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JULY- AUGUST 2016

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Editorial

Fulfilment of Love and Passion for Cereal Growing

What happens when you combine a great creative art director with his love and passion for cereal farming? You get a beautiful, artful magazine called **Cereals**, a beautiful magazine that the beautiful sector deserves.



Cereals Magazine brings the cereal farming to the pages of a beautiful, medium sized, well-done publication. It combines both stories and photography to give the reader (even people who aren't interested in farming) a passion for the sector.

Who doesn't like the good life? It's the dream of every living, breathing human being on Earth. And now we have a magazine to help us all discover that elusive chimera. The magazine covers how to acquire your land, prepare it, production, harvesting and post harvest, marketing and agro-processing. A publication like this that aims to inform, instruct, entertain, and stimulate debate can only contribute to a cereal farming.

I'm pleased to mention that the value of cereal farming is growing fast and attracting the value of foreign companies' direct investment in Kenya. This demonstrates the increasingly outward looking character of the Kenyan economy.

Speaking to sector players, it was a joy to see how many companies decided to join the launch issue. Thanks to those who took the bold step and placed an advert. Growers who allowed us to visit and cover their daily activities, we are proud of you. It was a joy to see agronomists joining the editorial board as technical think-tanks. **Cereals** will make an amazing read to all.

What we now need to do is build on this success, and to encourage all other players in the sector to join the bandwagon, so that we continue to produce a global champion.

Cereals will unplug you from the low-level anxiety that comes with reading online, and that bottomless pit of information, sometimes it's comforting to feel how many pages are left between your fingers. Knowing there's a beginning and end to anything, being able to see it, like the last few sips at the bottom of a bottle, always helps you to savour the moments in between.

Enjoy farming to the fullest. It's definitely a hot launch.

Masila Kanyingi

Cereals

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Cheap Fertilizer Beckons as Toyota kicks off sh.123bn Eldoret Factory

Toyota Tsusho Fertilizer Africa Limited (TTFA) a wholly owned Kenyan-based subsidiary of the Toyota Tsusho Corporation whose headquarters are in Tokyo, Japan are set to establish a state-of-the-art fertilizer blending plant in Eldoret. It was chosen as the location of the plant due to the high quantities of fertilizer that the North Rift region consumes, according to the government.

After an in-depth study and extensive consultation with key stakeholders in the region, TTFA was able to establish that soil fertility management as one of the major food security challenges. As a remedy, TTC set up Toyota Tsusho Fertilizer Africa Ltd to start the fertilizer production unit. Production is expected to commence in August 2016.

This factory will produce and deliver well researched soil-specific and crop specific fertilizers for the Kenyan market. This is a follow up to an MOU signed between TTC and the Kenyan Government to contribute to Kenya's economic development by actively supporting strategic sectors among them Agriculture.

TTFA has conducted soil sampling, testing and farm trials to establish fertilizers designed to address the different nutrient deficiencies. TTFA is currently working with farmers in over 200 trial sites to reconfirm effectiveness.



Deputy President William Ruto

TTFA in collaboration with local institutions such as Moi University and international fertilizer organizations such as International Fertilizer Development Center (IFDC) will ensure every bag produced contains high quality, tried and tested product.

The project which commenced a \$1.2 billion (Sh. 123 billion) fertilizer plant construction in Uasin Gishu last year will open a window for farmers to buy the critical input cheaply from the maiden factory. The plant is built on a two-acre piece of land in Kapsaret, 12km from Eldoret. Toyota has plans to expand the area under production in future. This was said by the Toyota East Africa chairman and adviser Dennis Awori.

The government estimates that the plant will cut the cost of fertilizer by about 40%, or less than KSh.2, 000 per 50-kg bag. This will also save the government's billions of shillings spend annually to

provide farmers with subsidies. The government provides a low-cost fertilizer at KSh. 1,600 compared to market rate of Sh.3, 500.

In addition, the country will save Sh.3billion used every year in the importation of fertilizer when the Japanese conglomerate Toyota Tsusho Corporation rolls out the first production.

Speaking during a tour of the plant, Deputy President William Ruto last year said Kenya would no longer import fertilizer once the multi-billion shilling project starts operations. The move has come as a relief to farmers who have been suffering from perennial shortage of the crucial farm input resulting from late imports that has seen some growers delay planting. Speaking when he received a progress report of the ongoing construction work, Mr. Ruto said completion of the factory would also bring down the cost of farm produce production. "We are impressed at the good progress being witnessed in the

construction of the factory. We are optimistic that by the end of 2016, we will no longer import fertilizer," said Mr. Ruto.

The Deputy President noted that the local manufacturing plant would be sensitive to soils and crops as it would produce fertilizer based on the specific requirements.

"The factory will have a big impact in the country's breadbasket because farmers will be able to purchase planting fertilizer at much cheaper prices," Governor Jackson Mandago said. The factory is expected to produce fertilizer for specific areas, a matter Mr. Mandago said will help solve the soil-acidity menace which is been attributed to the fall of North Rift's maize production from about 14 million in 2013 to 11 million in 2014.

Uasin Gishu CEC in charge of Agriculture Dr. Cyril Cheruiyot said farmers will be able to witness reduced market prices of the crucial commodity with an expected mass production. "Its central establishment puts the Rift and the Western region at an edge for ease access of the input and increase productivity," he explained. Dr. Cheruiyot also challenged farmers to constantly conduct soil testing so that they can ascertain its acidity and preferred fertilizer tailored specifically for their farms.

The factory will be producing 50 metric tons of fertilizer per hour, translating to 150,000 metric tons annually.

Olerai Field Day

Lives to its Expectation

They came by foot, bicycles, motorcycles, cars and heavy machinery. Even the muddy soils could not stop them. All in need to exchange ideas during the Olerai field day. It is no gain saying that cereal farmers play a major role in Kenya's economy.

Cereal growers from different parts of the country gathered at Olerai field to participate in a one day event organized by Cereal Growers Association and sponsored by Bayer CropScience. Suppliers had created makeshift offices in their exhibition stands and growers had the opportunity to gather new agro-knowledge, buy or order inputs and exchange knowledge with them. "Farmers are the backbone of our economy as Kenyans", said Mr. Anthony Songoro, Marketing Manager Bayer Agrosciences, the sponsors. Adding, "this is why we have left our offices today to mingle with them".

To cap it all, growers had the opportunity to listen to key industry stakeholders discuss the challenges facing the cereal sector. In his remarks, the CGA chairman, Mr. Farnie Kruger encouraged farmers to unite, so as to get the best, as the saying goes, 'United we stand, divided we fall'. It is through the unity that the growers will end up getting market for their farm produce, and again the cereal companies depend on these growers for their raw materials. He noted that farmers in the country suffer a lot since they get lower price for their produce. He particularly singled wheat growers, who are pressed with the fact



that their farm produce is bought at a lower price. He went farther and compared the market of wheat with the market of barley in Kenya. Barley growers in Kenya have collaborated with the brewing companies for the market of their products, yet wheat lacks such collaboration, hence growers suffer. He said, 'The barley subsector can grow enough in the country, but where is the wheat?' Actually, there is a lot to be done so as to improve the wheat market in the country, may be the government should come in and assist in this". Concluding, "No farmers, no food!"

In his remarks, Mr. George Kamuiru of Bayer Agrosciences, touched on the challenges facing cereal growers and their possible solutions. He mentioned some challenges such as soil and seed-borne diseases, fungal diseases and their control. He also talked of leaf rust, which is caused by *puccinia recondite*, and is the most widespread and regularly occurring rust on wheat. Genetic resistance is the most

economical method of reducing yield losses due to leaf rust.

Mr. Kamuiru cautioned on the impact of diseases on wheat yield formation. He said they lead to low quality produce, and growers lose almost 60% of their wheat yields. He advised farmers on the importance of spray timing and observation of latent period, to gain the best quantity and quality of their cereal yield.

Lastly, the area Assistant County Commissioner gave a piece of advice to the farmers. He encouraged them to put more effort in their plantations, regardless of the land size they own. He went further and promised that the government will support farmers especially on the market of their



products, so as to reduce the tension of farmers who were almost quitting the sector because of the low income.

Exhibitors were drawn from Agrochemical companies, Crop nutrition suppliers, Seed companies, Farm machinery suppliers, government institutions among others. Olerai Farm, as the host, also participated in exhibition.

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Syngenta East Africa:

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Syngenta East Africa Ltd is in a unique position to offer reliable and effective crop protection products together with technical support services. Delivered by the same company, this combination is exceptional and gives growers access to expertise and in house knowledge to build programs that meet the rigorous demands of today's customers.

With the strong commitment to research and development and offering unsurpassed technical support, Syngenta endeavours to meet every grower's needs in a special way that ensures delivery of profits. The superiority of Syngenta products lies in the ultimate test... the effectiveness each application yields...Bringing plant potential to life.

Speaking exclusively to *Cereals Magazine*, Ms Agnes Gitonga, Broad Acre Campaign Manager, said,

"Cereal production is fundamental to the country and Syngenta has innovative, tried and proven technology solutions for the cereal sector. Our focus, as Syngenta, is to deliver a step change in cereal production with our products and the expertise of our people."

Syngenta has continued to be a step ahead in innovation to maintain its objective as the market leader. Syngenta was the first company to bridge the gap in innovative solutions to the grower by bringing the first mobile seed cleaning and treatment machine for the cereal grower. The company was also the first company to bring a seed treatment product against Fusarium, which is a major problem in cereal farming. When *Cereals Magazine* visited them, they were set to introduce another solution, a broad spectrum insecticide to the grower.

Mobile Seed Care Machine

Three years ago, Syngenta detected a gap in the cereal industry which led to substandard yields. As the innovative leaders in the industry, they introduced a mobile seed treatment machine for all growers using the Syngenta products. The machine has a seed treater, a cleaner and is a phone call away to all growers.



A Market Leader in Innovation

Introduction of Celest Top

Seed- and soil-borne diseases caused by fungi impact upon almost all crop species and can have a significant effect on the early development of the seedlings as well as on the final yield. To counter this Syngenta introduced a novel product which growers can pride as the first in the market on *Fusarium* spp. Celest Top is a new broad-spectrum seed treatment fungicide that controls soil and seed borne diseases in wheat and barley. It mainly controls *Septoria* spp, *Helmithosporium* spp and *Fusarium* spp. In addition, it also takes care of soil dwelling pests and early sucking pests e.g Russian wheat aphid.

Celest Top has three active ingredients; Thiamethoxam, Fludioxonil and Difenoconazole. Thiamethoxam shows quick stomach and contact action in the target pest. It displays root systemic activity. Fludioxonil inhibits a protein kinase involved in cell metabolism. It penetrates the seed to control deep infection. It moves with coleoptiles to control soil borne inoculation. Difenoconazole is taken up by the seed and is translocated within the seedling. It stops the development of fungi by interfering with biosynthesis of sterols in the cell membrane.

Celest Top provides

- An excellent early crop stand,
- Excellent crop tolerance
- Fast plant growth,
- Excellent crop establishment
- The best in class formulation: safe and easy to apply
- Offers total protection against early insect pests and diseases. Thus, secures your yield.

Syngenta Launches Engeo 247 C

Syngenta East Africa Ltd has introduced Engeo 247 SC, a new insecticide for total control of sucking and chewing insect pests in wheat, barley and maize. With a combination of two active ingredients Thiamethoxam and Lambda-cyhalothrin the product has excellent insect pest control. Thiamethoxam displays systemic activity. In target insects it shows quick stomach and contact action.

Lambda-cyhalothrin is a potent pyrethroid controlling a broad spectrum of sucking and chewing pests. It has strong contact action, rapid knock-down effect and excellent residual activity. It shows a repellent effect on ovipositing moths and sucking pests.



Engeo has the following benefits

- The product has a broad spectrum activity
- Novel SC formulation,
- Quick Knock down effect
- High biological activity, contact, residual and stomach action
- Rapid penetration of waxy layer of the crop.
- Enhanced product safety
- Low dose rates due to the long residual activity hence few applications
- The product stops pest damage immediately and ensures control whether or not the pest is directly hit or sprayed
- Excellent rain fastness.

Conclusion

'Syngenta will continue being a leader in innovation in the cereals sector and we look forward to continue working closely with growers so as to increase yields and quality of cereal produce as we create more value for our customers' concluded Ms Agnes Gitonga.

A Grower

Out to Change Kenya's Growing Habits



Stuart Barden, an Australian farmer who moved to Kenya four years ago and established a farm in Athi-river, on the eastern side of Nairobi. In an Interview with Mercy Mutua of Cereals Magazine, he said, “Farming is an industry, not a game, take it seriously. If you don’t like farming, go do something else.

