyclone caused a depression – low pressure zone – in the ocean, cutting off moisture from flowing from the southern hemisphere to East Africa. Cyclone Idai delayed the

northward progression of the rain-bearing low pressure zone, also known as the Inter-Tropical Convergence Zone.

This limited the moisture flow from reaching Kenya, leading to the observed seasonal rainfall delay that strengthened anomalous dryness from early mid-March last year. A combination of failed rainfall and the observed high temperatures adversely impact agricultural activities across many parts of the country.

Because Kenya's economy relies heavily on rain-fed agriculture, it has to be prepared. Agriculture also accounts for 70 per cent of the workforce and about 25 per cent of the annual GDP. In the short term, the country relies on food reserves. This is mainly maize stored by the National Cereals and Produce Board. Unfortunately, with conflicting statements, it's not clear just how prepared the government is and how much is actually in the reserve.

In the long term, the country is not doing enough to respond to these changing rainfall patterns. Given that drought is not new in Kenya and is not going away any time soon, one would expect to see large scale water harvesting operations such as

what African Water Bank is doing in Narok. We would hope that available food resources were being properly utilised, too, but the reality is that a lot of food is ending up as waste.

Pilot projects

Research institutions like the Kenya Agricultural Livestock Research Organisation and the International Livestock Research Institution are working hard to come up with drought tolerant crop varieties – but more needs to be done.

The government must put measures in place that reduce the agricultural sector's over-dependence on rain-fed agriculture. The easiest way is to invest in irrigation infrastructure. This enhances food security, increasing the country's resilience to the effects of climate variability and change. This has been tried before and pilot projects have been successful. They now need to be systematically rolled out.

Kenya must invest more resources in the climate sector. It must train experts and provide the necessary tools for carrying out regional

climate projections.

There also needs to be a clearer picture of the projected climate. Existing climate projections are based on Global Circulation Models that fail to capture the entire East Africa climate. Reports from Intergovernmental Panel on Climate Change and regional studies, show that over the last 13 years, rainfall was projected to increase in East Africa. But we have seen that the opposite is true.

Mr Ongoma is a Lecturer in Physical Geography, The University of the South Pacific

What is Conservation Agriculture?

Sustainable farming system based on 3 principles

What is crop diversification?
Intercropping is growing two or more crops at the same time on the same piece of land. Crop rotation is growing two different crops on the same land in a sequential manner

1 Crop diversification decreases pest, disease and weed pressure

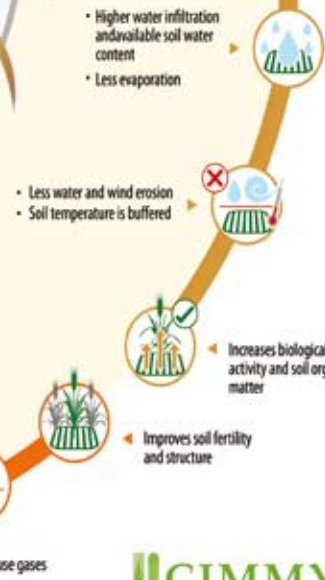
Benefits of crop rotation or intercropping



What is crop residue?
Crop residue or stubble is the accumulation of dried up plant parts left on the field, including cover crops or green manure

3 Soil coverage with residue of the previous crop, cover crop, or both

Benefits of soil cover



2 Minimal soil movement

Benefits of reduced tillage



What is Conservation Agriculture?

Farmers are increasingly adopting conservation agriculture practices. This sustainable farming method is based on three principles: crop diversification, minimal soil movement and permanent soil cover.

By Mary Donovan

If not practiced sustainably, agriculture can have a toll on the environment, produce greenhouse gases and contribute to climate change. However, sustainable farming methods can do the opposite – increase resilience to climate change, protect biodiversity and sustainably use natural resources.

One of these methods is conservation agriculture.

Conservation agriculture conserves natural resources, biodiversity and labor. It increases available soil water, reduces heat and drought stress, and builds up soil health in the longer term.

What are the principles of conservation agriculture?

Conservation agriculture is based on the interrelated principles of minimal mechanical soil disturbance, permanent soil cover with living or dead plant material, and crop diversification through rotation



or intercropping. It helps farmers to maintain and boost yields and increase profits, while reversing land degradation, protecting the environment and responding to growing challenges of climate change.

