CEREALS

The leading journal for field crops

JULY - SEPTEMBER 2019

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

Shanga Ubone: The phrase that pays

ELGON THABITI® FERTILIZERS

UREA, DAP, CAN & NPK

Why Use THABITI® Fertilizers.

- They Contain All The Registered Nutrients.
- Each Granule Contains The Correct Ratio Of All Essential Nutrients & Reduce The Risk Of Yield Loss.
- Have The Benefit Of Uniform Distribution Of All The Nutrients Across The Entire Field.

50kg, 25kg & 10kg

ELGON KENYA
TRANSFORMING FARMS & LIVES THROUGH TECHNOLOGY

National Park East Gate Road, Off Mombasa Road.
P.O. Box 46826 - 00100 Nairobi, Kenya
Office Line: +254 717 888 877, 733 509 509
E: info@elgonkenya.com
www.elgonkenya.com

Elgon Kenya limited
@elgonkenya

Azimut

AN EXCEPTIONAL SYSTEMIC AND TRANSLAMINAR FUNGICIDE

FOR THE CONTROL OF **YELLOW RUST** AND **STEM RUST** IN WHEAT

Tebuconazole

Azoxystrobin

- Broad spectrum- Single application controls multiple diseases
- Preventive, Curative and Eradicative Action- Broader window of application
- Long duration of residual control- Reduced Number of sprays
- 1+1 Two different Modes of Action- Good Resistance Management

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

TABLE OF CONTENTS

CORTEVA AGRISCIENCE Is Making Agriculture a Profitable Economic Activity in Zambia

4 COUNTRY FOCUS

The Disastrously Destructive Fall Army Worm

32 CROP PROTECTION

Agritec Africa 2019

46 EXHIBITION

10. Shanga Ubone

18. Growing Soybeans101

20. Better Management of Soybeans

23. Africa Can Feed Itself

26. Mechanisation: Minimising Your Costs

38. Farm Management: Controlling Input Costs

41. 'How Syngenta has Made Me Succeed as a Farmer'

Editorial

Agriculture in Zambia

Agriculture is certainly one of the most significant activities in Zambia as it not only feeds millions of people, but also contributes towards the overall growth of the GDP. At various social events, school or college functions, agriculture is a much talked about topic. In fact, for the government too, it's a pertinent issue and various steps are being taken for the improvement of this sector.

Special attention must be devoted to this particular sector so that farmers can benefit from the latest state-of-the-art technology for agriculture, which in turn can yield good results. Better the focus on agricultural activities, greater will be our nations' growth. Zambia's maize seed industry is one of the strongest in the region, and smallholder farmers grow numerous varieties, with no single variety dominating more than a small share of maize area. The seed market, which is highly competitive, is dominated by a few large companies despite the entry of many enterprises since liberalization.

It is clear that maize successes in the future will continue to depend on strategic crop improvements such as those targeted to relieve specific environmental and disease problems and enhance the stability of net returns to farmers. The continued development of maize seed markets and a realistic understanding of the farmers who are the actors in those markets are therefore critical. In this issue we have delved deep on what Corteva Agriscience is offering to revolutionize the Zambian maize sector.

Masila Kanyingi
Editor.

Cereals **EDITOR:** Masila Kanyingi **EDITORIAL ASSISTANT:** Cornelius Mueke **CONTRIBUTORS:** Edwin Kirwa, Ruth Vaughan, Thomas Kipkorir **PHOTOGRAPHER:** Jairus Ndani **GRAPHICS DESIGNER:** Evelyne Ndiema **MARKETING:** Edwin Kirwa **ADMINISTRATION ASSISTANT**: Christine Muthoki

EDITORIAL BOARD: Thomas Kipkorir - BASF E.A Ltd, Agnes Gitonga - BASF E.A Ltd., Doris Kawira - Corteva, 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

Secure higher yields with Amistar Xtra.

The most effective broad-spectrum foliar fungicide with systemic properties for the control of leaf and ear diseases in wheat and barley giving you;

- Excellent disease control
- Greening Effect
- Higher Yields

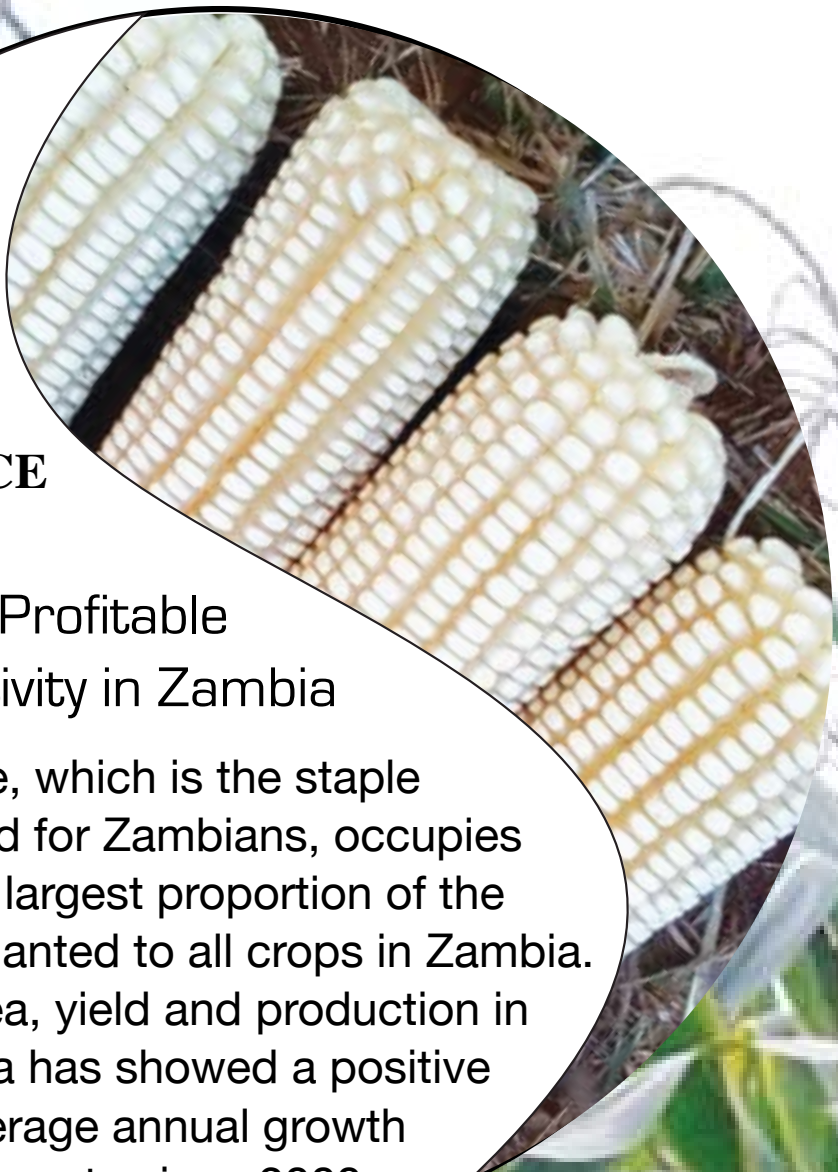
Amistar Xtra®

syngenta

For more information or enquiries, send a Free SMS to 22432.

Syngenta East Africa Limited, P.O. Box 30393-00100, Nairobi, Tel: +254703018263 /+2547030192633
www.syngenta.co.ke

CORTEVA AGRISCIENCE Is Making Agriculture a Profitable Economic Activity in Zambia



Maize, which is the staple food for Zambians, occupies the largest proportion of the land area planted to all crops in Zambia. Maize area, yield and production in Zambia has showed a positive average annual growth rate since 2000.

"Pests and diseases are a major threat to scaling production of maize in Zambia. Fall Army worm outbreak in 2017 for instance affected most of the farmers leading to a reduction of production of maize."

"Will copper see Zambia through another 50 years? Will Copper assuredly alleviate Zambia out of Poverty? asked Samson Nyendwa", Country Manager, Corteva Agriscience Zambia as we settled for an interview. "My categorical answer is NO", he answered. Speaking exclusively to *Cereals Magazine*, Mr. Nyendwa said, "agriculture is the future of Zambia. We have depended on the extractive industries over the past 50 years. Copper has brought us where we are but the only sector that assuredly alleviates poverty is maize farming which is easy to grow by the majority of the population. Our focus should be to grow this industry that is the future of this country".

Zambia needs to increase productivity in maize production, especially among small scale farmers. The vast majority of them produce between one and 2.5 metric tonnes of maize per hectare yet they have access to seeds that have a yield potential of over 10 metric tonnes per hectare. This is why small scale farmers are still trapped in poverty. In order for the small scale farmers to come out of poverty they should produce profitably, but that will only happens when they are able to produce efficiently.

Current state of Agriculture.

The Zambian agriculture sector comprises crops, livestock, and fisheries. There are three broad categories of farmers: small-scale, medium, and large-scale. Small-scale farmers are generally subsistence producers of staple foods with occasional marketable surplus. Medium-scale farmers produce maize and a few other cash crops for the market. Large-scale farmers produce various crops for the local and export markets. Most Zambians are subsistence farmers. Agriculture contributes about 19 percent to GDP and employs three quarters of the population. Majority of domestic production is comprised of maize. More than 70 per cent of Zambians live in rural areas and largely practise farming for their living. Maize which is the country's staple food is widely grown across the country and has provided food and income for many people. Although there have been private buyers, the Government through the Food Reserve.

The Zambian cereals sector comprises of maize, soybeans, groundnuts, millet, sorghum, and wheat; There are three broad categories of farmers: small-scale, medium, and large-scale. Maize, which is the staple food for Zambians, occupies the largest proportion of the land area planted to all crops in Zambia. Maize area, yield and production in Zambia has showed a positive average annual growth rate since 2000. There has been a faster and relatively more sustained growth in Zambia's maize area, yield and production since the early 2000s, compared to previous years. According to MOA, smallholders (whose farm sizes range from 2 to 20 ha) account for 85% of Zambia's maize production, whereas emerging commercial farmers (20 to200 ha) and large commercial farmers (>200 ha) account for 10% and 5%, respectively. Women contribute 44% of labour.

Maize, the staple food has an annual production 2,600,000. A bigger percentage of the production approximately 1,600,000 go to human consumption. The rest is consumed in various sectors mainly; stock feed 300,000, breweries 200,000, other uses 100,000 and export 500,000. This translates to approximately 62% of all maize produced in Zambia been used as food, while substantial amounts are channelled to breweries, animal feeds among other uses. The government of Zambia purchases about 90% of all commercialized maize through the Food Reserve Agency, even though it does not control the cereals market.

From Page 5

Location of cereals Farming in Zambia.
Cereals farming is practiced by five provinces (Northern, Central, Eastern, Copperbelt, Lusaka, and Southern), which also cover three agro ecological zones (AEZ) (I, IIA, and III). cereals grows best on deep, well-drained, fertile soils, and where total seasonal rainfall exceeds 500 mm. Maize which is the most grown cereal is reasonably tolerant to soil acidity, but if the soil is very acidic, liming will improve the soil and enhance maize yields. Maize is susceptible to both drought and water- logging.

Major Constraints

Drought: Extreme weather conditions is the key constraint for cereals production in Zambia, as it is in many other countries in Sub-Saharan Africa (SSA). In addition, inadequate awareness of the current technological advances, expensive seed and fertilizers, pest disease outbreaks and crop loss during storage, exploitation by Agro dealers, lack of access to market and offtakes, low commodity price all affect maize production.

Pests and Diseases: Pests and diseases are a major threat to scaling production of maize in Zambia. Fall Army worm outbreak in 2017 for instance affected most of the farmers leading to a reduction of production of maize. Despite the government setting aside funds to help farmers secure agrochemicals to avert situations like these, farmers still complain of costs incurred in acquisition of chemicals to spray their farms to prevent pests and diseases from cropping in. Additional pests include; Stock borer, Earworm. Farmesrs also face disease challenges especially MSV, GLS, Diplodia cob rot.

Unstable Market Prices: Although there have been private buyers, the Government through the Food Reserve Agency (FRA) has been the major player which has provided a low price for maize and other crops on its purchase menu compared to the private sector. Therefore, many small-scale farmers have been forced to sell their produce to the FRA in a bid to get some money for their crops because other offtakes are not feasible. However, the manner in which the FRA has conducted its business leaves much to be desired. The agency has not only run away from its commitment of paying farmers timely, but has betrayed the desires of making agriculture one of the cornerstones of the country's economy discouraging farmers from growing maize.

Costs of Inputs: The high cost of inputs may sometime lead to purchase of cheap inputs with compromised quality which affects the yields in the long run. This kind of compromise affects food security and sustainability in cereals farming.

Decline in production

Maize production in the year 2018 declined by more than 5% compared to 2017? The same decline is also anticipated in 2019 and may even higher. This has been caused by mainly climate change resulting in poor rainfall especially in the southern part of the country. In addition, poor implementation of Government E-voucher system to farmers who predominantly depend on FISP and Late payment to farmers who supplied maize to FRA thereby denying them buying power to purchase input also contributed.

Despite the decline, Zambia has enough for domestic consumption. However, we may see a rise in the cost of maize meals beyond what ordinary Zambian can afford. This scenario is expected to encourage more farmers grow maize in 2019/2020

Solutions by Corteva Agriscience

"At Corteva Agri Science, we strive to educate

To Page 8

Pre-emergence Maize Herbicide that controls annual grass and broadleaf weeds in maize, for 8-12 weeks

SureStart® 509 SE

HERBICIDE

Post Harvest Interval:
85 Days

Contains: Acetochlor 450gm/L
Flumetsulam 14gm/L
Cloypyralid 35 gm/L

Formulation type: Suspo–Emulsion

CORTEVA™ agriscience

www.corteva.com CortevaEAF

Manufacturer: DOW

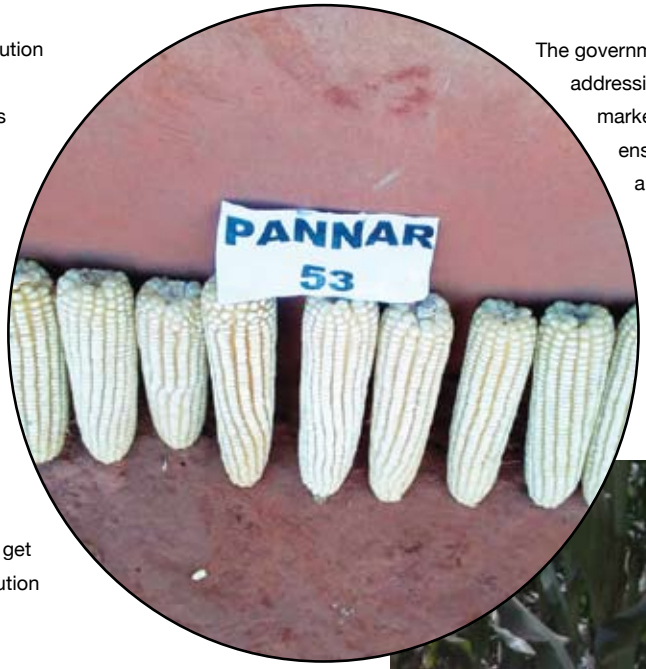
CORTEVA AGRISCIENCE
Local Contacts: Pioneer DuPont Zambia Ltd | P.O Box 33282, Lusaka
Mobile: +260 97 909 9002 / +260 96 700 9005 • **Email:**Samson.nyendwa@pannar.co.zm

From Page 6

farmers on the best farming practices to enable them practice climate smart agriculture and strive to improve their yields progressively. We make this possible by provision of improved hybrid maize seeds, soybeans among other cereals. We also train them on crop protection programs and why it is necessary to embrace the program to cut labour costs and increase revenue." Says Mr. Nyendwa.