The hardworking Stuart was busy checking his wheat, when we visited him. When we joined him, he was ready to take us for a field visit. To start us off, we visited the wheat plantation, then headed to the chick peas, thereafter we visited the sorghum plantation and lastly the green grams.

It was awesome taking a look at all those especially when he decided to cut a stem of sweet forage sorghum and gave us to have a taste of the sugar. For sure, the quality cereals promised a good harvest.

Origin and his Journey to Kenya

Stuart is a farmer's son, born in New South Wales, in Australia. At the age of 16, he left school and started working full time on the farm when he was 17. He then went for a twelve-month agriculture course study. Thereafter, he started small agriculture business. In 2009, he started his journey after he got a Nuffield scholarship that took him to 12 countries around the world, including Kenya, to study his point of interest; farming of grains in low rainfall black cotton areas. The Nuffield scholarship is an award run by the Nuffield Scholarships Trust in Australia. He got support from Grain Research Development Corporation, which supported his Nuffield Scholarships

On visiting the countries, he got to learn and identified an area in Eastern side of Nairobi; Athi-River. There, he saw potential of black cotton soils in low rainfall, "I identified Athi-River through rainfall, soil type and topographical maps," he said. People said the land was good for grazing cattle, so Stuart was aiming at unlocking the great potential in that area.

Alongside his wife Anne he settled in Athi-River and started serious business. His decision of settling in Athi-River for farming was motivated by the fact that the Australian industry would be pleased to see a scholar extending the knowledge to Kenyan locals.

Ausquest is born

AusQuest farm was established in the year 2012. It took Stuart and



Anne 12 months to develop the land. During this time, he conducted a lot of small trials to come up with most viable crops. In each trial, he ran a field day as he kept learning out of the trials.

Currently, he deals with mung beans, sweet forage sorghum and wheat, commercial size trials of Kabuli and Desi chick peas. The sweet forage sorghum is sometimes made into pallets with the aim of producing commercial dairy feed (cattle).

Production

How do grain growers look at rainfall? According to Stuart, it appears that grain growers look at it through the same eyes as they did 100 years ago. Stuart's view is that if grain growers want to take a step forward in rain-limited grain growing systems, then they should be looking at more than just millimeters. What he is suggesting is that they

Feature

start to talk about the total rainfall over a given area and then they confine their planting and fertilization to 20% to 30% of the total area. The balance of inter-row (the area between planted rows), would be essentially only water catchments and would also be devoid to a large extent of crop residues, both standing and loose. The ideal of course, is to maintain 100% residue cover, although in many lower rainfall zones Stuart feels that this is unrealistic with current genetics.



usage, NOT to be rich.”

Advice to Farmers in Low Rainfall Areas

Stuart says, “Economics are at the core of the decisions we make as grain growers and therefore not in touch on such issues would be remiss.” In terms of mechanization, he says there are few examples to learn from as Kenyans. That, however, was not to say that many Kenyan grain producers are not

There is great scope with summer crops in combination with current skip row configurations and current best practice, (e.g. zero till/controlled traffic operations,) to direct crop residues onto plant line rows. The residues created by cereal crops, for example, at grain yields of less than 2.5t/ha, struggle to do their job when broadcast over 100% of a field. Stuart says, in moisture limited environments this is a “Catch 22” situation i.e. one needs residues to preserve moisture although there is need for moisture to grow residues. He says, “I realize this is an age old problem and that is why I believe we need to view it differently. Once again, I believe that if we are to move in the right direction, there needs to be a shift from thinking about millimeters per hectare, to looking at the total rainfall on our farms. We need to start to think of rainfall as irrigation farmers do, in terms of mega liters available in total.”

Challenges and some solutions

In everything, there must be setbacks, which, if I may say, keep us going. So, Stuart mentioned some of the challenges he faces as a farmer. As for the mung beans, he mentioned the insect pressure mainly thrips, which reduce the yield by 70-80%. Here he uses critical pest control. In chicks peas, the oxalic and malic reduce amount of insects which can affect the crops negatively. Again, chick peas have a bigger market in India, since it can be used the same way as green grams. Chick peas is said to be better than many other grains since it

has less insect pressure.

There is need for more consumption of chick peas in Kenya, since the market is too low. As for the wheat, it is sometimes affected by bad weather conditions, hence reducing the yield.

Human and Mechanical Labor

Stuart said that he has excellent employees, who co-operate to bring the best in the company. Though he has few employees because he also uses the machine labour, his workers are Kenyans. This shows that he has created employment to the citizens of Kenya. The company operates in a level-management; whereby everyone is somebody and can share his mind. Stuart said, “Cheap labour is expensive, productivity must be generated from a certain costs.”

Stuart uses Control Traffic Farming, which according to him, is so efficient both in saving time and leading to a good harvest. Additionally, he uses conservation farming which enables him to use the little water maximumly.

Marketing

Most of his farm produce is sold locally and the rest exported. Green grams, chick peas, have high protein nutrition and are good for human consumption, while others like sorghum play a part as dairy cattle feeds. Wheat and barley are bought in advance. Talking about competition, he said, “I came to Kenya to show black soils

mechanized, in his opinion, many are.

Machinery cost is emerging as a significant issue in terms of remaining viable, particularly in lower rainfall zones. Stuart gives few points which look at this matter in detail: Wider geographic syndication of machinery, greater use of contractors for specific operations. With the lack of highly full time usage of machines on Kenyan farms there are certain machines that many farmers should not own. In low rainfall environments we must strive to run lean operations. Just as some operations are best done by a contractor so we must use our machinery to maximum advantage. This may mean that we also do contract work for other farmers to fully utilize necessary equipment.

Thinking outside the box in relation to maximizing the capital required to farm a given area will be key in the future to operating in a financially viable way in the lower rainfall zones of Kenya. He believes that, “Profit is the reward for risk and therefore the better we are at managing risk then the more profit we can expose ourselves to.”

Stuart says that there are no simple formulas to assess risk while growing grain in lower rainfall areas although he believes that growers must risk. In low rainfall zones we must have a medium term view. By this, he means we must gear our business to be able to handle back to back loss- making years. While no one likes to take a loss we must understand

the volatility that comes with these lower rainfall environments. Conservative gearing and or geographical spread are necessary to successfully survive and prosper while growing grain in these lower rainfall zones. Growers must study historical rainfall patterns and use this information, in order to make calculated judgments in relation to risk.

Giving Back To the Community

Generosity is a key value to Stuart, since he extends his experience as a farmer to the community through farm visits and updates on his blog. Despite the success he gets on his venture, he believes that he can have a positive impact on the community in Kenya. He does this by arranging field visits for farmers who are interested, where the visitors take a look at his farm and he goes on together with his team to demonstrate and experiment in the farm. Stuart through his hardwork has hosted so many people interested in farming, be it university students, individuals, farmers groups and even the President of Kenya, Uhuru Kenyatta and his deputy, William Ruto.

After his visit, the president ended up commenting "I would like to urge small land holders not to resist new farming ideas and technology that would maximize their land production capacity."

One thing that impressed is the fact that even the small-scale farmers admired Stuart too much that they spared their time to attend the AusQuest Farm Agronomy Field Day 2016, and they really wanted to learn new ways of improving their farming techniques. He encouraged farmers to try chick peas on their farms, since he had noted that most farmers lacked knowledge about this crop.

Most farmers appeared to be interested in mung beans (green grams; ndengu), hence they asked many questions concerning them. The field days appeared not to be in vain to



many who attended. He says, "Our hope is that as we impart some information to farmers from the region through the open days, what we are doing starts to change people's idea of what is possible on these soils, during our field days, we have also been able to learn from

those attending, which have helped us a lot."

Stuart adds that his field days are not meant to promote any product or service or even to endorse particular equipment, but to expose visitors to the benefits of black cotton soil.

He insists that farmers should start thinking about their farming systems before they worry about the brand of their equipment.

He has established some small plots trial farms for chick peas, barley, regular beans, etc., with the aim of helping the area farmers with what they can plant. Some of the crops which have done well are yellow beans, soya beans and the chick peas.

As noted earlier on, Stuart keeps updating on his blog to help those interested in farming to improve their farming skills. A large number of people have visited this blog to check on crop performance and activities carried out on the farm.

Stuart's mission is still on. Thumbs up!



YES. We Have

Do Farmers Have Choices?

There seems to be a consensus going around that farmers have no choice when it comes to the seed they choose to plant. Or if they do have a choice, large corporations like Monsanto force it upon them. And if anybody tries to voice their opinion and let the farmer's themselves speak upon their choices, the individual suddenly becomes a pawn for Monsanto.

Okay so the above example may be a little extreme. Doesn't mean I haven't seen it happen again and again online. Why is it that because we are behind a computer it gives us the license to be disrespectful? Anyway, back to farmers. I was interested in what the farmers themselves have to say about their seed choices, how they choose the seed they do, and why do they CHOOSE to plant GMOs or maybe they don't? So I asked several farmers some questions... And here's what I found.

Do farmers have a choice when it comes to the seed they plant?

Out of every single farmer I surveyed, 100% said they felt like they have a choice when it comes to the seed they plant. Not one farmer surveyed felt pressured into choosing a certain kind of seed, but instead felt like they have a good variety of seed to choose from and that they were free to choose however they wished. One farmer responded, "Just as you have the



choice on what seeds to purchase from your favorite garden store, we have the choice on what we want to buy from our favorite seed salesman." But farmers don't only feel like they have a choice, they are happy that they have a choice. One farmer told me, "I feel it's important that we have a choice in the seed we choose because not every system or seed type is a fit for every operation". There is no one solution fits all when it comes to seed.

What types of seeds are out there? How do you choose the seeds you do? What factors go into choosing seed?

Farmers today have a choice between conventional seed, or hybrids. Regardless of what type of seed you choose, there are many different things factoring into seed choice. As one of the responses from my organic farmers stated, "Seed selection for organics is not very different from seed selection on a conventional farm. We may grow things differently, but for the most part, we are considering the same facts just as a conventional farmer does."

Some of these factors include:

- **Maturity**
How long it takes the seed to mature and eventually be harvested
- **Soil type**
what kind of soil are you planting into? Some seeds do better in one type of soil versus another
- **Geography**
Where you are growing the seed makes a big difference, some climate may be

more wet or more dry than other.

- **Tolerance traits**
This can be anything from weed tolerance, insect tolerance, to even drought tolerance. Some seeds do better with less moisture or rain than others
- **Yield potential or return**
Which seed is going to give us the greatest chance for profit and keep our input costs within reason
- **Price**
Being a farmer is a career and it's how they make money to feed and support their families so of course price is going to play into the choice
- **Availability**
You may find a seed variety you like but it may not be available due to a number of reasons. Maybe natural disaster: in order for that seed to make it to you as a farmer, it must first be grown and harvested... What happens if a natural disaster hits where

they grow the seeds? Maybe a frost out of season? There are many reasons as to why some seeds just may not be available.

How do farmers make decisions on what seed to plant?

Many farmers look at the records for previous years. Often times they look at yield maps which are graphed by the harvester or combine while they harvest. It tells the farmer where the crop did good (had a high yield), where it was average, and where it was poor (had a low yield). Other farmers look to replicated research by universities paired with replicated research by seed companies. Some look to their trusted resources whether they be their seed dealers, local agronomists. As one of the farmer's shared with me, "The pace of change, new seeds, and seed technologies is quite fast. My ability as a farmer to keep up with all of it is challenging. I establish long-term relationships of trust and understanding with my seed dealers so that we can both work as a team towards selecting the right products for my farm."

If you plant hybrid seed, what are the benefits of choosing that over a conventional seed?

Each farmer has their own reasoning for choosing hybrid seed versus conventional seed. And to be completely honest, many of the responses were because of convenience. Much like the rest of us, farmers are always looking to do their job better & more efficiently with less labor (work) and input costs. And I understand that, if I could get paid the same while working less and spending less money in order to go to work, I'd be on board with that.

Farmers will not and do not spend money on things they don't absolutely need! If it's going to make for a better crop and it's within their input costs, absolutely farmers will use a certain product. But by no means we farmers just use an excess of insecticides, herbicides, or fertilizer because it costs a lot to apply! Whatever the reasoning, GM seeds are just another tool in the large toolbox of technologies

at the disposal of the modern farmer, not a weapon to unintentionally kill, hurt, or make people sick like some would have you believe.

So where do farmers get their seed from?

Would you be shocked to know that not every farmer answered Monsanto!? Some responses included: Kenya seed company, Pioneer, seed company East Africa Seeds Monsanto, as well as A LOT of smaller seed companies throughout the country. which is great because it means that farmers like to support and keep good working relationships with the people local to them!