To reduce soil disturbance, farmers practice zero-tillage farming, which allows direct planting without plowing or preparing the soil. The farmer seeds directly through surface residues of the previous crop.

Zero tillage is combined with intercropping and crop rotation, which means either growing two or more crops at the same time on the same piece of land, or growing two different crops on the same land in a sequential manner. These are also core principles of sustainable intensification.

How is conservation agriculture different from sustainable intensification?

Sustainable intensification is a process to increase agriculture yields without adverse impacts on the environment, taking the whole ecosystem into consideration. It aims for the same goals as conservation agriculture. Conservation agriculture practices lead

to or enable sustainable intensification.

What are the benefits and challenges of conservation agriculture?

Zero-tillage farming with residue cover saves irrigation water, gradually increases soil organic matter and suppresses weeds, as well as reduces costs of machinery, fuel and time associated with tilling. Leaving the soil undisturbed increases water infiltration, holds soil moisture and helps to prevent topsoil erosion. Conservation agriculture enhances water intake that allows for more stable yields in the midst of weather extremes exacerbated by climate change.

While conservation agriculture provides many benefits for farmers and the environment, farmers can face constraints to adopt these practices. Wetlands or soils with poor drainage can make adoption challenging. When crop residues are limited, farmers tend to use them for fodder first, so there might not be enough residues for the soil cover.

To initiate conservation agriculture, appropriate seeders are necessary, and these may not be available or affordable to all farmers. Conservation agriculture is also knowledge intensive and not all farmers may have access to the knowledge and training required on how to practice conservation agriculture.

Finally, conservation agriculture increases yields over time but farmers may not see yield benefits immediately.

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Zero-tillage farming with residue cover saves irrigation water, gradually increases soil organic matter and suppresses weeds, as well as reduces costs of machinery, fuel and time associated with tilling.



soil. Organic farmers apply tillage to remove weeds without using inorganic fertilizers.

Conservation agriculture farmers, on the other hand, use a permanent soil cover and plant seeds through this layer. They may initially use inorganic fertilizers to manage weeds, especially in soils with low fertility. Over time, the use of agrichemicals may be reduced or slowly phased out.

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However, innovations, adapted research and new technologies are helping farmers to overcome these challenges and facilitate the adoption of conservation agriculture.

How did conservation agriculture originate?

The term “conservation agriculture” was coined in the 1990s, but the idea to minimize soil disturbance has its origins in the 1930s, during the Dust Bowl in the United States of America.

CIMMYT pioneered no-till training programs and trials in the 1970s, in maize and wheat systems in Latin America. In the 1980s this technique was also used in agronomy projects in South Asia.

CIMMYT began work with conservation agriculture in Latin America and South Asia in the 1990s and in Africa in the early 2000s. Today,

these efforts have been scaled up and conservation agriculture principles have been incorporated into projects such as CSISA, FACASI, MasAgro, SIMLESA, and SRFSI.

Farmers worldwide are increasingly adopting conservation agriculture. In the 2015/16 season, conservation agriculture was practiced on about 180 mega hectares of cropland globally, about 12.5% of the total global cropland — 69% more than in the 2008/2009 season.

Is conservation agriculture organic?

Conservation agriculture and organic farming both maintain a balance between agriculture and resources, use crop rotation, and protect the soil’s organic matter. However, the main difference between these two types of farming is that organic farmers use a plow or soil tillage, while farmers who practice conservation agriculture use natural principles and do not till the

How does conservation agriculture differ from climate-smart agriculture?

While conservation agriculture and climate-smart agriculture are similar, their purposes are different. Conservation agriculture aims to sustainably intensify smallholder farming systems and have a positive effect on the environment using natural processes. It helps farmers to adapt to and increase profits in spite of climate risks.

Climate-smart agriculture aims to adapt to and mitigate the effects of climate change by sequestering soil carbon and reducing greenhouse gas emissions, and finally increase productivity and profitability of farming systems to ensure farmers’ livelihoods and food security in a changing climate. Conservation agriculture systems can be considered climate-smart as they deliver on the objectives of climate-smart agriculture.