Corteva Products: Corteva in Zambia represents the most comprehensive and balanced seed and crop protection portfolio in the world and a strong pipeline of new products that will enable us to continue to provide substantial value to farmers now and over the long term. Corteva is known for its PIONEER and PANNAR brands in the seed category. In crop protection we have well established product brands like Lancelot, Tracer and Radiant and Delegate which are good control for Fall Army Worms. Other than Herbicides and Insecticides, Corteva has also lined up some good fungicides.

Food insecurity: There is no one single solution that addresses the whole challenge. It is a multiple dimensional challenge that requires collaboration from companies like us, Government and other partners. One thing that can make a big impact on this matter is technology. Other than high yielding resilient seed and quality crop protection products, we are also driving customer value through digitization by offering the most advanced digital solutions. These include Farm management software by Granular®, Agronomy software and services by Encirca®, Farmland valuation and research by AcreValue TM. When farmers use our products and services and get better harvest, they become part of the solution to food insecurity.



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

Making agriculture profitable economic activity: Agriculture is profitable when you do the right things, and a great piece of being profitable is to be able to embrace the right technology. Corteva Agriscience helps farms and farmers flourish, and together we forge meaningful relationships that advance agricultural industry. We are on the ground, innovating collaboratively with producers to help enable their success. We earn the trust of customers and consumers by doing what is right and delivering solutions that meet their changing needs. Partnering with Corteva will lead to a profitable farmer.

Solutions by the Government

Fertiliser input subsidy program (FISP) provided by the Zambian Government has resulted into household food security among FISP beneficiaries but not economic emancipation. FISP must be improved in order for it to promote profitability and graduation from the program. However beneficial the program has been, there are a lot of loopholes to be sealed to enable successful farming. Addressing the weakness in the e-voucher system to avoid any delays in supply of inputs to farmers is of priority.

The Government through Food Reserve Agency (FRA) continue to purchase maize from the farmers to provide a stable market for their produce; however their pricing leaves much to desire not to mention the late payments of farmers.

The government is also working on addressing the bottlenecks in the marketing exercise by the FRA and ensure that agriculture remains a business with potential to become the country's economic mainstay. Further, the Government is looking for ways to encourage commercial maize growing by keeping open border policy.

Quick Knockdown activity in 2Hrs

on Caterpillars (Fall Army Worm), Tuta Absoluta, Diamond back moth, Thrips and White fly Nymphs

*Contains: Spinetoram 120g/l

Delegate™ 250WG

Why Delegate™ 250WG ?

- Unique mode of action
- Effective at low use rates
- Short preharvest interval (3 days)
- Valuable rotation partner with other chemistries
- Minimal impact on beneficial insects & predatory mites

CORTEVA™ agriscience

www.corteva.com CortevaEAF

Manufacturer: DOW

CORTEVA AGRISCIENCE
Local Contacts: Pioneer DuPont Zambia Ltd | P.O Box 33282, Lusaka
Mobile: +260 97 909 9002 / +260 96 700 9005 • **Email:**Samson.nyendwa@pannar.co.zm

Shanga Ubone:

The phrase that pays

PAN 53 famously known as shanga Ubone in Zambian local dialect is one hybrid seed variety which has surpassed any expectations of both the farmers and researchers at large, time and time again.

Visiting PAN 53 farmers across the country, one cannot help but notice the impact the seed has had on farmers' lives over the years. Benefits such as attaining higher yields, building modern houses, buying farm equipment, enjoying food security and many more are some of the resounding success stories from those who have embraced quality seeds.After seeing how his neighbours were excelling, he decided to venture into his own farming activities. With limited equipment, he started as a peasant farmer, but he did not see any progress until he started planting PAN 53 seed variety. He first saw PAN 53 maize variety in his neighbours farm and was motivated to ask which variety he grew. "Upon asking, I was shocked as my neighbour told me; Shanga Ubone. Thinking it was a big joke, my neighbour repeated the same answer, Shanga Ubone. Only then I realised PAN 53, had been christened Shanga Ubone due to the yields the farmers had experienced. I looked for the PAN 53 variety and immediately planted it, because I wanted to experience what I saw there and today I can only echo my neighbour to all my friends Shanga Ubone," he explains.

Farmers are employed to secure our country from starvation while making a living out of it. The best seed variety is not an option

Yields and beating the drought

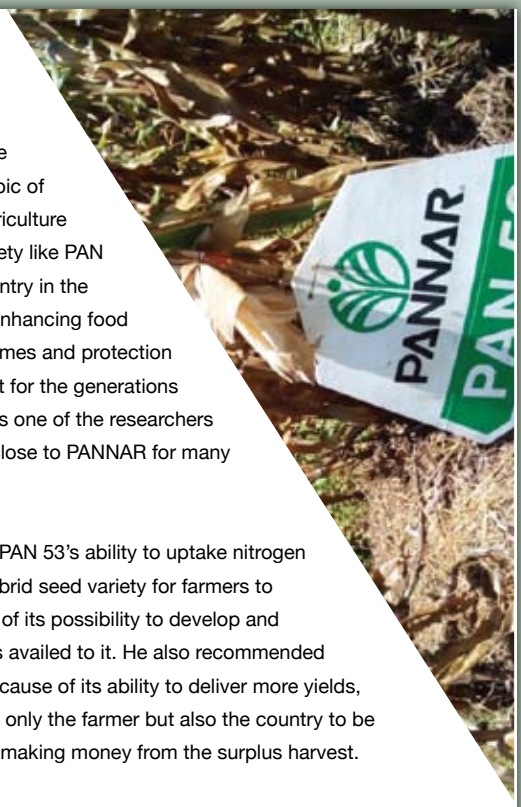
The farmer explained that since then, the harvest he has been getting from PAN 53 seed variety has been huge and motivating. He recalls how he has been increasing yields over the past four years owing it to PAN 53 seed variety. “I have been farming for many years and it is only through planting PAN 53 that I have attained the highest yields per hectare. I have never experienced such high yields and this is what has motivated me to always plant PAN 53 seed variety and tell others Shanga Ubone,” he says.

“It is not easy to achieve such a high yield, but with PAN 53 it is possible. Employing good management and agriculture practices combined with PAN 53 seed has been the key to achieving high yields,” he explains. PAN 53 is the best in beating the drought and it shows an excellent germination percentage. He also says the seed is able to grow well even with minimum rainfall. He believes that with farming, one should always strive towards doing the right things at the right time. “If one misses it at first, it is very difficult to achieve high yields. I make sure of the right seed variety, have right plant population, apply fertiliser at the right time and control weeds at the right time,” He explained.

The advancement of technology has enabled farmers to access information about any type of the product they need in their farms with ease. Access to information in real time and being on the loop with the research findings and advancement enables farmers to make the most appropriate decisions when procuring their seeds. A farmer would want to purchase a seed variety which will guarantee high yields, resistant to diseases, tolerant to drought and the issue of cost has to be considered.

Characteristics of PAN 53

- It has high tolerance to drought and can perform even under minimal rainfall
- Shanga Upone has a very good husk cover, which enables successful development of cob
- It is regarded as a stable crop across regions, this is in comparison with other varieties like PAN 4M-23, PAN 5M-37 just to name a few
- PAN 53 has a nitrogen use efficiency- this makes the hybrid variety a good seed because of its susceptibility to take up nitrogen which enables to develop and grow progressively
- It has high kilo weight due to heavy cobs with a lot of kennels
- Average yield like to be acquired from one hactre is approximately 10MT
- Shanga ubone takes 125-135 to maturity, this is close to 4 months at maximum
- It has high resistance to diseases; this resistance guarantees good yields and returns because of less cost of production required from the farmers end.



Why PAN 53

“In response to the global trending topic of Climate Smart Agriculture (CSA), a seed variety like PAN 53 aligns us a country in the right direction to enhancing food security, high incomes and protection of the environment for the generations to come” said says one of the researchers who has worked close to PANNAR for many years.

He reiterated that PAN 53’s ability to uptake nitrogen makes an ideal hybrid seed variety for farmers to consider because of its possibility to develop and consume nutrients availed to it. He also recommended Shanga Ubone because of its ability to deliver more yields, which enables not only the farmer but also the country to be food secure while making money from the surplus harvest.

“With the changing weather patterns, rainfall is not guaranteed sometimes, PAN 53 has demonstrated its ability to withstand these conditions and still deliver enormous yields. Because of this trait and not forgetting its resistance to diseases makes shanga ubone the best seed variety for your farm,” he said.

When Margaret started farming, initially it was so hard for her to make ends meet from the harvest she could get from her 3 acre investment; this was so because of many responsibilities she had which demanded huge chunks of money. In her quest to determine the best farming practices to increase the yield potential of her farm. Margaret stumbled upon a PANNAR agronomist who took her through numerous data (performance of shanga ubone) and she was interested to try out PAN 53 in her farm because she really needed a working strategy on increasing her yields and income subsequently.

Why should you buy PAN 53

If you are farmer who demands more and commit to achieving more from your farming investments then PAN 53 is your tool to get you there. This variety has the most intriguing traits worth considering; drought tolerance, High uptake of nitrogen, High mealie meal yield, Good grain quality, Excellent pound ability and High kilo weight

Farmers are employed to secure our country from starvation while making a living out of it. To do so, farmers ought to choose the best seed varieties which deliver more yields with less cost of production. PAN 53 is the right choice for you, try this today and experience what you have been missing in your farm.

Seed Variety, Determines Yield

Selection of the right seed variety is most determining factor for a farmer to make good returns in his investment. You should make the right decision from the beginning because once you put that seed in the ground there will be no turning back until its maturity.

PANNAR seed has invested heavily in research and development of the best hybrid seeds. They have done so with the farmers' needs on their minds all the time, with the aim of not only developing competent seeds which can withstand the hardships of the weather changing patterns but increase yields. Increasing yields will not only increase revenue but make farming more sustainable and worth pursuing.

There Local understanding and commitment to studying the soils of different locations and changing weather patterns have always enabled them to develop tailor made seeds which best perform in a designated environment.
The following seed variety developed by Pannar Seed Company is of interest; (PAN 5M-37) because of the results which have been witnessed first-hand from the farmers.
PAN 5M-37

Background
PAN 5M-37 has a comparability relative maturity (CRM) of 133; this is in comparison with major competitors like; PAN 4M-23, PAN 413, P3506W and SC513. A smaller (CRM) in a hybrid makes it flower early, fill with grain and mature for harvest within a short time and vice versa for a higher CRM.

PAN 5M-37 has high adaptability to a medium moist altitude and also medium dry altitude just by the virtue of being drought tolerant. To achieve the best results with this variety, it performs well when positioned with the following hybrid varieties; PAN 4M-23, PAN 413 AND PAN 53

Traits of PAN 5M-37
- Early maturity than PAN 53; it's CRM is much lower to that of PAN 53 which makes it flower and form the grain early enough ahead of PAN 53.
- It matures after 115-130 days, this is approximately 4 months from the time of planting
- PAN 5M-37 has medium cobs which are long and slender with excellent test weight and thinner core. This translates to more kennels per cob which results into more yields
- Good husk cover, which provides good protection to the cob.
- Good grain quality
- It has good tolerance to ear-rots due to the good quality of the husk cover
- Good tolerance to stalk-lodging
- Good tolerance to diseases especially to all foliar diseases including MSV
- PAN 5M-37 is drought tolerant, this makes it perform even in areas which experience low amounts of rainfall.

This kind of variety is the real definition of Pannar's promise "We farm together for the future". The guarantee of good yield secures food security for a nation and the resistance of the hybrid to diseases and weather changing patterns positions PAN 5M-37 strategically in regards to the changing weather trends and farming activities.

Food Security, Maize Prices and Maize Production: Country Briefs (Zambia)

Production of maize in 2019 is forecast at below average level

Harvesting of the 2019 cereal crops kicked off in April. Production of maize, the main food staple, is forecast to decline for a second consecutive year in 2019 and remain at a well below average level. Most of the expected decrease is associated with foreseen production declines in Southern, Western and, to a lesser extent, Central provinces, which combined account for about one third of the national maize output.

Seasonal rainfall deficits are the main factor behind the unfavourable production prospects. Large areas of cropped land in southern and western areas exhibited stressed vegetation conditions as of March, inferring a high likelihood of reduced yields this year. In addition, the poor rains at the start of the season are estimated to have caused a contraction in the area planted to a slightly below-average level.

Overall, maize production in 2019 is expected to decline by 16% and it is estimated to be between 2 and 2.2 million tonnes. However, results from the government led crop assessment are expected to be released in May and will provide definitive estimates for this year's cereal output.

Tight supplies forecast in 2019/20

The expected decrease in the 2019 maize output is forecast to be compensated by a large drawdown in stocks and an increase in imports in the 2019/20 marketing year (May/April). Opening inventories in 2019/20 are forecast at 450 000 tonnes, down by almost half compared to the previous year. Although a drawdown in stocks is anticipated to assist in satisfying the most of the national consumption requirements, an increase in imports is likely to be needed to buffer supplies and maintain adequate stock levels.

Moreover, exports are forecast to decline steeply in 2019/20, although an export ban in 2018 had already curbed the quantity shipped in the current marketing year compared to normal levels.

Maize prices rose sharply on supply pressure

Seasonal price increases of maize have been exacerbated by tighter supplies and have resulted in a 60 percent increase in the average retail price of maize grain in the year to March 2019. Similarly, maize meal products were 30 to 40 percent above their year earlier levels. Expectations of a reduced harvest as well as a depreciation of the local currency further underpinned the price increases.

Reduced harvest expected to worsen food insecurity

Food security conditions are anticipated to worsen in 2019, particularly in Southern and Western provinces where the anticipated reduced harvests are likely to severely constrain households' food availability. In addition, the current high cereal prices are impeding access to market supplies.

Conditions in 2018 had already deteriorated compared to the previous year on account of the lower cereal output, which pushed an estimated 954 000 people into IPC Phase 3: "Crisis".

Changing lives one step at a time: Samson Nyendwa

Country Manager Corteva Agriscience Zambia

When Samson Nyendwa of Corteva Agriscience, Zambia talks about his work, it's clear that it's more than just a job for him. With passion and enthusiasm, the Country Manager Corteva Agriscience, Zambia operates one of the country's largest and fastest-growing Seed and Crop protection company and says the company believes in a "Farming, food and you" to get people well, change lives, make farming profitable and have fun along the way.

Briefly discuss Mr. Samson Nyendwa (Personal and Professional life to your current position)

It has been a never-ending cycle of fast growth, positivity and change. I have worked for the past 24 years and my work experience cuts across financial reporting, Taxation, Budgeting, Cash flow management and control, Pricing, Cost of Sales control and management, Inventory management, Credit control and customer appraisal, Sales and Marketing, Internal system control and design, HR management, Risk management and corporate Governance. Currently I work as the country manager for Corteva Agriscience Zambia.

.How would you describe your time as the country manager Corteva Agriscience Zambia, what drives you?

It is an exciting opportunity and involving as you have to be hands on every day to inspire results and progress in the company. The desire to achieve more, get better and my passion for agriculture drives me to deliver value in the sector.

Other than Corteva Agriscience, have you worked in any other agriculture related field before?

I haven't worked in Agriculture related field before but I have been highly involved in farming activities right from our family farm, this nurtured my passion for agriculture from an early age

Why Corteva?

Its global presence, core values and immense investment in continuous research makes it an ideal place to work; because they are committed to contribute to food security for the current and the generations to come.

President of the republic of Zambia at Pioneer's Demo Farm with Country Manager Corteva Agriscience

What are some of the key attributes you need to perform in your position?
One should be focused, committed to the core; you should aspire to get better and devise ways to make that happen. You should be able to execute your plans and those of the company without any compromise.