To farmers: If somebody accused you of being a pawn for a large corporation because of the seeds you choose, how would you respond to that?

"Very simply, I choose my seed based upon the best variety for my conditions. I



choose a seed because it works for me, not because I don't have other choices"

"I would invite them to do the research with me. First we go through the list of potential seed candidates every year comparing conventional, and hybrids. Then we compare yields, cost per acre to keep plants alive, and then we throw in the variables: drought, flood, extreme heat or cold, and untimely rains during harvest. If they could come up with a perfect seed variety after comparing the hundreds of varieties available from the hundreds of companies THEN I'd listen to them."

And from the perspective of an actual seed dealer: "Seed companies, including bring

to market those varieties and traits that farmers want to buy. We have access to all kinds of conventional seeds, but when we have offered them, there are very few who want them. Farmers choose and want hybrid seeds, therefore, we supply that demand. Just as if there were a significant demand for conventional seeds, we would be happy to offer them."

Do farmers have choices? YES!

So there you have it, straight from the farmers. And YES farmers feel like they have a choice, sometimes too many choices, they enjoy the fact that they have a choice, they choose their seeds based on a variety of different factors not just money. Farmers drive the demand for the seed that is researched, bought, and sold. And really, it never makes any logical sense to me why people praise the farmers but demonize companies producing the seeds?

In the end, I think some people forget that no matter what side of the fence we are on, whether it be an organic farmer, an employee for Monsanto, or a GM farmer, we are all people. We all have families, friends, and people we care about. We are all passionate about the food we eat and how it is grown. We are all passionate about what we do and farmers are no exception.

Only in an area where food is abundant do you have a CHOICE in what kind of food you put in your body. So let's celebrate that we live in a place where food diversity is abundant. Let's celebrate the diversity that is agriculture and the fact that as farmers, we are given choices so that we can produce the very best crops we possibly can and that as customers and consumers of agriculture, you too have a choice when it comes to the food you eat and put in your body. And let's work together in agriculture in order to ensure people in other places have that same choice too.

Thank you to those farmers who responded to my survey, I appreciate you taking the time to voice your thoughts on the matter and hopefully this post helps boost your voices!

DETECT EARLY, SAVE YOUR CASH

Stem rust can affect wheat, barley, triticale and many other related grasses. It is found wherever cereals are grown.

Cereal diseases are a big challenge to the farmers, so they ought to be keen on their farm so as to know the progress of their crops and in case of any disease, how they should deal with it. Once the farmer has traced any disease, they need to get the best solution as soon as possible, to reduce the effects of the disease.

A growth stage key provides a common reference for describing the crop's development, as to implement agronomic decisions based on a common understanding of which stage the crop has reached. The most commonly used growth stage key for cereals is the: Zadoks Decimal Code, which splits the development of a cereal plant into 10 distinct phases of development and 100 individual growth stages. It allows the plant to be accurately described at every stage in its life cycle by a precise numbered growth stage (denoted with the prefix GS or Z e.g. GS39 or Z39)

Using Fungicides To Manage Cereal Diseases

Growers who can't or don't have long, diverse crop rotations will need to lean more on other management tools like fungicides. Management of cereal diseases using fungicides is a holistic approach. Growers must integrate all available knowledge into pest management. They need to understand Crop biology and growth stage, pathogen biology and disease cycle, weather conditions and forecasts, field history, yield potential and yield target, economic thresholds and fungicide characteristics.

Fungicides are used to make money,



therefore though disease may be present in a crop at many stages through the crop's life it may not always be economical to control it.

As an input, the economic response to fungicide relates to the extent of the disease pressure, the ability of the product to control that disease, water availability to the crop to express the benefit.

Yield response from fungicides is linked to the differences achieved in green leaf retention, principally during grain fill. In order to achieve differences in green leaf retention during grain fill, it is important to target the leaves that contribute most to yield. Fungicides are insurance inputs: applied during stem elongation yet having their greatest impact during grain fill.

Whilst the number of fungicide applications, rate, and specific timings will relate to disease pressure and yield potential, it is important to recognize that fungicide application should also be related to the importance of the plant components being protected.

In application, growers should aim to

control disease on the yield contributing leaves, protect disease free canopy during grain fill, Improve grain fill, harvest large grain size, improved yield and have improved quality characteristics

Application:

Every grower's fungicide strategy should be to protect the most important leaves. Then it becomes important to identify when the top 3 leaves emerge.

In terms of the Zadocks growth stage, the key top 3 leaves and ear emergence are covered by GS32-59 (the start of stem elongation to full ear emergence). At GS32 the leaf emerging from the main stem is likely to be leaf 3 or (F-2

If the onset of disease occurs at or before flag leaf emergence GS39 and a single fungicide application is delayed beyond GS39, then the risk of yield penalty increases, more so if the cultivar is susceptible to the Disease. Unless the crop is subject to very late disease infection, a single application at this timing will produce inferior results compared to applying at the flag leaf stage.

Mainly this application is done to control disease in the top 2 leaves assuming an earlier flag leaf application and protect the ear that was not emerged at earlier spray timing. This spray timing could be important in regions with longer grain fill periods when crops are under high disease pressure for the whole season.

Many farmers grow cereals for commercial purposes, so there is need for taking care of what brings income.

You can't
always be there
for your crop.



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Looking after your crop. It takes an unbelievable amount of effort, so it's good to know Prosaro takes the weight off your shoulders. This trusted fungicide is proven worldwide to consistently deliver unrivalled disease control on *Septoria* and other leaf diseases, as well as *Fusarium* head blight. Nothing gives you better protection for stronger yields.

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Sweet Sorghum for Commercial Animal Feeds

Slowly the vehicles snaked into the furthest side of his farm. In the muddy sticky black cotton soils, only the 4x4 wheel drive vehicles could manage. Out of the vehicles, one of my colleagues shouted, if you do not have 4x4 shoes, please remain in the vehicle. On sight is hectares of sorghum and immediately ask “ what do you do to the bords.” Let them eat i need the stems more, i plant for animal feed,” says Stuart Barden



Solid state fermentation has the advantage of energy-saving and pollution-reducing, and it is usually applied in feed fermentation as its product can be utilized directly as feed. Therefore, solid state fermentation was chosen for conversion of sweet sorghum stalk to protein feed.

Sorghum (*Sorghum bicolor* L. Moench) lends itself to a variety of uses. Its uses for feed and fodder are now overtaking that for food in many parts of the world. Recent developments in enhancing sorghum digestibility make it a strong competitor to maize in view of its relative advantage as low input demanding crop that can thrive better under harsh conditions. The forage stuff included grass, sweet and hybrid types and their production under green chop, grazing, hay or silage making systems. As feed stuff, the potential of utilizing sorghum grains in dairy, beef and poultry nutrition is great. Recently advances have been made in quality enhancement of sorghum and the role of processing to improve the relative efficiency of sorghum as feed-grain.

Sorghum has recently witnessed an increasing importance as feed crop in the semi arid tropics and drier parts of the world where livestock constitutes a major component of the production system. Such importance is further accentuated by global warming, increasing water shortages, and growing demand for high quality forage resources. Although the crop has great genetic diversity enabling selection for most economic traits, yet improvement efforts are mostly grain oriented with little attention being given to non-grain attributes. The fodder's contribution to the total value of sorghum production has increased considerably. They reported that the grain/straw price ratio of sorghum has dropped

Sweet sorghum, because of its high yields and high sugar content, has attracted great attention as feedstuff and energy crop. Of all usages, sweet sorghum stalks are mainly ensiled or directly used as animal feed. Ensiling is a process of solid state fermentation by mixed bacteria of nature; however, the silage obtained has low protein content (4-8%) with poor palatability. Great attempts on microbial fermentation have been made to enhance protein content in agricultural straw for poultry feed.



Sorghum is an important silage crop for beef and dairy producers. The general shortcomings of sorghum silage in comparison to that of corn include lower nutritive value and threats of prussic acid and nitrate poisoning. Forage and grain sorghums types are the best suited for silage production.

If silage is made perfectly, anaerobic bacteria (lactic acid bacteria) will convert carbohydrates to lactic acid, the pH is rapidly lowered and the silage is preserved. Yet, some DM is lost during lactic acid production in even the best of circumstances.

Whenever oxygen is present, carbohydrates are converted to carbon dioxide and water, accompanied by the generation of considerable heat resulting in serious losses in DM ranging from 5% - 15% in very good silage to 25% - 50% in very bad one. Losses are quantified as the amount of forage DM fed-in minus that fed-out of a silo. These losses are the result of effluent, respiration, primary and secondary fermentation, and aerobic activity during the storage and feed-out process.

The use of silage has long been an integral component of temperate feeding systems worldwide, as a means to ensure year round feed supply for high production animals. However, its use in the tropics has been restricted to isolated cases, usually involving higher-return enterprises, and particularly the dairy industry. This technology requires high investment in facilities, accurate timing in the several stages of the ensiling process, and better understanding of the whole process than hay making demands.

In addition to these demands, silage making and management in tropical conditions needs special attention and care with regard to three key points:

In warm areas: It is more difficult to control the correct stage for harvesting due to very rapid phasing of growth stages. This is especially crucial with cereal crops in the

last stages of maturity.

Dry Matter Content: The correct dry matter (DM) content in the plant before ensiling is an important factor for the fermentation success. Unexpected weather (dry, wet or hot) can damage the crop and increase losses.

Aerobic stability: Rapid deterioration of silage, especially during the feeding-out process is a real problem in a hot climate. It reduces quality and results in losses. Aerobic stability should become a routine test in hot areas.

Stem (lignin) ratio to the whole plant: Reducing the proportion of stem in the plant will increase its digestibility, so, in practice, shorter hybrids are preferable.

Some of the important properties determining the value of sorghum silage include:

High energy

Structural carbohydrates and starch are the main energy resources in cereal crops. Starch is mainly accumulated in the grain, the amount of which greatly affects the total energy content. The higher the proportion of grain in the plant, the more the total energy. The positive effect of the presence of starch is especially important for dairy cows. Therefore, a high-grain sorghum hybrid is better.

DM content

Ensiling technology requires at least 30% of DM in the forage. With less than 30% DM, undesirable fermentation takes place and increases losses. To increase the DM content, the recommended stage for harvesting should be between milk and dough stages. Harvesting at late-dough maturity or later will increase the undigested amount of the grains and reduce the nutritional value.

Tannins

As pointed earlier, tannins have a negative effect on the digestibility rate of the protein in the diet.

from 6:1 in 1970 to 3:1 currently and is likely to decline further.

Feed use was relatively minor until the mid-1960's when there was a rapid expansion. Currently, about 48% of world sorghum production is fed to livestock. Sorghum has great potential for fodder production under limited resource conditions. Compared to other cereals, especially maize, sorghum is more droughts tolerant, less input demanding and thrive better under harsh conditions. The advent of hybrid sorghum in the 1950's represents a turning point contributing to expanded use and higher yields of the crop

Animal Feed

Fodder sorghums are usually classified into three major categories. These sorghums have little value as directly marketable seed crops, but their value becomes apparent as they are marketed through livestock and industrial utilization.

Sweet sorghum varieties and hybrids are good for animal feed. They are tall plants (2 to 4 m) with sweet thick stems. Unlike traditional sorghum, forage sorghum has poor regrowth ability following harvest, so is best adapted to a single-cut system. It is best utilized as a silage crop, although it can be grazed or cut for hay if managed appropriately. Its silage is usually slightly lower in energy than that of corn but similar in protein.

Transformation is Needed – Transformation is Possible

Our commitment to transformation.

Soils Solution to achieving Sustainable Development Goals



Sustainable soil and land management contribute to achieving several of the proposed Sustainable Development Goals, such as food security, land

degradation neutrality and an ambitious climate and biodiversity agenda. These agendas, SDGs and Climate, would benefit from being thought and worked upon together. And soils can contribute to solutions in both agendas.

Soils – and the need for their sustainable management – cut across a range of the proposed Sustainable Development Goals. If we do not protect and sustainably use our soils, essential ecosystem services such as food security, sustainable freshwater management or the protection of the oceans will not be achieved. Soils are the largest terrestrial carbon storage.

Sound soil management holds the potential to increase the soil organic carbon content and thereby adapting to and mitigating climate change while increasing productivity.

The negotiations to strike a new climate deal and the finance for development process must be conducted in a coherent way. However, we run the risk of not making use of the synergies that exist between these political agendas. Considerations on a “4 pour 1000” (4 per thousand) initiative – referring to an increase in parts per thousand of soil organic carbon – by France is a valuable exception in this regard as it is truly pointing towards a systems approach and addressing multiple agendas.

