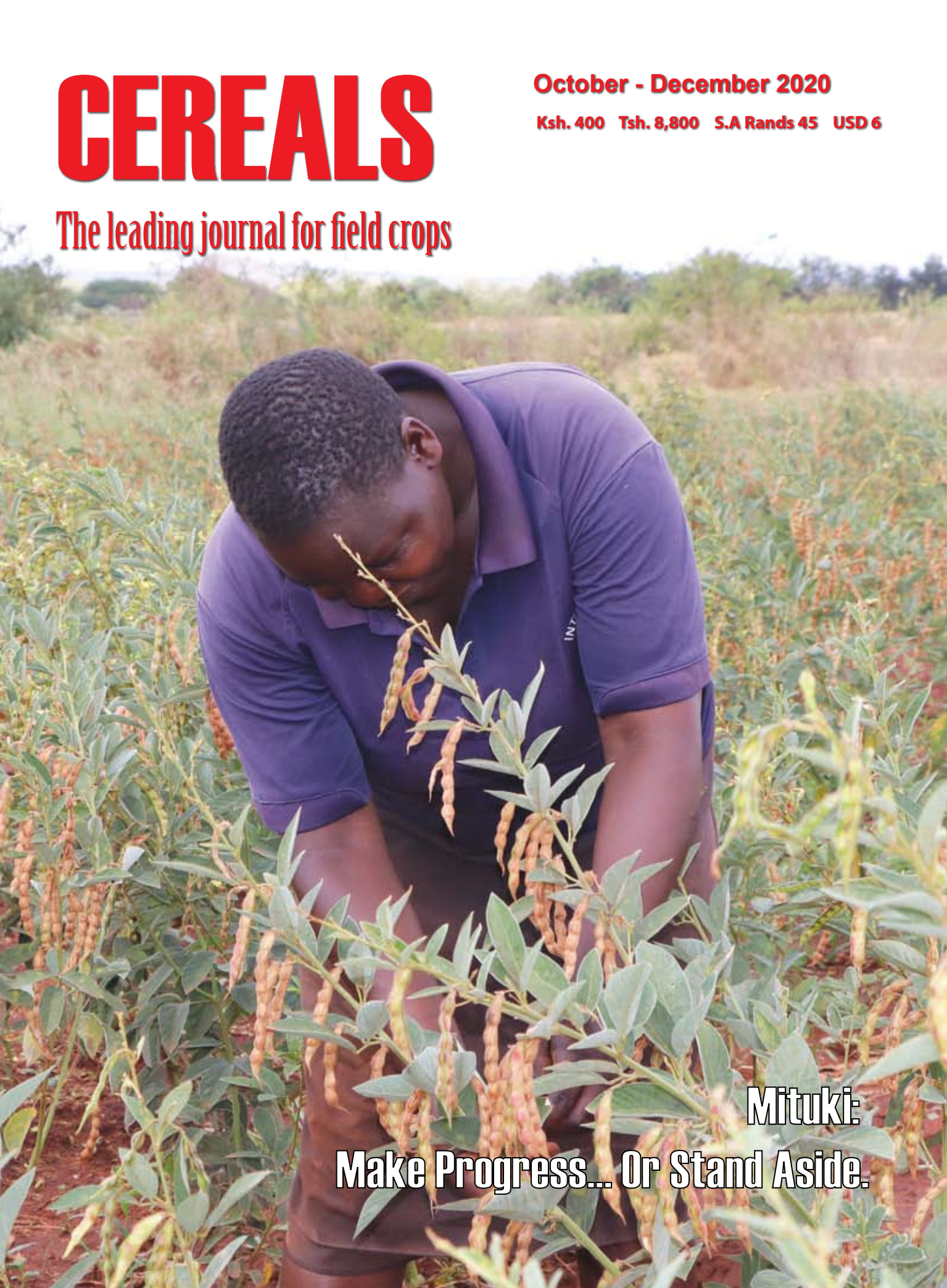
CEREALS

The leading journal for field crops

October - December 2020

Ksh. 400 Tsh. 8,800 S.A Rands 45 USD 6



Mituki:
Make Progress... Or Stand Aside.

Authorised Distributor :

Agricultural Tractor Spares Limited

33 Dar-Es-Salaam Road, Industrial Area, Narobi
Mobile +254722 209642, +254733 600 593, Email : tractorsales@atslkenya.com

ATSL

BESTFIELD

PATRIOT 750WDG

LANDMINE 550SC

Toa Nutgrass kwenye Mahindi

LANDMINE 550SC

Mesotrione + Altrazine
for control of grasses and broad leaf weeds .

PATRIOT 750WDG

Halosulfuron methyl
for the control of nut grass.

Bestfield East Africa Limited
Saku business park.North Airport Road.
P.O.Box 51369 - 00200 City square, Nairobi Kenya.
Tel: +254 704380212
Email: info@bestfield.co.ke | www.bestfield.co.ke

TABLE OF CONTENTS

Editorial

Innovation, Way forward.

Call it innovation on GMOs. Or innovation at warp speed. Or just the innovation of rapid innovation.

But the essential point remains: Technology is transforming innovation at its core, allowing companies to test new ideas at speeds and prices that were unimaginable even a decade ago. They can stick features on social media or Web sites and tell within hours how customers respond. They can see results from customers, or efforts to boost process productivity, almost as quickly.

The result? Innovation initiatives that used to take months and megabucks to coordinate and launch can often be started in seconds for cents.

And that makes innovation, the lifeblood of growth, more efficient and cheaper. Companies are able to get a much better idea of how their customers behave and what they want. This gives new offerings and marketing efforts a better shot at success. In this issue, we see new innovations from KARLO. Bayer Cropscience is also coming up with new partnerships and Dr. Murenga Mwimali believes innovation is the way to have youth in farming. In addition, he feels biotechnology is the way into fulfilling the president's big four. We are all talking of innovation. Companies are also willing to try new things, because the price of failure is so much lower. This year we have seen almost all the agrochemical companies trained their customers, launched new products or brought new innovations through Zoom. This was rarely used a year ago. This has brought more changes for corporate culture making it easier to challenge accepted wisdom, for instance, and forcing managers to give more employees a say in the innovation process.

Let us embrace change.

Masila Kanyingi
Editor

Cereals **EDITOR:** Masila Kanyingi **EDITORIAL ASSISTANT:** Cornelius Mueke **CONTRIBUTORS:** Dr. Murenga Mwimali, Bayer E.A Ltd, IRAC, CIMMYT, Apollo Agriculture **PHOTOGRAPHER:** Alexander Mainga **GRAPHICS DESIGNER:** Evelyne Ndiema **MARKETING:** Florinews ltd **ADMINISTRATION ASSISTANT**: Christine Muthoki

EDITORIAL BOARD: Thomas Kipkorir - UPL Ltd, Agnes Gitonga - BASF E.A Ltd., Doris Kawira - Cropnut, Joseph Kioko - Agribase Bioscience Int. Ltd., Patrick Gachanja - Bayer East Africa, Martin Mwobobia - Consultant,

ADDRESS: P.O.BOX 79396 - 00200 Nairobi. **TEL**: 020-2440909 • **CELL** 0732-558172, **EMAIL**: info@cereals co.ke **Website**: www.cereals.co.ke

Elegant

Stronger, more flexible broad weeds control

a unique new post-emergent herbicide providing robust control of a wide range of broadleaf weeds in wheat

- Very broad spectrum
- Flexibility - Makes it easier to work around weather events and apply early or late
- Increased efficacy on difficult to control broadleaf weeds with a wide spectrum of activity
- Excellent value for money when compared to other premium broadleaf options
- Stops weeds growing almost immediately improving yields from reduced competition

Distributed by:

GREBE
Making life better!

Grebe Enterprises Limited
Hoska Plaza, Pandit Nehru Road
P.O. Box 14828-20100
Nakuru, Kenya
Mobile: +254(0)722603054
www.grebeenterprises.co.ke

For further information please contact: Robert Wachira
Tel: +254 713 463 937 www.adama.com/east-africa

ADAMA

Find us on Facebook ADAMA East Africa

Bayer East Africa Ltd.
Initiates Better Farms, Better Lives

• Through its new "Better Farms, Better Lives" initiative, Bayer will complement its current commitment to support smallholder farmers in Africa with hybrid corn and vegetable seeds.

• By supporting up to 700, 000 smallholder farmers facing increased challenges due to COVID-19 pandemic in Africa, Bayer intends to boost food security.

• The programme was flagged off in Nairobi, Kenya and will be implemented in Kenya, South Africa, Tanzania, Nigeria, Zambia, Zimbabwe and Malawi.

• Kshs. 93 million worth of seeds to be distributed among 200 000 smallholder farmers in ten counties in Kenya.

Agriculture PS Prof. Hamadi Boga

To assist smallholder farmers in Africa who are facing additional challenges resulting from CIVID-19, Bayer, as part of its societal engagement activities and through its new "Better Farms, Better Lives" initiative, is providing seeds as well as assistance with market access.

"Better Farms, Better Lives" is in line with Bayer's overall aspiration to help build a world where there is Health for all, Hunger for none. The initiative focuses on providing smallholder farmers with assistance needed to address the additional challenges they may be facing as a result of the coronavirus pandemic.

"Smallholder farmers are essential to providing food security to billions of people, but the on-going COVID pandemic is placing extra challenges on their ability to produce food for their communities and beyond, "says Liam Condon, President of Bayer's Crop Science Division.

To ensure the greatest successful impact, Bayer will work and expand its partnerships with governments, recognized NGOs and local organizations; to provide accelerated access to agronomy services and knowledge; scale up existing and new value chain partnership and further expand value chain partnership across Africa.

"In line with vision 'Health for All, Hunger for None', Bayer is focused smallholder farmers with the help they need to address immediate challenges while building resiliency for the future, and working to ensure the CIVID-19 pandemic does not turn from a health crisis to a hunger crisis", notes Klaus Eckstein, Head of Africa, Crop Science Division.

In Kenya, Bayer will collaborate with Alliance for Green Revolution in Africa (AGRA) and local County Governments to distribute 300 metric tones of Bayers Dekalb corn seed brand and Seminis vegetables seeds brand, to ten Counties including Bungoma, Tanariver, Machakos and Narok.

"Together with partners, we aim to multiply the social and economic impact smallholder farmers can have in tackling poverty and hunger, improving health and livelihoods and ultimately, spurring economic development for their families, communities and nations," adds Laurent Perrier, Managing Director Bayer East Africa Limited.

From the Desk of
Bayer East Africa Managing Director
Mr. Laurent Perrier

Ladies and Gentlemen, first and foremost, I wish to thank you all for joining this event and to welcome you all to the Bayer East Africa Complex which is the headquarters for our East Africa Region. This is a great indication of your unwavering commitment to Agriculture and particularly to smallholder farming.
On September 3rd, 2020, we joined hands with the Ministry of Agriculture through our umbrella platform ASNET to present over Sh.100Million to help in efforts to contain the deadly locust invasion in East Africa.

We are sisitedted for a different occasion and for a good cause – to further catalyze agriculture. We are gathered here today to commission Bayer's Africa wide Covid-19 Response initiative. We are calling it *Better Farms, Better Lives*. We believe it is from Better farms that we get food, it is from Better Farms that we generate jobs and income, it is from Better Farms that strong economies are built and especially in most African countries where Agriculture is their mainstay-in short
Better Farms, lead to Better Lives.

About Bayer

Our distinguished guests, allow me to tell you who we are and our vision. Bayer is global with core competencies in the life science fields of health care and nutrition in line with our vision of Health for All, Hunger for None.

In this regard, the program is Bayer's contribution intended to support distressed Smallholder livelihoods with cross value chain engagement to secure farmer incomes in the aftermath of the covid-19 pandemic through increased recovery.
This will be through: Enabling access to innovative tools for Kenya's maize and vegetables smallholder farmers and reducing cost burden for smallholders farmers in the upcoming farming season.

To page 6

From page 5

The main thrust of the program will be targeted at:

- Input Support through provision of free corn vegetable starter packs
- Service and knowledge support in collaboration with our partners
- Off take support through value chain linkages

This marks the official go-live of the Better Farms, Better Lives program in Africa with Kenya being the first country to go live. Other program countries in Africa include: Tanzania, Zambia, Nigeria, Zimbabwe, Malawi, South Africa and Mozambique. Through this programme, we aim to impact 700, 000 smallholder farmers in Africa between 2020-2022. Out of this number over 200,000 will be in Kenya.

This program reinforces Bayer Global ambitious objective of empowering 100 million smallholder farmers by 2030. The program will provide smallholder farmers, who are critical to Kenya and Africa's food security by providing them with our high-quality hybrid corn and vegetables seeds-some of which is right in front of us on the truck awaiting flag off-, and continuously providing technical support until harvest time.