What is your vision for the Agricultural sector in Zambia?
Improve hybrid adoption rate from ~64% to 100%. Use of hybrid seeds not only increases yields but the cuts on the costs of production and resistance to pests and diseases.

What do you want to achieve for the Corteva brand in Zambian Market?
It is my desire to Make Corteva top seed and Crop Protection brand in Zambia. This will be achieved through intense marketing and advertising activities, farming demonstrations and continuous interaction with farmers. This way we will grow the Corteva Agriscience Market share to more than 40%.

With the demands that comes with your position, this seems like a hard task; what keeps you focused in delivering value to Corteva customers and contributing towards food security and safety in Zambia?
Setting my priorities straight enables me to perform my tasks on time; having a good and dedicated team helps me to deliver my duties diligently through leveraging the abilities of each any every team member to achieve the overall vision of the company.

How would you describe the Corteva team in Zambia?
This is a team ready to work; they take on challenges every day and commit to solving them. Such a great team. As their leader, what is required to inspire them to their full potential? It is necessary to have a good performance incentive and recognition award system in place because such programs inspire employees.

Acre flex is a notable program which is helping Zambian farmers reduce 'the cost of agricultural inputs to increase their margins, what other programs does Corteva Agriscience in Zambia have which are geared towards increasing revenue for the Zambian farmers and making farming profitable and sustainable?
Our commitment to shifting farmers' mind-set to embrace hybrid technology and continuous training programs for farmers in the best agricultural practices under a program dumbed Sales effectiveness are some of the programs aimed at delivering more value to Zambian farmers.

Where do you project the most growth in Agriculture sector in Zambia?
There is high probability of growth in agricultural activities and subsequently production in the Northern and North-western Provinces; what will contribute to this growth? Abundant land and God rainfall with low hybridization rate.

To Page 16

Samson Nyendwa and Anampiu Githinji. from Corteva Agriscience and Minister of Agriculture , Zambia

What is the biggest challenge Agricultural sector in Zambia faces, how do you inspire your team to approach this in a solution-oriented kind of a way?
Low yields and commodity price. I encourage my team to educate farmers with knowledge on how to increase yields to compensate low commodity prices. Additionally, we encourage them to use of crop protection to reduce labour cost and increase their revenue in return.

It is projected that maize production might decline by 16% this year, what are you doing at Corteva to contribute to an increase in yields in the future amid drought challenges?
We strive to conduct farmer education coupled with research and development programs on climate smart agriculture in order to mitigate the risks associated with climate change.

As a professional in the agricultural field, what can you tell farmers in order for them to realize more value from farming?
Farming is business and Farmers need not to only farm but also learn the agribusiness aspect of farming. Additionally, adopt good farming methods and use certified Corteva Seed to increase yields and realize more value.

What is your work ethic and how does that affect the organizational culture? Honesty, walking faultlessly and speaking the truth, moral uprightness, respect for others, integrity, discipline, commitment and hard work. Doing Nothing out of Contentiousness or egotism, considering others superior, looking out not only for own interest but also for the interest of others, in embracing diversity and collaboration take the lead. This has helped me to create a unit of purpose.

What are some of the decisions you've made in the past and turned out to be mistakes, what were the main lessons from that experience?
At some point in my career I hired based on high academic qualifications but less experience. This kind of hiring proved disastrous. The lesson I learnt was in the future I should hire for attitude and train for skill.

Describe your ordinary day?
My weekdays are filled with a lot of office work, meetings and field work.

How is your personal time?
Iam Married with 4 children. Weekends are meant for my family, evangelizing and worshiping God.

Best piece of advice you've ever received?
That a man is a combination of character and heart. I try to lead with love, and character is important to me. As long as I stick to my ethics and my moral compass, who I am as a person and what I stand for, and I show my authentic self, lead with heart, and practice love and care, then whoever comes into my world is either influenced by that, or they move on. So be it.

Add your personal comments about the agricultural sector in Zambia, what do you feel the Zambian farmers and the government should do to improve the sector? How do you envision agriculture in Zambia?
The Zambian farmers must adopt hybrid seed and improved agricultural practices such as good land preparation, use of herbicides to reduce labour cost, insecticides to control pastes like Fall Army Worm (FAW) and apply good nutrition (Fertilizers). In addition, improve plant population to increase yield. On the other hand the Government must provide enabling environment of doing business in the Agriculture industry and stop interfering in input supply, setting of commodity prices, and export of grain and allow supply and demand to play. Government through Food Reserve Agency (FRA) to buy strategic reserves at market prices.

President of the republic of Zambia & Country Manager Corteva Agriscience Samson Nyendwa

AGCO's Zambia Crop Tour educates farmers in crop yield-boosting agronomy practices and techniques

AGCO, Your Agriculture Company (NYSE:AGCO) (www.AGCOcorp.com), a worldwide manufacturer and distributor of agricultural equipment, welcomed commercial and emerging farmers to its Zambia Crop Tour focused on educating growers in ways to enhance crop yield through improved management and agronomical practices at planting.
Staged at the AGCO Future Farm in Lusaka, VIP guest at the event was the Honourable Given Lubinda. Zambia's Minister of Justice, a farmer himself and a former Minister of Agriculture.

The highly-successful Crop Tour covered the complete science of maize production, from soil quality characteristics and tillage systems to factors affecting corn growth and development and the use of equipment and technology. Practical demonstrations were at the heart of the day-long event. Test plots of maize were planted at the AGCO Future Farm in December 2018 to enable Crop Tour visitors to evaluate how different approaches to agronomy, planting, equipment settings and usage affect growth and yield. A freshly-dug soil pit provided the focus for the discussion of soil quality and root systems.

A priority was to highlight the issues associated with the application when planting of too much down force and too little down force, plus the effects on seed planted at different depths and the consequences of poor seed singulation and over-population of seed. Visitors were able to see how uneven depth changes the distance for a seedling to exit the ground and reach sunlight. As a plant gets to the surface and beats its neighbour out of the ground, it will out compete its slower emerging neighbour for vital resources like sunlight, water and nutrients in the soil. We have found that plants emerging later will produce significantly less yield because of competition. Precise placement is similar: two plants being too close together create competition for vital resources. If they are both competing in a small area, they are not able to maximize their yield potential.

One of the test plots planted with a Massey Ferguson planter equipped with Delta Force, for example showed a 7% improvement in maize yield compared to planters equipped with spring or airbag downforce systems. In another trial, participants learned how important it is to avoid skips and doubles, terms used to describe planter mistakes resulting in misplaced seeds. If just 5% of seeds get skipped, growers will lose approximately 5% in yield. On the other hand, doubles typically do not cause dramatic yield loss, instead they represent wasted seeds. AGCO's Massey Ferguson planter equipped with Vset meters from Precision Planting achieved 99% seed singulation in the field trials.

Darren Goebel, AGCO Director - Global Agronomy and Farm Solutions based in the United States, who has been advising growers for 15 years, took a key role in the event. "The Crop Tour is one of AGCO's unique initiatives focused on demonstrating best-practice agronomy and aimed at finding ways to improve crop yields using new innovative agricultural machinery solutions. Our field demonstrations analyse how growers can better understand the role of agricultural equipment in optimizing crop production systems. We want to equip farmers with the very best knowledge in order that they can apply it to their own enterprises and get the most from their crops." "Farmers pay very close attention to the selection of hybrids, fertilizers and crop protection products," he adds. "This same scrutiny is required for tillage, planting and sprayers. Ensuring machinery does its job as precisely as possible has a big impact on yield outcome."

Massey Ferguson planters are available from two rows up to thirty six rows and working widths from 45cm up to 27.36m. Planting solutions include monitors, sensors and meters which can be retrofitted to existing equipment. These hi-tech precision systems contribute to better seed spacing, better depth control and better root systems, all of which increase yield potential.

Growing Soybeans101

Soybeans are a leguminous vegetable of the pea family that grows in tropical, subtropical and temperature climates. It was domesticated at around 11th century in northeast China. It is believed it might have been introduced to Africa in the 19th century by the Chinese traders along the east coast of Africa.

Soybean Variety Selection

Arguably the greatest tool in modern soybean farming is the ability to hand-select traits preferred in a soybean variety. Between disease and herbicide traits, maturity selection, and stand ability and shattering options, farmers can start the growing season with more control than ever over how the following months will go.

Later maturing soybean varieties tend to have higher yields, but the highest-yielding varieties aren't always the most profitable for growers. It's advisable to balance yield potential with other management costs.

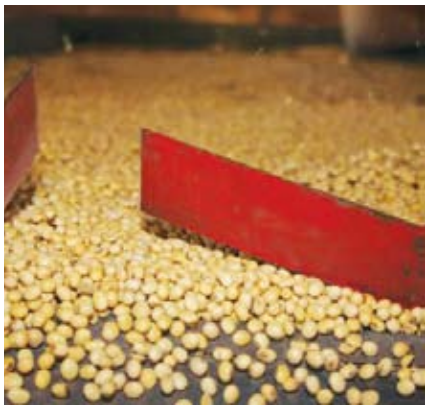
There are always new traits and varieties being tested by seed companies and recently agricultural companies have been teaming up to get the latest seed technology in African fields.

Disease and constraints

Diseases in Africa include rust, red leaf blotch, frog-eye leaf spot, bacterial pustule, bacterial blight, and soybean mosaic virus. Pests include pod (stink bugs) and foliage feeders, bean flies and nematodes.

Soybean rust, caused by the Phakopsora pachyrhizi fungus, attacks and destroys the leaves of the plant and can cause up to 60% yield loss. It is widespread throughout many parts of the world and is considered the most destructive of soybean foliar diseases.

Other problems include pod shattering that reduces seed



longevity, and production and distribution difficulties. Dual-purpose improved varieties of soybean have not reached many soybean growers to increase production. In many countries only a small market exists for soybean so many farmers are not willing to grow it, and not many people know how to process it or prepare meals with it.

Importance

it consists of more than 36% protein, 30% carbohydrates, and excellent amounts of dietary fiber, vitamins, and minerals. It also consists of 20% oil, which makes it the most important crop for producing edible oil.

Malnutrition, particularly protein deficiency, is prevalent in many parts of Africa as animal protein is too expensive for most populations. Many leguminous crops provide some protein, but soybean is the only available crop that provides an inexpensive and high quality source of protein comparable to meat, poultry and eggs.

A by-product from the oil production (soybean cake) is used as a high-protein animal feed in many countries. Soybean also improves soil fertility by adding nitrogen from the atmosphere. This is a major benefit in African farming systems, where soils have become exhausted by the need to produce more food for increasing populations, and where fertilizers are hardly available and are expensive for farmers.

Production

More than 216 million tons of soybean were produced worldwide in 2007, of which 1.5 million were in Africa. Africa imports nearly as much soybean as it produces. Africa exports about 20,000 tons annually.

Nigeria is the largest producer of soybean in sub-Saharan Africa (SSA), followed by South Africa. Low yields and a shortage of fertilizer constrain the ability of some countries to increase production. In Nigeria the haulms and post-processed pulp (soybean meal) serve as important sources of animal feed. A 30% annual growth in the poultry industry from 2003 to 2008 fuelled such a demand for soybean meal that an increase in imports was required.

"Soybean planting depth is another factor for setting yourself up for success. Soil temperature, moisture, and type of tillage all should be considered when choosing the depth you'll plant beans at. Iowa State Extension advises Iowa farmers to not plant soybeans deeper than 2 inches. In fact, 1 to 1.5 inches deep is best for Iowa."

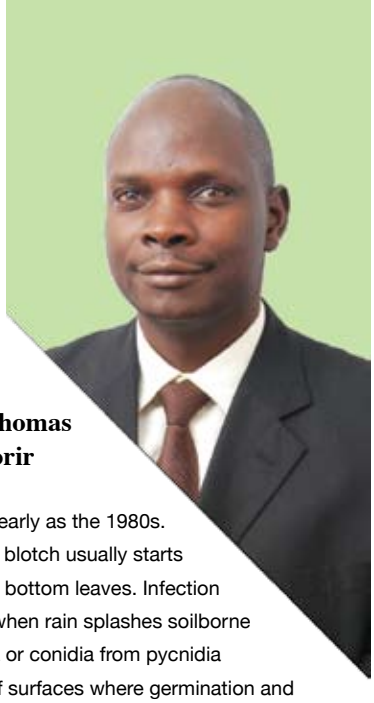
Commercial soybean production on large farms takes place in Zambia, Zimbabwe and South Africa. However, it is mostly cultivated by small-scale farmers in other parts of Africa where it is planted as a minor food crop among sorghum, maize, or cassava

Consumption

Worldwide consumption of soybean is nearly 11 million tons. Africa consumes about 618,000 tons annually, and uses another 4,800 tons for animal feed. Nigeria is the largest consumer of soybeans in SSA followed by Uganda.

In Africa dry soybean is used to produce milk substitutes and flour. The bean curd is fried and eaten as a snack or breakfast food. Mature beans are not easily digested and contain toxic compounds, which require soaking and prolonged cooking.

2 BASF Products For Better Management of Soybeans



Mr. Thomas Kipkorir

For many growers, soybeans require less input cost and the ability to forecast a more consistent yield, making soybeans a desirable crop when the farm economy is down. Growing soybeans multiple years in a row may not be as easy as it sounds. However, here are some tips to help make soybean-following-soybean rotation more successful.

Don't forget to fertilize. Fertilizing ahead of corn is a surprisingly common practice. If corn has not been in the rotation for more than 1 year, remember to fertilize for your soybean crop. Sixty bu/ac soybeans use almost 100 lbs. of DAP/TSP and 115 lbs. of Potash. Failing to apply the required levels of fertilizer will cause your soils to become depleted of nutrients.

Evaluate options for SCN. While every county growing soybeans has confirmed presence of soybean cyst nematode (SCN), populations are likely to be higher in soybean-following-soybean. Choose varieties that have the best resistance to the pest. Seed treatments can also be effective in protecting against the damage of SCN. But more importantly, pull representative soil samples for egg count to know the risk level.

Manage for seedling diseases. Many seedling diseases like Pythium and Phytophthora will overwinter in residue in our soils. Therefore, without crop rotation their presence is more likely and disease risk is higher. Utilizing fungicide seed treatments will help manage seedling diseases. Choosing varieties with higher resistance ratings to these diseases is also key, and avoid planting into cool, wet soils. Even though Sudden Death Syndrome (SDS) isn't typically observed until later in the season, it infects soybeans early in their life cycle.

Consider your weed control options. Planting the same crop for multiple years in a row can easily lead to utilizing the same herbicide sites-of-action (SOA) every year. With limited effective options available for control of water hemp, particularly in soybeans, you may end up relying on the same 1 or 2 SOA repeatedly. Be sure to utilize residual herbicides in a pre- and post-emergence herbicide application. Rotating SOA is highly recommended to help prevent further resistance. Consider planting soybeans with a different herbicide trait package on these acres as well as introducing a new SOA.

Scout for foliar diseases. As with seedling diseases, foliar diseases are more likely to be problematic in the absence of crop rotation. If you are in the northern part of the state where white mold exists be sure to choose varieties with good white mold tolerance, consider planting in wide (30") rows and apply fungicides closer to R1 than R3. Frogeye leaf spot may also be more prevalent in soybeans-following-soybeans. Choose resistant varieties and apply fungicides that are effective in controlling this pathogen, as there has been documented resistance to strobilurin fungicides.