At the same time achieving food security and the right to food means securing access to land for

the billions of smallholder farmers who are the primary investors in their own agriculture.

These global agendas require mechanisms for their implementation at regional, national and local levels. Adoption of sustainable land management on sub-national and local level needs urgent attention.

Invest in soil rehabilitation

This has various benefits, from food security to the mitigation and adaptation to climate change. In a world of 9 billion people we cannot afford to further lose our fertile soils. We must halt degradation processes. The degradation of soil and land resources is threatening livelihoods and the provision of ecosystem services in many parts of our world. This is a global concern.

To attain national food security goals and the objectives of the Zero Hunger Challenge the rehabilitation of degraded soils is therefore key. Measures to restore soil fertility are not only important to achieve food security; they also increase the soil organic carbon content. Soil rehabilitation policies therefore offer a great opportunity to link the Post-2015 development agenda and the negotiations on an ambitious climate agreement while advancing food security through restoration of soil quality. The newly established Green Climate Fund could and should be used by soil related programmes, which can demonstrate that their implementation contributes to the soil and climate agenda alike. The same applies to the Global Environment Facility and other sources of financing. In these efforts, we must not forget that responsible investments respect the human rights, including the right to food, of local communities.

Investment in soil rehabilitation needs to be scaled up. The work by the

Economics of Land Degradation Initiative shows that the costs of inaction on land degradation are significantly higher than the costs of investing in sustainable land and soil management. Bringing this message and the first results from the project The Economics of Ecosystems and Biodiversity in the Food and Agriculture Sector (TEEB) to decision makers in policy and private sector is key. Next to investments, we have to address the question of adoption. To implement soil rehabilitation measures on landscape level, we need to understand obstacles within the social, economic and political context. Particular attention needs to be paid to the land rights regime.

The identification of implementation pathways through multi-stakeholder processes assumes particular importance in this regard. An open dialogue and participatory processes at the local level on soil rehabilitation measures is also key to ensure that proposed measures match local realities, that they correspond to people's needs.

Soil protection and soil rehabilitation policies

These need to be based on a human rights framework, principally emphasizing land rights for marginal and vulnerable groups in society. A focus on soil rehabilitation holds great potential. There is need to be aware, though, that technologies for soil rehabilitation are not neutral. This applies in particular to large-scale rehabilitation efforts. Technologies might favour some groups in society over others or might even have outright negative implications for some. As a principle, soil rehabilitation measures must contribute to the progressive realization of the right to food. Soil protection policies

Soil rehabilitation needs to be accompanied by measure to increase tenure security of intended beneficiaries, as well as to prioritise those approaches and technologies that can be implemented and owned by small-scale farmers.



Soil Management

in general need to be based on a human rights framework.

Investments in soil rehabilitation tend to increase the value of the land. In addition, certain approaches to land rehabilitation may require large investments in expensive technologies. In a context of insecure or unclear land rights, these investments might lead to some groups losing the access to their land. Hence, soil rehabilitation needs to be accompanied by measure to increase tenure security of intended beneficiaries, as well as to prioritise those approaches and technologies that can be implemented and owned by small-scale farmers.

Common lands including pastures and forests, require particular attention, as it is often the most vulnerable and marginal groups in society who live on these lands. Measures to increase tenure security in common lands must be developed in a participatory way to ensure that they are in line with the perceptions and needs of the

intended beneficiaries.

The Voluntary Guidelines on the Responsible Governance of Tenure of Land provides the necessary principles for pro-poor land and soil policies. There is need to further work on the application of the Guidelines at national and sub-national levels as well as to respond to the extraterritorial obligations laid out in the guidelines. Multi-stakeholder learning processes are a useful approach in support of their adoption.

Invest in a holistic approach to sustainable soil management.

Towards a consistent approach to implementing the SDGs by focusing on soils, protect soils by investing in a holistic approach to sustainable soil management. In terms of our soil resources, the SDGs run the risk of not being sustainable.

We might need more land to implement the Sustainable Development Goals (SDGs) than we have available. Balancing

competing demands on soils and the bio-resources they sustain is a necessary step to achieve consistency across the goals. At the same time, we can protect our soil resources by investing in other goals. For instance access to education is a very important example and fostering health care support farmers to maintain sound land management and productivity, and reduce migration pressures. Reducing food waste and increasing resource efficiency are other important examples. Soils must be seen in a Nexus and soil protection must be approached by cross-sectoral policies.

Public Debate

To make the transformational potential of the SDGs work, we need to set up institutions and processes at national level that will allow a public debate on the post-2015 development agenda.

In implementing the SDGs we have to put in place national level processes and institutions, in all countries and, if relevant,

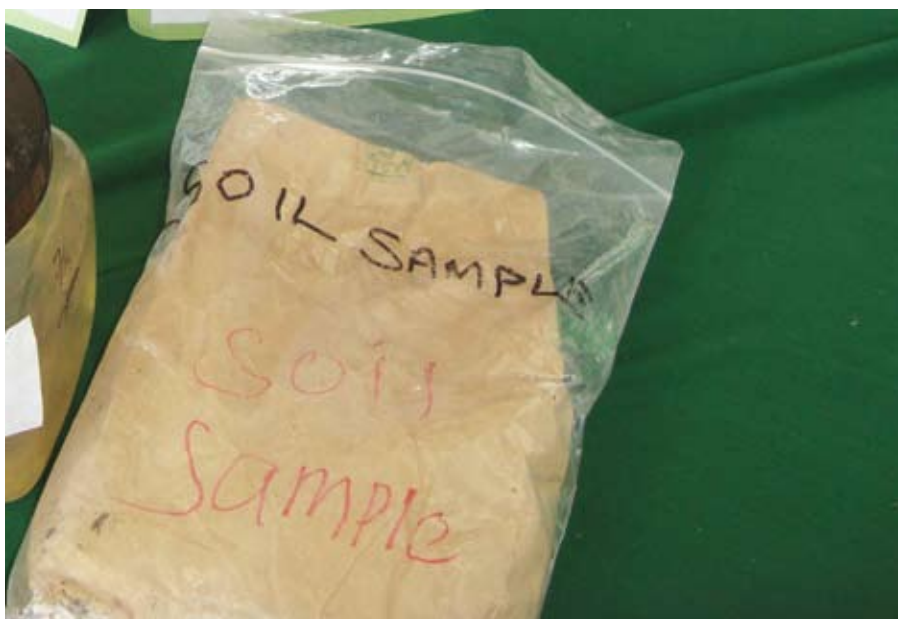


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at regional level to set priorities and to balance potential conflicts between the goals. These processes will also help to better understand negative externalities within and beyond our own countries. We need public forum that allow for debates on what type of development we want to see for our societies. These public forum also assume particular importance in monitoring, review and accountability of the Post-2015 development agenda. In times in which we are developing new types of international agreements on sustainable development, the need for participatory forms of review and accountability is not confined to the Post-2015 development agenda only.

While soils and land are managed locally, their ecosystem services are globally relevant. Soil use and land degradation have transboundary characteristics. Virtual land imports or land based pollution of our oceans are just two examples in this regard. National level processes to implement the SDGs must take these transboundary effects into account. In effect, soil protection cannot be confined to the national level only. Sustainable soil management and responsible land governance must move centre stage within the Global Partnership for Sustainable Development.

Hence, there is need to focus on processes to implement the SDGs by and in countries.

Given the potential of sustainable soil management and responsible land governance for achieving the SDGs there is need to pilot such processes focusing on soils.

Articulate scientific knowledge with societal decision-making

We need to build on the diversity of available knowledge and improve ways to articulate scientific knowledge with societal decision-making in order to identify responses to the pressing challenges of soil and land degradation.

There is need to appreciate the advances by the soil science community – represented by the IUSS – and broader interdisciplinary studies on sustainable soil management and responsible land governance. The successful implementation of the Post-2015 development agenda must be knowledge-based. For this to come about there is need to better articulate science with policy processes. This involves actual engagement of science in transformation processes. In return, it is through this involvement that relevant research questions emerge. Our research agenda hence needs to be informed by the Post-2015 agenda and its implementation.

We will not only require an interdisciplinary dialogue but also a dialogue – on equal footing – between science and other

stakeholders. This exchange must include traditional knowledge and would benefit from citizen science that goes beyond citizens as implementers of pre-defined research questions. In our knowledge democracies, there is need to conduct science with society.

The first joint meeting of the Intergovernmental Technical Panel on Soils of the Global Soil Partnership and the Science Policy Interface of the United Nations Convention to Combat Desertification demonstrated the possibilities that are available when we join forces.

To support transformations, to address questions of “how to make change happen” we need to expand research on implementation. This research agenda on implementation needs to be action-oriented and become engaged with actual transformations processes.

Conclusion.

It remains a challenge to set the often forgotten resource soil on the political agenda. Giving marginalized voices an opportunity to speak up and potentially influence policy processes on soil and land is an equally demanding task. Sometimes, this implies the need to overcome vested interests. Hence, we need a broad alliance of different stakeholder groups to achieve change. There is great potential in facilitating this much needed exchange between these different stakeholder groups. Last years’s International Year of Soils, showed awareness raising activities contributed to a change in perception of the importance of soils. The Institute for Advanced Sustainability Studies should therefore continue to further the science-policy – society –action interface on sustainable soil management and responsible land governance. This can only be done through broad partnerships and it would thus be an honour to continue doing so with you. Let us show that the goals described above are within reach, if we sustain the momentum and continue to work together.

Lancelot 450WG Launch



Dow Launches New Lancelot 450WG Herbicides

Win the Battle against your Toughest Broadleaf Weeds

Growers in Narok, Nakuru and Eldoret welcomed the introduction of Dow Agrosciences new innovation with thunderous applause as presenter after presenter enumerated its benefits. "I am pleased to announce the introduction of Lancelot 450WG Herbicide to growers in the cereal sector. As Dow Agrosciences we are thrilled to add Lancelot 450WG to our expanding herbicide portfolio," said Mr. Oscar Shilliebo, Business Development Manager, East Africa in the midst of applause. "Lancelot 450WG offers unparalleled control of many hard-to-control weeds with impressive plant safety."

The new post-emergent herbicide for cereal crops (Wheat, barley, Maize) containing a new active ingredient Aminopyralid and Florasulam delivers excellent control of many key annual and selected perennial broad leaf weeds

Lancelot 450WG is effective against a very wide range of broadleaf weeds, including resistant Amaranthus and Emex australis. The product has a wide application window from tillering till the second node stage of wheat, it has soil residual efficacy, allowing control of late germinating weeds. In addition, Lancelot can be mixed cereal graminicides, insecticides,

fungicides and liquid fertilizers. It has rain fast of one hour after application.

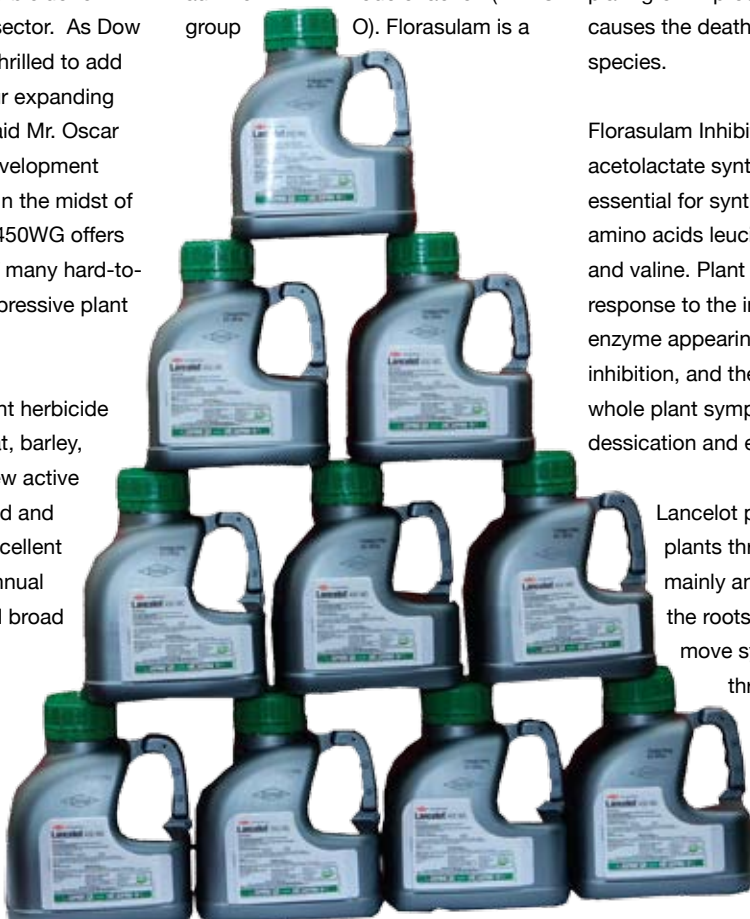
Composition

Lancelot 450 WG contains two active ingredients, from different chemical families; 300g/Kg Aminopyralid, a new active ingredient in the pyridine carboxylic class of chemistry with an auxinic mode of action (HRAC group O). Florasulam is a

throughout the plant, binding at receptor sites normally used by the plants natural growth hormones which results in deregulation of plant growth metabolic pathways and therefore disruption of normal growth processes.