Distinguished guests, smallholder farmers face many challenges in accessing quality, reliable products they need to produce a high yielding harvest to support their families and communities. In the advent of COVID-19, smallholder farmers and food security-are under immense threat. Lockdowns have resulted in great logistical challenges-farmers have difficulties gaining access to seeds, crop protection inputs and labor which they need to continue farming, in addition to on going challenges of health and safety occasioned by the virus.
In collaboration with our partners, we aim to boost food security as well as aid with recoveree and long term resilience. We believe that equipping these farmers with the insights and innovations to grow more using less, they can collectively help the world make big leaps in conserving resources, fighting climate change, providing food security and improving lives.

In line with our vision 'Health for All, Hunger for None', we are committed to providing smallholder farmers with the help they need to address immediate challenges while building resilience for the future and working to ensure the COVID-19 pandemic does not turn from a health crisis to a hunger crisis.

As part of our overarching commitment to empower 100 million smallholder farmers by 2030 globally, the Better Farms Better Lives Initiative is tailor made to help smallholder farmers with a three-phased 'Response, Recovery, Resilience' approach. Beyond the immediate response in the form of support seed packages, we are working with partners to put in place a mid-and long-term plan to build up resilience of our food systems and ensure smallholder farmers are better prepared for the future.

The areas of the world most affected by hunger are also those where smallholder farmers can make the biggest impact. We are working to provide them with the tools they need to grow, harvest and process enough feed and food for themselves and their communities. In many parts of the Africa-Kenya included, women are backbone for agriculture, yet systematic issues often contribute to dramatically reduced production for them. I am happy to inform you that this initiative will give a special focus to women smallholders to ensure they get the resources and knowledge they need to emerge from this situation stronger.

As we commission the programme, I am thrilled by thought of directly impacting

close to 170, 000 smallholder farmers in Kenya for this planting season. This number translates to 170, 000 households or about 500, 000 individuals in 15 counties to whom we will not only have placed food on their table, and a smile on their face but empowered their lives for better.

An incredible 97 percent of the world's farms are smaller than 10 hectares (about 25 acres) and produce 80 percent of the food in developing regions of Sub-Saharan Africa. These farms are often family-run businesses that have a long history in the communities where they live. Against the value of over Ksh. 93 Million that we are spending for this programme in Kenya alone, we are excited in terms of food security and knowledge.

Big challenges require big solutions and a shared commitment among dedicated partners at the global and local level to drive long-term impact. Together with partners, we aim to multiply the social and economic impact smallholder farmers can have in tackling poverty and hunger, improving health and livelihoods and ultimately spurring economic development for their families, communities and nations. In Kenya, (Including Tanzania and Nigeria) we will be collaborating with Alliance for Green Revolution in Africa (AGRA) and County Governments to distribute an estimated 300 metric tons of Bayer's Dekalb corn seed and Seminis vegetables seeds brand, to about 15 counties including Bungoma, Tanariver, Machakos, Meru, Kilifi, Laikipia and Narok.

I wish to thank all the partners involved in this programme. We thank ASNET for bringing the Agriculture experts together and being the voice of the Agriculture Sector Network in Kenya. We also thank the Council of Governors and all the County Leadership represented here today for their unwavering support. AGRA and her sub-partners like CGA has positive initiatives and we continue to work closely with them in many areas. In a very special way, we thank the Ministry of Agriculture for always providing the strategic leadership and partnership that we all need. Our collaboration with the Ministry of Agriculture is the strongest indicator that a public-private partnership (better known as PPP) is one of the greatest game changers in our world today.

To page 8

From page 7

A Word From County Government

It is an honor and great pleasure to share this important occasion with you.

First, I wish to express my gratitude to Bayer East Africa Limited for its commitment to support smallholder farmers through seed donations and crop protection inputs through the "Better Farmers, Better Lives Initiative" which we are launching today.

This is a defining moment for Kenya and all other countries. It is a time nearly all the country's resources have been ring-fenced to address the boost to already constrained efforts by the County Governments to the small holder.

You will agree with me that for a long time, Kenya's agricultural sector has suffered from under investment, which has continuously resulted to pockets of chronic hunger, particularly in rural areas. That is why this initiative will greatly help Government in its quest for 100% food nutrition security under the Big Four Agenda by supporting up to 2 million small holder farmers through seed donations for various crops.

Smallholder farmers produce the majority of the nation's food crops but their yields significantly lag behind. To truly address hunger, we have to think about how to maximize their productivity. Agriculture has an outsized effect on Kenya's economy – 74% of the population live in rural areas and rely on farming for their food and income. The sector also accounts for about a quarter of the gross domestic product.

According to the latest five year average from the United Nations Food and Agriculture Organization (FAQ), our farmers only harvest about 1-7 metric tonnes of maize per hectare of land, that's 20% less than farmers globally and five times smaller than a typical harvest in North America. It's even below several other producers in the region, including Uganda, Zambia and Rwanda.

So, why aren't Kenya's smallholder farmers maximizing their potential? The answer is that their job is incredible and they lack the necessary resources. Quality seeds and fertilizer are two of the biggest determinants of higher crop yields. Our main concern is seed which is one of the most critical inputs in agricultural production and has a significant potential in increasing on farm productivity and enhancing food security. In the words of Michael Pollan "Seeds have the power to preserve species, to enhance cultural as well as genetic diversity, to counter economic monopoly and to check the advance of conformity on all its many front."

Yet smallholder farmers, who live from hand to mouth, are usually unable to consistently access these crucial inputs before the

planting season. Government subsidies, which are meant to lessen the financial burden, are also often inefficient at targeting the farmer populations. The solution includes providing market facilitation to maximize farm profits and minimize post-harvest losses.

For example, a number of new hybrids, no-GMO seeds on the local market can give higher yields but many of our small holder farmers still use decades-old varieties that don't perform well. Consequently, supporting them with crop varieties that are more drought-tolerant and mature faster, reducing the risks of crop failure in extreme weather will maximize productions.

The fall armyworm outbreak across Africa has also shown us the need to be vigilant about crop diseases and pests. As such, a robust extension programme which would create a direct link between agricultural experts and small holder farmers is key in implementation of the initiative.

It is for these reasons that the National and County Government have partnered with various Development Partners such as World Bank which is supporting the Kenya Climate Smart Agriculture Project (KCSAP) and National Agricultural and Rural Inclusive Growth Project (NARIGP), to help in achieving 100% food and nutrition security. The objectives of the KSCAP and NARIGP are to increase agricultural productivity and enhance resilience/coping mechanisms to climate change risks in the targeted smallholder farming and pastoral communities in selected counties. This is done through building of stronger farmer organization (FOs) in order foster economic inclusion of smallholder and increase their market power.

The recent partnership between the County Governments and Yara East Africa Ltd to support approximately 73, 000 smallholder maize farmers across counties through donations of fertilizers and seed, are important farm inputs towards intensification of production by smallholder farmers in the country.

All these underscore the importance of synergies in the overall development and growth of the agriculture sector aimed at increasing productivity, commercialization and competitiveness of agricultural commodities and enterprises. Therefore, the County Governments welcome this partnership and urge Bayer to consider long and sustainable partnership with the counties.

As County Governments, we are committed to creating an enabling environment for improving agriculture productivity. Over the last 6 years, we have provided subsidized inputs such as fertilizers, Agro-chemicals, farm tools and seedlings of various crops to assist smallholder farmers across various agricultural extension services through organizing farm demonstrations and customized trainings for small holder farmers among others.

I therefore appeal to development partners and all other stakeholders to join us in delivering this noble endeavor of increasing agricultural productivity and profitability for the benefit of all our farmers. We therefore offer the much needed commitment to ensuring the success of this initiative.

Insecticide Mode of Action and Resistance Management in Farming

Insecticides are an important component in the management of pests in virtually all crops. However, they should not be solely relied upon as overuse is increasingly costly, can induce insecticide resistance and may cause phytotoxicity. This article will discuss how to reduce the risk of inducing resistance in pest insect and mite populations.

Important aspects of the mode of action of insecticides are summarised; understanding the traits of insecticides assists in purchasing pesticides to best suit your situation and in applying products to gain maximum benefit.

Insecticide Mode of Action

There are a number of important aspects of insecticide mode of action that should be understood before applying the product to a crop. These include the mode of action (MoA) classification assigned by the Insecticide Resistance Action Committee (IRAC), whether the product is contact or systemic and basic information about how the product kills pests. Sometimes, this information is found on the product label, but not always.

MoA Classifications

Almost all product labels have a MoA classification printed on it clearly. It is a number, or a number followed by a letter. All products with the same MoA kill pests the same way, e.g. Group 6A products all activate a particular nerve function that causes paralysis and death. While products from the same MoA group kill pests the same way, it does not mean that they are all equal. For example, some active ingredients or formulations within the same MoA can be systemic, while others are not.

Sometimes pesticides are produced that are similar, but may have a slightly different chemical structure or MoA from other products. Such products may then result in a different number-letter combination, e.g. 7A, 7B, 7C.

It is best to assume that all products with the same number function in the same way, even if they have a different letter. Determining the MoA can take years of intensive research, which is why some products are in the 'UN' group for compounds with unknown or uncertain MoA.

Contact, Systemic and Translaminar Products

Insecticides interact and move within plants in different ways; understanding how the product will behave is important for successful application.

Contact insecticides are products that remain on the epidermis of plants only; they do not enter plant cells. Such products are active against insects when they are applied, contacting individuals directly. Some contact insecticides may have activity when ingested or touched a period of time after application. The residual period of some pesticides is very short, while others can be weeks after application.

Systemic insecticides enter plant cells and are mobile within plant vascular tissue. Most systemic products move upward in

Lepidoptera - Mode of Action Classification by Target Site

Nerve & Muscle Targets

1. Acetylcholinesterase (AChE) inhibitors
   1A: Carbamates
   1B: Organophosphates
2. GABA-gated chloride channel blockers
   2A: Cyclodiene Organochlorines
   2B: Phenylpyrazoles
3. Sodium channel modulators
   3A: Pyrethrins, Pyrethroids
4. Nicotinic acetylcholine receptor (nAChR) competitive modulators
   4A: Neonicotinoids
5. Nicotinic acetylcholine receptor (nAChR) allosteric modulators Site I
   5 Spinosyns
6. Glutamate-gated chloride channel (GluCl) allosteric modulators
   6: Avermectins, Milbemycins
14. Nicotinic acetylcholine receptor (nAChR) channel blockers
    14: Nereistoxin analogues
22. Voltage-dependent sodium channel blockers
    22A: Oxadiazines
    22B: Semicarbazones
28. Ryanodine receptor modulators
    28: Diamides
30. GABA-gated chloride channel allosteric modulators
    30: Meta-diamides, Isoxazolines
32. Nicotinic acetylcholine receptor (nAChR) allosteric modulators Site II
    32: GS-omega/kappa HXTX-HV1a Peptide

Unknown or uncertain MoA

Azadirachtin, Pyridalyl, Beauveria bassiana, Burkholderia spp, Paecilomyces fumosoroseus

Respiration Targets

13. Uncouplers of oxidative phosphorylation via disruption of the proton gradient
    13: Chlorfenapyr
21. Mitochondrial complex I electron transport inhibitors
    21A: METI acaracides and insecticides (Tolfenpyrad)

Midgut Targets

11. Microbial disruptors of insect midgut membranes
    11A: Bacillus thuringiensis,
    11B: Bacillus sphaericus
31. Baculoviruses
    31: Host-specific occluded pathogenic viruses Granuloviruses, Nucleopolyhedroviruses

Growth & Development Targets

7. Juvenile hormone mimics
   7A: Juvenile hormone analogues (Hydroprene)
   7B: Fenoxycarb
15. Inhibitors of chitin biosynthesis affecting CHS1
    15: Benzoylureas
18. Ecdysone receptor agonists
    18: Diacylhydrazines

vascular tissue, but not down (the notable exception being the active ingredient spirotetramat).

Translaminar products enter plant cells but not the vascular tissue. In general, they have limited systemic action and move from the upper leaf to the lower leaf (or vice versa), but not from leaf to leaf. Such products can be active against insects at application and upon ingestion. As with contact products, the residual period that each product is active within plants is highly variable (days to weeks or sometimes even months). Systemic products drenched into soil/growing media tend to be active for longer periods than when applied to foliage.

Do not apply contact pesticides to pests that inhabit protected areas of the plant. For pests that reside within leaves, growing tips and other protected areas, systemic or translaminar products are required. Translaminar products will only move a short distance across the leaf, therefore they may not be sufficient in some instances, e.g. stem-boring insects, pests producing very thick galls or those within multiple layers of a leaf roll.