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Area: Non-cropped areas
Weeds: Broad-leaved weeds
Grass weeds
Rate: 2.5L/ha in 1000L of water.
(50ml in 20L of water)

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Athi 55 Ltd Complex, Warehouse No. 6.
P.O. Box 24942-00100, Nairobi, Kenya
+254 722 563 698 | +254 735 544 544

It is not clear how the cartels forced a policy change but fingers point to political interests and some distributors.

Ten months after it was exposed how a cartel-inspired fertiliser standard was put in place, the government has begun rectifying the multibillion-shilling policy mistake even as the syndicates fight back.

Unbeknown to many, two years ago some traders conspired – thanks to the Sh3 billion subsidised fertiliser – and lowered the cadmium limit for the input sold in Kenya to 15 parts per million, down from 30ppm.

This left the country with no choice but to get the fertiliser from a single Saudi supplier. Sources revealed that the cartels, eager to retain their monopoly, are fighting the Kenya Bureau of Standards (Kebs) and government's push to rectify the situation.

The move, quietly gazetted on February 23, 2018, led to the rise of fertiliser prices and guaranteed the cartels a single source for their products.

Government Dismantles Cartels to Lower Market Prices

This year, after Kebs granted a waiver that allowed the import of fertiliser from different sources awaiting the finalisation of the standards review, the DAP prices for a 50-kg bag dropped from Sh2,600 to Sh2,100 – signifying how lack of competition directly affects farmers.

In 2019, when there was only one source for DAP, the price shot up to Sh3,500 per bag, thanks to the 15ppm cadmium limit.

While countries have adopted different cadmium limits, Kenya narrowed competition by opting for a measure lower than any other nation in the world.

Earlier this year, Agriculture Cabinet Secretary Peter Munya told off critics who have been fighting the decision to replace the controversial KS157:2018 with KS157:2019 standard, which puts Kenya at par with European Union (EU) limits. In May last year, the EU adopted a cadmium limit of 30ppm.

However, critics have silently been accusing Mr Munya of creating a new standard as he seeks to open competition in the fertiliser industry.

“To the contrary, I am correcting an anomaly that was created to favour particular traders,” he said during a players' forum. “Why did Kenya adopt a standard not used elsewhere? We will make sure there is competition in the market and fertiliser is affordable.”

Political Interests

It is not clear how the cartels forced a policy change but fingers point to political interests and some distributors.

As that happened, farmers were caught between two major global phosphate producers – OCP of Morocco and Phosagro/Maaden of Saudi Arabia – whose rocks have different cadmium elements.

While North Africa, the US, China and





“The industry needs solid science to back up agricultural technology solutions in the realms of both nutrient and water management. Regarding the right placement, right time and the right quantity of fertilizer, mechanization solutions

the Middle East produce 80 per cent of the world’s phosphate, their rocks have higher cadmium limits than those of Russia and Saudi Arabia.

The commercial battle between these two groups is on if the cadmium concentration affects human health. Kebs organised a public review draft to get comments on the limit of cadmium in imported fertiliser.

Some argue that fertiliser with higher cadmium is lethal but Kenya still imports maize and wheat from countries which have adopted such limits.

No Logic

Kenya imports wheat and rice from India and Pakistan, which have no limit, maize from Mexico (no limit), Tanzania (30ppm) and Ethiopia

(45ppm) and sugar from Brazil (57ppm).

“There was no logic in setting up the standard which ended up making fertiliser prices high. The country became uncompetitive in food production,” a scientist averse to the debate says. “There is no scientific study in Kenya to show that fertiliser with cadmium of below 15ppm is safer for health and the environment.”

A policy document sent to the Agriculture ministry says there is no conclusive scientific evidence on fertiliser’s contribution to cadmium in the soil and its transfer to plants, animals and humans.

The fear is that if the current limits are maintained, imports would only be restricted to Russia and Saudi Arabia.

Don't Blame it on the Rain If Your Maize Gets Mould

Timely harvesting reduces contamination on the farm; while harvesting during the dry season makes most of the grains to be stored well, sometimes prolonged rain season may force a farmer to harvest during the rains.

Popular Germany's music group, Milli Vanilla, remains one of the best acts of our time despite reigning in the 80s and 90s.

One of their most successful songs is Blame it on the rain...does it ring a bell.