This significant disruption of normal plant growth processes ultimately causes the death of susceptible plant species.

Florasulam Inhibits the plant enzyme acetolactate synthase (ALS) which is essential for synthesis of branched amino acids leucine, isoleucine and valine. Plant death occurs in response to the inhibition of the ALS enzyme appearing first as growth inhibition, and then, several distinctive whole plant symptoms, followed by desiccation and eventual death.



Lancelot penetrates into the plants through the leaf surface mainly and secondary through the roots. Both compounds move systemically throughout the plant and deregulate plant growth metabolic pathways, affecting the growth process and of the plant and which leads to death of susceptible

plant species. atriazolopyrimidine sulphonamide with an ALS mode of action (HRAC group B).

Mode of Action

Aminopyralid possesses auxin-like qualities and moving systemically

plant species.

Speaking during the Launch, Mr. Shilliebo said Lancelot controls a wide spectrum of annual and perennial broad leaf weeds. Optimum application timing is when weeds



Conclusion

Speaking during the launch Mr. Francis Karanja, Dow Agrosciences Sales Manager, South East Africa said Dow Agrosciences had teamed up with Amiran Kenya Ltd as their distributor for cereal products. He called on growers to take the advantage of the strong partnership and make the best of it.

Adding, “Ultimately, if growers achieve good weed control with Lancelot program, they will likely be set up for success for the entire season. This new herbicide will be an excellent fit in reduced and no-till production systems to control actively growing weed species and give growers peace of mind that they will plant into a clean field.”

are at 2-8 leaves stages. Mr. Shilliebo said to increase the effectiveness, growers need to ensure weeds are actively growing and translocation of the active ingredients is faster. Temperatures during application are from 5 to 25 degrees with good humidity. A non ionic adjuvant can improve the activity on certain weeds, particularly under dry conditions.

Mr. Shilliebo added that under field conditions Lancelot 450WG works mainly as foliar herbicide, penetrating the weeds through leaf surface and is conveyed through phloem system to the plant growth tissues but in contrary to many other cereal herbicides Lancelot shows also good soil activity allowing control of the late germinating weeds or weeds with prolonged germination. Thanks to it, the control period of the product can be extended in average by 1-3 weeks.

Despite lancelot soil residual activity, it's principal use should be post emergent on the weeds

already present on the field.

Crop Rotation

Due to its soil residual activity, Lancelot may have some effect on certain crops in rotation. Following intervals between Lancelot application and new crop drilling should be observed.

In case cereals treated with Lancelot have to be replaced by other crop, due to the cultivation failure, wheat, barley, oats, maize or sorghum can be planted immediately.

Residues in Plants and Manure

Keep straw on farm where aminopyralid was applied; preferably incorporate the straw into soil by means of ploughing where treated with Lancelot. The only exception is where

the straw is used for industrial purposes such as paper production or burning straw for energy production.

Plant residues, including straw treated areas, or manure from



animals that have consumed straw from treated areas should not be used for composting or mulching or dressing where susceptible plants may be grown in the same season and cannot be used in greenhouse or seedling production.

“Growers are seeking new, better ways to control Weeds,” said Doris Kawira of Amiran Kenya Ltd. “We look forward to offering Lancelot to mitigate the ever-growing threat of weed pressure and provide improved control.”

Shafi 125 SC

Shafi 125 SC is a triazole fungicide marketed by Cheminova. All triazole fungicides act by blocking the synthesis of ergosterol in sensitive species of fungi. This causes rupture of the cell wall and subsequent inhibition of growth. Flutriafol is the most systemic triazole fungicide available. It is rapidly taken up by the plant and also is translocated very quickly within the plant.

Wheat Diseases



Barley Diseases



Benefits

- Highly cost-effective against wide range of diseases in wheat and barley.
- Versatile giving flexibility of application – both soil and foliar application
- It may be applied in tank-mix with many other agricultural chemicals
- Quicker results as flutriafol is the most systemic triazole fungicide available giving faster results.
- It is rapidly taken up by the plant and also is translocated very quickly within the plant

Developing Nutritious Maize and Wheat Varieties



Maize and wheat biofortification can help reduce malnutrition in regions where nutritional options are unavailable, limited or unaffordable, but must be combined with education to be most effective, particularly as climate change jeopardizes food security, according to researchers at the International Maize and Wheat Improvement Center (CIMMYT).

Climate change could kill more than half a million adults in 2050 due to changes in diets and bodyweight from reduced crop productivity, a new report from the University of Oxford states. Projected improvement in food availability for a growing population could be cut by about a third, leading to average per-person reductions in food availability of 3.2 percent, reductions in fruit and

vegetable intake of 4 percent and red meat consumption of .07 percent, according to the report.

Over the past 50 years since CIMMYT was founded in 1966, various research activities have been undertaken to boost protein quality and micronutrient levels in maize and wheat to help improve nutrition in poor communities, which the Oxford report estimates will be hardest hit by climate change. As one measure of CIMMYT's success, scientists Evangelina Villegas and Surinder Vasal were recognized with the prestigious World Food Prize in 2000 for their work developing quality protein maize (QPM).

"We've got a lot of balls in the air to tackle the ongoing food security crisis and anticipate future needs as the population grows and the climate changes

unpredictably," said Natalia Palacios, head of maize quality, adding that a key component of current research is the strategic use of genetic resources held in the CIMMYT gene bank.

"CIMMYT's contribution to boosting the nutritional value of maize and wheat is hugely significant for people who have access to these grains, but very little dietary diversity otherwise. Undernourishment is epidemic in parts of the world and it's vital that we tackle the problem by biofortifying crops and including nutrition in sustainable intensification interventions."

Undernourishment affects some 795 million people worldwide – meaning that more than one out of every nine people do not get enough food to lead a healthy, active lifestyle, according to the U.N. Food and Agriculture Organization (FAO). By 2050, reduced fruit and vegetable intake could cause twice as many deaths as under-nutrition, according to the Oxford report, which was produced by the university's Future of Food Programme.

As staple foods, maize and wheat provide vital nutrients and health benefits, making up close to one-quarter of the world's daily energy intake, and contributing 27 percent of the total calories in the diets of people living in developing countries, according to FAO.

"Nutrition is very complex and in addition to deploying scientific methods such as biofortification to develop nutritious crops, we try and serve an educational role, helping people understand how best to prepare certain foods to gain the most value," Palacios said. "Sometimes communities have access to nutritious food but they don't know how to prepare it without killing the nutrients."

The value of biofortified crops is high in rural areas where people have vegetables for a few months, but must rely solely on maize for the rest of the year, she added, explaining that fortified flour and food may be more easily accessed in urban areas where there are more dietary options.

PROMOTING PROTEIN QUALITY

Conventional maize varieties cannot provide an adequate balance of amino acids for people with diets dominated by the grain and with no adequate alternative source of protein. Since the breakthrough findings of Villegas and Vasal, in some areas scientists now develop QPM, which offers an inexpensive alternative for smallholder farmers.

CIMMYT scientists also develop QPM and other nutritious conventionally bred maize varieties for the Nutritious Maize for Ethiopia (NuME) project funded by the government of Canada. NuME, which also helps farmers improve agricultural techniques by encouraging the deployment of improved agronomic practices, builds on a former seven-year collaborative QPM effort with partners in Ethiopia, Kenya, Tanzania and Uganda.

In Ethiopia, where average life expectancy is 56 years of age, the food security situation is critical due in part to drought caused by a recent El Nino climate system, according to the U.N. World Food Programme. More than 8 million people out of a population of 90 million people are in need of food assistance. Almost 30 percent of the population lives below the national poverty line, 40 percent of children under the age of 5 are stunted, 9 percent are acutely malnourished and 25 percent are underweight, according to the 2014 Ethiopia Mini Demographic and Health Survey. The NuMe project is helping to shore up sustainable food supplies and boost nutrition in the country, where the vast majority of people live in rural areas and are engaged in rain-fed subsistence agriculture.



INCREASING MICRONUTRIENTS

CIMMYT maize and wheat scientists tackle micronutrient deficiency, or “hidden hunger,” through the interdisciplinary, collaborative program HarvestPlus, which was launched in 2003 and is now part of the Agriculture for Nutrition and Health program managed by the CGIAR consortium of agricultural researchers. Some 2 billion people around the world suffer from micronutrient deficiency, according to the World Health Organization (WHO). Micronutrient deficiency occurs when food does not provide enough vitamins and minerals. South Asia and sub-Saharan Africa are most affected by hidden hunger, which is characterized by iron-deficiency anemia, vitamin A and zinc deficiency.

Work at CIMMYT to combat micronutrient deficiency is aligned with the U.N. Sustainable Development Goals (SDGs) — in particular Goal 2, which aims to end all forms of malnutrition by 2030. The SDG also aims to meet internationally agreed targets on stunting and wasting in children under 5 years of age, and to address the nutritional needs of adolescent girls, older people, pregnant and lactating women by 2025.

WHOLE SOME WHEAT

The wheat component of the HarvestPlus program involves developing and distributing wheat varieties with high zinc

levels by introducing genetic diversity from wild species and landraces into adapted wheat.

Zinc deficiency affects about one-third of the world’s population, causing lower respiratory tract infections, malaria, diarrheal disease, hypogonadism, impaired immune function, skin disorders, cognitive dysfunction, and anorexia, according to the WHO, which attributes about 800,000 deaths worldwide each year to zinc deficiency. Additionally, worldwide, approximately 165 million children under five years of age are stunted due to zinc deficiency.

A project to develop superior wheat lines combining higher yield and high zinc concentrations in collaboration with national agriculture program partners in South Asia has led to new biofortified varieties 20 to 40 percent superior in grain zinc concentration. “We’re playing a vital role in this area,” said CIMMYT wheat breeder Velu Govindan. “Our research has led to new varieties agronomically equal to, or superior to, other popular wheat cultivars with grain yield potential at par or — in some cases — even superior to popular wheat varieties adopted by smallholder farmers in South Asia where we’ve been focused.”

Scientists are studying the potential impact of climate-change related warmer

temperatures and erratic rainfall on the nutritional value of wheat. An evaluation of the effect of water and heat stress with a particular focus on grain protein content, zinc and iron concentrations revealed that protein and zinc concentrations increased in water and heat-stressed environments, while zinc and iron yield was higher in non-stressed conditions.

“The results of our study suggest that genetic gains in yield potential of modern wheat varieties have tended to reduce grain zinc levels,” Govindan said. “In some instances, environmental variability might influence the extent to which this effect manifests itself, a key finding as we work toward finding solutions to the potential impact of climate change on food and nutrition security.”

Additionally, a recent HarvestPlus study revealed that modern genomic tools such as genomic selection hold great potential for biofortification breeding to enhance zinc concentrations in wheat.

IMPROVING MAIZE

Scientists working with HarvestPlus have developed vitamin A-enriched “orange” maize. Orange maize is conventionally bred to provide higher levels of pro-vitamin A carotenoids, a natural plant pigment found in such orange foods as mangoes, carrots, pumpkins, sweet potatoes, dark leafy greens and meat, converted into vitamin A by the body.

Vitamin A is essential for good eyesight, growth and boosting

Orange maize is conventionally bred to provide higher levels of pro-vitamin A carotenoids, a natural plant pigment found in such orange foods as mangoes, carrots, pumpkins, sweet potatoes, dark leafy greens and meat, converted into vitamin A by the body.

immunity. Almost 200 million children under the age of 5 and 19 million pregnant women are vitamin A deficient, and increasing levels through maize kernels is an effective means of boosting it in the diet.

Maize breeders, who are currently working on developing varieties with 50 percent more pro-vitamin A than the first commercialized varieties released, identified germplasm with the highest amounts of carotenoids to develop the varieties. In Zambia, Zimbabwe and Malawi, 12 varieties, which are agronomically competitive and have about 8ppm provitamin A, have been released.

Provitamin A from maize is efficiently absorbed and converted into vitamin A in the body. Stores of Vitamin A in 5 to 7 year old children improved when they ate orange maize, according to HarvestPlus research. The study also shows preliminary data demonstrating that children who ate orange maize for six months experienced an improved capacity of the eye to adjust to dim light. The findings indicate an improvement in night vision, a function dependent on adequate levels of vitamin A in the body.