How Insecticides Cause Mortality

Insecticides are broadly categorised into five groups, depending on the physiological function they disrupt.

These are:
1) nerve and muscle,
2) insect growth regulators,
3) respiration, 4) midgut, and
5) unknown.

Some nerve pesticides target sites that are also in vertebrates (including humans), leading to some products being taken off the market, not being able to be used near waterways or have been under significant review, e.g. organophosphates. Such products should be treated with great care. Newer nerve products often target sites that are not active (or not as active) against vertebrates.

Products targeting respiration, nerve and muscle functions are relatively fast acting insecticides.

Insect growth regulators (IGRs) affect the development of insects, particularly moulting. They are moderately slow acting, though feeding may be inhibited and insect/mite development may cease. Adults are relatively unaffected and are likely to survive the application.

However, their reproductive organs may be affected causing adults to become sterile or reducing egg survival. Only immature insects are killed and, depending what the product disrupts, it may not cause death until the insect next tries to moult. This is important when assessing efficacy of a product, as it may appear that the product is ineffective for some time after

To page 12

From page 11

application. In addition, in cases where there is a large proportion of adults, these products may not be as effective as other MoA groups, unless applied in combination with another product.

The main midgut insecticides are Bacillus thuringiensis (B.t.) products for use against caterpillars or fly larvae (e.g. fungus gnats).

These products are living bacteria that must be stored appropriately (cool and dry). Always check the manufacture date when purchasing these products as they have a relatively limited shelf life. Time of day of the application is important as the products are UV sensitive (broken down in sunlight) and must be ingested to cause insect death. These products are far more effective when applied against small larvae; ingestion of only a small amount of product causes death.

Large larvae must ingest a large amount of product, causing greater damage in the process, and will survive a small dose. For nocturnal caterpillars, apply this product late in the afternoon, if possible (to reduce breakdown from UV radiation).

What is Insecticide Resistance?

Insecticide resistance occurs from repeated use of products from the same MoA group. This causes a change in the sensitivity of a pest population resulting in a failure to achieve the expected level of control (at recommended label rates). Resistance can be passed on to offspring.

Effectively this causes susceptible individuals to die, leaving behind resistant ones. Resistant individuals reproduce and result in a population with a relatively high proportion of resistant individuals.

Since the discovery of resistance in 1947, a pattern has developed often described as the 'pesticide treadmill'. Products are released and applied consistently, leading to insecticide resistance and more frequent applications of the product. This in turn leads to greater levels of resistance until the product fails altogether. A new product is used and the pattern starts again. Unfortunately, resistance to one pesticide MoA group can sometimes lead to resistance to pesticides of a different MoA.

Insecticide Resistance Management

The most effective method to reduce the likelihood of inducing insecticide resistance is to reduce the need to apply pesticides, by implementing as many cultural practices as possible.

General practices include:

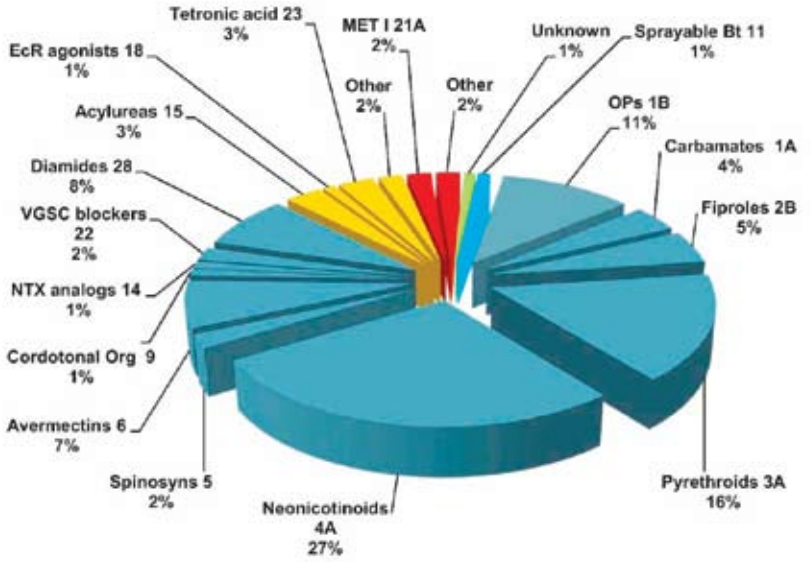
- Manage pest populations early by monitoring crop health regularly
- Check incoming stock for pests
- Manage weeds proactively
- Remove unsaleable stock and avoid holding old stock
- Grow resistant varieties
- Release biological control agents whenever possible
- Only apply pesticides when a pest population will result in damage
- Modify the growing environment to be favourable to plant growth, but unfavourable to pest development, e.g. reducing media moisture levels to manage fungus gnats.

Pesticides are the main method to reduce pest populations quickly and avoid economic loss from high pest populations. If a pesticide must be applied it is important to have a basic understanding of the pest lifecycle. The generation time is particularly important as is knowledge of vulnerable/ tolerant life stages.

The following recommendations will reduce pesticide resistance:

Apply pesticides to the most vulnerable stage. In general, early stage immature insects are the most vulnerable to insecticides (just after hatching). For some groups late instar larvae are very tolerant to insecticides, e.g. scarab beetles, and for others all larvae are tolerant, e.g. gall midge flies. Do not assume that all stages of an insect can be effectively managed with an insecticide, even if the species is on the label without specifying a particular stage.

Some labels have a pesticide resistance management strategy included. Always follow these instructions. Apply the full recommended rate. Using a low dose can increase pesticide resistance; individuals with low level resistance survive and may give rise to greater resistance in the future.



Ensure good coverage to increase the chance of contacting the pest and achieve best efficacy.

Maintain pesticide application equipment regularly, e.g. calibration of equipment, cleaning equipment, replacing nozzles as required. Apply pesticides using best management practice guidelines.

Avoid applying broad spectrum pesticides that kill predators and parasites whenever possible.

Do not continue to apply chemicals from a MoA group that has possibly failed due to pesticide resistance. It is important to alternate/rotate between chemistries.

Rotation/Alternation of Insecticides

Regular use of one pesticide chemistry (MoA) will increase the risk of resistance. Using products from multiple MoA can reduce this risk substantially and can be achieved in several different ways. It is critical to reduce exposure of consecutive pest generations to the same insecticide MoA. For this reason rotation scheduling can vary depending on the pest lifecycle.

For pests with a short generation time, it can be beneficial to employ a 'window' approach, in which the same product is applied on 2-3 consecutive occasions within the timespan of one pest generation. Depending on the pest and environmental conditions this could be over a week or month.

Then for the next generation, apply an insecticide from a different MoA and continue this approach until pesticides are no longer required. However, exceptions occur. For two-spotted mite, Tetranychus urticae, resistance management strategy for crops recommends rotating to a different MoA after each application; to never apply sequential applications from any one MoA.

For pests with a relatively long generation time, e.g. months, it is critical to understand the lifecycle of the pest to apply insecticides during the vulnerable stage (which is often before damage is obvious). It is recommended to apply pesticides from different MoAs sequentially, if required. If the pest is continuously present in the farm, do not use the same pesticide across multiple generations.

Break the Lifecycle

If the same pest is continuously present, even if at low levels, it becomes important to evaluate the management strategy employed. It is recommended to modify the approach such that the lifecycle of the pest is broken. Find out how the pest is entering and put in place actions to reduce re-infestations.

Where pests are flying into the farm, consider appropriate monitoring to assist in its early detection, e.g. with traps. Pests coming into the farm from agricultural areas also pose a higher risk of developing pesticide resistance.

Conclusion

Pesticide resistance poses a serious risk for all agricultural industries. However, by putting in place many simple management strategies, this risk can be mitigated. These include using cultural practices to reduce pest pressure, using predators, applying pesticides appropriately and rotating between chemicals of different MoA groups. Farms have also developed a large and growing volume of resources and best management practice guidelines to assist businesses in managing crop health, including pests.

How can Agriculture be more attractive to the youth in Kenya?

By Murenga Mwimali

Agriculture has an important role to play in providing employment to the youth in Kenya. True rural transformation cannot be accomplished in Kenya without empowering the youth in agriculture. Kenya needs to enhance right policy environments, access to capital, innovations and right technologies in support of the youth to engage massively in agriculture and agribusiness. Most importantly, Kenya needs to develop practical business models on selected crop and animal value chains, with examples of budgeted business plans with cost-benefit analysis, and evidence based outreach programmes.

There is no doubt that migration from farm to non-farm sectors, and from rural to urban areas will provide the brightest prospects for transforming and modernizing Kenya's economy.

Threats to small-scale farming

There is need for motivation through linkage to financial services that do not require collaterals the youth cannot provide, rural infrastructure and services to facilitate market linkages and enterprise development and partnerships.

Investing in the future of the youth and encouraging them to grow their own businesses is key in dealing with the unemployment situation in Kenya. Along with adequate access to technology and innovation as well as motivation from successful start-ups. The need to be practical and put the youth at the center as agents of agricultural growth.

The conversion of forests to cropland would entail major global environmental costs. The Kenya governments' existing strategies are officially oriented to promote agricultural growth and food security for the millions of their rural constituents who are small-scale farmers. However, most of these strategies assume unhindered access to land.

In spite of rhetorical support for small-scale farmers, there are increasing concerns that de facto agricultural and land policies have encouraged, and are continuing to encourage the transfer of land to medium- and large-scale interests without due recognition of how this is affecting land access and the viability of agriculture for Kenya's future generations.

The Government of Kenya leaders should expedite the process by giving up on the vision of smallholder agriculture and favor commercialized large-scale agriculture. However, large-scale agriculture appears not to be the solution. For example, large-scale grain production is an extremely weak employer of labour.

Why smallholders need support

Rejuvenating aging farming population through youth employment

Enabling decent agriculture and agri-business jobs programme will support in harnessing its huge demographic dividend, while contributing to the rejuvenation of the aging farming population that is average of 60 years in Kenya.

For an integrated approach structured around three main components.

We have to let out the money making power of the Kenyan youth in agriculture and value chains. The Government of Kenya must address the challenges that disenfranchise the youth from agriculture such as low productivity, hardship, low levels of mechanization and modernization, lack of rural infrastructure and insufficient local processing and value addition.
In doing that, the Government of Kenya must acknowledge that the youth is not a homogeneous group and there's a need to use tailored approaches according to the constraints, needs and priorities of various youth groups.

Kenya has unskilled and semi-skilled rural people who are primarily engaged in farming. While they might wish to put down their hoes and walk into white collar office jobs tomorrow, their levels of education and skills will prevent this from happening quickly.

If increasingly populous rural communities were unable to access new land because of increased competition for it from local elites and outside interests, then it is likely that urban poverty and unemployment will be further intensified.

Kenya's transformation from a primarily semi-subsistence, small-scale agrarian economy to a more diversified and productive economy will still require unwavering support for relatively small-scale farmers. Through this, small-scale farmers will be able to participate in and contribute to Kenya's economic transition rather than be marginalized by it.
There is no doubt that migration from farm to non-farm sectors, and from rural to urban areas will provide the brightest prospects for transforming and modernizing Kenya's economy. However, it will happen not with fast educational advances and growth in the non-farm job opportunities, which in turn depend on income growth among the millions of families still engaged in smallholder agriculture.

To page 16

From page 15

Government policies and public investment plans should be decisive as these will determine the incentives and scope for investment by the private sector, and will largely determine whether the region's economic transformation is a relatively smooth, robust and peaceful process or a painful and a protracted one.

Investments that will make agriculture must be attractive to the youth may include the following proposed ag-technologies that in the long run may be useful namely; precision agriculture, robotic farms swarms, closed crop ecosystems, synthetic biology, and vertical farms.
It may take a little longer to realize this concepts of new farming in Kenya, but it is a viable venture that is worth trying.

These are discussed below;
Precision agriculture: Farming management based on observing intra-field variations. The use of satellite imagery and advanced sensors, farmers can optimize returns on inputs while preserving resources at larger scales. In addition, understanding of crop variability, geolocation weather data and precise sensors allow improved automated decision-making and complementary planting techniques.

Robotic farm swarms: The combination of dozens or hundreds of agricultural robots with thousands of microscopic sensors, together would monitor, predict, cultivate and extract crops from the land with practically no human intervention. These implementations are already being carried out at a small scale in the developed economies. Engineering involves technologies that extend the reach of agriculture to new means, new places and new areas of the economy. Of particular interest will be synthetic biology, which allows efficiently reprogramming unicellular life to make fuels, byproducts accessible from organic chemistry and smart devices.