Soybean Diseases (use Rex® Duo or Opera®)

Red Leaf Blotch (*Pyrenochaeta glycines*)
Lesions start as pin-point size dark red spots on the leaves and progress to other parts of the plant (stems, branches, petioles and pods). The spots which develop into the lesions are 5 mm in diameter and appear bright red on the bottom side of the leaf. If not controlled, the lesions coalesce and cover the whole leaf. Heavily infected leaves deteriorate and drop prematurely, leading to significant yield reduction. The disease presently occurs in only a few African countries (mainly Southern Africa) on soybeans and awild legume, Neonotonia wightii.Yield losses of up to 50% in soybeans have been documented in Zambia and Zimbabwe where it has been endemic from as early as the 1980s. Red leaf blotch usually starts from the bottom leaves. Infection occurs when rain splashes soilborne sclerotia or conidia from pycnidia onto leaf surfaces where germination and infection occur.

Rust (*Phakopsora pachyrhizi*)
symptoms start as water-soaked lesions, which then develop into a brownish colour with pustules on the bottom of the leaf, only visible with a magnifying lens. The most common symptoms are grey green, tan to dark brown or reddish-brown lesions which break through the texture of the leaves, particularly on the bottom, particularly on the bottom of the leaves. Lesions that tend to be angular, are restricted by leaf veins and reach 2-5 mm in diameter.

Rust epidemics are most severe during long periods of leaf wetness when the mean daily temperature is around 28° C. The infected leaves rapidly turn yellow and drop. Petioles and young stems can get infected as well. This is one of the most important diseases in soybeans. It is an aggressive disease capable of causing defoliation and significant yield loss of up to 90%. It progresses very fast and can lead to rapid loss of leaves and eventually yield. Fungicides have proven to be very effective in managing this disease and they remain the primary means of managing rust in soybeans.

As with every year, we will need a little help from Mother Nature to guarantee a successful season. It's important to control the things we can control and accept the things we cannot. Following these simple guidelines will provide you with the best opportunity for success on your acres of soybean-following-soybean.

Zambian Farmers

North Region - ZAMBIA

Zambeef Nampamba	Mark Elloit	marke@zambeef.co.zm
Cameo Estates	Poena vavik	poenavan@gmail.com
Silverlands Agriculture	Niel Conradie	neilc@silverlandszam.com
Silverlands Zambia	Chomba Kasonde/Colin Huddy	chombak@silverlandszam.com
Agrivision Mkushi	Derek Nicole	derek.nicolle@chobeagrivision.com
Agrivision Somawhe	Brian Jenkins	jenkinsb@somawhe.com
Tripple S. Olympic Global	Bruce Donaldson	bruce.donaldson@olympicmilling.com
Cena Farms	Elson Dicken	dickonelson1@gmail.com

Southern Province- ZAMBIA.

Evergreen Farm:	Mr. Mohamed	evergreen.poutry.farm@gmail.com
Mubuyu Farms:	Mr. Winwood	mubuyucrops@gmail.com
Amatheon Farming;	Mr. Minne	t.minne@amatheon-agri.com
Nankenya Farm:	Mr. Kirbs	kerrykirbs@gmail.com
MGM farms:	Mr. Moon	jm@mgmfarms.co.zm
Kapinga Farms:	Mr. Bryans	clint@krtzambia.com.
Delta farms:	Mr. Ngulube	stephen@makukudelta.com
Marula farms:	Mrs. Reeves	Mazleah@gmail.com

Central Province - ZAMBIA

FARM NAME	CONTACT PERSON	E-MAIL
ZRC	G. Rae	graham@zrczambia.com
Wangwa	P.Luyt	pluyt@wangwafarms.com
Zambeef	Brave	braves@zambeef.co.zm
Galaunia Farms	Julian	crops@gailinia.co.zm
Ellesdale	N.Dean	rndeanfarm@gmail.com

7 Tips To Make Cover Crops Pay

While many growers realize the long-term benefits of cover crops for their soil, justifying an extra $30 to $35 an acre may be difficult in the short term. How do you make cover crops pay without an immediate return on investment with a grain sale?

Speaking at the recent Conservation Cropping Seminar in Springfield, Illinois, Sarah Carlson, strategic initiatives director for Practical Farmers of Iowa Cooperators' Program, presented seven tips for making cover crops pay:

1. Be cautious about how much you spend on seed.
Cover crop seed can become expensive quickly, especially with more exotic choices like radishes or "fancy mixes." If you have never planted cover crops before, start with a cereal grain like rye, oats, wheat or even mustards.

Carlson recommends starting with oats into soybeans because the cereal grain effectively reduces nitrates in the soil and will be terminated by winter freezing.

2. Control herbicide costs.
Take advantage of cover crops in your herbicide program. Covers can help control weeds by suppressing winter annual weeds and reduce the need for a full herbicide program in the spring.

Practical Farmers of Iowa compared yields of soybean crops that followed an early termination (10 days prior to planting) with soybean yields that followed late termination (one day prior to planting) of cover crops. Carlson reported that late termination yielded the same or even a bit better than early termination. In addition, the growers were able to reduce herbicide program costs by taking advantage of a longer season of cover crop growth.

3. Avoid cover crop failures.
Beware of residual corn herbicide affecting the cover crop. Pre-emergence herbicides that persist in the environment may remain in the soil at the time of cover crop establishment in the fall. This can cause a stand failure.

Some herbicide rotational crop recommendations may not be labelled with cover crops in mind so do your research before planting. The relatively short time between cover crop planting and the onset of cool temperatures increases the risk of residual herbicide damage.

4. Avoid redundant expenses.
Carlson suggested growers consider removing one of their nitrogen applications, since cover crops can act as a nitrogen stabilizer and keep nutrients in the soil. A fall nitrogen application with cover crops saw a 42 percent reduction in nitrates leaching into drainage water. Spring nitrogen application with a cover crop saw a 50 percent reduction in leaching nitrates versus just the spring application.

5. Avoid corn yield drag.
If corn is in the crop rotation, keep your profits up by avoiding a yield drag. Be especially careful with nitrogen if you plant rye before corn. Cover crop residue will immobilize any available nitrogen during the decomposition process. Make sure your corn has enough nitrogen following the cover crop to compensate for tie-up. Apply sufficient nitrogen at planting or terminate your cover crop earlier.

Planting rye before soybeans is easier because soybeans fix their own nitrogen and won't be affected by immobilization. Additionally, beware of possible soil-borne disease pressure in corn seedlings caused by pathogens hosted in winter cover crops like rye.

6. Improve soybean yield.
The long-term soil health benefits provided by cover crops can increase soybean yields over time. Carlson showed that cover crops improved soybean yields in eight out of 29 trials. In 19 cases yields were neutral and in two cases cover crops caused a yield drag. Carlson explained that one of the reasons for the yield drag could have been the cover crop was too tall before it was terminated.

7. Feed cover crops to livestock.
Grazing cover crops in the fall or spring can reduce the need for stored forages or pasture for livestock. Haying or ensiling the cover crop for later feeding is also another way to gain additional revenue from the cover crop.

There are a lot of opportunities for improved stewardship and healthier soils when adopting cover crops. Follow Carlson's tips to take advantage of these benefits. The best way to determine if cover crops will make your farm profitable is to set up trials on your own operation.

Africa Can Feed Itself

Surrounded by tangled shrubland, Wisdom Mababe's farm in central Zambia seems incongruously neat. "In 2002, when I started, it was bare bush," he says. Each year since, he has bulldozed an area the size of 40 football pitches. Maize grows in ordered rows; cattle graze behind a fence. "The land, the water, it's in abundance," he gushes. Beyond his fields, the tall grass waves.

For most of its history, sub-Saharan Africa has been short of people, not land. In 2011 the World Bank estimated that the region had 200m hectares of suitable land that was not being used for crops—almost half of the world's total, and more than the cultivated area of America. That potential excites many. "Africa is the future breadbasket of the world," says Ephraim Nkonya of the International Food Policy Research Institute, a think-tank in Washington, DC.

Yet such aggregate figures may deceive. Most of Africa's spare land lies in just a few big countries, such as Sudan and the Democratic Republic of Congo. In densely populated places (with more than 100 people per square kilometre of farmland), average farm sizes have shrunk by a third since the 1970s. The continent is already a net importer of food; by 2050 it may have twice as many bellies to fill. In hotspots like central Nigeria, clashes between crop-growing farmers and herders have killed thousands. Doom-mongers see a larger crisis brewing.

From Mr Mababe's tranquil farm, such fears seem distant. Only a fifth of land in his district is being used, reckons the council chairman. A German company has bought 40,000 hectares of private land to grow maize and soya beans. The government is trying to lure other commercial outfits to designated "farm blocks" around a country twice as big as Germany, with fewer people than the Netherlands.

But even here, land is scarcer than it seems. The western half of the district is a national park. Locals complain that heavy-handed rangers on private game ranches stop them fishing and picking mushrooms. "This land we are in here, it's not ours," says one villager, "it's for people who have money." Human Rights Watch says that poor people in other districts are being evicted by commercial farms.

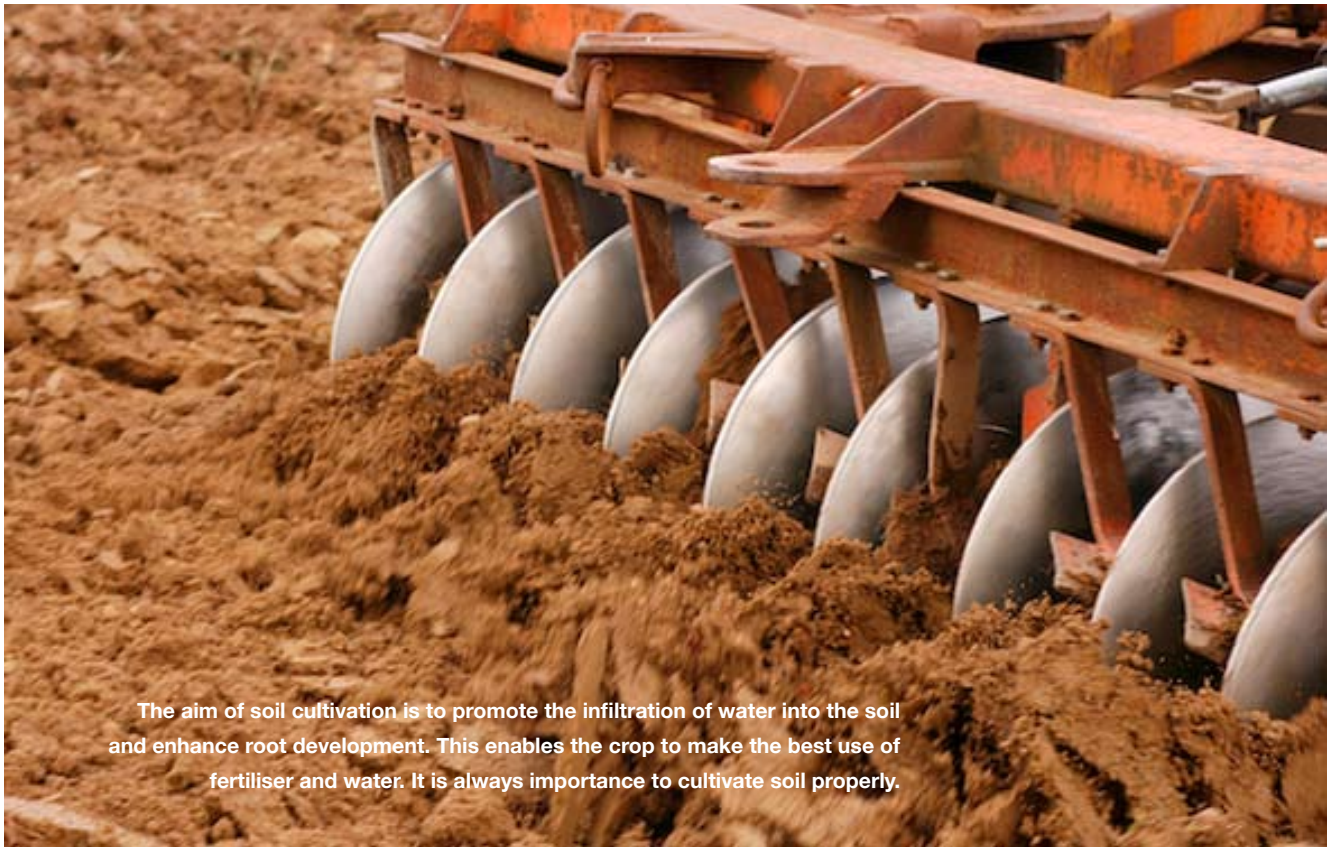
Despite talk of Africa's unused land, few places are truly empty. "On a map it is like that," says Mbumwae Nyambe, a paralegal with the Catholic Church. "But when you go in the field you find there are already people there." Uncultivated land is used for grazing, foraging or hunting. Occupiers are often surprised to hear themselves labelled as squatters. In northern Uganda people returning home after being displaced by war found their "empty" fields had been dished out among generals, tycoons and conservationists.

Perhaps a tenth of Africa's cultivated land is now in the hands of big business, which uses most of it for biofuels, timber and other non-food crops. As significant is the rise of mid-size farms (those between five and 100 hectares), often owned by civil servants in the cities. "They have the political connections," says Thomas Jayne of Michigan State University. Many are not serious farmers. Those who own more than 20 hectares often leave most of it idle.

Middling farms now cover more of Zambia than small ones. Meanwhile squeezed smallholders farm their shrinking plots too intensively, degrading already poor soils. This happens even in spacious countries because people are concentrated along roads and in towns. Africa has enough land why is it so hard to feed itself?

This presents a conundrum. Better seeds and fertiliser, as well as niftier techniques, could send Africa's farm yields soaring. But mechanised commercial farms do not provide as many jobs as subsistence agriculture. Most Africans still live in the countryside. That life there is so tough is why they are abandoning it faster than people on any other continent.

Crop Production:
Get the Most From Your Fertiliser



The aim of soil cultivation is to promote the infiltration of water into the soil and enhance root development. This enables the crop to make the best use of fertiliser and water. It is always importance to cultivate soil properly.

It is possible to increase profitability and reduce risk if you use fertiliser to best effect on your farm. Increasingly expensive input costs are always of concern to farmers and efficient fertilisers and fertilising practices will help them to cope with this challenge.

Fertiliser Needs

To calculate how much fertiliser you need, you will have to have a soil analysis done and to establish a target yield.

Soil analysis is crucial in fertiliser planning.

- Firstly, you have to follow the correct procedures in taking the samples.
- If the sample does not represent the specific field or production unit, the final result – or for that matter the profit – might not be positive.
- The interpretation of the analysis must be soil- and crop-specific.
- Analysis of the nitrogen in the soil can be a great help; if there is a surplus in the soil, it can be taken into account when determining fertiliser needs.
- It is extremely important to take nitrogen samples within soils that are more or less the same. Remember: soil properties influence nitrogen dynamics directly.
- Determining the target yield is as crucial as a

> *The harmful effects of high acidity on the development of an efficient root system decreases the availability of phosphorus and inhibits the efficient uptake and use of water and fertiliser.*

representative soil sample.
• These 2 factors will prevent under- or over-fertilisation which can be detrimental to profit.
• Over-fertilisation increases the input cost unnecessarily, and under-fertilisation decreases yield and therefore also income.

Liming

Do not neglect liming.
Experience has shown that liming is often regarded as being less important when finances are under pressure – often with catastrophic consequences. If conditions are extremely acidic, it could, from an economic point of view, be more beneficial to lime instead of increasing the fertiliser application rate.

The harmful effects of high acidity on the development of an efficient root system decreases the availability of phosphorus and inhibits the efficient uptake and use of water and fertiliser. Another risk is that herbicides used on acid soil usually do not work. The effect of micro-organisms in the soil is also suppressed in acid soils.