Researchers are also developing maize varieties high in zinc.

Efforts on this front have been a major focus in Latin America, especially in Nicaragua, Guatemala and Colombia. Scientists expect the first wave of high zinc hybrids and varieties will be released in 2017. Further efforts are starting in such countries as Zambia, Zimbabwe and Ethiopia. Results from the first nutrition studies in young rural Zambian children indicate that biofortified maize can meet zinc requirements and provide an effective dietary alternative to regular maize for the vulnerable population.



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Farm Productivity Dwindling

Driving around, one cannot fail to notice a number of real estate mushrooming. Historically where these real estate stand today was a farmland. Crop protection has been seriously losing to real estate, which way for Kenyans?

Kenyans grain farmers have defied a long term decline in their terms of trade by making nation leading gains in productivity. Statistics show the average productivity growth for a cereal farming to have been losing in hectares to real estate. The cropping subgroup includes wheat and other grain producers and has out-performed despite the slow expansion.

In terms of the cropping operations, three quarters of these productivity gains have come technology. The magnitude of some of these changes is evident as you walk into farms.

The introduction of alternative crops such as canola has also been important as often such crops have a different planting and harvesting window to the cereals. Effectively this increases the amount of time labour and machinery resources can be used for a particular task in any given season.

Whilst productivity growth has been a good news story for farmers, figures indicate that since the turn of the century, the rate of productivity growth has slowed. Recent droughts do impact upon these figures however the slowing trend also raises questions about whether the major gains from past have been made. If this is the case, we will need to look for new technologies and methods to keep ahead of the terms of trade.

Analysis of benchmarking data for grain farmers in reveals two distinct trends regarding asset values and farm profits. The movement over time of farm assets and farm operating profit indexed against previous levels. Given that on average, 70% of total farm assets are comprised of farm land, reasonable inferences about farm land values can be made from this data.

It is clear from this data that, farm assets (and therefore farm land values) have increased at a faster rate than average farm profits. Since the 1990's, it appears the discrepancy in rate of growth between the two has widened.

The other trend evident is the increased volatility of farm profits in the last decade. Partially this can be attributed to two severe droughts; however these seasonal fluctuations shouldn't be ignored or excused because they have a very real effect upon financial returns in those years.

It cannot be ignored that farm inputs have also become very expensive. This can be attributed to high government taxation, financial crisis and EU regulations on what molecules to use and which not to.

Additionally, resistance by pests diseases and weeds has also affected inputs negatively.

Used as a proxy for farm land affordability, this figure shows that previously, farm income as a percent of land value was increasing indicating that farm land was becoming more affordable. However since 2000, the trend has reversed with farm land becoming more expensive when measured against farm income.

At this point in time, farm land appears to be holding its value despite the effects of the global financial crisis. In terms of future land price movements, history would suggest that if land is to become more affordable, it would be the result of a stagnation of land values rather than an increase in farm incomes.

Basically it has become evident there were two aspects that needed defining. These are: What is meant by efficient? And what exactly is a farm business?

Efficiency

The concept of efficiency is defined in the Collins dictionary as “functioning or producing effectively and with the least waste of effort”. Therefore to become more efficient in this context would require increased output from the same inputs or maintaining the level of output whilst using fewer resources.

In a financial context, efficiency also has connotations relating to risk. When constructing an investment portfolio, consideration is given to the mix of assets included in the portfolio because this affects both the long term rate of return as well as the short term volatility. An efficient investment portfolio is one where investments are made in a way where the long term rate of return is optimised for the amount of volatility (risk) from year to year (Painter and Eves 2008).

In the context of a farm business, if operating profits have become more volatile over the past decade, it can be argued that farming as an investment has become less efficient because volatility and risk have increased without a corresponding increase in longer term average profits.

What is a Farm Business?

Over the duration of my travels, it became evident that the “business of farming involves a combination of two very different activities. One activity is an operational business involving the production of food and export crops (and potentially fuel).

The second is the business of investing in rural real estate. Depending upon where in the world you travel, the degree to which these two activities are combined to form a “farm business varies greatly.

These two activities tend to happen in conjunction with each other. Typically the person who owns the land is also the person using that land in their operational business. If that person ceases their operational activities, then they would most likely also sell their farm land.

Conversely, there are farmers who run an operational business without owning any of the land. At the same time, there are others who are also considered farmers because they own large amounts of agricultural land

but take a very limited (or no) role in the operational business utilising that land.

It became obvious that the factors driving success in the operational aspects of the farm business were not necessarily required for success in the real estate business and vice versa.

Therefore, if farmers are to optimise the returns for both aspects of their farm businesses, they need to start looking at each in isolation as well as a combined unit.



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Paving the way for Food Security Leads Matt Fryer to the Helm of Arysta LifeScience East Africa

Briefly discuss Matt Fryer (Background and Managing Director Arysta LifeScience East Africa)

I was born into a farming community in South Africa, and my love for farming, nature and the outdoors started as far back as I can remember.

After completing my BSC Agric in 2002, I went on to work for a small crop protection company, Gap Chemicals, based in Kwazulu Natal and focused on Sugarcane. The small size of the company resulted in me being exposed to all aspects of running a successful business and this quickly revealed yet another passion I have for customer service.

In 2008 I joined Arysta LifeScience South Africa as a Key Account Manager and in addition to my deliverables I took on active roles in the S&OP process, demand planning and had a short stint of looking after the Southern Africa export business. In 2014 I was appointed Commercial Manager for South Africa, mainly as a support role to the Commercial Director, and was responsible for forecasting, pricing, stock distribution and allocation. In early 2015 I was offered the incredible opportunity to move to Nairobi. Having spent my entire career being based in South Africa, it was an easy decision to make to move here and embark on this new leadership challenge.

How would you describe your first year as the Head of Arysta Lifescience East Africa? Are you passionate about what you do?

The first year as Head of East Africa has been exciting, challenging and rewarding. I see East Africa having tremendous potential, but to achieve self-sufficiency and realise this potential, food security needs to be at the top of government's agenda and from what I've seen so far, it is. I'm very passionate and proud about being part of the solution in delivering food security to the region.

Moving to a new country and market can be daunting, but I was fortunate enough to be joining a very welcoming and professional team. They really



helped make the transition a smooth one. To make matters more challenging we were faced with the purchase and integration of Arysta, Chemtura and Agriphar into one entity. With the hard work and commitment of the team, not only did the integration go seamlessly but we were able to still achieve a 100% growth rate in 2015.

Year one was focused on improving our operating systems, making sure back office functions supported the business growth and consolidating and optimising the team on the ground. We achieved this and at the same time successfully integrated the three legacy companies into one face to the customer.



In order to support the growth process that the region committed to, the Eastern Africa management team leveraged best practice from southern Africa and set up the 1st Strategic Agenda workshop in early 2016. Sixteen members of the East African team met in the Nairobi office to embrace the challenge. The Strategic Agenda will be our road map to achieving the 2016 Financial Targets, and at the same time being compliant and looking after the interests of our customers, the organisation, our employees, neighbouring communities and the environment. In this process, we identified key initiatives that need to be implemented to ensure short term targets are met, while remaining sustainable in the long term.

What is your vision for Arysta Lifescience East Africa?

Arysta LifeScience has a very strong presence in Africa and is recognized as the market leader in Southern and West Africa. Our positions in South and West Africa resulted from significant acquisitions and then subsequent organic growth. East Africa is the exception and our growth was started from a low base and relied on organic growth, that was until last year and the acquisitions of Chemtura and Agriphar. Although our footprint is still relatively small, we have increased our team from 19 people in 2014 to the current team of 35 and have more than doubled our revenue over the same period.

Our vision for East Africa is to be recognized as one of the leading Crop Protection companies, with an emphasis on customer service and product stewardship.

What are your top priorities?

We have both short and long-term priorities. The short term priorities include continuous improvement of processes and procedures, updating our operating systems and to maintain a

motivated and empowered team that is passionate about the business and the industry they work in. We pride ourselves on customer service and this will always be a top priority.

The long term priority is to remain at the forefront of technology and make sure our products and services remain relevant and up to date with the industry.

In a nutshell describe Arysta Lifescience East Africa products and services to the farmers

To ensure our short term growth our focus has been on bringing new registrations to the market, maximizing the sales and distribution of our existing range and 3rd party product distribution on behalf of multinationals and J Makers. We have a balanced range of products catering for all market segments.

Large scale commercial farmers in the row crop and ornamentals sectors have been using our products such as Evisect, Silwet, Levo, Kalach, Floramite, Sigma Combi, Satunil, Proplant and Orthene for a number of years and these are well known and established brands. Recently we introduced new active ingredients to the market such as Teppeki (flonicamid), which is a very effective insecticide with a good IPM profile and Topcane (amicarbazone) which is a pre and post emergence herbicide for long term residual weed control in sugarcane. These products are distributed and serviced by our key partners, but at the same time we have on the ground presence to ensure product stewardship and to create additional demand.

In late 2014, we appointed a new Retail Market team, under the leadership of Patrick Amuyunzu. Products such as Cuprocaffaro, Kalach, Orthene, and Folimat are important products in this segment. This is an area of the business that we will continue

Manager of the Month

to invest in as the small scale sector represents the greatest area of land farmed in the region. Small scale farmers are becoming more sophisticated and technically astute, and they are demanding the latest technology to improve their yields and we intend to remain part of their solution.

As part of the Chemtura acquisition, we now have a range of seed treatment products in the region and updating this range will be a priority in the future. We also distribute Public Health products in the region for Syngenta, focused on Malaria vector control.

[Briefly discuss the Arysta Lifescience East Africa team](#)

Arysta Lifescience East Africa has a professional, qualified and experienced team that are passionate about what they do. I am very pleased with the team we have on the ground and the management team. We have plans to expand the team even further and last month we employed an R&D Manager in Ethiopia. We have identified this country as a key market for future growth.

We have offices in Dar es Salaam, Nairobi and opened an office in Addis Ababa in 2015. We also service Rwanda, Burundi and Uganda from Nairobi.

[Lately we have seen a more aggressive Arysta Lifescience East Africa, what can you attribute this to?](#)

Two years ago Arysta Lifescience embarked on a 5 year growth plan in East Africa. It identified key factors to be implemented in order to secure our planned growth in the region. Arysta's global acquisitions of GBM and Goemar gave us a head start in the biosolution and crop nutrition space. Unfortunately this market is not regulated and there are so many products being marketed in this space that do not deliver the promised results and have gone some way in tarnishing the image of this group of products. However, our products are backed up by global and local scientific data along with replicated trials showing

significant yield increases.

With these products plus the acquisition of Chemtura, Agriphar and Arysta by PSP, the growth plan is delivering the results and justifying further investment in the territory. We now have a greater product range, more experienced staff and improved capacity to transact with big customers.

[Are you intending to expand your products range and market, what factors that are you considering in making that choice?](#)

Yes, we have a very active R&D pipeline and are always looking for new molecules to develop and register as well as being the preferred distributor for 3rd party products.

The most critical factors when choosing products to develop in-house is their long term future, customer needs and to fill the gaps in our product range. We cannot afford to invest in products with a limited shelf-life due to factors such as product toxicities and pending molecules limitations.

[Where do you think the most significant growth will occur in the company in the next few years? What new competition are you expecting then?](#)

I think the most significant growth will come from the newly entered markets like Ethiopia, and especially in the Biosolutions space. The greatest competition and threat will come from new market entrants that have no investment in the countries, questionable registration data, low operating costs, no product training and support and the only service they offer is low price. Although these businesses have proven to be unsustainable, they disrupt the market and drive down prices. Some farmers see this as a benefit, but cheap products often come at a price. Crop Protection accounts for +/-5% of a farmers input costs, but a mistake can cost him 100% of his yield. Unfortunately this risk is often overlooked when a purchase decision is made.

[What's the biggest challenge YOU feel your company faces, and how do you inspire your employees to meet it head on?](#)

One of the biggest challenges we face is internal change in our organization. We have had 3 owners in the past 8 years and with that comes new cultures, expectations, ways of working, reporting lines and structures. Another challenge is to have balanced growth and sticking to good business practices. The lure of an easy sale is often followed by debt problems, a sale in not complete until the money is in the bank!

One of my only disappointments since moving to East Africa has been experiencing a culture of non-payment of debt. This has definitely been one of our growing pains and lessons have been learnt. We have now consolidated our customer base and will only work with reputable and reliable customers in the future. I continuously remind the team to embrace change and remain motivated.