Well, I remembered this song when I visited maize farmers. "All the maize is rotting on the farm. My investment is going down the drain," a farmer said, reminding me of Milli Vanila and the hit song Blame it on the rain.

As the weather changes and becomes extremely unpredictable, it is obvious that the rains would continue to cause mayhem. But should we continue blaming them for our omissions.

Looking at the farms, the main challenge affecting maize farmers due

to the rains was mould. This is a fungal infection that causes huge losses and harms human and animal health since they produce aflatoxins. The toxins remain in the stored products and cannot be easily destroyed by burning or evening processing.

Farmers' Woes

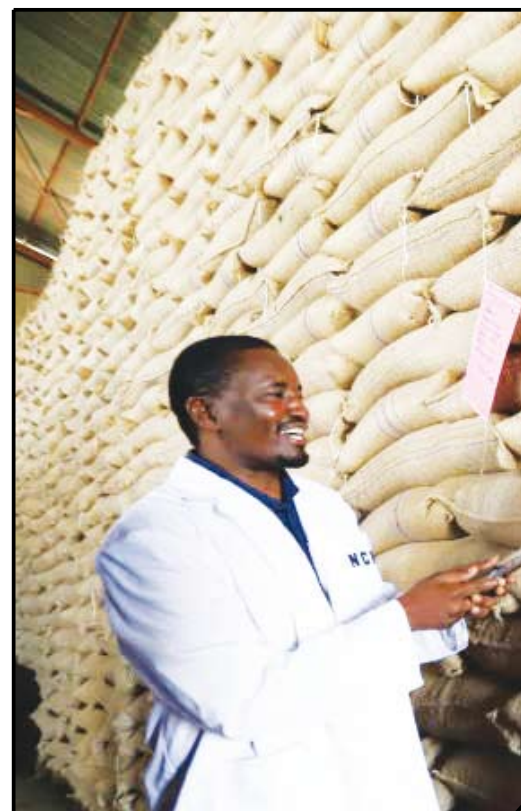
Besides on the farm, plenty of grain is usually lost after harvesting due to poor handling and bad storage practices that expose the grains to insect pests and diseases.

Pests such as weevils can infest the maize while still on the farm making holes on the seeds while the rodents make the seeds to break and spill on the ground.

Therefore, for the best strategy, management of post-harvest losses in maize should start right before one plants the crop.

Simplest and Affordable

This begins by selecting varieties that are less susceptible to the attack. These varieties are available for most of the regions of the country enabling farmers



to curb losses, whether there is rain or shine.

Timely harvesting also reduces contamination on the farm. While harvesting during the dry season makes most of the grains to be stored well, sometimes prolonged rain season may force a farmer to harvest during the rains.

If this happens, store the maize in a well-ventilated leak-proof structure and keep on turning the produce frequently to ensure proper air circulation. This will prevent the grains from rotting or developing moulds.

After harvesting, ensure the maize



in and around the granary is also essential as this ensures the seeds remain dry. Therefore, one should ensure that the granary is well-ventilated to allow air circulation.

To control weevils, the maize seeds can be stored in hermetic bags that are made up of three layers or in metal silos.

This helps the farmer to keep the grain without using any preservatives. Pests inside the bags or silos suffocate since they

is well-sorted and graded to remove all the infected seeds. Threshing should be done and all the residues removed as they also act as a source of contamination.

are airtight.

Sun-drying is the simplest and affordable method of drying the grains. However, solar panels can also be used to effectively dry the maize.

Even without a moisture meter, you can do a simple test to determine if the maize is well-dried by putting a handful of seeds and salt in a bottle and thoroughly shake to mix it. If the salt does not stick on the bottle, this shows that the maize seeds are well-dried.

Monitoring of the moisture content





A Promise to Farmers, Sector

Food security requires a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's own economic development and national priorities.

The government will spend Sh440 billion over the next five years to boost farming, Agriculture, Livestock, Fisheries and Cooperatives Cabinet Secretary Peter Munya has said.

The CS said the programme is being implemented under the Agricultural Sector Transformation and Growth Strategy (ASTGS) 2019-2029.

The strategy, he said, is based on

the belief that food security requires a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's own economic development and national priorities.

