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QUARTERLY



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# JSE storage rates and outloading capacity: Two challenges requiring urgent attention

By Casper Schmidt, BKB Grain Storage

According to a European Union study, an investment in additional storage capacity takes place as soon as the annual demand for storage starts to outstrip the long-term utilisation of existing capacity. In terms of capital-intensive storage, the return on investment is too low to risk investing in surplus storage that will not generate an income.

Technology has changed since then with the introduction of alternative storage structures requiring less capital investment. However, there are risks associated with grain and oilseeds stored in silo bags and bunkers, for instance, in that more labour and management are needed. Fumigation is also not as easy as it is in traditional cement structures, and the incoming harvest cannot be optimally blended and managed for outloading purposes.

On the other hand, silo bags and bunkers allow for the identity preservation of grain and oilseeds, differentiated according to certain buyers' needs, and smaller batches. The grain and oilseeds of several producers are commingled in large cement structures, which may not be the case in alternative commercial structures. In addition, given that these alternative storage structures allow for outloading under all weather conditions, access to stock in silo bags and bunkers is less restrictive, and the risk of concentration during periods of low stock levels nationally may be less.

## Effect of JSE storage rates

The functioning of the JSE Futures Market is one of the strengths of the South African grain and oilseeds market. Currently, physical deliveries on the futures market are on average just more than 25% of all grain and oilseeds produced in South Africa. The JSE is therefore a significant player in the physical market.

The annual adjustment in JSE storage rates is based on the annual increase in the producer price index (PPI). This annual rate adjustment is therefore a leading indicator for the adjustment of storage rates in the storage sector – it does not differentiate between the storage cost of old or newly developed storage structures, or the type of storage (cement, sink, silo bag, bunker, or dam).

The Russia-Ukraine conflict led to a significant increase in the cost of derived products such as the imported plastic needed for silobag structures. This is a significant cost increase for silobag operators, which did not reflect the relatively lower increase in the PPI. As a result, the increase in JSE storage rates was not sufficient to cover the increased storage rates needed for silobag operators. The incentive to invest in better outloading rates for all storage operators, no matter the kind of storage involved, is suppressed by yields lower than that of investments on the JSE.

## Outloading capacity

The production of grain and oilseeds has increased over the past two decades, while the decline in railway sector services meant that the storage sector's outloading capabilities suffered because of the loss in outloading capability, and therefore the outloading rate on the sidelines.

It is not surprising that the outloading rate at certain locations becomes more of a challenge and more concentrated over time. It poses challenges for price convergence, especially during years of shortages or at the end of the marketing season in an inverse price market.

The storage sector initiated the idea of allowing holders of JSE stock to book outloading slots of up to 25% before the first-come-first-served principle kicks in.

Its uptake, however, has been limited and the value will only be seen during periods of shortage and concentration risk at certain locations.

The real challenge is finding a way to decouple the JSE storage rate from the PPI, and to incentivise commercial storage operators to invest in their respective outloading capacities. Care should be taken, however, not to unintentionally discriminate against storage operators who do not reach the required minimum outloading rate. Some of these storage operators manage to sustain access to stock sufficiently without impacting negatively on access to stock or price convergence.

## In summary

To ensure the proper functioning of the grain and oilseeds market, the JSE Futures Market should maintain its integrity and efficiency. The increase in production led to an increase in registered locations for outloading, although the required outloading rate has remained the same over decades. The demise of grain outloaded on rail is harming the storage sector's outloading rate. In turn, the increase in JSE storage rates becomes a leading indicator for storage rates in the physical market.

Storage operators do not have a choice but to follow the JSE storage rates; however, they can package this into a differentiated offering for clients to comply with competition guidelines.

The lack of investment in the outloading capacity in the storage sector may be the result of an industry-wide problem that cannot be laid at the door of the storage sector only. Increased communication between stakeholders in the grain and oilseeds value chain may be needed to find solutions within the ambit of the legal framework in South Africa. [a](#)

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## Wheat crop quality report now available

The Southern African Grain Laboratory NPC recently announced that the *Wheat Crop Quality Report for 2021/22 and Final Wheat Crop Results* are now available on their website.

Follow the link to view the report: [www.sagl.co.za/wp-content/uploads/SAGL\\_Wheat-Report-2021-2022-2-03-10-2022-1.pdf](http://www.sagl.co.za/wp-content/uploads/SAGL_Wheat-Report-2021-2022-2-03-10-2022-1.pdf).