[Lately we have seen numerous acquisitions and mergers globally. Where do you see the agrochemical sector globally in the next 5 and 10 years from now? How are you prepared for this change in the industry?](#)

One thing I have learnt at Arysta Lifescience since joining the company is that change is inevitable and learned to embrace it. Arysta Lifescience has already been through a number of acquisitions and mergers so I expect this to be the pattern in the future. "Bigger is better" seems to be the global trend in all industries and Crop Protection Industry is no exception. I expect this trend to continue as history has a tendency to repeat itself.

There is always opportunity in these acquisitions and mergers. New entities are often required to divest in products due to competition laws and Arysta Lifescience should be well positioned to invest in these products if the opportunity arises. Larger

Describe your ordinary day? Do you have enough personal time?

I had to commute between South Africa and Kenya for the first 9 months due to work permit delays and this was quite tough on my personal life as I was away from my amazing wife and children for up to 2 weeks at a time. Now that we are based in Nairobi, the family is a lot more settled and happy.

I generally wake up at 6am and leave for the office at 7am. I am fortunate enough to have a driver so I use the time in the car to catch up on emails and plan my day. Most days are spent in the office or meeting with customers and suppliers in and around Nairobi. In future I plan to spend a lot more time in the field visiting customers to hear first-hand what challenges they face, the direction that various industries are moving in and to assist where I can. I try leave the office by 4pm to avoid peak hour traffic.

Again I use this time to catch up on emails and attend conference calls. I have two young children and by getting home by 5pm, it gives me time to spend with them before bed time. It is important to have a balance between work and personal life, but often it is work that takes priority. As they say, "a happy wife, is a happy life" so it is critical to have that balance between. I have an understanding family who support me unconditionally and I'm very grateful for that.

Give your final comments

I have really enjoyed my time so far in East Africa and it has given me a much greater perspective on agriculture in Africa. Coming from South Africa which is dominated by large commercial farms, it is great to see the level of expertise and sophistication of the small scale farmers in East Africa. Food and water security is becoming more and more challenging due to climate change and a growing population. Farmers need to produce greater yields per unit land to feed the expanding population and being part of the solution by giving farmers the tools to protect their crops and increase yields is a very fulfilling experience.



companies are often slower to react to market changes and decisions take a long time to be rubber stamped. There has always been a spirit of entrepreneurship in Arysta Lifescience and this culture empowers local leadership to make local decisions that will improve their business. If we are able to maintain this culture, then the future will remain bright for us.

What is your personal work ethic, and how does this affect the company culture?

I like to have processes and procedures in place and am generally systematic in the way I approach things. When a company starts off small and experiences fast growth, it is often processes and procedures that are overlooked. Once these are in place, then my personal leadership style is to empower management to make decisions.

I do not like to micro manage people as there are more important strategic considerations to focus on. I have an open door policy and a good working relationship with the team. I'm very open to new ideas as long as they have been well thought through and make financial sense.

What decisions have you made in your career that you look back on and feel were mistakes, and what have you learned from them?

I have no real regrets in my working career to date. The one lesson I have learnt is not to procrastinate on making the right decisions. Go with your gut feel and don't over analyse every situation, make a decision and run with it.

Discuss the most pivotal moments in your career that you either learned from and/or that got you where you are?

I would say that starting off my career in a small company and being exposed to all aspects of running a successful business was critical to laying a solid foundation for my future growth. Another quality that I learnt during my career is to back yourself and to put your hand when it comes to taking on new challenges and additional responsibility. Hard work pays off and if you deliver results, you get noticed and recognized. People that sit in the back corners of the office, who are not willing to participate or move out of their comfort zones do not get recognized.

Seeding the Future:

Emergency support for drought-affected farmers in Ethiopia

Stocks of maize seed have been certified for quality and are now ready to be distributed to farmers in drought-affected districts.

As the Rio 2016 Olympics draw near, team managers are rushing to recruit their best sportspeople from all over the country, put them through fitness tests, and get them to various stadiums before the starter's gun goes off.

The team working on the Emergency Seed Support for Drought Affected Maize and Wheat Growing Areas of Ethiopia initiative

Ethiopia, but the 2015-2016 El Niño – the strongest on record – has led to the worst drought in a decade. Harvests across Ethiopia were affected, leaving 10.2 million people – more than 1 in 10 Ethiopians – in need of emergency food assistance.

Planning for a food-secure future

The government of Ethiopia and international organizations are working to provide food aid for people facing immediate shortages, but Bekele Abeyo, senior wheat breeder and pathologist at the International Maize and Wheat Improvement Center (CIMMYT) for sub-Saharan Africa and leader of the emergency seed project,

these farmers are able to access seed, we may face further shortages in 2017.”

CIMMYT, with support from the U.S. Agency for International Development, is working with partners to supply over 2,700 tons of seed to more than 226,000 households across 71 woredas (districts) in four regions of Ethiopia. CIMMYT will work with both the formal seed sector and farmers' cooperatives to source quality seed from within Ethiopia and make sure it reaches the farmers who need it the most. These high-yielding, drought resistant varieties are being supplied along with agronomic advice to further increase farmers' resilience.

Together with Ethiopia's Agricultural Transformation Agency (ATA), a primary partner in the project, CIMMYT organized workshops in each of the target regions – Amara, Oromia, Southern Nations, Nationalities, and People's Region (SNNPR), and Tigray – to engage stakeholders and collectively finalize the workplan. Based on participant feedback, some sorghum will now also be supplied to selected regions, in addition to maize and wheat.

“It is important to consider the needs of the individual

is facing a similar challenge. But instead of recruiting long jumpers and marathon runners, they are tasked with procuring quality seeds of elite maize, wheat, and sorghum varieties and distributing them to farmers before the start of the main planting season to increase food security in regions devastated by recent droughts. Dry conditions are not uncommon in

is focusing on a more sustainable future.

“Relief efforts will provide sustenance today, but we need to ensure there is also food on plates tomorrow,” says Abeyo. “With the large crop losses experienced in 2015, farmers were not able to save seed for planting in 2016 and did not have sufficient income to purchase more. Unless

communities and regions,” says Yitbarek Semeane, director of ATA's Seed Systems. “ATA has very strong links with the regions and government institutions so is able to provide feedback on farmers' needs and preferences. As weather patterns in Ethiopia are becoming increasingly unpredictable, many farmers are changing their farming practices, or even switching





crops.”

A race against time

With the main planting season rapidly approaching, the team is racing to source, procure, certify, transport and distribute seeds.

“The success of this project will depend on us procuring enough quality seed and distributing it to farmers before the main planting season,” says Tadele Asfaw, CIMMYT-Ethiopia program management officer and member of the project’s Seed Procurement Committee.

By mid-April, the team had successfully procured almost all the required maize and sorghum seeds and were navigating the complex logistics to get the requested varieties to each woreda. Agreements are also being signed with farmers’ cooperatives to ensure that wheat seed can be purchased without disrupting the normal

*“It is important
to consider
the needs of
the individual
communities and
regions,”*

seed system.

According to Ayele Badebo, CIMMYT scientist and wheat seed coordinator for the project, CIMMYT does not have the capacity to collect seed from individual farmers within each woreda, but this is something the cooperatives are ideally placed to do. They have the trust of both CIMMYT and farmers, and through the previous seed scaling project, they know

which farmers were given seed to multiply and will now have it available for sale. At the end of March, the seed procurement team traveled to eastern Oromia – one of the areas most affected by the 2015 drought – to meet with Chercher oda bultum, a farmers’ cooperative and seed supplier. The team was very satisfied to see that the supplier had sufficient stock of Melkassa2 and Melkassa4, locally-adapted drought resistant maize varieties that had already been certified for germination and moisture by another collaborator, Haramaya University. This same process is now underway for wheat seed.

Ethiopia’s Bureaus of Agriculture and Natural Resources are also working with woreda representatives to ensure that the seed will be distributed to those farmers who need it most, and who have sufficient land and agronomic tools to benefit from this initiative.

“Working with local enterprises and partners enables us to procure and deliver seed to drought-affected farmers as quickly as possible,” says Abeyo. “In combination with CIMMYT’s longer-term efforts in the region, we hope that we can foster a more robust seed system and increase food security for 2016 and beyond.”



Land Expensive, Production Low, Profits Dwindle

“There is need to identify opportunities for Kenyan farm businesses to make better use of their own resources and to find strategies to allow these businesses to cope with the reduced affordability of farm land.”

Who Am I?

“I am the basis of all wealth, the heritage of the wise, the thrifty and prudent.

I am the poor person’s joy and comfort, the rich person’s prize, the right hand of capital, the silent partner of thousands of successful people.

I am the solace of the widow, the comfort of old age, the cornerstone of security against misfortune and want. I am handed down through generations, as a possession of great value.

I am the choicest fruit of labour, the safest collateral and yet I am humble. I stand before every person bidding them know me for what I am and asking them to possess me.

I am quietly growing in value through countless days. Though I may seem dormant, my worth increases, never falling,

never ceasing. Time is my aid and the ever increasing population adds to my gain. I defy fire and the elements, for they cannot destroy me.

My possessors learn to believe in me and invariably they become envied by those that have passed me by. While all other things wither and decay, I alone survive.

The centuries find me younger, always increasing in strength. All oil and minerals come from me. I am the producer of food, building materials and the home to every living thing. I serve as the foundation for homes, factories, banks and stores. I have not been produced for millions of years yet, I am so common that thousands, unthinking and unknowingly, pass me by”.

“Who am I? I am Land.”

The above text was on display in one of the offices of a land investment. It could

easily be re-titled “The Farmers Creed in that it reflects the intrinsic value that is attributed to owning land and farmers have been some of the main beneficiaries of accumulating land over the decades. Based on this experience, the decision to purchase land is often underpinned by the expectation that the intrinsic value of land will cause its price to continue to rise into the future. Consequently, the economic hurdle before committing to a land purchase often relates more to “affordability rather than an expected rate of return from the operating profit derived from the extra land.

Economy of scale is one of the key competitive advantages of Kenyan Cereal farmers and has been an important driver of productivity gains in this sector. The benefits of scale are reflected in the desire by family farm businesses to continue growing by purchasing additional land as it becomes available.

Over the past decade, land prices have grown at a much faster rate than operating profits. This has made additional purchases of farm land less affordable relative to the income that land is capable of generating. If this trend is to continue, it will slow the rate at which family farms are able to expand through land purchases because it will take longer to accumulate sufficient equity through retained profits and we will have reduced capacity to service debt.

With these trends in mind, there is need to rethink the structure and the way to utilise capital resources. There is need to identify opportunities for Kenyan farm businesses to make better use of their own resources and to find strategies to allow these businesses to cope with the reduced affordability of farm land.

The rural land is a combination of two businesses: farming and a real estate business. We must start thinking of these as two separate activities and begin analysing the performance of each as stand alone businesses. This is essential if we are to be sure that each activity is contributing

to our overall financial position in its own right.

Around the world, farm businesses have evolved to capitalise on the relative strengths of their operational or real estate activities and the following recommendations are based upon my observations of these businesses.

Leasing land allows you to lever the potentially high returns from an operating business. The short term nature of leasing arrangements in Kenya has meant the focus is on short term profits which often come at the expense of medium to longer term returns.

Basing lease arrangements on a share of profit approach would give both parties the confidence to agree to longer term deals which in turn would lead to a focus on longer term returns and better management of the land asset.

We need to focus on the scale of our operating businesses and make sure that we are operating scalable units.

Furthermore, when expanding our operating businesses, we need to work within multiples of scalable units if we are to avoid the large costs associated with diseconomy of scale. We need to benchmark the performance of our key operations and use this as the basis for determining optimum scale.

Learning to work with other people through joint ventures offers an opportunity to grow our operating businesses without tying up capital in additional farm land. Being prepared to work in a joint venture would also overcome the current lack of land available for lease in Kenya. Having a clearly defined set of procedures for start-up, ongoing operations and for unwinding the venture is critical.

We should continue to buy farm land when suitable opportunities arise. However we should not assume that we should farm that land ourselves simply because we

bought it. This is especially the case if it means running an operating business that is not at optimum scale. Being prepared to own land but not operate it also opens the door for farmers to benefit from diversifying into different geographical locations and also into different types of real estate investments.

Attracting external capital to invest in agricultural assets will be of benefit to existing operations only if it increases the amount of land available for lease. If we are to attract such capital away from other investments, we need to look at standardising our performance reporting and establish a benchmark index to measure the performance of agricultural investments.

These measures would allow more accurate assessment and comparison of existing investments and provide a guide to historical performance for those considering an investment in the agricultural industry.

There are opportunities to make more efficient use of the capital we employ in our farm businesses and the first step in taking advantage of these opportunities is to recognise the two distinct activities that make up the business of farming in Kenya.