The ambitious plan is also in line with the commitments to the Malabo Declaration under the Comprehensive Africa Agriculture Development Programme (CAADP) and the United Nations Sustainable Development Goals (SDGs).

Mr Munya spoke during the Kenya Private Sector Alliance (Kepsa)-organised National Agriculture Summit in Nairobi, where he explained that the ASTGS has built on lessons

learnt from previous strategies with a focus on counties as the centres for implementation and delivery. He believes the strategy will make the country a regional agriculture powerhouse.

"The main approach is to address the effects of climate change and the challenges that constrain agricultural output, productivity and natural resource management in Kenya today," said Mr Munya.

He noted that the strategy had shifted the burden of action to the county governments, the private sector, industry players, entrepreneurs, development partners and civil society.



The plan prioritises Kenya's 10-year transformation underpinned by nine big ideas in the context of devolution.

Some of the specific targets include integrating one million farmers in 40 zones producing crops, livestock and fish who will be served by 1000 farmer-oriented small and medium-sized enterprises that provide inputs, equipment, processing and postharvest storage and aggregation.

It will also shift nationwide subsidy to 1.4 million registered high-needs farmers to access inputs and equipment from a variety of private

and public providers using e-vouchers with digital service delivery. The ASTGS also seeks to increase agricultural output and value-addition.

The CS said six large-scale agro- and food-processing hubs will be established through a rapid Public-Private-Partnership (PPP) process, targeting both domestic and export markets.

The strategy also seeks to launch 50 large-scale private farms with 150,000 acres under sustainable irrigation, with

government-provided infrastructure and protected land ownership.

The recently launched National Farmers Summit will be an annual event and will be co-chaired by input dealers Elgon Kenya Ltd managing director Bimal Kantaria and Agriculture principal secretary Harry Kimutai.

"Through the summit and the subsequent ones, we hope to open up ways through which all stakeholders involved in this key sector can work together to strengthen it," said Mr Kantaria.

Things that will Pull Farmers Out of Poverty



The end of 2014 brought the conclusion of the African Union's Year of Agriculture and Food Security.

However, most Africans work in some aspect of agriculture, and for them, every year is dedicated to agriculture and food security.

As farmers head out into their fields today, they are likely giving little thought to meetings underway in South Africa focused on energising the AU's Comprehensive African Agriculture Development Programme (CAADP).

AU leaders have vowed to move quickly in 2015 to fulfil the promises enshrined in Malabo Declaration, which reaffirmed

the commitment of AU member states to allot 10 per cent of national budgets to agriculture, double productivity on African farms and cut post-harvest losses by half.

The Alliance for a Green Revolution in Africa (AGRA) has been seeking out public and private sector partners committed to triggering a uniquely African green revolution; one that revolves around the smallholder farmers who produce the majority of what Africans eat.

Here are a few lessons learned in places, where many are now embracing the potential of agriculture to anchor a new era of sustainable and equitable economic growth.

1. Create conditions for smallholder farmers to adopt new inputs and practices by raising awareness.

The only way to sustainably and inclusively raise agricultural productivity is to ensure farmers are aware of the potential of new seeds, fertilisers and basic agricultural practices that can more than double their yields.

AGRA's partners in national research systems have developed nearly 500 locally adapted crop varieties that are just as competitive as anywhere in the world.

Our partners and private equity firms, have helped launch 90 seed companies that collectively constitute the largest producer of certified seeds in sub-Saharan Africa, and 80 fertiliser companies that can help blend, distribute, and sell the produce to

smallholder farmers through market-led solutions such as local agro-dealerships.

2. Think outside the bank to consider new ways to deliver financing to farmers.

There are multiple opportunities to go beyond brick-and-mortar banks to help deliver financing that is still in short supply to smallholder farmers.

For example, Mpesa is reaching out to farmers with its popular mobile phone banking services. Microfinance institutions are partnering with commercial banks to provide new streams of affordable capital for agriculture ventures. And the MasterCard Foundation recently launched a campaign to expand financial services to rural Africa through Agra and other partners.

3. Develop structured and efficient grain markets that are accessible for smallholder farmers.

As farmers produce more, they increasingly need access to markets for their goods. Newly established warehouse receipt systems in Ghana and Kenya are providing safe and secure facilities to store grain while farmers negotiate with potential buyers.