## Agbiz Grain develops food safety conduct

Agbiz Grain has developed a food safety conduct supported by members. The conduct describes how the storage operator and its activities are managed or directed. The document communicates the conduct to clients, including producers, customers, and any other market participant that delivers grain and oilseeds for commercial storage to a storage operator.

Future revisions to the document will incorporate reviewed legislation or follow-up inputs reached by consensus between members. Members are encouraged to use the Agbiz Grain food safety conduct in storage agreements. By signing the storage contract and/or submitting to the harvest rules of the storage operator, the client is bound to the standardised food safety conduct of the storage operator.

The conduct fully supports the relevant legislation that the storage sector has to comply with. Any additional requirements demanded by clients in terms of food safety are not covered by the Agbiz Grain food safety conduct. The malted barley and canola passports are typical examples where additional requirements are negotiated between the respective storage operator and the respective clients.

Details regarding the conduct and its contents will be provided in the next issue of *Agbiz Grain Quarterly* as well as on other platforms. – *Agbiz Grain*

## NDSU offers advice for US soya bean harvest and drying

According to US Department of Agriculture's National Agricultural Statistics Service, as of 25 September, 72% of the United States' soya beans were at leaf drop, near the normal of 86%. The near-term forecast is for continued warm temperatures, so most soya beans should reach or be near maturity, according to Ken Hellevang, North Dakota State University agricultural engineer and grain drying expert.

"There is considerable variation this year due to the challenging spring, variation in rainfall, planting date, maturity rating and growing degree days, so it is important to check each field," Hellevang says.

Soya bean moisture content in the field will fluctuate depending on drying

conditions and air humidity. Moisture content can increase by several points with an overnight dew or rain event, and it can decrease by several points during a day with low humidity and windy conditions.

He recommends that producers try to harvest as much of their crop as possible before the moisture level falls below 11%. Producers will receive the best price for their soya beans when the moisture content is 13%. Prices will be discounted for beans at moisture contents exceeding about 13%, and beans are prone to storage problems at higher moisture contents.

Because harvest losses increase dramatically when the moisture content is below 11%, harvesting during high

humidity or damp conditions may reduce shatter loss, according to Hellevang.

Soya beans at 11% to 12% moisture have similar storage characteristics as wheat or corn at about 13,5% to 14,5% moisture, and 13% moisture soya beans might be expected to store the same way as about 15,5% moisture corn. The 13% moisture content is adequate for winter storage, but for summer storage, the moisture content should be closer to 11%.

Click on the following link to read more: <https://www.ag.ndsu.edu/news/newsreleases/2022/september/ndsu-offers-advice-for-soybean-harvest-and-drying>





## Global wheat prices up by almost 6%

Global wheat prices recently rose sharply following Russia's withdrawal from the Black Sea grain export deal. The most active wheat contract on the Chicago Board of Trade jumped 5,9% to US\$8,78 per bushel, after hitting a high of US\$8,93 per bushel earlier. Maize and soya bean prices have also risen, but to a lesser extent with maize futures up 1,2% and soya bean futures climbing 1,3%.

These increases come after Russia announced that it was suspending its involvement in the Black Sea Grain Initiative, which allowed vital agricultural products to be exported from several Ukrainian ports. Ukraine's foreign ministry said that Russia had suspended its participation in the grain deal on "a false pretext of explosions 220km away from the grain corridor" and that by doing this, it was blocking "two million tons of grain on 176 vessels already at sea."

Ukraine's president said Moscow's withdrawal from the grain initiative, which was due to be renegotiated in November, would exacerbate a global food crisis with countries in Africa, particularly Ethiopia, at risk of a severe famine. – *CNBC*

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## SHEQ Forum meetings around the corner

Gerard Ramage, SHEQ manager at the VKB Group, reached out to Agbiz and Agbiz Grain during this year, requesting the establishment of a SHEQ forum which would allow for the dissemination of information relating to health and safety practices in the workplace. Agbiz Grain has consequently set up an internal SHEQ committee to provide inputs and arrange future workshops.