Leasing land offers the opportunity to achieve higher returns on capital compared to the situation where the land is owned by the operator. Similarly, the annual operating profit can be divided to show a return to the land assets and also to the operating assets.

Leasing land effectively allows a farmer to isolate the return on operating assets and dedicate his resources to this activity rather than diluting his returns by tying up capital in farm land.

However, the success of this model is contingent upon the return to total assets exceeding the rental paid for the farm land. If the amount of total profit halve, then the return to operating assets would fall from 16.6% to 1.9%.



Some of the advantages cited from these arrangements included:

Access to a reliable machine with the latest technology

A known/defined cost to the business compared to the unpredictable nature of repairs and depreciation.

Better matching of capacity to demand

For example being able to call on a number of spray units to complete a job when the timing window is narrow. (This is obviously contingent on being a valued customer of a large contracting business).

Preserving capital for other investments offering better returns

Not all farmers take this approach, with some choosing to own equipment. The motive behind this decision is that an “owner operator” approach means capturing all of the profit in the production system within the business. However, any surplus capacity is utilised by doing contract work for other farmers in order to maximise the return from the investment in plant.

Own or Lease

Farmers should buy a share in the cooperative and then pay an annual membership fee. Each member of the cooperative registers the equipment (if any) they are willing to hire on a central database.

Plant and machinery ownership makes up the second largest category of farm assets for crop production. Globally it has a number of differences in operating structures around the world.

Machinery hire versus ownership

It could be cheaper to rent large machines like tractors and harvesters from machinery dealers. Similarly, there should be a greater capacity within the contracting industry when it comes to operations like seeding, spraying and harvesting.

Ultimately the difference between those who hire rather than own their equipment is a difference in focus between return on capital and absolute costs. Whilst all seem to agree that in most cases owning equipment would be cheaper, it didn't always provide the best return on capital. For example, a farmer can choose to hire his machinery in order to free up capital to invest in grain and fertiliser storage facilities which provided better returns for his business.

Machinery cooperatives

The concept of machinery cooperatives originated in Europe and there are now a number of such cooperatives running. These cooperatives allow members to reduce the cost of their machinery operations by either sourcing or offering machines from or to other members on a contract basis. The co-operative acts as an intermediary to facilitate the hiring of machinery between businesses. Farmers buy a share in the cooperative and then pay an annual membership fee. Each member of the cooperative registers the equipment (if any) they are willing to hire on a central database.

Members are then able to contact the ring to request hire of a machine or a contract service. The database is searched and the most compatible provider (based on location and costs) is put in contact



with the farmer. The ring can charge a commission to both parties for managing the paperwork and ensuring payment via the ring's direct debit payment system. The general overcapacity of plant means

there is usually an adequate supply of machinery to meet demand in a timely manner. Quite often farmers hiring their own machinery also provide an operator to ensure their equipment is well looked after. The co-operatives can also facilitate the sharing of labour between member businesses but take steps to ensure it is not viewed as an employer due to the complications this would cause with labour laws.

Co-operatives can also diversify into acting as a buying group to supply cheaper bulk inputs to members. They can broker the purchase of fuel for its members. It can also broker fertiliser deals. The successful operation of a buying group is contingent upon details of the deal remaining confidential within the group. Individual members need to trust the system and cannot break out of the group within the year in order to chase a spot price.



Sulphur (S) as The 4th Macronutrient in Crop Nutrition

By Doris Kawira

To minimize the gap between the demand and supply of cereals, oilseeds and pulses, intensive efforts are being made to increase their production.

As ever-increasing population and urbanization cannot allow increase in the land area under the cultivation of cereals, oilseeds and pulses anymore, yield per unit area needs to be improved further.

To achieve this objective, agricultural scientists have laid more emphasis on improving production of these crops through proper nutrition of the crops by evolving high yielding varieties and adopting improved agronomic practices as well as plant protection measures etc.

The most important constraints to crop growth are those caused by the shortage of plant nutrients.

Sulphur is increasingly being recognized as the Fourth major plant nutrient after Nitrogen (N), Phosphorus (P) and Potassium (K). The importance of S in agriculture is being

Increasingly emphasized and its role in crop production is well recognized.

“Based on years of cumulative experience with sulphur testing, almost every soil tested does not have enough sulphur to produce top yields unless it is specifically added as part of the fertility program.” – Neal Kinsey and Charles Walters, Hands-On Agronomy, Acres U.S.A., August 1999

This is the not different for the Kenyan soils!!

Why there is Shortages of Sulphur in Kenyan Soils.

- Changing agricultural practices have led to Low Organic Matter in the soils reducing the amount of Sulphur in the soil.
- Sulphur Dioxide(SO₂) in the atmosphere is now less due to mandated emissions control
- Sulphur Containing fertilizers are being used less and less e.g. ASN, AS, and K₂SO₄.
These Sulphates leach easily with high rainfall, or under irrigation.
- With the application of Sulphates only, as source of sulphur mostly in low organic soils there is no build up of Sulphur in the soil.

Facts about Sulphur:

- Sulphur is a macro element in plant nutrition.

- Elemental Sulphur IS available to plants.
- Oxides are converted to sulphates along with Sulphur.
- Sulphur and Phosphorus levels required run more or less parallel i.e. Sulphate is needed for growing plants just as badly and in much the same amounts as phosphates.
- Nitrogen: Sulphur ratio is critical for optimal Nitrogen availability.

Why is this Nutrient Extremely Important and much needed by crops?

- Helps seedlings survive in cool, moist soils especially in early planted fields or for conservation tillage fields.
- Provides 50% more root development during early periods of growth.
- Sulphur is needed to make and increase protein content of the crops and increases oil content of crops like (Rape Seed) Canola.
- Sulphur is needed in plants to craft chlorophyll and to fabricate enzymes and vitamins.
- It promotes nodule formulation in legumes.

Elemental Sulphur is the Solution!!

Sulphur is needed through all stages in plants growth.

Soils needs to have at least 10% Sulphur in sulphate form available early in the crop season for germination and seedling growth then the rest 90% along the season.

To achieve this, 10% can be supplied with commercial fertilizers like AS, ASN or MgSO₂ since they contain sulphur in sulphate form which is readily uptaken by plants.

For the 90% Sulphur needed along the season relying on slow release source like elemental sulphur is the best. This Sulphur is not subject to leaching and is slowly released as it oxidizes in the soil.

Therefore , farmers need to plan their fertilizer program to contain this crucial nutrient .To achieve a sustainable supply of sulphur throughout the crop season elemental Sulphur can be blended with Planting fertilizers like DAP or MAP.

With Amiran TIGER TRACE product i.e. granular pure Sulphur based product with trace elements in oxide form, the farmer can achieve a continuous Sulphur supply throughout the crop season. The Sulphur oxidizes slowly releasing sulphur in sulphate form and trace elements in a form readily available for plant uptake. This fertilizer product is granular (size 2-4mm) and can be blended with all field grade fertilizers applied especially at planting.

CEREAL FARMERS IN KENYA

FARM	CONTACT PERSON	LOCATION
Simba Estates Ltd	H.S. Dhillon	Narok
Olerai Farm Ltd	Alastair Wood	Narok
Lalela Ltd.	Cliff Neylan	Narok
Sarpau Ltd	Paul Berthelsen	Narok
South Sioux Farm	Gurbir Heer	Narok
Lochab Bros Ltd	Jiti Lochab	Narok/Eldoret
S.S. Dhillon	Sukhi Dhillon	Narok
Ndovu Ltd	Vyas Viney/Rajesh	Narok/Eldoret
R.M. Farms	R. M. Patel	Narok/Eldoret
Jowamb Greens Farm	John Wambugu	Narok
Sansora Ltd	Hakkai Mose	Mau Narok
Madrugada Ltd	Jonti Barclay	Nakuru
Menengai Feedlots	GeFf Nightngale	Nakuru
A.I. Barlow	A. Barlow	Nakuru
Kijabe Ltd	David Cullen	Naivasha
Kisima Farm Ltd	Shaun Miller	Timau
Marania Ltd	Jamie Murray	Timau
Oldonyo Ltd	Bryn Llewlyn	Timau
Tumili Ltd	David Beak	Timau
Wangu Embori	Wambugu	Timau
Lengetia Ltd	Laurie Session	Narumoru
Elfam Ltd	John Koima	Eldoret
J. Kruger	Fannie Kruger	Eldoret
Agventure Ltd	Don White	Timau
Rosendahl Farm	Dr. Udo Ueing	Eldoret
Soyonin Ltd.	Benjamin Kipkulei	Naivasha
MaraBa	Beatrice	Eldoret
Meya	Ngunia	Nakuru
Mambo	Sital	Nakuru
Eldoret Packers	Raj	Eldoret
Siana	Senteu	Narok

My Day with the Village Supreme Court

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

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

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

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

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

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

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

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

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

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

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

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

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



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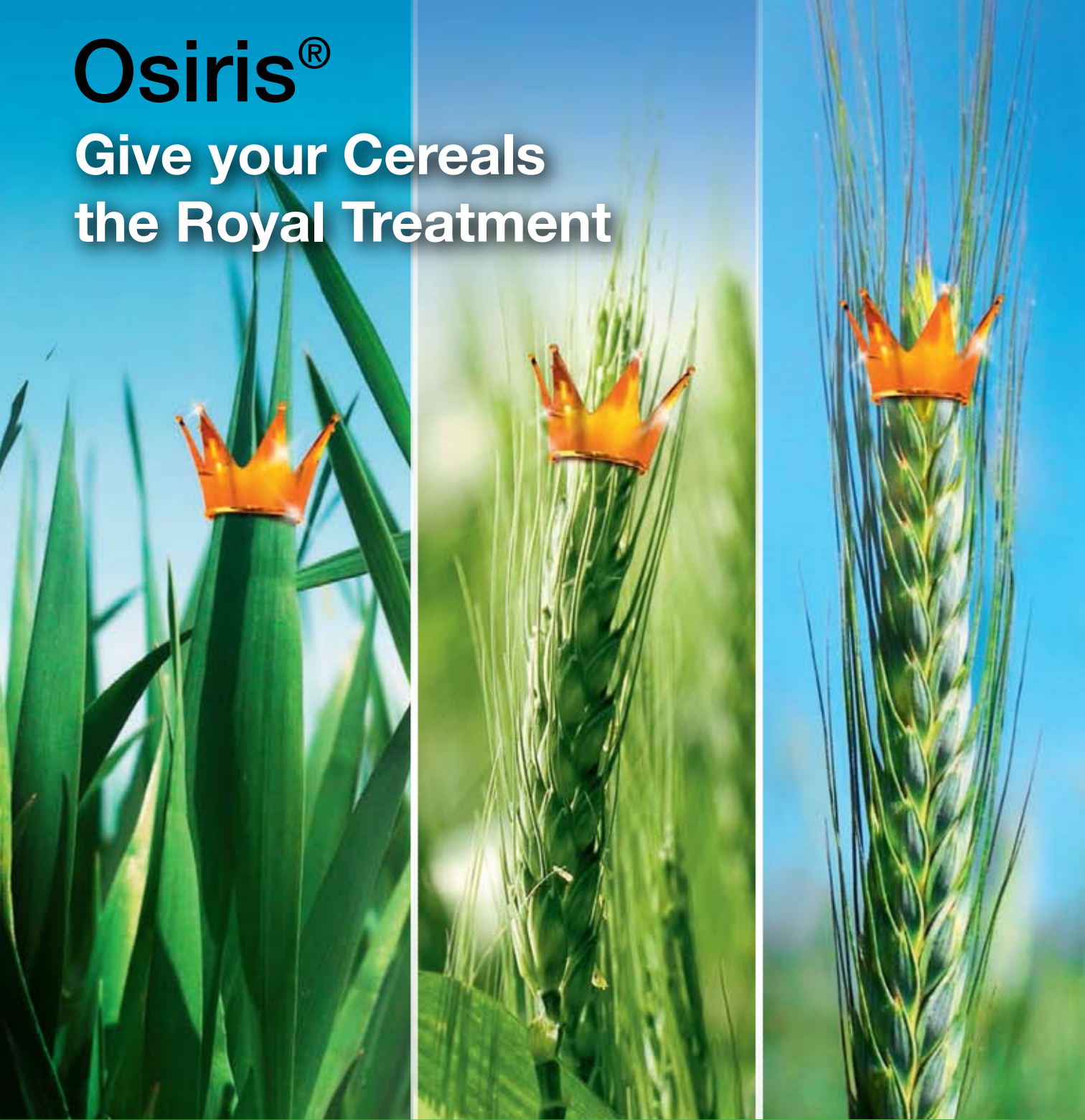
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