National and regional commodity exchanges are needed to attract more buyers for this produce. One potential model is being developed by African Exchange Holdings (AFEX). It's a new partnership working to combine warehouse storage options with commodity exchanges to serve smallholder farmers in the East

African Community.

4. Support efforts to match smallholder farmers with large-scale buyers.

Over the last few years, farmers' organisations in Ghana, Mali, Tanzania, Mozambique, Kenya, Rwanda, Burkina Faso and Malawi have established aggregation centres where growers can pool their harvest to meet the demands of large institutional buyers, like the World Food Programme.

In West Africa, a major rice miller and a large brewery have both seamlessly integrated smallholders into their network of suppliers.

5. Support women in agriculture

Most smallholder farmers and many new agribusiness leaders are women, and they have a significant role to play in Africa's agriculture.

Priority actions include developing and promoting improved seeds that take into account women's preferred characteristics such as taste and cooking time and targeting increased inclusion by women farmers in producer groups.

We need more support for groups that are putting women first in their development of solutions, and others like the African Enterprise Challenge Fund that are putting in place targeted finance for women in agribusiness.

Ms Kalibata is the President of the Alliance for the Green Revolution in Africa (AGRA) and former Rwandan Minister of Agriculture and Animal Resources.

CEREAL FARMERS IN KENYA

FARM NAME	LOCATION	CONTACT PERSON	EMAIL	TELEPHONE	CROP MIX	ROTATION CROP
Chemusian ltd		Too	chemusian@gmail.com	0722209754	Wheat / Barley	
Kikwai farm		Patrick	padykikwai@gmail.com	0731817804	Wheat / Barley	
-	ELDORET	-	-	-	-	
Sergoit farm		Yani/ Kruger	tingaspik@gmail.com	0718338099	Wheat / Barley	Maize
Komol farm		George Killi		0722732757	Wheat	Maize
Mohammed		Kaittany		053-2062234	Wheat	Maize
Elfam ltd		Ngetich		0721517701	Wheat	Maize
Mace foods		Margret Komen		0722840799	Wheat	Maize
Kuinet Tarus		Tarus		0721934176	Wheat	Maize
Moiben Chepkener		Chepkener		0719506980	Wheat	Maize
Chepkorio		Jelimo		0722571355	Wheat	Maize
Kenya ordnance		Chirchir		0721851931	Wheat	Maize
Kandelo		Kandelo		0720305041	Wheat	Maize
Kimoso		Kimoso		0734858619	Wheat	Maize
Silas Tiren		Tiren	skktiren@africaonline.co.ke	0725792463	Wheat	Maize
Shiv enterprises		Albert Kimwatan		0722652300	Wheat	Maize
Timothy Busienei		Busienei		0727085756	Wheat	Maize
Plateau Ngeria		Sile		0724752143	Wheat	Maize
Victoria Chebet		Chebet		0753466025	Wheat	Maize
Maji Mazuri		Ziwa		0723024971	Wheat	Maize
Kibogy Moiben		Kibet		0728706668	Wheat	Maize
Kapkabai Farm		John	wilchem@africaonline.co.ke	0722724990	Wheat	Maize
-	ATHI RIVER	-	-	-	-	-
Ausquest ltd		Stuart Barden	stuartbarden70@gmail.com	0703119444	Barley/ Wheat	Sorghum
-	KITALE	-	-	-	-	-
Bubayi		Jonathan Mayer		0735488001	Wheat	Maize
Panocal		Chris Carpenter	cereals@panocal.co.ke	0719505785	Wheat	Maize
Murmet		Chelimo		0722571355	Wheat	Maize
Cheptembe farm		Robin		0722817638	Wheat	Maize
Robert		Tuitoek		0722813381	Wheat	Maize
Biwott		Biwott		0720955748	Wheat	Maize
Express Farm		Mbugua		0722766176	Wheat	Maize
Western seed company		Harry		0720897860	Maize/ Wheat	
Kenya seed company		Mwarei		0722614639	Maize/ Wheat	Barley
ADC Farms Edward			edwardmwando@gmail.com	0728453942	Maize	Sunflower/ Pasture
-	MOLO	-	-	-	-	-
EAML		Gacheru		0722791563	Contracted farmers	Barley
-	KISUMU	-	-	-	-	-
Dominion farms ltd		Okoth		27494585	Rice, Maize, Sugarcane	