Closed ecological systems: Ecosystems that do not rely on matter exchange outside the system. These, closed ecosystems would theoretically transform waste products into oxygen, food and water in order to support life-forms inhabiting the system. The use of closed ecological systems is still limited due to the current technological limitations.

Synthetic biology: Synthetic biology is the programming biology using standardized parts as one programs computers using standardized libraries today. It includes the broad redefinition and expansion of biotechnology, with the ultimate goals of being able to design, build and remediate engineered biological systems that process information, manipulate chemicals, fabricate materials and structures, produce energy, provide food, and maintain and enhance human health and our environment.

African Youth Farming Forum In Rwanda

The vertical farms is a natural extension of urban agriculture, vertical farms would cultivate plant or animal life within dedicated or mixed-use skyscrapers in urban settings. Vertical farms could augment natural light using energy-efficient lighting. The advantages are numerous, including year-round crop production, protection from weather, support urban food autonomy and reduced transport costs.

Murenga Mwimali, PhD, Principal Scientist/Breeder, Kenya Agricultural and Livestock Research Organization

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)

BASF East Africa Limited • The Pavilion, 6th Floor, Lower Kabete Road, Nairobi, Kenya • P.O. Box 24271, Nairobi, 00100 • Tel: 254 20 4072000
For more details: www.agro.basf.co.ke • info.eastafrica@basf.com
William Bett Cereals Manager - Kenya Mobile: +254 723 103 932 E-mail: william.bett@basf.com
https://www.facebook.com/BASF.AgriculturalSolutions.AfricaMiddleEast/

Mituki: Make Progress… Or Stand Aside.

This amazing life which each of us is privileged to live- is a life of many choices. Some of those choices determine the future of our lives. This statement came clearer in my mind as Rael Karimi (KALRO-Katumani), Research Scientist (Crop Improvement), Grain Legume Programme took me through their newest pigeon peas variety Mituki Kamba word for Faster. It also left me with one word for farmers in the Lower Eastern counties mainly Makueni, Machackos, Kitui, Tharaka Nithi and Embu, Make progress…. Or stand aside.

Farmers in the lower Eastern have kept on repeating the same mistake – Maize farming. Year in year out they get the same answer, FAIL. These areas are not maize growing zones but there are other crops especially legumes which can do better but they still grow them as secondary. This is the time to make progress.

KALRO is committed to help farmers in making progress. They are not only blessing them with legumes but the right variety. As the short rains fall, the farmers have a decision to make. Hold grip into their traditional crops or move to better performing crops. In pigeon peas, they also have a choice between the 7-9 months traditional crop, the 3 months less yielding crop or Mituki, the 4-5 Months wonder variety that has been tested by farmers in Emali, Kwa kathoka, Wamunyu and Mwingi.

Mituki the wonder variety has been improved for food security, income generation, soil fertility and conservation farming. The variety released by KALRO in the year 2018 (The Kenya gazette volume CXX-108, 7th September 2018) is a medium duration variety (125-135 days to maturity) thus a farmer is able to harvest twice in a year. It is a high grain yield (Annual grain yield 1.7—3.5 t/ha) with a large pod size thus easy to shell. The variety has a large grain size, good ratoonability and is tolerant to fusarium wilt.

Cereals Magazine visited Mr. Lati, a farmer from Emali Area who has piloted the variety. Mr. Lati said, "The rains have become scarce, this is the fourth year we have had insufficient rain. We expected rains in March, but they came in

Pigeon pea is well balan
source of protein and vi
immature pods or green

"Surveys have shown that the most destructive pests of pigeon pea pods and seeds in the region are pod sucking bugs and seed boring caterpillars and pod flies. Others are root rot nematodes where affected plants are normally stunted and eventually wilt and dry off."

nced nutritionally and an excellent
itamin A. It is eaten as a vegetable
n pea or as dried cooked grain.

January. People got confused, some planted, some did not... the crop was affected. I opted to plant Mituki and I cannot regret. Even with the effects of Corvid-19, am better than those who planted maize or the traditional varieties.

Most agronomists agree with the fact that, faced with increasingly unreliable rains, farmers in region have a choice to make which will define their food security destiny. The choice is growing drought-tolerant crops to meet their food and subsistence needs instead of the staple maize.

The Kenya Agricultural and Livestock Research Organization has introduced this new pigeon pea (mbaazi) variety that is suitable for the short season rains with better yields per hectare than the KARI BAAZI 1.

In agreement, Mr. Lati says, "Mituki is very elastic. Because it matures quicker, one gets a harvest even with just the short rains [October-December]... if there is more rain [the long rains] one gets a second rattoon [crop]," he said. Adding, "Old varieties will not give you a crop until after the long rains [April-June]. If the long rains fail, then there is no harvest."

Land preparation

The crop thrives best in seedbeds prepared by deep ploughing and cultivations to reduce weeds. Seeds should be sown in rows with spacing of 75cm by 25 cm. In dry areas and especially in coarse textured infertile soils, farmers use wide spacing between plants to limit competition.

Plants are fairly slow to start and weed control for the first two months is important in crop establishment. Once plants are established they grow vigorously.

Weeding

Weeds must be controlled to facilitate slow initial growth. Wind may bend the plants but staking is not practiced. It is important to weed the farm 2 – 3 times during the first two months from planting.

The crop is cultivated on marginal lands by resource poor farmers who traditionally grow landraces. Inputs such as fertilisers and irrigation are hardly used but pesticides are slowly been used.

Intercropping

It performs well with two rows of cereals such as sorghum, millets including cotton or groundnut. After harvest of the intercrop, long-duration pigeon pea continues to grow and protects the soil.

It is regarded as a good plant for restoration of fertility and is used in a rotation with crops such as maize-groundnut and most cereals. One of the advantages of pigeon pea is the increased growth of the grass inter-planted with it.

Pests

Surveys have shown that the most destructive pests of pigeon pea pods and seeds in the region are pod sucking bugs and seed boring caterpillars and pod flies. Others are root rot nematodes where affected plants are normally stunted and eventually wilt and dry off. The most characteristic symptom is formation of

To page 20

From page 19

root knots and these can be seen with the naked eye.

Farmers are advised to plant resistant varieties and plant in fields with no previous record of nematode infestation as well as rotate with cereals.

Other Pests are: (Aphids, Pod sucking bugs, Red spider mites, Cutworms, Scales, Pod borer, Pod fly, Pod weevil, Whiteflies, Thrips, Leaf miners, Root knot nematode, Bruchid).

Diseases

The commons diseases in pigeon peas is Fusarium wilt which causes wilting at flowering stage but Mituki is tolerant to the disease. This is one characteristic of the variety which makes it friendly to the farmers. Other diseases include Cercoospora leaf spot, Macrophomins stem canker, Powdery Mildew and Rust.

The solution is to plant clean seeds and follow the right agronomy practices. Fungicides available can easily manage the diseases.

Nutrition & Nutritional Deficiencies

It is always important to ensure that plants are supplied with sufficient amounts of nutrients. This enables them to carry out their normal activities successfully leading to considerably increased yields.

Main deficiencies include

- Potassium deficiency– plants become stunted. Symptoms start from the older to the younger leaves which show marginal chlorosis and later necrosis, causing leaves to appear scorched at the margins.
- Phosphorous deficiency– deficient plant is stunted with dark green leaves which turn orange yellow eventually falling off. Phosphorous deficiency causes delay of flowering and maturity of the crop.

Plants that have been deprived of nutrients are highly susceptible to attack by pathogens, and this affects overall yield directly.

During planting, a mixture of manure and DAP is recommended. In order to enhance efficient nutrient uptake by the young plants as well as stimulating their growth.

Harvesting and storage

The crop is usually cut near the ground when pods are mature or mature pods are picked individually. Green pods are picked over a long period in home gardens or hedge crops. After harvest the stems are cut back to facilitate re-growth and a second crop is harvested in the subsequent season.

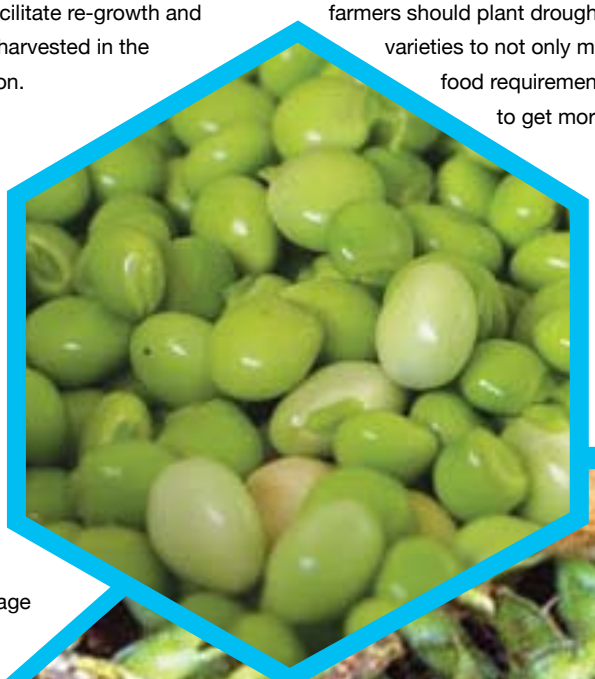
The pods are usually threshed by hand and seed is cleaned. Clean beans prevent insect attack which can be considerable.

Threshing should be done on clean ground and bags for storage must be new. If possible triple air bags can be used to avoid weevil penetration. In case of weevil infiltration farmers are advised to use pesticides.

Conclusion

"We have been experiencing a lot of hunger and the first harvest really helped my family. I did not have to look for beans to mix with the maize to make githeri [a maize and bean stew]," Mr. Lati says. "I am now trying to move my wife away from growing maize. We can sell some of the pigeon peas and buy maize instead."

Though single crop cannot be the solution, Karimi agrees with Mr. Lati, Mituki is one of the solutions. "We are encouraging farmers to adopt the drought-tolerant variety, but this will take time," says Karimi. "In the long term, farmers should plant drought-tolerant varieties to not only meet their food requirements but also to get more income."



LENTERA PRECISION AGRICULTURE

Technology enabling farmer success

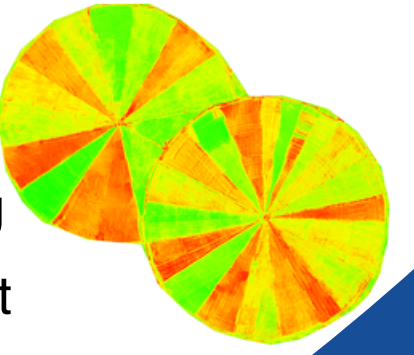
SATELLITE IMAGING

DRONE IMAGING

CONNECTED WEATHER STATION

Get useful insights on your farm:

- Crop health analysis
- Soil moisture analysis
- Aerial pest and disease scouting
- Hyper-localized weather forecast



LENTERA AFRICA

Website: www.lenterafrica.com

Cellphone: +254-743162357

Wheat Blast Has Made the Intercontinental Jump to Africa

Researchers in Zambia confirm the arrival of this devastating fungal disease to the African continent.

Wheat blast, a fast-acting and devastating fungal disease, has been reported for the first time on the African continent. In an article published in the scientific journal PLoS One, a team of scientists confirmed that symptoms of wheat blast first appeared in Zambia during the 2018 rainy season, in experimental plots and small-scale farms in the Mpika district, Muchinga province.

Researchers from the International Maize and Wheat Improvement Center (CIMMYT), the US Department of Agriculture – Foreign Disease Weed Science Research Unit (USDA-ARS) and the Zambian Agricultural Research Institute (ZARI) participated in this study.

Wheat blast poses a serious threat to rain-fed wheat production in Zambia and raises the alarm for surrounding regions and countries on the African continent with similar environmental conditions. Worldwide, 2.5 billion consumers depend on wheat as a staple food and, in recent years, several African countries have been actively working towards reducing dependence on wheat imports.

“This presents yet another challenging biotic constraint to rain-fed wheat production in Zambia,” said Batiseba Tembo, wheat breeder at ZARI and lead scientist on the study.

A difficult diagnosis

“The first occurrence of the disease was very distressing. This happened at the spike stage, and caused significant losses,” Tembo said. “Nothing of this nature has happened before in

Zambia."
Researchers were initially confused when symptoms of the disease were first reported in the fields of Mpika. Zambia has unique agro-climatic conditions, particularly in the rainfed wheat production system, and diseases such as spot blotch and Fusarium head blight are common.

"The crop had silvery white spikes and a green canopy, resulting in shriveled grains or no grains at all… Within the span of seven days, a whole field can be attacked," Tembo explained. Samples were collected and analyzed in the ZARI laboratory, and suspicions grew among researchers that this may be a new disease entirely.