Biological Life In The Soil

• This aspect was neglected in the past.
• The value of micro-organisms in the soil should not be underestimated.
• The positive influence a well-balanced, healthy micro-organism population has on the availability of plant nutrients is well-documented.
• Consult an expert for advice.

Choosing A Product

More concentrated products can also help to reduce fertilisation costs, as you will save on transport costs. The downside is that, in general, concentrated products do not contain the same quantity of secondary elements as less concentrated ones. So, compare the pros and cons before making a decision.

Consider, too, using organic fertilisers such as manure and compost, in specific circumstances. The low concentration of plant nutrients in these products can result in higher transport costs, so in most cases inorganic fertilisers have to be combined with them to enrich them and balance the nutrients.

Application

How you apply fertiliser also has an effect on its efficiency. In general, administering fertilisers in a band is much more efficient than broadcasting.

Some nitrogen products can be broadcast on narrower rows.

Foliar sprays are also a way of rectifying any shortages later in the growing season and are especially useful in the case of micronutrients.

Precision Farming

This method ensures that the whole field is fertilised according to soil analysis and expected yield, without the fear of over- or under-fertilisation on specific sections.
• The availability of historical yields, as well as soil chemical and physical information, are all powerful tools in optimising fertilisation.
• Differential fertiliser application can save a lot of money, increase yield and reduce risk.
• If producers have access to the equipment, they are in a perfect position to optimise their fertilising practices.

Water Use

The availability of water in the soil is another important factor in the optimal use of fertilisers. If the crop in a specific field withers, the fertiliser is largely wasted.
Farmers will have to put in a great effort to determine beforehand how much water there is in each field. Fields that do not have enough water available initially should be considered too risky for planting. A better plan would be to plant less in order to cut down on the total risk and financial exposure.

Effective weed control and soil cultivation are two more ways to obtain optimal fertiliser reaction. Unfortunately, a lot of water and nutrients are consumed by weeds which means they are not available for the crop. The aim of soil cultivation is to promote the infiltration of water into the soil and enhance root development. This enables the crop to make the best use of fertiliser and water. It is always importance to cultivate soil properly.

Plant Sap Analysis

This has become a vital part of the nutritional management of crops and is an excellent way to evaluate your fertilisation programme. Samples, taken regularly, will enable farmers to identify any possible shortages in plenty of time. And this, in turn, will prevent not only yield losses caused by nutrient deficiencies but also the unnecessary application of fertiliser.

If these practices are followed, input costs and income can be optimised, risk can be reduced and profitability increased.

Mechanisation: Minimising Your Costs

Properly maintained, a good second-hand tractor will give its new owner years of service. Have big-ticket used machinery checked by someone competent to spot problems and ask the right questions. Once the tractor is yours make daily checks part of the routine operating procedure for the operator.

It is both difficult and unwise to cut corners if you have to plant high-quality seed and make sure they receive proper irrigation. But mechanisation costs are often unnecessarily high and looking at these again could result in lower input costs and higher profits.

- The profit in a cash crop venture is determined by crop yield and input costs.
- The higher the yield, the higher the profit for a specific input cost.
- The lower the input cost for a specific yield, the higher the profit.
- The farmer's efforts should therefore be focused on increasing yield and/or decreasing input costs.
- Increased yields can be achieved by using superior cultivars and optimum fertilisation and irrigation levels.

Remember that all these measures add to the input costs and that the extra yield should be worth more than the extra input cost to increase profit.

If the best possible cultivar is planted and fertilising is already at an optimum, profit can be maximised by lowering input costs. It should be obvious that savings should not be made on seed cost by buying cheaper, inferior cultivars or by decreased fertilisation levels. What remains is mechanisation cost. This article looks at ways to reduce mechanisation costs.

Mechanisation System

The farmer should consider whether all current operations are really necessary and consider reducing them by changing the overall mechanisation system. It may be best to get an expert to help you with this.

"IN ORDER TO MINIMISE FUEL COSTS, THE TRACTOR ENGINE SHOULD BE IN GOOD CONDITION. THIS MEANS SERIOUS ATTENTION TO THE MAINTENANCE AND SERVICING OF THAT TRACTOR. TRYING TO SAVE ON MAINTENANCE WILL ONLY BE OFFSET BY LOSSES RESULTING FROM HIGHER FUEL CONSUMPTION."

Correct Tractor/Implement Matching

Tractors have specific power capabilities and implements have specific draught requirements to function properly in different soils. It is important to match the right implement to the tractor to ensure the cheapest possible cost of the operation.

- A 50 kW tractor, for example, can pull a 4-share mouldboard plough at 5.9 km/h in sandy soil to plough 10 ha/day.
- If the farmer bought a 2-share mouldboard plough cheaply at an auction and used it behind the 50 kW tractor at the same speed, the operation would be limited to only 5 ha/day.
- The tractor would, therefore, have to work double the time to complete the same area.
- It will cost R 91/ha more to use the 2-share plough than to use the 4-share plough.
- If this "bargain plough" cost R10 000 less than the correct plough, the saving would be wiped out after ploughing 109 ha.
- After that, the farmer will be losing R 91/ha.

It is important to execute the operation at the highest possible speed that will result in the correct soil condition and will also be safe.

At that speed, the widest possible implement should be used, to make full use of the tractor's power capability (kW). This will lead to the highest possible work rate (ha/day) at the lowest possible cost per hectare.

Land Efficiency

Land efficiency is the actual time spent carrying out the operation, divided by the time that the operator is sitting on the tractor or attending to the tractor or the implement in the field, expressed as a percentage.

The more time spent on turning round or attending to tractor stoppages or implement breakages, the lower the land efficiency will become. This aspect depends on the competence of the tractor operator and the serviceability of tractor and implement.

- The operator should be well-trained and the maintenance of tractor and implement should be beyond question.
- The layout of the field also affects land efficiency in the sense that one needs the least possible number of turns.
- If fields are as long as possible along the contour, so that the tractor travels as far as possible before having to turn, it will result in the best possible land efficiency.
- High land efficiency leads to high work rates and may make the difference in whether or not you have to acquire a second tractor.

To Page 28

From Page 27

More tractors mean higher cost per hectare for the overall farming enterprise.

Time Management Of Tractor Operators

Tractor operators usually work 10-hour days. That does not mean they spend 10 hours actually carrying out cultivation operations.

Time is consumed by activities before the operator leaves for the field. Further time is spent on travelling to and from the field. During the day, the operator may get off the tractor for various reasons such as breakfast, lunch, calls of nature and social chats. The net effect of these time consumers is that 7 hours or less is spent on the operation.

The farmer should manage these aspects to minimise time wastage. Briefings at the start of the day should be short and clear, roads should be good to permit higher travelling speeds to the fields and operator discipline should be of a high standard to maximise the time spent on actual operations.

Good time management may also lead to fewer tractors and lower operating costs.

Operator Training

- Incompetent tractor operators lead to high tractor and implement maintenance costs and low field efficiency.
- It is important to have tractor operators trained to use the equipment properly and to carry out preventative maintenance.
- Operators should know which gears to use, and at which rpm settings, for the different operations.

Fuel Costs

- Fuel costs can make up as much as 50% of the total cost per hectare.
- Savings on fuel costs will therefore have the biggest impact on the cost of the operation.

In a monitored ripping operation, the cost in this specific scenario worked out at, for instance, R165.27/ha, of which fuel cost R82.64/ha. Using 10% less fuel, would save R8.26/ha.

In order to minimise fuel costs, the tractor engine should be in good condition. This means serious attention to the maintenance and servicing of that tractor. Trying to save on maintenance will only be offset by losses resulting from higher fuel consumption. Focus on:

- The condition of the air filter.
- The diesel pump setting, condition of the diesel injectors and the way the engine is used.

It is important to ensure the air filter is clean and does not offer too much resistance to the through flow of air. If there is resistance to air flow, not enough air gets to the cylinders and there is not enough oxygen to burn all the fuel. The result is incomplete combustion, which leads to loss of power and a waste of unburned fuel through the exhaust.

A faulty diesel pump may supply too much diesel, which also leads to the loss of unburned fuel through the exhaust. Faulty diesel injectors will not break down the diesel in small enough drops, which will in turn lead to incomplete combustion and loss of unburned fuel. Each tractor has a specific power and torque curve for the associated specific fuel consumption curve. It is most economical to operate the tractor in the area of maximum torque on the torque curve.

This means it is probably always more economical to select a higher gear at a lower rpm for an operation at a specific speed ("gear up, throttle down").

Depreciation Costs

- The second highest cost driver in the total cost of the operation is the depreciation on capital cost.
- This suggests the equipment should be acquired at the cheapest possible price.

A stern warning here: a bargain may turn out to be a nightmare of higher repair and maintenance costs. Farmers are advised to buy tractors from reputable suppliers, who will provide good maintenance and service back-up.

Maintenance Costs

- Repair and maintenance costs make up about 13% of total operational costs.
- Don't try to cut corners to save.
- Meticulous preventative maintenance will do the saving for you.

By making sure the air filter is clean; changing oil, oil filters and diesel filters at the right time; and by regular lubrication, the farmer will prevent expensive breakdowns in the long term.

Labour Costs

- Labour makes up about 7% of operating costs.
- This is also not an aspect that should be targeted for savings.

A low-paid, incompetent tractor operator will eventually cost more than the saving on the labour cost because of higher increases in repair and maintenance costs and also on fuel costs.

Amiran

Our Knowledge, Your Success.

Arysta LifeScience

Innovation. Agility. Results.

SIGMA COMBI SC

No.1 MAIZE HERBICIDE

Active Ingredient: 250 g/L Acetochlor + 250 g/L Atrazine

- For early weed control
- Effective against both broad leafed and grass weeds in maize and sugarcane
- Prolonged weed control

Old Airport North Rd. - Embakasi
P.O.Box 30327 - 00100, Nairobi, Kenya.
Tel: +254 (0) 719 095 000
Email: pr@amirankenya.com

Call us free of charge on:
0800 720720

A member of the Balton Group of Companies

@amiran_kenya Amiran K Ltd www.amirankenya.com

Climate Change Emerging the Most Serious Threat to Agriculture: Borrowing a leaf from Zimbabwe

In Zimbabwe, climate change is emerging as the most serious threat to agriculture. To address the challenge, a leading farmers' organisation has teamed up with a private sector telecoms company to provide bundled climate-smart agriculture products and services to farmers.

The mobile technology solution, which delivers weather-based insurance, real-time, location-based weather information and farming tips via cell phone, is helping producers to combat the effects of climate change.

Zimbabwe is largely driven by an agrarian economy, with more than 80% of rural households depending on agriculture for their livelihoods. The country's one rainfall season per year is critical for more than 70% of smallholders who depend on it. But rainfall patterns have become more erratic, uncertain and unpredictable, placing a strain on smallholder production systems. Smallholder have limited access to existing adaptation solutions or weather information that could help them cope with acute weather patterns and climate change, which in turn affects food security, nutrition and household incomes.

Two particular challenges currently prevent farmers from taking advantage of climate-smart agriculture solutions – limited uptake of available agricultural insurance services to mitigate against shocks, and poor access to real-time weather information to enable timely and effective decision-making.

Addressing low take-up rates

To date, limited numbers of smallholder farmers have taken up weather-based insurance (WBI) due to lack of awareness, understanding and affordability, poor commercial sustainability due to the low number of clients, and lack of a regulatory framework in Zimbabwe. Other obstacles to adoption of digital Weather Information Services (WIS) include lack of knowledge of information and communication technologies (ICTs), limited use of cell phones and other ICT gadgets as a source of climate information, and weak capacity to interpret climate information. Compounding the difficulties are poor alignment of information from different sources, insufficient measuring instruments to enable farmers to capture field data, inadequate digital content on indigenous knowledge systems, and lack of proper support structures and facilities.

The Zimbabwe Farmers Union (ZFU) has been helping its members' combat climate change for nearly a decade. Since 2009, this predominantly smallholder-based organisation has implemented climate-smart agriculture projects, especially targeting upscaling of adoption among small-scale farmers.

More recently, ZFU has been working with Econet Wireless Zimbabwe to promote weather-based insurance and dissemination of farming tips and alerts through the ZFU EcoFarmer Combo programme. This ICT-based bundled service offers weather-based insurance, real-time, location-based weather information, and farming tips and funeral insurance cover at a cost of €1 per month, deducted from farmers' mobile money wallets (EcoCash) on their cell phones.

ZFU and Econet Wireless Zimbabwe's approach involves setting up multi-stakeholder partnerships and alliances to achieve large volumes, scale and sustainability. Working with ZFU, the private sector (Econet) is at the centre of the delivery mechanism for the bundled ICT solutions, ensuring sustainability.

Awareness-raising for farmer

Strong focus of the ZFU EcoFarmer Combo is farmer digital registration using cell phones, and since the solutions are relatively new to most smallholders, a key thrust of the approach is awareness-raising and mobilisation, through marketing and promotion. ZFU plays a critical role in ensuring uptake and long-term sustainability of the bundled

solution, leveraging its existing membership, database and sub-national structures.

Experience in running the programme shows the need for further extension support to farmers when they receive weather information, SMS tips and alerts on livestock and maize on their cell phones. To achieve this, the project is facilitating monthly subscriptions to the Combo for 300 extension workers living in the 100 target wards, paying €1 per month on their behalf. This ensures that extension staff receive the same tips as those sent to the farmers. The extension workers each convene farmer meetings where they explain to the farmers the practical implications on crops and livestock production of the weather information, tips and alerts received.

Generally, in Zimbabwe, an extension worker can reach out to 50-100 farmers during a single formal training meeting. So there is potential for the 300 extension workers to help 15,000 to 30,000 farmers increase productivity through CSA advice, assuming each holds at least one meeting.

The success and sustainability of the ZFU EcoFarmer Combo is based on a business model that creates a win-win situation for all participants. It is attractive to the private sector player, Econet Wireless, and farmers benefit through climate change awareness creation and resilience building. An important component planned for the future is to introduce mitigation measures, such as farmer training in woodlot management, and promotion of clean energy solutions, including bio digesters and solar technologies.

This article was created through a CTA-led process to document and share actionable knowledge on 'what works' for ACP agriculture. It capitalises on the insights, lessons and experiences of practitioners to inform and guide the implementation of agriculture for development projects.

Reduce Risks to the Maize Crop with Cowpeas

To sustain your soils and fields rotate your crops intelligently; planting cowpea is a useful alternative in a rotation.

Cowpea is an important grain legume in sub-Saharan Africa and a source of cheap plant protein in the edible dry grains. Used as a vegetable, the young leaves, pods and green seeds are also edible.

It provides nutritious fodder for livestock and the fallen cowpea residues and roots contribute to soil fertility.

Legumes are often used as a rotation crop because of their nitrogen fixing ability. The cowpea can take 80% of its nitrogen needs from the atmosphere; nitrogen which ends up in the soil where it acts as a cost-free fertiliser for the farmer. When root nodules and leaf litter decay, residual nitrogen improves the soil. Farmers who plant cowpea can do with very little fertiliser for optimum production.

Cowpea is a winning rotation crop; improving the soil, and providing a good source of nutrition for people and animals.

Cowpea is tough enough to handle marginal soils.

From Mono-Culture To Diversity

Maize cultivation is important in the southern region, but there are factors beyond the farmer's control that put some risk into farming maize. The weather plays a critical role in dryland maize production and weather is a fickle partner, as farmers have often been reminded.

There are other threats like the recent fall armyworm invasion, which can bankrupt farmers through crop failure.
The maize price can be an equally untrustworthy player, with drastic drops in price when harvest is higher than usual. These problems are linked to mono-culture known to be risky and linked to crop wipe-out and supply excesses. Countries like Gambia and Senegal, have suffered the risks inherent to the groundnut mono-culture regime. It's not just maize that's the problem.