CEREAL FARMERS IN KENYA

FARM NAME	LOCATION	CONTACT PERSON	EMAIL	TELEPHONE	CROP MIX	ROTATION CROP
-	MT. KENYA	-	-	-	-	-
Oldonyo ltd		Brynn	brynn@oldonyo.co.ke	0722817163	Wheat/ Barley	Peas, Canola
Kisima ltd		Shaun	shaun@kisima.co.ke	0729924353	Wheat/ Barley	Peas, Canola
Wangu Investment		Ben	ben@wanguembori.co.ke	0724545475	Wheat/ Barley	
Marania ltd		Jamie	marania@maraniafarm.com	0721573634	Wheat/ Barley	Peas, Canola
Lengetia ltd		Sessions	Lengetiafarm@gmail.com	0722332647	Wheat/ Barley	Peas, Canola
Mastermind ltd		Gitonga	dgitonga@mastermindkenya.com	0722751488	Wheat	
Tumili ltd		David Beak	tumili@wananchi.com	0722823543	Wheat/ Barley	Peas, Canola
Thamba Ngombe		Thamba	thamba@gmail.com	0724927351	Wheat/ Barley	
Mt Kenya saw mill		shah	nainhshah@gmail.com	0722511691	Wheat	
-	NAROK	-	-	-	-	-
Simba Estate		SS. Dhillon	simbaestate@simbaestate.com	0722511460	Wheat	Maize
Farm Africa ltd		Raghu	raghu.penmetasa@farm-africa.com	0788299442	Wheat	
Lalela ltd		Neylan	neylan@macc.com	0722385329	Wheat	Sorghum
Mann Wheat ltd		Magal		0722518964	Wheat	
Green Farms		Wambugu		0722287337	Wheat	
South Siox Farm		Guri	gurbir@southsiouxfarms.com	0722676878	Wheat	
Olerai ltd		Alistair	alandbill@olerai.co.ke	0728484659	Wheat	Seed Maize
Talent Farm		Paul	sarpau@internode.on.net	0729846736	Wheat	
Rm Farms		Amit and Sanju	rishi-amit2007@yahoo.com	0722225330	Wheat	Maize
Ndovu estate		Viney		0722824793	Wheat	Maize
Country motors		Singh	country@africaonline.co.ke	0722764763	Wheat	
Oldonyo Nairasha Estate		Karan	ssdhillon@africamail.com	0722323296	Wheat	Maize
Development Trust		David		0724741718	Wheat	Canola
Oratili ltd		Mahesh	farmpartsltd@africaonline.co.ke	0722848474	Wheat	Canola
Upland crops		Koos	fm@uplandcrops.com	0704681651	Wheat	Maize
-	NAIVASHA	-	-	-	-	-
Kijabe ltd		David Cullen	ndabibi@gmail.com	0729950910	Wheat/ Barley	
Soyonin ltd		Benjamin Kipkulei		0733605071	Wheat	
Livewire Ltd		Goddy Millar	info@livewire.co.ke	0722205992	Wheat / Barley	
-	NAKURU	-	-	-	-	-
Lesiolo ltd		Tundo Franco	firtundo@gmail.com	0724333322	Wheat / Barley	
Madrugada		Jonti	jonti@madrugada.co.ke	0722734179	Wheat / Barley	Maize, Peas, Canola, Sunflower
Tony		Hughes	hoozie@swiftkenya.com	0722808058		
Chepkonga		Andrew	andychep@yahoo.com	0710308917	Wheat / Barley	
Siruai		Rose	skvarose@gmail.com	0722865892	Wheat / Barley	Maize
Sasumua Agriculture		Luke	luke@sasumua-agriculture.com	0722779618	Wheat / Barley	Canola, Peas, Sunflower, Maize
Kenana Farm		Oliver	pkenana@africaonline.co.ke	0722725002	Wheat / Barley	Canola, Peas, Sunflower, Maize
Remsons Ltd		Mugambi	remsons.ltd@gmail.com	0722807773	Wheat / Barley	
Molodowns		Chris Foot	ckfoot@gmail.com	0722717130	Wheat / Barley	
Gogar Farm		Hamish Grant	md@gogar.co.ke	0722327718		Maize
Kinoru Farm		Barlow	barlow@africaonline.co.ke	0725777479	Wheat / Barley	canola, Peas, Sunflower
Comply industries		Sandhu	sckihumba@complyindustries.com	0729870025	Wheat / Barley	

Importance of Content Marketing During Coronavirus Pandemic



As cases of the

coronavirus (COVID-19) increase internationally, brands have begun scrambling to navigate the pandemic – both internally and externally.