Tembo participated in the Basic Wheat Improvement Course at CIMMYT's global headquarters in Mexico, where she discussed the new disease with Pawan Singh, head of Wheat Pathology at CIMMYT. Singh worked with Tembo to provide guidance and the molecular markers needed for the sample analysis in Zambia, and coordinated the analysis of the wheat disease samples at the USDA-ARS facility in Fort Detrick, Maryland, United States.

All experiments confirmed the presence of the fungus Magnaporthe oryzae pathotype Triticum (MoT), which causes the disease.

"This is a disaster which needs immediate attention," Tembo said. "Otherwise, wheat blast has the potential to marginalize the growth of rain-fed wheat production in Zambia and may threaten wheat production in neighboring countries as well."

Wheat blast spreads through infected seeds and crop residues, as well as by spores that can travel long distances in the air. The spread of blast within Zambia is indicated by both mechanisms of expansion.

A cause for innovation and collaboration
CIMMYT and the CGIAR Research Program on Wheat (WHEAT) are taking action on several fronts to combat wheat blast. Trainings and international courses invite participants to gain new technical skills and knowledge in blast diagnostics, treatment and mitigation strategies. WHEAT scientists and partners are also studying the genetic factors that increase resistance to the disease and developing early warning systems.

"A set of research outcomes, including the development of resistant varieties, identification of effective fungicides, agronomic measures, and new findings in the epidemiology of disease development will be helpful in mitigating wheat blast in Zambia," Singh said.

"It is imperative that the regional and global scientific communities join hands to determine effective measures to halt further spread of this worrisome disease in Zambia and beyond," Tembo expressed.

Maize Gene Could Lure Natural Enemies of Crop Pests

- Stemborers contribute to yield losses of about US$1.5 billion a year in Sub-Saharan Africa
- Scientists identify traits in maize plants that could pave the way for creating pest-resistant crops
- African governments must contribute more to agricultural research to help fight crop pests

Scientists have identified genes in local maize varieties that can fight off stemborers by summoning their natural enemies, raising hopes for pest-resistant varieties for African smallholders, a study says.

Stemborer — an insect larva that bores in plant stems — is causing smallholders in Sub-Saharan Africa yield losses of about US$1.5 billion a year and negatively affecting the livelihoods of nearly 300 million people, according to the study.

With smallholders unable to buy pesticides to control stemborers, which affect about 50 per cent of crops in Sub-Saharan Africa, researchers studied the genetic make-up of 146 maize plants comprising those created from formal breeding programmes.

"Developing crop varieties which emit appropriate odour to attract natural enemies of the pest presents an ecologically sustainable and cost-effective pest management option."

Amanuel Tamiru, International Centre of Insect Physiology and Ecology

Smallholder-selected varieties, called landraces, were assessed to identify whether they had natural traits that could help fight pests.

Researchers identified a defence trait more common in the varieties selected by smallholders than those resulting from breeding programmes, according to the study published in Scientific Reports.

"Developing crop varieties which emit appropriate odour to attract natural enemies of the pest presents an ecologically sustainable and cost-effective pest management option for smallholder maize farmers in Sub-Saharan Africa," says Amanuel Tamiru, a co-author and research scientist in plant signalling and insect-plant interactions at the International Centre of Insect Physiology and Ecology.

This study involved the screening of diverse genotypes to identify those that were attractive to Cotesia sesamiae, an African parasitic wasp that parasitises cereal stemborers.

"Landraces … gave the highest proportion of number of plants having the trait (six out of 15 screened, or 40 per cent)," says the study, adding that C. sesamiae spent more time on egg-induced odours that came from landraces than the other varieties.

"Stemborers are devastating insect pests of maize and other important food crops such as sorghum, rice and millet in Africa. They damage these crops by burrowing inside the stem causing the plants to collapse and die," Tamiru explains.

He says that stemborers also drill into maize cobs, ruin grains and increase vulnerability to aflatoxins, a poisonous substances produced by certain fungi and can contaminate food crops with serious health threat to humans and livestock.

The study's findings, he explains, could be key to developing new resistant varieties for sustainable maize production.

According to Tamiru, the use of insecticides for pest control is not only expensive for smallholder farmers, but may also lead to pest resistance, secondary pest outbreaks, environmental pollution and health risks for spray operators.

Tamiru says that stemborer pests undermine food security in the region, adding that the findings provide a strategy to develop maize varieties with natural resistance against the pest.

"Stemborers are devastating insect pests of maize and other important food crops such as sorghum, rice and millet in Africa. They damage these crops by burrowing inside the stem causing the plants to collapse and die,"

Murenga Mwimali, principal scientist and a maize breeder at the Kenya Agricultural and Livestock Research Organization, says the research on strategies to fight stemborers is vital.

"In Kenya stemborers cause approximately 400, 000 metric tonnes in grain losses, which is equivalent to nine billion Kenyan shillings (about US$85.5 million) annually," Mwimali says.

But Mwimali says that further studies will be required to test for stability of the genes and their transferability into the parental population, which will eventually be used for hybrid formations.

African governments need to commit up to ten per cent of their country's gross domestic products to agriculture, he adds.

"With the ever-emerging new agricultural challenges including new pests such as fall armyworm, there is strong need to invest more in the agricultural research to enable us to reach the zenith of food and nutrition security," he says.

Why Kenya's Budgeting And Planning For Agricultural Development Needs Change

Kenya's Treasury Secretary, Amb. Ukur Yatani presented the 2020/2021 budget estimates in parliament with analysts trying to see how the government plans to navigate through a ballooning public debt, unmet tax targets and the covid-19 pandemic. Last year, I wrote this piece concerning the 2019/2020 budget breaking down what it meant to the farmers. My focus then being the little allocation to the agriculture sector relative to the huge role it plays in the economy and the Malabo Declaration. This year I want to focus on our agricultural planning while looking at the implementation, monitoring and evaluation of projects.

Various stakeholders in including the government seem to agree on the problems facing the agriculture sector. For instance, expensive farm inputs, climate change shocks, low productivity, accessibility to markets and lack of diversification are some of the issues the proposals seem to target. The problem is the policy instruments deployed to solve them. I do not want to assume that the government is short of competent staff in policy making but maybe we should start by evaluating whether previous interventions were implemented and their effectiveness. Without scrutinizing these issues, politicians will always get away with anything they propose.

Even bad policies are designed to work for some people and that's one of the reasons some stakeholders resist reforms designed to work for the majority. Just to highlight an example, the Ksh3bn Coffee Cherry Revolving fund proposed in last year's budget. The fund was to provide farmers with advances at 3% but to date it has never been released despite being appropriated by the National Assembly. I am sure there are other projects or proposals earmarked in last year's budget that have not been implemented.

After ensuring the projects have been implemented, it is paramount to conduct evaluations and determine the effectiveness of the policies or the returns on projects. Queries on the effectiveness of continuing projects will ensure that policy makers get it right the first time by using evidence to back their proposals. If not properly checked, politicians who have dominated our policy making arena will get away with anything. A case point is the Galana Kulalu project that continues to be funded by the taxpayers despite the dismal returns. As I have previously indicated, the Kenyan government should not have involved itself in the business of growing maize rather it should have ensured a conducive environment for maize farming and market forces would have pushed up the production.

In addition, as to any policies as they say, the devil is in the details. It is one thing to allocate funds to let's say the Climate Smart Agriculture project but the exact activities to be funded are another thing. There should

be mechanisms to plan and prioritize activities to ensure that funds are utilised prudently. This is possible through involving the targeted beneficiaries in the designed interventions. Use of evidence in policy making should be a norm. The government collects massive data during periodic surveys, and they would be of no use if their findings are not used in designing policy interventions. County governments should also actively collect agricultural data and work jointly with the national government to convert it into actionable plans.

National development planning (including agriculture) is not an easy task because in most contexts like ours, it is done in a political system that employs a short-term approach then dealing with bad consequences later. On this, we as citizens are equally to blame as we demand quick fixes to problems that require a long-term approach and that's what we get.

Jean-Claude Juncker, immediate former European Commission president once said, 'We all know what to do; we just don't know how to get re-elected after we've done it'.

Last but not the least, corruption is a huge problem in the government and the agriculture projects have not been spared. In last year's budget funds meant for Arror and Kimwarer were allegedly misappropriated. Even though, the Director of Public Prosecutions claims the investigations are narrowing on how the loans were acquired, the projects have stalled, and we are yet to see which projects have been earmarked for this year's allocation to irrigation.

In conclusion, planning for agricultural development is complex in an economy such as ours that relies heavily on agriculture. It is linked and dependent on other sectors and as such, must be done within a national development plan considering varying ecological, geographical and market needs. Trade and taxation policies among others come into play. This means policy coherence is of essence. It does not make sense for the Trade Ministry to promote 'Buy Kenya Build Kenya' initiative while Treasury and Agriculture Ministries cannot evaluate which taxes (if any) in our agri-food chain are increasingly forcing us to rely on Uganda and Tanzania.

Agricultural planning should be done over the long-term say 15-20 years with some form of a medium term 5 year rolling plan that allows for adjustments as circumstances dictate. That means it should not be affected significantly by change of governing parties.

The Kenyan Vision 2030 relaunched by the Grand Coalition government in 2008 was a good framework but has been overshadowed by other short-term plans such as the Big Four Agenda- President Uhuru's legacy projects for his second and final term. With ten years left and some projects yet to start, I doubt its aims will be achieved. Even the Kenya Agricultural Sector Transformation and Growth Strategy (2019-2029) seems to have been just another document.

Planning for agricultural development is complex in an economy such as ours that relies heavily on agriculture. It is linked and dependent on other sectors and as such, must be done within a national development plan considering varying ecological, geographical and market needs.

How Apollo Agriculture Is Solving Small-Scale Farmers' Credit Problem in Kenya

The vast majority of small-scale farmers still cannot access tools like hybrid seeds, fertilisers, and insurance that can increase their yield and income.

For Njenga, this boils down to two reasons.
First, they lack access to credit and thus, cannot afford the cost of well-understood high-return investments like hybrid seeds and fertilisers. Also, smallholder farmers are very rural, remote, and difficult to reach.
Till date, approaches to smallholder financing have relied on human-driven and manual processes. The problem is these processes are costly and slow to scale.

This is where Apollo comes in, by digitising and simplifying these processes.

Apollo Agriculture builds credit profiles for its small-scale farmers using machine learning models. It does so by doing its due diligence of verifying the identity of farmers and taking satellite coordinates of their fields.

The data obtained is then used to build automated digital processes for each step in a farmer's lifecycle from customer acquisition to training to collecting the payment.

These processes, from collecting data to analysing it to building credit profiles guides Apollo in making lending and credit decisions to farmers at scale. Additionally, the company helps them access increasing levels of their investment over time.

Njenga argues that there are very few commercially viable approaches to small-scale agriculture financing in sub-Saharan Africa. To get it right, a company must have a unique combination of skills like software development and data science, to mention a few, and in his opinion, Apollo brings these skills together, leveraging on expertise developed at The Climate Corporation, Tesla, and One Acre Fund.

He goes on to state that the company is collecting insights on a demographic in a way that hasn't been done before.

"We have to do this in a very super-challenging environment where farmers have no financial records like bank statements. And also, limited knowledge on subject matters like the impact of climate change."

According to him, the company has been able to develop tools that these farmers would otherwise not have been able to access because of the aforementioned challenges.

Growth and customer acquisition

In 2020 alone, Apollo Agriculture has been able to close 25,000 farmers. In total, it is serving more than 40,000 farmers in Kenya.

However, the team isn't stopping there. It has plans to rapidly scale by partnering and securing more farmers and to that end, the four-year-old startup raised a $6m Series A in May 2020. The round was led by Anthemis Exponential Ventures. Also in participation were The Omidyar Group's Flourish Ventures, Leaps by Bayer, and Sage Hill Capital, among others.

Njenga also mentions that the company is securing working capital funding to finance loans and grant funding to support research and development (R&D).

After bringing its total raise to $7.6m, the chief customer officer says Apollo is focused on growth in the year ahead. "We have got a great product that farmers love and we want to continue to scale it."

To drive home its mission of maximising farmers' productivity and profitability, per hactre, Apollo is looking to transition its customers from subsistence farming to commercial farming so that they can make more money.

"We are also exploring new ways to support our customers particularly with the challenges around food security as a result of COVID-19. We are piloting a variety of options to best support our customers through these challenging times."

Inside Kenya's New Digital Strategy To Lift Agriculture

Kenya has launched a digital-for-agriculture (D4Ag) project that is targeting to register 1.4 million farming households online and 2,300 agro-dealers to supply farm inputs to growers by 2023.