Experience and observation teaches farmers ways to counter these risks. One of the most obvious solutions is to diversify. The introduction of indigenous crops adapted to the environment is a diversification no-brainer. They can be produced with minimum input for maximum output.

As a hardy and drought-tolerant crop, cowpea is ideal for this niche. In circumstances where other cereals may fail, cowpea can maintain its grain yield.

When there is too much rain, it puts more growth into the canopy and delays flowering, producing a bigger fodder yield and about a 60% grain yield, depending on the type, or variety.

There are some high-yielding cowpea varieties with yield potential varying from 2t to 4t of grain, and 15t to 20t of fodder, per hectare, depending on the management.

Rotate maize with cowpea for improved soils and strong demand in the human and animal markets.

The Disastrously Destructive Fall Army Worm (FAW)

By Ruth Vaughan

Fall Army Worm (FAW), is a new emerging invasive pest that is wreaking havoc in Kenya and many other parts of the world, causing huge losses to farmers and impacting on food security. FAW or Spodoptera frugiperda, is a caterpillar native to tropical and sub-tropical regions of the Americas. FAW was first detected in West and Central Africa early in 2016 and quickly spread across Sub-Saharan Africa. It got to Kenya early 2017. In July 2018 it was confirmed in India and early this year it reached parts of China. It has even been picked up as a quarantine pest on plant material entering the EU (exporters be aware).

Fall army worm Life cycle: FAW eggs are usually tucked away under the leaves and the larvae hidden in leaf whorls

The larvae of the FAW feeds on many different crops, but particularly affects our maize, sorghum and sugar cane farmers, damaging the crop stand and substantially reducing yields. In the Americas, farmers have been dealing with FAW for centuries and much research has been done on this insect. We can learn a great deal from their previous knowledge.

In Kenya, as a new and emerging pest, we were caught unaware. Not only did we not know how to identify and deal with it, but, as a new species, the natural enemies of the FAW had not built up. So, the first outbreak of the FAW was disastrous.

By understanding the nature and lifecycle of the pest, we can formulate better, more effective ways to deal with it.

• The FAW adult moth is very mobile! Adult moths can fly 100 km in a night, and over 1000 km in a lifetime. It can spread very fast, over

2000 km in a mere few months!

• The FAW is polyphagous, which means that it can feed and reproduce on many different crops and plant species. It can spread across many different cropping systems and migration is not limited by diet.

• FAW is a prolific breeder! The lifecycle is about 30 days in warm weather, and the adult female lays about 100-200 eggs per egg mass, and 1500 – 2000 eggs in her lifetime, 12 generation a year.

• Unlike our native army worm and locusts, that hang around in gregarious groups and are easier to control on a county level, FAW populations are diffuse and hard to hit. They spread out, with thin population cover over wide areas/crop types. This makes them very difficult to eradicate or control on a large scale. Thus, control must be done at farm level.

The Fall Armyworm (FAW) Lifecycle

Day 1-3 – the females lay egg clusters containing 100-200 dome shaped eggs underneath the leaves close to the stem junction at the base on the plant. If FAW populations are high they will lay eggs higher up the plant and on surrounding vegetation. The eggs are protected by a layer of scales between the eggs and over the egg mass.

3-5 days after the eggs are laid, the larvae emerge, begin feeding and migrate to the whorl (in maize). Young larvae can spin silken threads that catch the wind and transport them to new plants (ballooning, which can create 100% infestation in fields). The very young larvae only partially eat through the leaf creating transparent feeding windows in the leaves. They are greenish with a black head. As they get bigger, they can eat through the leaves, growing points and protective leaf bracts on the cobs, causing major destruction. Mature larvae are 3-4 cm long and vary in colour from light brown to green and black, they have a light-coloured inverted Y on their faces.

After 14-22 days the larvae mature and drop to the ground to pupate, forming a reddish-brown oval cocoon, 2-3 cm in length, that is hard to see. In soft soil they can burrow down 2-8 cm, in hard soil they can hide under leaf debris spinning a webbed cocoon.

8-9 days later the adult moths emerge. Their bodies are about 2.5 cm long, with a wingspan of 3-4 cm. They are mottled brown/ grey and difficult to spot. Adult moths are nocturnal and most active during warm humid evenings. The female starts laying eggs 3-4 days after emerging and can continue laying eggs for up to21 days, although adult life duration is 10 days.

The length of the FAW life cycle is affected by temperature, diet and humidity. Rising temperatures speed up the life cycle, cooler temperatures slow it down. Optimal temperatures are 28C for the

larvae. In Kenya the life cycle is about 30 days, which means we can have 12 generations in a year! Frost kills the FAW, rain can wash the young larvae off the leaves and windy conditions will aid dispersal of the moths.

To spray or not to spray?

Spraying may not be economically viable due to high cost of sprays and low farm gate returns. FAW is an emerging pest, so finding approved registered pesticides is always a challenge. KALRO have approved a shortlist of effective pesticides. Maize is a food staple and risks of exceeding MRL's in the crop are high, affecting food safety. The FAW are difficult to kill with contact pesticides (eggs

Cropnuts' Agronomists George (left) and David (right) doing a routine field scouting in a wheat field in Timau, Kenya

tucked away under the leaves, larvae hidden in leaf whorls, pupae are encased and below ground and adults are nocturnal). The most important reason not to spray (especially small-scale farmers!), is that the pesticides are more likely to kill emerging natural enemies of FAW, than they are the FAW itself, resulting in continued high pressure from this new pest. Spraying is more effective at the early vegetative stage, where the FAW can eat the growing tip and kill the plant, and at silking – where FAW can affect reproduction and cob quality. Spray in the evening or early morning when the FAW are active. Target spray into the whorls.

Early Warning and Scouting.
Early detection of FAW is very important. Pheromone traps are readily available, and capture the male moths, well before the damage is seen in the crops. There are several Early Warning Systems, that collect and share information. (CABI, FAO, KALRO). Talk to your local extension worker. Search and install the FAO-FAMEWS app on your phone.

Scouting your crops is very important. Eggs tend to be laid on plants near grassed areas or on the edges of large fields, and hatch after three days. Reduce the scouting frequency and concentrate more often on these areas. FAW, eggs and larvae, are often confused with native caterpillars. Get to know the pest and download the poster off CABI or the FAO website.

Biological control, cultural control and habitat management
Even though it is a new, emerging pest, FAW has many natural enemies in Kenya: Predators, birds, bats, ants, earwigs, beetles, kill and feed off FAW. Parasitoids, tiny wasps that lay eggs in the eggs, larvae & pupae. Pathogens infect and kill the FAW include bacteria (BTs), viruses, fungi (Beauveria spp) and nematodes. Farmers would be well advised to be extra observant in the field so as to spot, conserve and promote the natural enemies. The cumulative effect of natural enemies can be very effective in FAW control and much longer lasting & more environmentally sound.

Plant early at recommended time taking advantage of the first effective rains. FAW populations build up during the season. Critical crop stages for maize are early vegetative growth and silking. Avoid late planting and choose a fast maturing variety to be ahead of the crowd.

Improved crop health will very much reduce the impact of FAW on yields. Good quality seed, appropriate plant spacing, good soil management and crop nutrition will boost vigour and reduce yield losses.

Hand picking and destroying the eggs masses and larvae is very effective in small areas. Reducing immediate crop damage and appearance of 1500-2000 more larvae in a month! Chickens are great at finding the pupae and eating any larvae that fall off the plants. Don't waste the larvae, an effective age-old natural remedy for caterpillar infestations is to collect the larvae, stress them for a few hours, and grind them up with water and spray on the crop, to promote the spread of natural pathogens.

Remove volunteer plants and infested crop residues.
Eliminate grassy (and other) weeds in and around the crop, these can perpetuate high populations of FAW.

Intercropping with legumes will repel and confuse the adult female and deter her from laying eggs on the crop, AND benefit with nitrogen fixation to produce a more vigorous plant, as well as providing alternative food source for natural enemies. Crop rotation with non-grass crops such as cassava will reduce populations, but they can quickly build up.

Conservation agriculture: no till, reduced till, residue retention, crop rotation and cover cropping all increase biodiversity and numbers of natural enemies, as well as improving soil health, water infiltration and water storage of soils, to mitigate damage and yield losses.

Habitat management using a push plant that repels FAW e.g. Desmodium inside the maize plot, with a pull crop (Napier or Brachiaria) that attracts FAW on the outside, can be effective for small plots. Always remember to scout the pull crops to make sure they are not breeding up the pest!

Remember that the best way to deal with any new, emerging pests it to be prepared. Good soil health, increased biodiversity, promotion of natural enemies, Integrated Pest Management (IPM) and Good Agricultural Practices (GAP) are paramount in cushioning the negative effects of these outbreaks.

For more information on Fall army worm control or to join our agronomy newsletter list please contact us on support@cropnuts.com.

Ruth Vaughan is the Technical Director at Crop Nutrition Laboratory Services Ltd. (CROPNUTS). Ruth is also a contributing author to Kenya's leading horticulture magazines such as the HortFresh Journal, HortiNews and Floriculture. Ruth is a great believer in soil health, organic matter, biochar and carbon sequestration as a way to alleviate climate change and increase food security. Loves visiting farmers and seeing all the different farming methods.

> From experience we know that not all actions or tasks can receive attention at the same time. A decision must be made as to which actions or tasks need attention most urgently. Tasks that impact income and/or expenditure, or those tasks that affect your employees, should be regarded as important.

Once plans have been finalised, make sure you implement them effectively.

Implementing planned tasks aids your business objectives. Thus, it would be foolish to plan carefully and then neglect the implementation. Implementation is specifically carried out by the human resources (the employees) of the business, who should thus be activated to do the work efficiently.

For implementation to be truly successful, it is required of a manager to be committed to his other management activities namely leadership, communicating, motivating, delegating, coordinating, making decisions and maintaining discipline.

Practical Implications

Strong internal leadership from management is required to successfully drive the process of implementation, and better methods of executing plans must be sought continuously. Managers must take the lead in the implementation process, not by doing everything themselves but by activating their employees. To activate employees, they need to be motivated, and motivation is a management role. During the implementation process the necessary guidance needs to be provided by management as it helps to activate people.

Clear communication is of the utmost importance if the implementation of plans is to be successfully handled. Instructions must be clear and precise. Everybody involved with

a specific implementation process must know who should do what, when and at what standard, and in which direction they are headed.

Delegation is important during implementation. The manager cannot do everything himself. The extent of delegation will mostly be determined by the size of the business and/or the specific task. It will also depend on whether management wants to be more actively involved in the process of implementation, or whether they will be on the side-line acting in an advisory management capacity. It is important to pay attention to proper coordination between sections. The gears of the business must run smoothly if the implementation is to be successful. Should co-ordination be hampered it will waste time and, therefore, money.

Remember: Income – expenditure = profit or loss

For example, should dosing remedies for your calves not be available on the Monday morning when they are supposed to be administered, implementation of the task will obviously be delayed.
In practice, management is quite often required to make decisions urgently in order to keep the implementation running smoothly.
Should a tractor present with a flat tyre during harvesting, how will the challenge be addressed?

Farm Management: Implement Your Plans Properly

Maintaining employee discipline at all times is of the utmost importance to ensure proper implementation. Is work being done below the acceptable standard? If ill-discipline is not addressed in a proper manner it can seriously jeopardise the implementation of actions.

How To Prioritise

In practice, there will always be more than one task to attend to. Remember that unforeseen actions may occur too – such as a veld fire, or your prize bull becoming stuck in the mud in a veld.
From experience we know that not all actions or tasks can receive attention at the same time. A decision must be made as to which actions or tasks need attention most urgently. Tasks that impact income and/or expenditure, or those tasks that affect your employees, should be regarded as important.

Tasks can be classified as follows:
- High importance/high urgency
- High importance/low urgency
- Low importance/high urgency
- Low importance/low urgency

Tasks that are high in importance as well as urgency are those tasks that have an impact on your income – if they are performed immediately they will likely increase your income and if they are not handled immediately they may well jeopardise your income. Or it could be work that has an impact on expenditure – if not done immediately it will increase expenditure, and limited time is available to deal with the specific task.

Urgency relates to the time you have available to get a specific task done – it must either be done today, or it can be done later. If a mechanical failure is experienced while you are harvesting a crop, repairing the machinery will be treated as a task of high importance/high urgency – thus it is high priority. The same would be true if one of your cows experienced difficulty calving, especially if it is one of your stud cows.

On the other hand, filing to be done in the office would be treated as a task of low importance/low urgency, or low priority, because it could be done at any time.

It is important to be thorough regarding the implementation of all plans to the required standards in order to achieve all of your business objectives.

Farm Management: Controlling Input Costs

Almost everything we buy today is affected by rising prices. Many of them we can do nothing about, but the question we must ask ourselves is, "What can I do on my farm to control increasing costs?"

Input (production) costs are a fact of life for every farmer, so the best course of action is to see what can be done to minimise their impact on your farming operations and ultimately on the bottom line (profits).

In this article I've divided input costs into 2 sections:

- Costs you cannot control.
- Costs you can control.

Every farm will have its own challenges and ways to handle them, but a few general pointers should also help.

Under the heading of "fuel", I talk about servicing and maintenance. A good operator on the right machine, that is well-maintained and serviced, doing the right job, is an investment. The opposite to that is, of course, a cost.

COSTS YOU CANNOT CONTROL

You can do nothing about the price of fuel, electricity, fertiliser, equipment and so on, but you can take steps to help minimise the effect of these input costs on the overall production costs of your farm.

The key is to accept that they are a part of your farming life, so let's see what can be done to reduce their impact on your farming operations. We'll take 2 of your major costs – fuel and fertiliser – and see what can be done to reduce their negative impact.

Fuel

Plan travel more carefully, and try to combine trips where possible.

Check that:

- Engines are properly tuned and not burning extra fuel.
- Diesel injectors are tested, cleaned and set for optimum operation.
- Filters are checked and cleaned regularly.
- Vehicles, tractors and equipment are serviced, maintained and kept clean for maximum efficiency.
- Every driver has been trained to drive responsibly to save fuel, and is encouraged to do so; perhaps by a bonus incentive system based on fuel saved and/or repair costs reduced.
- See what discounts/payment terms you can arrange if you buy fuel in bulk.

Fertiliser

If you have not already done so, now is the time to change your thinking from feeding the plant to feeding the soil first. It is fundamental for a good farmer to get the correct nutrient balances in the soil for the roots to take up what is needed and thus feed the plant. Rather spend more money on good manure/compost or plant cover crops that will nourish the soil than on expensive fertiliser.

Have you had a reliable soil analysis done? Soil analysis done by a reputable firm will be the foundation for your plant-feeding programme; make sure it is the best. You don't want to waste fertiliser on over-application.

- If you have to use fertiliser, consider using organic fertilisers and, if you can afford it, try to buy stocks in advance to get the best prices.
- Make sure fertiliser bags are handled and stored properly to avoid breakages and wastage. Every grain of fertiliser costs money!
- Check that your fertiliser spreader and other equipment are set correctly and operate as they should.
- If you are applying fertiliser by hand, make sure the people concerned are trained to spread the fertiliser properly and carefully.
- Are application rates correct? Too much wastes money; too little, the crop suffers.

COSTS YOU CAN CONTROL

Some costs are easier to control than others. Start with your expenditure budget and look at farm expenses since the start of the financial year. Remember, you'll have a record of what you expected to spend and what you actually spent.

This is one of those times when you'll be glad you kept up with your admin work, because now you need information to help make important decisions. Identify the costs that have gone over budget and write down the serious ones that took a really big bite out of your original budget.