In response to coronavirus, many marketing teams are forced to switch gears and think of alternative outlets, away from event marketing, to accelerate pipeline while keeping the health of others in mind.

The challenges for marketers during coronavirus outbreak

On average, 30-40% of marketing

budget is allocated for trade show sponsorship, travel, expenses, attendance, and collateral. With the coronavirus blowing up trade show budget, marketers are challenged to redistribute that budget quickly.

Amid the fear of attending and sponsoring large events, marketers are turning to content marketing delivered directly to consumers online and stay engaged with their customers. Content marketing has evolved from being just blog posts, websites, emails, all kinds of social media and editorial strategies. It's a holistic approach that relies on a broad range of digital marketing strategies tactics such as

paid media to continue engagement with customers.

The importance of content marketing

Content marketing can become an effective way for you to remain in touch with your customers and increase pipeline generation during the coronavirus pandemic. With the ever-changing digital landscape, communicating and engaging with your audience can remain undisrupted, no matter what the situation is – as long as you have the proper content marketing strategies in place.

Since trade shows are primarily used for demand generation initiatives and pipeline acceleration, focusing on digital lead generation channels becomes vital. Many marketers would say that increasing digital spending will increase lead volume, but quality can vary. Some would argue that the quality of leads generated at trade shows can also vary – as long as the leads are carefully vetted, pipeline generation will increase without having to rely on trade show participation.

Digital Magazines will allow you to become storytellers en masse and provide consumers with the content of value increasing brand awareness and engagement. Customers and prospects seek out content that entertains, inspires, educates, and informs – a strong content strategy will give you the opportunity to leverage important elements from experiential marketing online.

In challenging times and a fast-changing global landscape, communicating brand identity and values remains important. Coronavirus provides a new challenge for marketers that shines a light on the importance of relying on strategies outside of traditional channels (while expected to remain agile). The goal of experiential marketing during the coronavirus outbreak is to invest in similar experiential and content marketing strategies delivered through online platforms. Ensure your customers are aware that you are still available and interested in their business throughout 2020.

Moreover, no matter how you're approaching this situation – both from a health as well as a marketing standpoint – it is important that we maintain a healthy and safe environment.

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Salient Features

- ▶ Powerful Engine
- ▶ 4 Wheel Drive
- ▶ Synchronmesh Gear Box with 12+12 Speeds
- ▶ Heavy 2600 Kg Lift
- ▶ Power Steering
- ▶ Oil Immersed Brakes
- ▶ Multi Speed PTO
- ▶ Dual DC Valve
- ▶ No. 1 in agriculture and commercial works



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ATSL

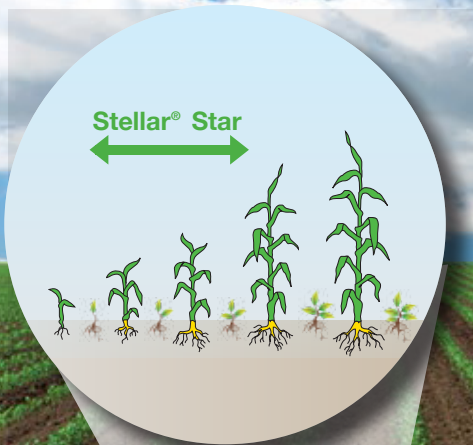
□ - BASF

We create chemistry

Stellar® Star

- A highly effective herbicide for the control of broadleaved weeds and grasses in Maize as a post emergence application
- Stellar Star gives you a wide range of application timing apply when the weeds are up to 6 leaf stage of growth

Rate of application : 1 L/Ha or 0.4 L/Acre (Knapsack 20L 100ml/20L of water or boom sprayer 2L/400L of water)



Still on time.