The government, according to Agriculture Cabinet Secretary Peter Munya, plans to shift all the farming activities online as a way of locking out brokers, curbing loss of subsidised inputs and enhancing productivity.

Kenya is home to more than 100 distinct D4Ag solutions accounting for 25 percent of the technologies in the region.

"Data and digital solutions play an important enabling role in this transformation and is necessary in supporting the sector to achieve its primary objectives of increasing small-scale farmer, pastoralist and fisher folk incomes for 3.3 million households and impact 15 million Kenyans," said Mr Munya.

The government plans to launch other electronic solutions such as digital food balance sheet, Kenya integrated agricultural information system and the big data centre where data on the state of the country's food security can be found.

Out of the 100 distinct D4Ag solutions in Kenya, nearly all are driven by the Kenya Agricultural and Livestock Research Organisation (KALRO), which advise farmers on digital uptake.

KALRO has three e-agricultural platforms, including the Kenya Agricultural Observation Platform (KAOP) website and 30 mobile apps covering 30 value chains.

Kenya, says the government, is at the forefront of digital innovation and technological adoption to achieve the 10-year Agricultural Sector Transformation and Growth Strategy (ASTGS).

Under the strategy, the government will create a vibrant, commercial and modern agricultural sector that supports 100 percent food security.

The Ministry of Agriculture has launched the agricultural digital strategic roadmap and the national value chain support e-voucher programme (NVCSP) in Kisumu County.

The e-voucher that is being piloted in 12 counties is designed to tame cartels manipulating distribution of government sponsored farm inputs such as fertiliser.

The first phase will cover 200,000 farmers. The second face will add 17 more counties with all the regions expected to [illegible] in the next two years.

Selected Agrovets

Under the e-voucher plan, a number of selected agrovets will be registered under the deal.

Farmers will be issued with the vouchers through their mobile phones on validation by the extension officers.

After which they are given a pay bill number to which they will make payment and receive a text message confirmation from Safaricom.

"Farmers will take the message to registered agro-dealers and they will be given the farm inputs that they require," said Joseph Komu, project co-ordinator of the national value chain support.

Once a farmer pays for inputs, the government will pay the balance to the dealer. Through this programme, the farmer will pay 40 percent of the entire cost while the government takes up the remainder.

The State has developed a digital agriculture strategy that is anchored in seven priority digital use cases. These cases seek to accelerate registration of eligible farmers for e-incentives such as the e-voucher programme.

[illegible]griculture tech strategy further seeks to provide customised extension services on digital platforms — from receipt of a simple SMS to an interactive mobile application that monitor emergency food reserve stocks using the national food balance sheet.

Early Warning

To make more dynamic trade and consumption decisions using an early warning system in response to food price inflation and to support effective monitoring and evaluation, it will be reporting back on what is working on the ground.

The total cost of the digital solutions has been put at Sh2 billion by 2023, representing 10 percent of the cost estimated for ASTGS enablers, with development partners releasing at least Sh300 million to date.

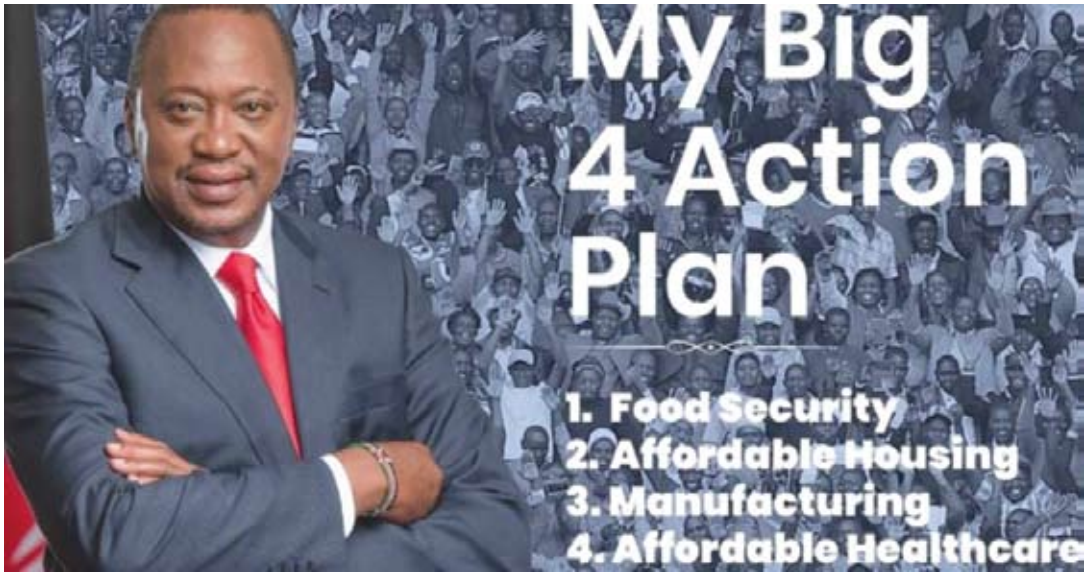
An additional Sh3.4 billion is required for disbursing the e-incentives if the existing Sh5 billion allocation in the ministry budgets for input support programmes is reallocated to the proposal.

The Role of Agricultural Biotechnology Towards the 'Big Four' Agenda in Kenya

By Murenga Mwimali

Introduction

Biotechnology is a broad area of biology that involves living systems and organisms by inserting DNA into the genetic make up to develop products that use biological systems, living organisms or their derivatives for specific uses. Biotechnology is divided into three main categories; plant biotechnology, industrial biotechnology and medical biotechnology. These categories, and their applications are discussed below;



Plant biotechnology: Genetically Modified (GM) crops are agricultural plants whose DNA has been modified using genetic engineering methods to introduce a new trait (s) that does not occur naturally in that crop species. The application of tissue culture techniques in Kenya has become popular. Currently, the technique is on various crops namely; coffee, tea, sugarcane, bananas, coconut, aloe vera, sisal, pyrethrum, and others to produce disease free seedlings that can be distributed to farmers. In so doing, the technique has a direct effect on the food security and nutrition pillar.

The applications of plant biotechnology aim to achieve better crop yield especially under challenging environmental conditions. For example, the adoption of Bt cotton in Kenya will result in a 30-80% increase in yield from the Bt cotton compared with non-Bt cotton, this increase is attributed to marked improvement in the Bt cotton plants

ability to overcome bollworm infestation. In Kenya, Bt cotton is grown across seven counties on approximately 200,000Ha.

The conventional cotton seeds produce about 2,500kg per acre, while Bt Cotton yields are double. Its improved yields will enable Kenya to meet its feed and fibre needs, therefore, contribute towards the Big Four Agenda in Kenya through the creation of about 500000 new employment opportunities in the textile and apparel industry.

Kenya Agricultural and Livestock Research and Organization (KALRO), has conducted studies on Bt maize and or the stacked GM maize with more than one trait in Kiboko, Makueni County and in Kitale, Trans Nzoia County for over 4 years. These study findings have demonstrated consistently that the use GM maize showed a yield advantage of 40% when compared with non-GM maize. In addition the Bt maize was able to control upto 100% the stem borers which are a major challenge in the maize growing areas. These pests cause annual total losses in Kenya thus estimated at 13.5% (valued at between US$25 and US$ 59.8 million), ranging from 11% in the highlands to 21% in the dry areas. The adoption of Bt maize technology will contribute immensely towards alleviating the losses, and improved food security, therefore directly add value towards the Big Four Agenda.

Furthermore, through plant biotechnology, maize tolerant to parasitic weeds such as striga can be developed. It is known that over 1.4 million ha of East Africa's farmland is affected by striga, with over 340,000 ha of farmland affected in Kenya alone. The Imazapyr Resistance (IR) technology can be used to reduce these losses. Maize Lethal Necrosis (MLN) disease cause losses of upto 100% in maize growing areas in Kenya. Recent findings have shown that with Kenya MLN causes a loss of Ksh4.1 billion ($41 million). Viruses cause losses in cassava with an average 30-40% (1524 million tonnes; $6-25 billion/year) reported in Africa. The use of GM technology using gene silencing is able to reverse the losses, thus contribute towards the Big Four Agenda in Kenya on achievement of food and nutritional security.

In other parts of the world, the golden rice was modified to incorporate vitamin A. It is meant to provide nutritional benefits to and solve vitamin-A deficiency related diseases, including irreversible blindness. Provitamin A (beta-carotene) maize has been adopted in Southern Africa in countries successfully. These has improved the health of the people.

In the improvement of nutritional quality, genetic tools have been used to alter the carbohydrate, fat, fibre and vitamin content of food. For example, a gene from amaranth was transferred into a potato. The potato showed an increase not only in its protein content, but also in its size. Genes from protein-rich cereals can be transferred to low-protein cereal crops. Biofortification with microelements of iron, zinc, and vitamins such as vitamin A, genetic tools have been applied to produce orange fleshed sweet potatoes and cassava.

Medical Biotechnology: Vaccines for humans such as polio and tuberculosis

Furthermore, transformation has been applied to fruits and vegetables to improve their flavour and texture by manipulating their maturing process. For instance, tomato was genetically manipulated to slow down its ripening, and has a longer shelf-life. The above plant biotechnology applications will thus contribute towards the food security and nutrition in the Big Four Agenda in Kenya.

Industrial biotechnology: It is used in the processing and production of chemicals

To page 34

From page 33

and fuels from renewable sources, using living cells to produce enzymes. Enzymes are used as catalysts to speed up complex biochemical reactions. Industrial biotechnology has enabled the beer production, production of biodiesel through fermentation plant-derived sugars to ethanol, making detergents, in food processing and cosmetic industry, bioplastics are used in packaging, personal care products such as shampoos and conditioners. Polymer fibres are used to make clothing, blankets, carpets and other fabrics. Industrial biotechnology has been used to solve some of the worlds' greatest challenge of feeding a growing population and offering alternatives to scarce natural resources.

The adoption of the above industrial biotechnology applications will directly contribute towards increment and value of exports, improvement of consumer benefits, and diversification in the economy and exports. These could then create competitiveness and level playing field for investors, skills driven manufacturing, development of small to medium enterprises, and ensure the security of the manufacturing industry in Kenya, therefore directly contribute towards the Big Four Agenda.

Medical biotechnology: It is an application of biotechnology tools to produce medical products that can be used for diagnosis, prevention and treatment of diseases. There are various applications of medical biotechnology that produce antibodies used for detection of plant diseases such as foot and mouth disease and animal diseases such as acute immuno-deficiency disease (AIDS), cancer and tuberculosis using diagnostic kits which are quick, easy and able to detect early stages of diseases.

Additionally, vaccines for humans such as polio and tuberculosis, and vaccines for animal use for instance foot and mouth, rinderpest, pneumonia in cattle and goats have been developed. In the field of organic acids, it is used in the production of lactic acid, citric acid and acetic acid. Through medical biotechnology, pharmaceutical hormones, enzymes and antibiotics have been produced namely; insulin, penicillin, streptomycin, kanamycin and tetracyclin and growth hormones such as proteases, amylase and pectidases. The application and use of the products derived from medical biotechnology ranging

from the treatment of the populations, imply a healthy nation, and less medical bills, therefore directly affecting the available labour force which contributes towards the universal health coverage in the Big Four Agenda.

Other biotechnology applications that may contribute indirectly towards the affordable housing in the Big Four Agenda, will include the adoption of GM trees that take a shorter time to mature have been used for timber, fuel energy production and paper production. These GM trees technology is currently in use in some developed economies such as Canada, Israel, Australia, etc. The adoption of such technology will contribute towards affordable housing by providing construction materials without a reduction in the recommended country's 10% forest cover. In addition, in sewage treatment, organic matter can be decomposed using bacteria, fungi and algae, therefore contribute to a clean environment. Ornamental plants can be improved in terms of structure, size, colour, scent, and fruit absence. Finally, the use of gas from biofineries can be combusted to produce heat and electricity to heat homes.