With your list of serious budget increases in front of you, go through each one carefully and see why it was so far over budget. That will help you to decide if you can do something about it or not.

Fuel and fertiliser will be 2 of them and we've already discussed a few ideas on how to handle them. In business, some of the other costs which tend to get out of control are labour and machinery repairs.

Labour

If you employ only 2 or 3 people, this cost should not be too high, but if you have 10 or more people working for you, it becomes a very important farming expense.

Everybody has to pay staff according to the law so I'm not going to cover that here. I am concerned about how your staff is being used and the ability of each person to do his/her job effectively. These are areas where you can lose a lot of money through downtime and inefficiency. Take a close look at each person and consider the following:

- Is he/she the right person for the job?
- Is he/she properly trained to do the work?
- How is he/she doing the job?
- What can be done to do it better, faster and more cost-effectively?
- Do you need more or fewer people to do the job?
- How much time does he/she spend away from the job during working hours – downtime?
- How often is he/she off work and for what reasons?
- What about the whole pay "package"? Is he/she being paid a fair wage? What about other benefits?
- How motivated is the person and what is his or her attitude towards the job and fellow workers?
- And now for the big one which very few people ask themselves: How am I (or a supervisor) managing this person?

Improving worker performance is critical to any business because you are dealing with human beings, and that adds many other factors to the issue which you do not have with other farming activities. You can save money and increase profits through good people management.

Machinery And Equipment

Any machine, tractor, bakkie or vehicle costs you money – whether you use it or not. So, it is crucial to know your costs and identify areas where you can save. Consider the following:

- Am I using my equipment effectively? In other words, is the equipment being used for the intended purpose, and is it performing as required?
- Is that tractor too big for the job, or too small? If it's too big I'm wasting money. If it's too small it will cost more to do a job and will be more likely to break down.
- What are the repair costs on this machine? If they are too high, I must find out why and take action to reduce them.
- Is the operator doing his job properly? Is he/she trained to do the job? Is he/she adding to repair costs or helping to keep them down?
- Do I have too much equipment on the farm? Perhaps I have machines that are not being used effectively so I could sell them and bring in some extra cash. Many farmers don't like to do this because they think they might need the machine again "one day", or it would be useful for spares. In most cases it ends up being a piece of junk and makes the farm look like a scrapyard.

Through good planning and management you can use farm equipment more effectively, thereby improving outputs and reducing costs.

Why Expectations are High Regarding Biological Products

The need to reduce chemical use is driving the uptake of biologicals. While the industry has a long way to go before it can match the success of traditional synthetic crop protection products, its growing influence in the market cannot be ignored. AgriBusiness Global™ magazine spoke with Thomas Mason, the President of Bio Protection Global, on issues facing the industry:

What's been the impetus behind the growth of biological products?
In the early 2000s there were very few regulations or calls on farmers to reduce chemicals. Over the years there has been a massive shift from consumers, regulators, and retailers in terms of the produce being sold. Across the globe there is massive pressure to reduce chemical use. As a result, biological products are becoming more important. It is an exciting time for our industry because we are developing products to allow farmers to meet market demands.

What is the level of uptake of biological products?
Developing countries — Kenya, Ethiopia, Colombia, Ecuador, Guatemala, Peru, Argentina, and most equatorial nations — are growing for export markets. Farmers are feeling the pressure to improve yields with smaller margins. Over the past 10 years, there has been very little increase in agricultural prices for fresh produce compared to the prices of commodities. Despite this, agrichemical prices have risen at the same rate as petrol prices. This means farmers have a much smaller margin, and the only way to improve that is through improved yields. Farmers have realized biologicals, as well as biostimulants, have a significant impact in improving yields, which results in farming earning a more economically sustainable practice.

How biological products compare to conventional pesticides?
Across the globe, biologicals are regulated in exactly the same way as traditional agrichemicals. What that means is that if a company is developing a solution and wants to place that product in the market, the company has to prove to the local agricultural regulator that the product works as well or better than the existing most common solutions in the market.

How would you describe market growth of the biological industry?
We estimate the biological market to be worth more than $4 billion and growing at double digits compounded annual growth rate. As the President of Bioprotection Global, my goal is to oversee a rapid expansion of the industry, something we are seeing from the mergers and acquisitions activities embedded within the industry. Even big chemical companies like Bayer, Monsanto, and others recognize the importance of biologicals and biostimulants and want to acquire companies in this segment.

What is driving global companies toward biopesticides and biostimulants?
Increased competitiveness in the biological space is positive, and the fact that the industry is on a growing path is attracting agrichemical companies. This is good because market forces will result in prices dropping, ultimately benefiting farmers.

Despite the growth of biologicals, conventional pesticides still dominate the market. Your thoughts?
We recognize that patented products are coming off label, and the reality is that more and more generics products are coming to market. There is a huge amount of pressure on regulators to ensure the quality of generic products, particularly from India and China. Regulators must ensure these products are robust, high quality, and delivering the right solutions to farmers. That said, we appreciate the leading role of synthetic chemicals. The agrichemical industry is valued at over $170 billion, and the biological sector is worth $4 billion. However, in the next five to 10 years we expect a lot of activities in the biological space.

Are the chemical and biological industries compatible?
I think it is less about a cold war but more about understanding how to work hand in hand. It is that compatibility that is really the biggest emerging force and focus of the sector. With a truly integrated crop management strategy, there is a very clear and robust role for chemicals and biologicals to allow farmers to farm sustainably not only for environmental but also for economic sense.

What's the future or biologicals?
The biological sector will grow at an even faster rate in the coming years. The focus should be on understanding how we can make our solutions more effective and more precise. We also need to improve delivery methods, de-complicate their use, and focus on the roles that chemicals and biologicals play together.

‘How Syngenta has Made Me Succeed as a Farmer’

Noah Kadima, a respected ‘agri-preneur’ shares the story of his progress under The Good Growth Plan.

About 13 years ago, Noah Kadima was trying to get started as a farmer, keen to try out the various promising farm inputs available on the market. Today, with trial and error and experience under his belt, Mr Kadima has become a respected farmer and ‘agri-preneur’ among his network, thanks to Facebook, and beyond.

In fact, Kadima has recently launched the Africa Farmers Club to offer fellow farmers guidance and advice on how to manage their crops and their farms. Through the club and his collaboration with agricultural company Syngenta, Mr Kadima is giving farming a new definition as a profitable business.

Noah Kadima at the farm

Kadima is part of Syngenta’s sustainable initiative called The Good Growth Plan (GGP), which provides guidance to farmers on good agriculture practices. The aim is to promote more efficient and more sustainable farming to increase land productivity and resilience. “Three years into farming and the challenges were so real. I started off so excited. I really wanted to get into this farming business. But at the same time getting information on how to go about it was a challenge,” Mr Kadima recalls.

Like many farmers of his generation, he started off as a ‘Google farmer’. He would search for information on farming from the web. This is how he came across the Syngenta website and made a point to visit the company’s offices in Nairobi. “I was interested in growing four crops: onions, watermelons, tomatoes and capsicum. An agronomist from Syngenta gave me information on the seeds, put me in touch with my local field expert, and also handed me a booklet that guided me on how to prepare my farm from sowing to harvest,” he shares.

The agronomist took Mr Kadima through the process of identifying the products that would work for his soil and his crops. “We also worked out a customised farming programme detailing what I was growing there, and how to protect my crops.”

It did not end there. “He also introduced me to The Good Growth Plan, which offers so much more than just crop management. He talked me through how to best take care of my farm and my workers so that they could work safely and more productively,” he explains.

Mr Kadima is now one of hundreds of GGP reference farmers, setting the example for others in his region and promoting a number of best practices on how to grow crops more efficiently.

What has changed on his farm?

Through the GGP, Mr Kadima started keeping records, and that is when he realised he was

able to use the same quantity of inputs on a larger farming area, without compromising on his yields and profitability.

"Through the programme, I have cut down on my farming expenses and kept proper records, which has translated into financial accountability and tracking," he says during a tour of his 14-acre farm in Kisaju, Kajiado County. "I was able to reduce on the cost of production, which translates to more profit thus more income."

The GGP has further introduced Kadima to safe use of chemicals. In fact, one of its key pillars is to help people stay safe.

Syngenta invests heavily on training growers and value chain partners in using crop inputs safely and effectively. Small steps like wearing the appropriate protective gear, understanding product labels and disposing of packaging in the best possible way, have made a huge difference on the impact that Kadima's farm has on the community.

He was also trained on how to scout around his farm and identify which areas are affected by pests and note down when they need to be sprayed and which chemicals to be used. He shares this knowledge with other farmers, he says.

Knowing when to spray your fields is just as important as knowing what products to use. The step-by-step advice Kadima received from Syngenta is what he now gives back to his community through the Africa Farmers Club. Through the club, Mr Kadima aims to conduct farmer trainings. He has established a model farm in Kitengela, Kajiado County, where he showcases best practices and the latest agricultural technologies to increase yields. "I know all the farmers in my network and it is so satisfying to hear how their lives have changed through our advice on how to make use of top quality agricultural technologies, how their yields are doubling, and in turn how their income and the wellbeing of their families and that of the communities they work and live in are improving," he observes.

Using WhatsApp to spread agronomic knowledge

Lack of information on proper farming techniques and the difficulty to get agronomic advice in a timely manner often hinders farmers from benefitting fully from their fields. "The ratio of agronomists to farmers in Kenya is 1:14000," observes farmer Noah Kadima of Kisaju, Kajiado County. Kadima, a beneficiary of Syngenta's Good Growth Plan (GGP) programme, is nonetheless lucky. The programme has enabled him and many other farmers to maximise crop productivity. "Through the GGP, Syngenta is meeting a market need to support farmers with knowledge and step-by-step advice," he says. Syngenta, which offers innovative crop solutions, has launched a number of WhatsApp groups through which its agronomists connect with more growers to help bridge knowledge gaps. Syngenta agronomists manage many of these platforms across the country.

Senior Syngenta Field Technician Duncan Mukuna, explains: "The WhatsApp groups we create are platforms for farmers and agronomists to come together and share experiences. We have been using these platforms to share advice. Farmers use them to share photos of the pests plaguing their fields, and we use the same to connect farmers to favourable markets for their produce. In a way, these forums have made us all a family, and we come in to help each other".

Mr Mukuna has been following Kadima's journey closely, but he is only one of the hundreds of field experts working to improve agricultural productivity in Kenya. Joining the WhatsApp groups helped Kadima to kick-start the African Farmers Club. "It has helped me reach out to more people who are farming in my area. Most of them have moved from farming as a hobby and have understood that it is a business," he says.

To those who ask him how he has managed to succeed in farming Mr. Kadima always refers them to the GGP program. "The step-by-step advice and the access to a community of fellow farmers to share challenges and successes have changed the life of farmers in the area by changing their attitude towards farming," he says.

Small deeds for big success on the farm

Access to knowledge and high quality input are key requirements for successful and profitable farming. But there is more to this, according to experienced farmer Noah Kadima, who has derived vast knowledge through Syngenta's The Good Growth Plan (GGP). To maintain consistency in quality of produce, Mr Kadima practices crop rotation on drip irrigation, growing at any given time, his favourite capsicum, onions, spinach, kale and tomatoes.

He shares: "I start with soil tests to check the nutrient levels across the farm. That information helps me decide where to grow which crops and even to select the varieties I want to grow on any given season. I also factor in climate change, which is a reality farmers in Kenya will have to live with more and more".

Kadima advises his peers to diversify their crops as much as possible regardless of the acreage of their farms. This promotes soil health and encourages resilience, he says. He additionally advises fellow farmers to think beyond crop production for their farming enterprises to be profitable. Farmers must consider all aspects relating to the sale of their items, such as transportation costs. "Farmers need to sell at good prices and need access to markets. What I loved about GGP project is that it did not just end at producing the crops. It also meant that if Syngenta got people who wanted to buy the produce, they would link us up," he says.

This unlocked new doors for Kadima and other farmers in his network. "We now start planning together which crops to grow, and throughout the year, we have consistency, which gets buyers to trust us," he says.

Modern farming technologies

Mr Kadima advises other farmers to also embrace modern farming technologies and get proper training on how to apply them effectively.

"When it comes to (modern) inputs, we have a choice. We can either continue doing things in the traditional way… or we can try them on our field… My appeal to farmers is, let us adopt the new technologies," he says.

Kadima admits that there is certainly still a lot to be done to increase access to modern inputs and new farming technologies in Kenya, as well as the knowledge on how to use them. The GGP and the Africa Farmers Club are a step into this direction. He also wishes that farm inputs dealers played a more active role, for instance, by enquiring from customers why they are purchasing a particular product and offering professional advice on how to best use it practically on the field.

Inspiring the next generation

At 40 years of age, Mr Kadima is making agriculture cool for the next generation, helping to reverse a trend that sees young people shying away from farming.

He starts in his own backyard. He is a father of three – two boys and a daughter – and he aims to inspire them about the importance of the land. "The boys know that their daddy works in the farm, and anytime they see him wear a suit going for a meeting, they are like, 'Daddy we don't see you wear a suit'."

He adds: "The twin boys have their own small kitchen garden where they farm. One of them is passionate about how plants grow. The other one wants to know how he can use technology to grow plants. The little girl is still too young to understand, but she certainly prefers apples to sweets, and knows that her dad works closer to the food."

These could be three promising agricultural talents.

The story of Mr Kadima's farming journey is an inspiring example of how farmers in Kenya can benefit from each other's experience and knowledge sharing, and how input companies can support them in maximising yields and improving their livelihoods. The Good Growth Plan has already reached millions of growers across the world with farming advice, safety and productivity training and with expert support in the field.

Mr Kadima and his fellow farmers at the African Farmers Club are demonstrating how, when used safely and effectively, modern agricultural inputs and technologies can revolutionise and professionalise agriculture and support the government's vision for a food secure Kenya.

The Good Growth Plan

Every day, our planet wakes with nearly 200,000 more mouths to feed and more farmland lost to erosion. Many people who produce the world's food are living in poverty, while biodiversity is disappearing fast.

We have a plan to meet these challenges: The Good Growth Plan.

Our mission with this plan is to improve the sustainability of agriculture and our business through six commitments. We know we don't have all the answers. That's why we are working with growers, governments, NGOs and others, to make a difference.

One planet. Six commitments. This is The Good Growth Plan.

A Win For OCP Kenya As DPP Drops Charges Against Them

DPP Nordin Haji dropped charges against Moroccan Company and its directors who were alleged to have imported sub-standard compound fertilizer amounting to 5.8 MT. The acquaintance came after a long court battle between OCP Kenya, its two directors, former KEBS MD Mr.Ongwae, port health officer, port inspection officer and the Director public prosecution.

Director of public prosecution Nordin Haji dropped the charges after new and credible evidence was tabled leading to the prosecution team and the accused through their lawyer Paul Muite reaching to a plea agreement. The prosecution team acknowledged that the decision to press charges was made without the full benefit of the factual scenario provided to the prosecution team and investigators. This came as a big win for OCP (K) which had stopped its operations for more than 10 months to pave way for investigations.

OCP (K) is famously known by its unique headlining product (NPSB) which contains Nitrogen, Potassium, Sulphur and Boron, Triple Super Phosphate (TSP) and the common DAP product. OCP entered the Kenyan market with new customized fertilizers which demonstrated a tremendous effect on farmers in terms of yields and competitiveness. Farmers who have had the experience with NPSB brand, for instance, were elated at the acquaintance news, despite the season being long gone.

Despite the season being far gone, it is still the best news for OCP (K) as they embark to reclaim their market share and the Kenyan farmers welcome this as a plus because they now have an array of options to choose from in acquisition of inputs moving forward.

38 Million Fertiliser Plant to be Operational this Year

Sacks of fertiliser stored in a warehouse in Kayonza District, Eastern Province.