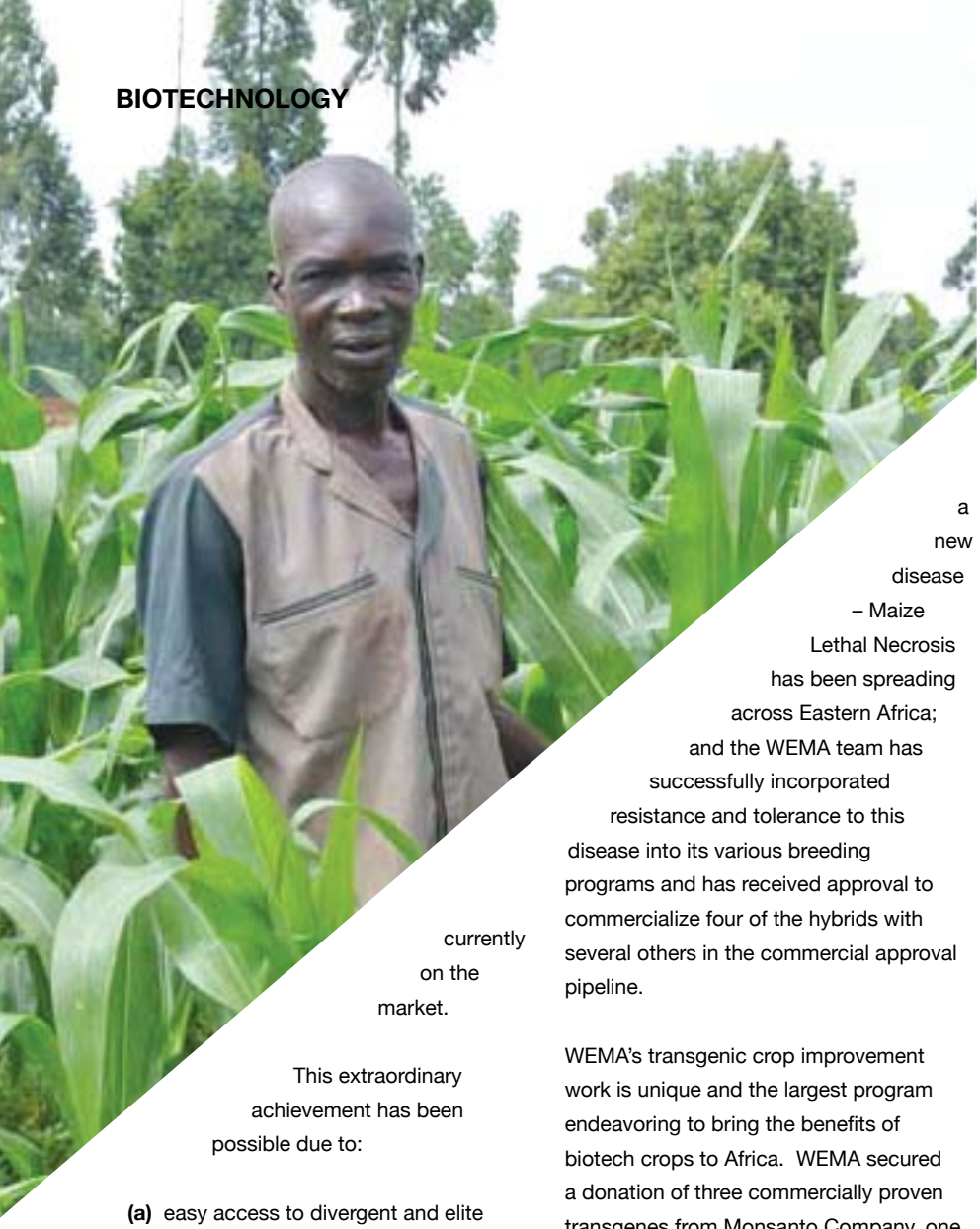
In the improvement of nutritional quality, genetic tools have been used to alter the carbohydrate, fat, fibre and vitamin content of food. For example, a gene from amaranth was transferred into a potato. The potato showed an increase not only in its protein content, but also in its size. Genes from protein-rich cereals can be transferred to low-protein cereal crops.

As an example, in 2008, public and private sector organizations, the African Agricultural Technology Foundation (AATF), the International Maize and Wheat Improvement Center (CIMMYT), the National Agricultural Research Systems (NARS) of Kenya, Uganda, Tanzania, Mozambique and South Africa, and the Monsanto Company united to form the Water Efficient Maize for Africa (WEMA) Project. The goal of the Project was to enhance food security in Sub-Saharan Africa (SSA) through developing and deploying drought-tolerant maize royalty-free to smallholder farmers in Africa. The Project received financial support from the Bill and Melinda Gates Foundation and the Howard G. Buffett Foundation. In 2011, the Executive Advisory Board (EAB) of the WEMA Project requested access to transgenic insect-pest protection technology to complement the drought tolerant efforts of the Project. This technology with associated support activities was added to the Project plan with additional support from the Bill and Melinda Gates Foundation.

In 2013, the Project received reinvestment from the Bill and Melinda Gates Foundation, USAID, Monsanto Company, and the Howard G. Buffett Foundation for Phase II which builds on the progress of WEMA I, including the addition of insect-pest protection technology to the original goal of the Project. WEMA Phase II continued with research and development (R&D) of both conventional and transgenic maize hybrids; and the delivery of products with improved drought tolerance and insect-pest protection to smallholder farmers by engaging and sub-licensing royalty-free, new inbred lines and hybrids to seed companies in Africa. The Project has successfully completed the development of a set of transgenic drought-tolerant and insect-protected hybrids that were field-tested in regulated trials in five African countries.

WEMA's conventional breeding work in the past nine years has been very successful. The consortium developed and officially released in the five participating countries a total 95 new drought tolerant and high-yielding maize hybrids trademarked DroughtTEGO®, with yield between 10 and 50% higher than the commercial hybrids

To page 36



currently on the market.

This extraordinary achievement has been possible due to:

(a) easy access to divergent and elite germplasm;
(b) the use of extensive testing networks; and
(c) the integration of the doubled haploid (DH) technology and molecular markers in maize productdevelopment that significantly shortened the breeding cycle.

The new hybrids are resistant to a suite of maize diseases and perform particularly well compared to the commercial checks during conditions of moderate drought. AATF has established a system, first of its kind in Africa, to license the new hybrids royalty-free to private seed companies operating in Africa for production, distribution, and sales. The Project has successfully licensed and partnered with 33 seed companies to commercialize the WEMA products. Over the past five years, a new disease – Maize Lethal Necrosis has been spreading across Eastern Africa; and the WEMA team has successfully incorporated resistance and tolerance to this disease into its various breeding programs and has received approval to commercialize four of the hybrids with several others in the commercial approval pipeline.

WEMA's transgenic crop improvement work is unique and the largest program endeavoring to bring the benefits of biotech crops to Africa. WEMA secured a donation of three commercially proven transgenes from Monsanto Company, one for drought tolerance – MON87460 and the others for insect-pest protection (stem borer), MON89034 for South Africa and MON810 for other African countries; and incorporated them into white maize hybrids adapted to African conditions.

The Project then secured the necessary permit approvals and field-tested the GM maize in each of the five participating African countries with 35 confined field trials carried out since 2009. The Project has succeeded in South Africa, where the policy environment is favorable, but has more work to do to overcome the remaining policy and regulatory hurdles in the other four WEMA countries. WEMA is now pursuing the approvals needed to make the new GM maize hybrids available to African farmers. Recently, WEMA has

WEMA Project Maize

commenced the negotiation for the fourth transgene on herbicide tolerance (Roundup Ready – RR gene) that will be stacked with the other transgenes. The current status of the WEMA transgenic crop improvement program has been summarized below:

Drought-tolerance: Twelve years ago, Monsanto Company discovered a transgene that confers additional drought tolerance to maize, incorporating it into scores of maize hybrids and testing them widely in North and South America. It subsequently secured all the necessary regulatory approvals and began selling the maize hybrids in the United States that include this "DroughtGard®" trait.

Nine years ago, Monsanto Company agreed to make this same transgenic trait available royalty-free to African farmers through the WEMA Project to address the frequent drought events in Africa occasioned by climate change. Work was undertaken to move the transgene into African-adapted white maize hybrids for testing. This was

WEMA Project Maize

coupled with a conventional breeding program to enhance drought tolerance and yield in tropical germplasm. The resulting transgenic hybrids were tested in confined field trials in four WEMA countries. Field trials confirmed that the transgene confers additional drought tolerance during periods of moderate drought and causes no yield drag under adequate or optimum moisture conditions. The drought tolerance (DT) trait – MON87460 provides on average incremental drought tolerance of 8–14% yield advantage over the isogenic hybrids. The trait was approved for commercial release in South Africa in 2015. However, the WEMA partnership decided that it will not be commercialized as a single trait but best complemented in stacks with the other traits.


WEMA Project Maize

Insect-pest resistance: Twenty years ago, Monsanto Company began commercializing its first transgenic maize hybrid containing a transgene (Bt) for insect-pest resistance. The transgene provided good insect-pest protection, protecting yields and reducing the need for pesticide spraying. Since then, its Bt maize seeds have been sown on more than 100 million hectares by farmers in 18 countries. Bt maize was not made available, however, to African farmers outside of South Africa for various reasons. WEMA Project was designed to change this situation. It secured a commitment from Monsanto Company to make the trait available royalty-free for African smallholder farmers, incorporated it into African white maize hybrids, and have been tested in field trials in four African countries.

Under conditions of artificial infestation by Busseola fusca and Chilo partellus, the Bt maize provides excellent insect-pest protection and in some cases has demonstrated over 50% yield advantage compared with the conventional non-transgenic version (isogenic hybrids). This technology received general approval for environmental release in Kenya in 2016 with conditions that are pending final approvals for commercialization. It is ready for deregulation (environmental release) and deployment in the different WEMA countries.

The Stacks: Seeing the advantages conferred by both traits (DT and Bt), WEMA decided to combine or "stack" the traits in adapted hybrids. The stacked products are currently undergoing field trials in South Africa, Kenya, Uganda, Mozambique, and soon to commence in Tanzania and Ethiopia. The stacked maize hybrids – branded "TELA™" by the Project – are now the primary focus of the TELA™ Maize Project that will also explore the development of triple stacks – DT-Bt-RR with smallholder farmers paying a development-fee for the herbicide tolerance (RR) trait. The proposed TELA™ Maize Project will build on the trusted relationships established among the WEMA partner organizations, the key successes achieved and lessons learned for over nine years that were recently assessed and documented by ALINe, 2017.

Murenga Mwimali, PhD, Principal Scientist/Breeder, Kenya Agricultural and Livestock Research Organization

TWIGA CHEMICAL INDUSTRIES LTD

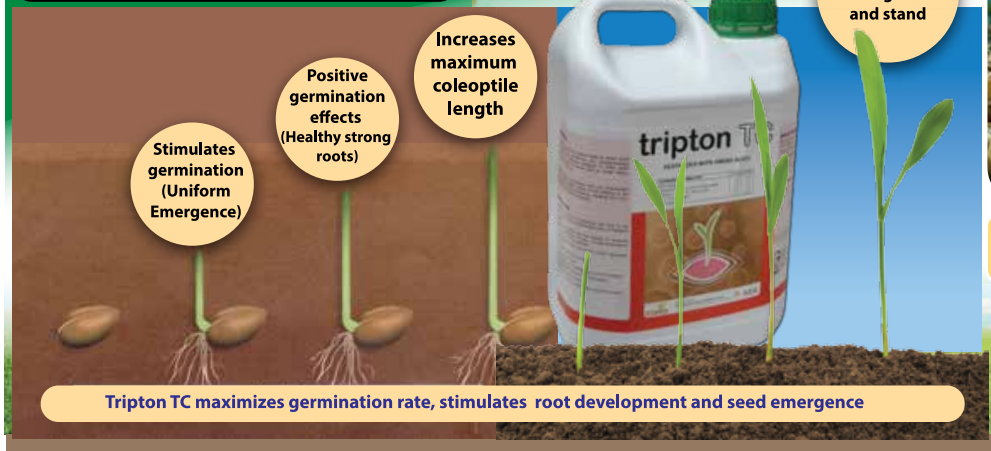
Cereal Farming at its best!

Tripton TC

Biostimulant for Seed Treatment

To produce a high- yielding crop of uniform maturity the seeds must all germinate and emerge together to allow each individual plant to express its full genetic potential

BENEFITS OF TRIPTON TC



Tripton TC maximizes germination rate, stimulates root development and seed emergence

The idea is to give a supplement of nutrients and stimulant to maximize germination rate

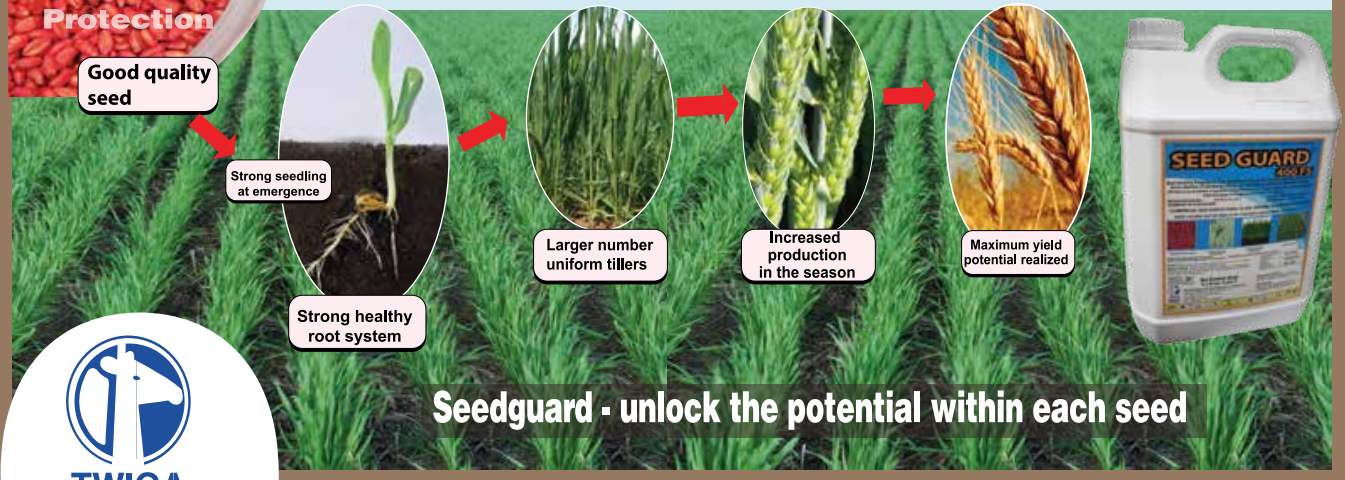
coda

SEEDGUARD 400FS®

(Carboxin 200g/L + Thiram 200g/L)

'Seed is valuable and needs to be protected'
'Mbegu ni muhimu na inahitaji kulindwa'

SEEDGUARD 400FS is an advanced flowable formulation, designed for the farmer's convenience for effective disease control, better crop emergence, enhanced root growth, improved crop vigour and uniform crop.



Seedguard - unlock the potential within each seed

TWIGA CHEMICALS

Reliability & Value

TWIGA CHEMICAL INDUSTRIES LTD.
P.O. Box 30172, NAIROBI-KENYA,
Tel: 020-3942000, Fax: 020-3942405
Email:- info@twiga-chem.com Website:-
www.twigachemicals.com

YouTube Instagram LinkedIn WhatsApp 0742 967 573

Bayer East Africa Donates Product To Aid the Fight Against Desert Locusts in East Africa

Insecticide donation enables treatment of 170,000 hectares of the most affected fields

More than 10 million people in the East Africa region are facing acute food insecurity due to recent locust plagues that ravaged massive fields of food crops. With the advent of the planting season, the locust invasion still looms high. This risk coupled with the current COVID-19 pandemic and recent drought and floods in the region, piles additional pressure on food systems hence a key threat to food security.

Linah Chebii Kilimo

According to FAO, the desert locusts present "an extremely alarming and unprecedented threat" to food security and livelihoods. To help address this problem, Bayer through the Agriculture Sector Network (ASNET) and the Agrochemical Association of Kenya (AAK) donated 170,000 litres of Deltamethrin - an active ingredient effective in combating the desert locust, as listed in the latest Pesticide Referee Group – PRG – report, to the Governments of Kenya (120,000 litres) and Uganda (50,000 litres).

The entire donation, valued at approximately Ksh 100 Million; Kenya – 70 Million and Uganda – 30 Million excluding freight, will enable the two governments to treat 170,000 hectares of the most-affected fields. Through this donation bayer hopes to support vulnerable smallholder farmers who are so critical to food security, and essentially contributing to bayer's shared vision of a future where health for all, hunger for none is made possible.

A major food issue for millions of people

Earlier this year, the largest swarm that hit Kenya measured 2,400 square kilometers and was made up of 200 billion locusts. The pests consumed nearly 400,000 tons of food every 24 hours which is equivalent to what 84 million people eat each day. Desert Locusts can travel up to 130 kilometers a day in their frantic race to feed and reproduce.

The devastation means a serious food crisis threatens these East African countries with many countries already experiencing food shortages. In Kenya where 34 percent of the country's GDP comes from agriculture, this invasion marks the worst of its kind in 70 years and is threatening the country's economics and food production.

To page 40

From page 39

Delivering sustainable solutions through partnerships

Bayer is a global enterprise with core competencies in the life science fields of health care and nutrition. As a company, all we do revolves around our vision of Health for All, Hunger for None. Today we are responding to a crisis in East Africa
At Bayer, we want to ensure all farmers have the tools they need to raise crops to a healthy harvest. This is especially critical in countries where agriculture plays such a vital role in the livelihoods of families, communities, and countries but where they often lack of tools and the latest agronomic knowledge.

Why Locusts

Locusts present "an extremely alarming and unprecedented threat" to food security and livelihoods, according to the FAO. Tens of thousands of hectares have been damaged in the Horn of Africa, meaning less food for families and communities but also lack of income from any surplus previously sold. For those dependent on purchasing food, prices soar.

More than 20 million people in the region are already facing severe acute food insecurity. With the main cropping season upcoming, the locust invasion threatens to drive this figure even higher. This risk is increased by the current COVID-19 pandemic, drought and floods in the region, all of which put pressure on food systems in parts of the world where food security remains a significant challenge.

The potential for destruction is enormous. A locust swarm of one square kilometer can eat the same amount of food in one day as 35,000 people.

Climate change, which is thought to be causing severe weather extremes, including cyclones and unusually heavy rains, has caused locust populations to explode. The upcoming rainy season will lead to further increases in swarms unless control measures rapidly scale up.

Both Kenya and Uganda are highly dependent on agriculture with 22 percent of Kenya's GDP and 56 percent of workforce employed in agriculture. In Uganda 24 percent of GDP is coming from agriculture and employs 75 percent of the workforce.

why now?

Bayer is working to ensure the COVID pandemic does not turn from a health crisis into a hunger crisis by taking bold actions on today's challenges that will build resiliency for the future.

The areas of the world most affected by hunger are also those where smallholder farmers can make the biggest impact. We are therefore working to provide them with the tools they need to grow, harvest and process enough feed and food for themselves and their communities.

Crop protection and innovation in agriculture continue to be crucial to ensuring food security and nutrition around the globe. As Bayer, this is where we come in through Research and Development.

Our biggest challenges require impactful and sustainable solutions that will only be possible through the joint commitment of dedicated partners at a global and local level. We are happy today as this clearly demonstrates a public private partnership geared towards supporting millions of livelihoods

The Donation, Deltamethrin

Bayer through the Agriculture Sector Network (ASNET) and the Agrochemical Association of Kenya (AAK) is donating 170,000 litres of Deltamethrin - an active ingredient effective in combating the desert locust, as listed in the latest Pesticide Referee Group – PRG – report, to the Governments of Kenya (120,000 litres) and

Uganda (50,000 litres).

We are making this donation to the Ministries of Agriculture in Kenya and Uganda. This is because the Ministries of Agriculture, together with local partners, have the expertise and ability to ensure it is correctly used and that it goes where it is most needed.

The entire donation, valued at approximately Ksh 100 Million; Kenya – 70 Million and Uganda – 30 Million excluding freight, will enable the two governments to treat 170,000 hectares of the most-affected fields.

Through this donation we hope to support vulnerable smallholder farmers who are so critical to food security, and essentially contributing to our shared vision of a future where health for all, hunger for none is made possible.

The 170,000 litres of Decis ULV donated to Kenya and Uganda were produced in France, in a Bayer industrial site based in Villefranche Limas that specializes in the formulation, packaging and distribution of plant protection products for farmers. The product was airlifted to East Africa by the Kenya Airways, we deliberately used KQ also as a way of supporting local economy and I am happy that KQ joins us.

The power of partnerships

We are giving the donation under the umbrella of partnerships: Working with Kenya Private Alliance Sector Alliance (KEPSA), Agricultural Sector Network (ASNET), Agrochemical Association of Kenya (AAK) and other partners we are demonstration the power of partnerships and that crisis can be addressed if we come together.

Sh400m Factory to Help Kirinyaga Farmers Turn Rice Husks into Furniture

Their boards are considered cheaper and denser than the plywood and conventional wood.

For many rice farmers in Kirinyaga, husks have been something you sell at a throw-away price or use as animal feed and bedding.

If a farmer couldn't find use for the husks, they would dump them in open fields or burn them — polluting the environment in the process.

But the rice growers will no longer throw husks away because a new project will make boards for furniture from them. The Kirinyaga county is constructing a Sh400 million rice husk factory for the farmers with funding from the British government.

Once opened, the factory will take husks from the farmers and turn them into boards for making furniture among other uses. The added value will make more money for farmers.

Rice husk boards are considered cheaper and denser than the plywood and conventional wood. They are a timely and sustainable innovation for the furniture industry which has grappled with costly yet scarce timber.

Governor Anne Waiguru welcomed the construction of the rice husk factory as a milestone that will bring numerous benefits to the residents.

Another beneficiary of the British funding is the Kerugoya-Kutus municipality. Some Sh200 million will be spent on urban planning and development programmes and capacity building.

Kerugoya-Kutus was among 12 municipalities which qualified for the funding under the Sustainable Urban Economic Development (SUED) programme. Waiguru said the rice husk factory project will bring to an end the challenges rice farmers in the county have encountered for a long time.

Besides conserving the environment, the project will earn farmers more money from the rice by-products, Waiguru said.

The governor said that the factory will offer jobs to county residents and also make the

Kerugoya-Kutus municipality an industrial hub that will attract investors within and outside the rice husks value chain.

She said the county government undertook a feasibility study to determine the level of pollution on the environment by rice husks, the amount of husks produced and the most appropriate technologies for their value addition.

“We realised that as the largest rice-producing county, we have tonnes of rice husks which can be processed to provide a cheaper and safer alternative to timber,” Waiguru said. The project will also ease pressure on forests while improving the local economy, she said.

The governor said her initial plan was to use the rice husks boards to construct furniture for Early Childhood Development Education (ECDE) centres. However, the project will be expanded to produce material for other projects including the construction of affordable houses. Kirinyaga is one of the counties selected for the implementation of the government’s affordable housing project.

More than 7,000 farmers grow rice under the Mwea Irrigation Scheme with hundreds of others having rice paddies in other areas. This number is expected to rise after the completion of the ongoing construction of Thiba Dam. Kirinyaga assembly’s majority leader Kamau Murango hailed the governor for the efforts she put in ensuring that the project secured funding.

The Kerugoya MCA said that the project will go a long way in assisting residents of the rice-growing county. “I am grateful and proud of the governor for this milestone and I am now appealing to all other leaders in the county to support the project and not to start haggling about its location,” he said

Yellow maize: Answer to animal feeds cost?

Farmers have been complaining about the high cost of animal feeds because the prices of maize make up to 20 per cent of animal feeds.

Martin Kinoti, the secretary general of Association of Kenya Feeds Manufacturers, says animal feed millers are forced to compete with maize millers for human consumption and they probably end up losing the battle.

“The solution to this problem is for animal feeds millers to discontinue use of white maize and instead use yellow maize,” Kinoti said.

However, yellow maize is not available in the country and animal feeds millers are forced to import.

Kinoti said the importation is limited because of Bio Safety Act, which prohibits use of genetically modified foods.

“Unfortunately most yellow maize produced in most countries are genetically modified, except from Ukraine and Mexico, hence the two dictate prices they want to sell at,” he said.

This leads millers to incur a lot to import maize and have to roll down the cost to the farmer.

Kinoti says to import maize, one requires a special gazette notice as the maize has suspended duty of 50 per cent.

He says the government should allow regular importation without having the requirement of gazette notice for all animal feed millers without conditions.

PICTORIAL

Thank You!

The Board of Directors, Management and Staff of Florinews Ltd Wish you a Merry Christmas and a Prosperous 2021.

A POST EMERGENCE SELECTIVE HERBICIDE FOR CONTROL OF BROADLEAF WEEDS INCLUDING:

Cleaves, Knotweed, Black night shade,
Black bind, Mallow, Pigweed & Yellow daisy.

Ariane™ EC
HERBICIDE

Reliable & effective weed control in:
Wheat and Barley.

For more information call: (+254) 724 22 18 70
Whatsapp: (+254) 110 09 52 15

Corteva Agriscience™
Keystone Park, Block B, 3rd Floor, Riverside Drive
P.O. Box 53384 - 00200, Nairobi Kenya
T: + 254 709 142 000

Manufacturer: Dow Agrosciences

Distributed by: Our Knowledge, Your Success.
Amiran Kenya Ltd. Tel +254 719 095000
/AmiranKenya /amiran_kenya

CORTEVA™ agriscience

Visit us at **corteva.com** CortevaEAF