A mobile soil-testing laboratory facility, which was launched recently as part of a proposed fertiliser making factory. The factory is set to save the country billions of Francs on the importation of fertilisers.

Rwanda is set save the amount of money it spends on importing fertilisers with government saying the new fertiliser making plant will be operational by the end of this year. The plant, which is being constructed in Bugesera District at a cost of $38 million (about Rwf33 billion), will have the capacity to blend 100,000 tonnes of fertilisers.

With Rwanda's annual demand for fertilisers at 53,000 tonnes, according to Rwanda Agriculture Board (RAB), once the factory begins production, Rwanda will have a surplus of fertilisers, potentially opening up a new avenue for export diversification.

The project is a joint venture involving Morocco's OCP Group – one of the leading exporters of phosphate fertilisers in the world, the Government of Rwanda and a local firm—Agro Processing Trust Corporation (APTC). OCP Group will own 57.4% of the project (APTC) 30% and the Rwandan Government 2.4 %.

The factory is part of the Caravan – a mobile soil-testing laboratory project expected to improve soil fertility management and raise farm productivity – which was launched last month.

The Caravan consists of a set of mobile equipment with modern soil testing technologies intended to analyse soil samples in order to produce a soil fertility map in order to match fertiliser application with crop needs based on different types of soil.

Charles Bucagu, Deputy Director General of Agriculture Research and Technology Transfer at RAB told The New Times that the fertilisers that will be produced include urea, Diammonium Phosphate (DAP) and NPK—three-component fertiliser providing nitrogen, phosphorus, and potassium.

Jean Claude Musabyimana, Permanent Secretary at Ministry of Agriculture, told parliament last week that the study to set up the factory was completed. "The funds are available. It is a matter of time such that in the next year, we hope we will use fertiliser blends made in Rwanda based on soil test results," he said.

The fertiliser blending will be based on the type of soil and the nutrient needs of each crop to be grown in a particular region, Bucagu indicated. "For instance, there will be formulation of the fertiliser adapted to the northern part of the country which is near volcanoes and has a particular type of land, which is different from that in northern part of the country," he said.

"This project aims to bring fertilisers close to farmers. There will no longer be importation of fertilisers." The factory is also expected to reduce the price that farmers pay for fertilisers, which is needed to drive the growth of agriculture—one of the most important sectors of the Rwandan economy.

Jean-Damascene Ntawushobora, an Irish potato farmer from Nyabihu District, told The New Times that farmers have been struggling with applying fertiliser suitable to the type of soil.

"Fertilisers used in marshland was the same used on upland. We were applying fertilisers without certainty; we did not know the nutrient needs for our soil and appropriate fertilisers to meet such needs. That issue was unfavourably affecting farm output," he said, expressing optimism that the new factory will address the problem.

Harnessing Agricultural Technology
To Achieve Food Security and Nutrition: Agritec Africa 2019

CS. Agriculture Mwangi Kiunjuri, Official Opening Agritec Africa 2019

Guests and Management during the opening of Agritec

Agritec Africa exhibition happened for a 6th year in row at KICC on 19-21 June 2019. This year's theme "Improving Farmers' income Through Technology" aligned Agritec Africa in the right perspective in regard to Climate Smart Agriculture's strategies (CSA). Climate Smart Agriculture is an approach that helps guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate.

CSA tackles three main objectives; sustainably increasing agricultural productivity and incomes, adapting and building resilience to climate change and reducing or removing greenhouse gas emissions where possible.

Agritec Africa happened concurrently with Graintech Africa, FAO Conference and Dairy and Poultry Expo. It was attended by more than 10,000 visitors and 175 exhibitors from more than 25 countries. The most involving part of the exhibition was the Food and Agriculture Organization of the United Nations (FAO) conference which was discussing issues on how to harness agricultural technology to increase agricultural productivity, food security and income.

Dr Rugalema who is the FAO representative in Kenya noted that farmers are willing to embrace technology but the cost implications are too high in relations to the production of their farms. He also mentioned the issue of banks not being so keen in investing on the agricultural sector because it is perceived to be risky.

FAO Rep Dr. Rugalema & Mwangi Kiunjuri at the exhibition floor

Visitors at one of the stands

BrazAgro Ltd Commitment to Climate-Smart Agriculture

The challenges of climate change are heavily felt everyday by farmers across the world. In response to these every organization in the agricultural value chain are shifting towards climate smart agriculture products and services to guarantee food security, high income and protection of our soils for generations to come.

BrazAgro Ltd showcasing their planter for small-holder farmers.

Brazagro ltd is one company who has not been left out of these innovations. From their wide array of products, Brazagro Ltd has demonstrated their commitment to source the best machinery aligned to the current agricultural trends for farmers in Kenya.
Brazagro is an affiliate of Brazafric enterprises limited which focuses on grain dryers and silos, rice and pulse division, satellite equipment, auxiliary equipment to minimise post-harvest losses and coffee processing equipment.

"We have been operational for the last 8 years, educating farmers on zero tillage tools and the trends in technology" said Maina, Managing director Brazagro ltd.

Brazagro boasts of an exhaustive product range from planting of your crops, to spraying, harvesting and preserving your produce to avoid post-harvest losses. This makes Brazagro the right partner for your farming investments.

Mr. Maina reiterated that "the best way to achieve more is to embrace use of technology and we have simplified this process by designing smaller machines to suit the small-holder farmers who have been neglected before". Demand for the technology in the agricultural chain has risen up tremendously, if you are seeking to grow more for the market, incorporating the latest trends of farming will be the right choice for you as a farmer.

It is therefore, necessary to recommend brazagro to any farmer out there; there product range is all you need to advance in your farm. Brazagro ltd is one stop shop for all your farming needs.

From Page 46

Agritec Africa 2019

To harness technology, government and private sector has to come in play; more funding should be channelled to agricultural sector to bolster production, boost investor confidence, increase income and guarantee the country's food security. FAO which is one of the partners to the Agritec Africa Expo advocates for improving access of technology by bringing it closer to the farmers and execution of more training programs to equip farmers with the current trends in the market and agricultural practices.

Agritec Africa has grown for the past 6 years to be an house hold name in the exhibition sector; its unique approach to show case the trendy technological advances in agriculture has provided a platform for farmers to interact, ask questions, network and revamp systems in their farms eventually. This event uses a call-to action approach by altering the thoughts of farmers and shifting them to the right direction which is climate smart agriculture. It is time to rid of old systems and models of farming and get into the train of technological advancement to produce more, increase income while enhancing food security and nutrition. Technologies have been designed in the best ways possible to avert the dangers of climate change and allow us to practice farming with a lot of integrity to avoid compromising our climate further.

Agritec Africa 2020 is scheduled to take place at KICC in June 19-21, until then, farmers should harness all the knowledge acquired during the show, make calls, visit suppliers they met during the show and commit to embracing at least one technological change in their farms in a bid to scale up productivity and profitability of their farms.

Makueni ASK Satellite Show and Trade Fair Pictorial

Pioneer Demo Farm

Monsanto's Demo Farm

KALRO won an award on research & Development

An Award to Pioneer seed company

Monsanto displaying Dekalb seeds

KEPHIS Stand

Exhibitor displaying seeds

Exhibitor

Ultravetis' stand

Simlaw seeds attending to farmers

Makueni County's Stand

Exhibitor displaying bead bags

Sisal Value Chain

Makueni ASK Satellite Show and Trade Fair

The Makueni Agricultural Show is without a doubt one of the biggest farming shows in south eastern region and probably the largest in the county. Every year, it welcomes thousands of visitors, both consumers and professionals.

They will find exhibitors that come to share their products and passion with the attendees. The show though not by default is divided into 4 parts: the crop and plant sector, the agricultural services and profession, the livestock production and its sectors and the sector dedicated to products from Makueni and the rest of the country. The show also features the well-known children fun games, a set of high-end state of the art innovations.

For three days, Makueni Agricultural show 2019 exhibitors pioneered the future of crop production. All the leading agricultural companies in the industry presented their latest innovations. The show lived to its theme; promotion of innovation and technology in agriculture and trade as exhibitors showcased their technology trends and addressed all key questions relating to the future of agriculture. It had a special focus on systems, modules, components and accessories for agricultural machinery and related industries.

The ASK organized agricultural fair saw its second edition running successfully. The three days exhibition on trade and agriculture sector titled promotion of innovation and technology in agriculture and trade on June 13th to &15th 2019 was held at the Makindu show grounds.

The event was opened by the Machackos County Deputy Governor Eng Francis Maliti assisted by the Makueni Deputy County Governor Ms Adelina Mwau among many other dignitaries from the National Government, County Government and ASK. The trade fair served to be a platform for most of the main companies and government sectors, directly or indirectly involved with agriculture and food industry of Kenya. The event like last year was well attended by farmers, practitioners, academia, business and government sectors.

Speaking to those in attendance, *Cereals Magazine* realised the trade fair is slowly transforming into a conglomerate bringing in all sectors of agriculture industry. The event has managed to build and retain a momentum by involving both national and county government departments, researchers, farmers' associations, private and public sector as well as foreign organizations and dignitaries.

It provides an opportunity to access the potential of Makueni's agricultural production and market and empowers the key players and participants to understand farmers' needs and the market appetite for their products and recognize the best channels for delivery. It is till date the only event of its scale in Makueni county which is able to bring together all stakeholders from the public, private, academia and social sectors together on one platform to engage in constructive dialogue, experience sharing and information dissemination.

The Makueni County Government hopes that it continues to foster meaningful and result oriented interaction on topics pertaining to maize, cereals, bee keeping, dairy, horticulture, livestock and poultry creating a road map to achieving value addition, enhancing quality of produce & product, improving export viability and deployment of new technology.

This year also the event was supported by relevant Makueni county government ministries/institutions and endorsed by various multinationals in seed and crop protection, research and regulatory institutions, local companies, local farmers show casing their farm produce, women and youth groups showcasing their value added products, Kamba heritage groups showcasing the Kamba traditions with numerous traditional foods, financial institution, food, water and beverage manufacturers, Machackos county, local artisan especially in Ciondo weavers and famous entertainers . These companies especially seed producers had been given space to plant their seed varieties for farmers to see and compare had a full day of farmers visiting. The competition for the different seed varieties was well noticed with Monsanto, Pannar and Pioneer, Kenya Seed and Karlo varietis of Maize, cow peas, pigeon peas, grass, cabbages, kales, spinach etc well displayed.

The show highlighted modern innovations in the agribusiness industry. In terms of sheer numbers of visitors, it was among the largest industry events in the area when compared with other industry shows that gather a couple of professionals and consumers. Makueni ASK agricultural show was not only about networking, buying and selling, it was also about discovering new trends, enjoying an amazing spectacle, testing new products and much more.

As the largest trade fair for agricultural technology in the county, exhibitors were ready to welcome visitors with information on all the latest innovations and proven technologies. Visitors of course were also able to evaluate a large selection of the latest technologies from farm to fork.

CEREAL FARMERS IN KENYA

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

CEREAL FARMERS IN KENYA

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

No Cause for Alarm: Experts assure Public on Glyphosate Safety

With the rising concerns on safety of glyphosate triggered by the recent US jury verdicts over the use of the chemical, experts under the auspices of the Kenya National Academy of Sciences (KNAS) met in Naivasha from May 30-31, 2019 for a consultative forum on pesticide use in agriculture and reviewed a range of emerging issues including glyphosate safety. The experts comprised academicians, researchers, policy makers, agronomists, regulators, some farmers, industry umbrella body Agro Chemicals Association of Kenya/ CropLife, and agro-chemical dealers and manufacturers. The objective of the two-day meeting was to re-examine the impacts of pesticide use in agriculture on human health and the environment. Overall, pesticides play a critical role in agricultural production. Without their use, farmers stand to lose an average 30% of their produce, according to experts.

"To produce sufficient food for our rapidly growing population, and achieve zero hunger and malnutrition, an aspiration of the Sustainable Development Goals (SDGs), we have no choice but to use pesticides, which should be used safely and responsibly", said Prof. Ratemo Michieka the Honourable Secretary of KNAS.

In Kenya, pesticide use will accelerate actualisation of the Government's Big Four Agenda especially on food security and nutrition. In 2017/18, the country imported 17.8 million metric tonnes of pesticide valued at Ksh.13. Billion.

Glyphosate is one of the pesticide active ingredients approved for weed management on crops and for non-crop uses globally. There are more than 70 glyphosate-based registrations in Kenya. Of these, Roundup, a glyphosate-based herbicide, is one of the most popular herbicides and has been evaluated and approved in Kenya for commercial use.

Following the deliberations and consultations from this meeting, the experts made the following observations:

• Pesticides are amongst the most regulated products in the world.

• Kenya has an adequate regulatory framework on the use of pesticides and related products. The Pest Control Products Act, Cap 346 and associated Legal Notices, regulates the importation, exportation, manufacture, distribution and use of products used for the control of pests.

• The Pest Control Products Board (PCPB), a statutory organisation established under the Act, is mandated to regulate the importation and exportation, manufacture, distribution and use of pest control products including glyphosate-based herbicides.

• All pesticides registered for use in Kenya, including glyphosate, go through a rigorous risk and safety assessment prior to approval by PCPB. The assessments are based on various characteristics. These include environmental fate and residue data submitted in support of these products by the applicants in accordance with the pest control products (PCP) regulations.

• Kenya has the human capacity to determine the safety of Glyphosate-based herbicides and the country continues to build on this capacity.

• The country conforms to international standards and best practices on pesticide use and compliance. It is a signatory to key international conventions on chemical safety. They include the Stockholm Convention (on the protection of human health and the environment from persistent organic pollutants) and the Rotterdam Convention (on the promotion of shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment).

• Globally, there is overwhelming evidence from over four decades of extensive scientific research involving more than 800 regulatory studies on the safety of glyphosate. All have confirmed that these GBH are safe when used as directed.

In view of the aforementioned facts, the experts wish to make the following assurance:

•Glyphosate-based products pose no undue health risks, including cancer, to the Kenyan public.

In conclusion, we wish to advise the following recommendations:

1) As a general precaution, just like any industrial products, we advocate for use of personal protective Equipment when using any pesticide, as guided by the Pest Control Products labelling guidelines, in order to reduce exposure.

2) Kenya should continually build its human and infrastructural capacity in pesticide use especially in the agri-food sector.

3) The public should be protected from incorrect and misleading information that triggers unnecessary anxiety. There is a concern that pseudo-experts are peddling lies about glyphosate. It is critical to differentiate between an expert and a non-expert.

4) Relevant agencies and institutions should synergise their efforts to carry out a nation-wide public education and awareness on proper usage of all pesticides.

Co-signed by:

1. Prof. Ratemo Michieka, Honorary Secretary, KNAS .....

2. Dr. Moses Rugutt, Director General, National Commission for Science, Technology and Innovation (NACOSTI) .....

3. Peter Opiyo, CEO, Pest Control Products Board (PCPB).....

4. Dr. Eric Eshitera, Maasai Mara University .....

BASF

We create chemistry

Rex® Duo

- A highly effective fungicide with dual-systemic action for control of Stem Rust and Yellow Rust in wheat
- Rex® Duo goes beyond crop protection to enhance yield
- The active Thiophanate-methyl and Epoxiconazole in Rex® Duo - provides good protection against fungal diseases in wheat hence protecting the yield quality and quantity

Rate of application : 0.75L/Ha or 0.3L/Acre (Knapsack 20L 75 ml/20L or boom sprayer 1.5L/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/

INDO FARM
POWER+MILEAGE

India 1st Most POWER+MILEAGE Tractor Range

22 hp to 110 hp

Salient Features

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

www.indofarm.in

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