The newly established SHEQ Forum held its first workshop in September this year, focussing on the legislation governing health and safety aspects. The workshop was presented by Lucinda van Rensburg of Implex. The forum will be held quarterly, and the outputs of each forum will be reworked into article format by Plaas Media, and published in subsequent issues of *Agbiz Grain Quarterly*. The first article based on the September workshop appears elsewhere in this issue

The second Agbiz Grain SHEQ Forum workshop will be held on 29 November 2022 from 09:00 to 10:30 via Microsoft Teams. The meeting will focus on legislative and compliance requirements relating to electrical installations and hazardous classification zoning.

To be invited to the quarterly SHEQ Forum, register the contact details of your SHEQ official with Annelien Collins at [annelien@agbizgrain.co.za](mailto:annelien@agbizgrain.co.za).

## Canada enhances grain grade dispute resolution process

Canadian grain producers will now have more time to ask for a final quality determination from the Canadian Grain Commission in the event of a grain grading dispute on their deliveries into Canadian Grain Commission-licensed primary elevators.

Formerly known as 'Subject to Inspector's Grade and Dockage', producers can now ask that a sample of their grain delivery be sent to the Canadian Grain Commission for a final quality determination for up to seven calendar days after the date of their grain delivery. This right is available for grain producers who deliver a regulated grain into a Canadian Grain Commission-licensed primary elevator.

The Canadian Grain Commission has implemented these changes to the *Canada Grain Regulations* to support fair transactions in the Canadian grain sector. These regulatory updates have been made to reflect and keep pace with the current operational realities of grain handling and delivery in Canada.

The amendments clarify how long samples must be stored and allow more flexibility for producers and elevator operators to decide who will store delivery samples and where. In addition, grain producers will not need to be present at the time of delivery to request a final quality determination. – *Canadian Grain Commission*

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## SDPs workshop hosted in November

The Agbiz Grain workshop for skills development providers (SDPs) for the occupational qualifications Grain Depot Manager (SAQA Qual ID: 118686, NQF level 5, credits 235) and Grain Grader (SAQA Qual ID: 118688, NQF level 4, credits 46) will take place on 9 November.

The workshop will share information required by SDPs to implement the registered occupational qualification for grain depot managers and grain graders. The aspects covered will include the accreditation of SDPs, assessment, quality assurance and certification. Accreditation is valid for five years from the date on which the QCTO granted accreditation to the SDP, or until the SDP is de-accredited by the QCTO.

Agbiz Grain members are required to request their respective training providers and representatives in their respective human resources departments to attend. SDPs that are interested in attending can register with Annelien Collins at [annelien@agbizgrain.co.za](mailto:annelien@agbizgrain.co.za). – *Agbiz Grain*



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## Access to stock issues addressed with JSE

Agbiz Grain frequently initiates engagements with the JSE to address issues of mutual concern. It is important to maintain the integrity of the market to ensure the JSE is a buyer of last resort, but most importantly to ensure the efficient functioning of the JSE for hedging purposes and therefore to improve price convergence between JSE securities and commodities in the physical market.

Access to stock and price convergence remains a significant threat to the efficient functioning of the futures market, especially during an inversely priced market. This is most prevalent when the end of the previous marketing season

(March, April and May) approaches, which coincides with a dry production season or highly lucrative export period. Certain locations are then more prone to concentration risk and high demand, especially when these locations run periodically low on available physical stock.

To maintain registration, storage operators must comply with mutually agreed-upon JSE rules – the JSE frequently audits new and existing storage operators to comply. To ensure fairness, existing rules need to be applied consistently across the market and, since the inception of SAFEX, inclusive of all market participants.

It is equally important to ensure a clear understanding of rules and the sharing of client information on stock levels or exemption thereof, as well as how these actions have to comply with the *Competition Act, 1998 (Act 89 of 1998)*. The latter impacts the extent to which the market can be timely alerted.

Issues with access to stock involve a span of possible solutions ranging from the deregistration of important locations that run an increased risk of not complying or incentivising those locations to invest in their outloading capacity to improve the outloading rate and access to stock. – *Wessel Lemmer, Agbiz Grain*

## Principles set out for future grain inspections

In early 2021, the grain industry appealed against the implementation of inspection services and the publication of inspection tariffs as required by the *Agricultural Product Standards Act, 1990 (Act 119 of 1990)*. After a lengthy appeal process, the Appeal Board ruled in favour of the industry.

Since the outcome of the appeal case at the end of 2021, the industry engaged with the Department of Agriculture, Land Reform and Rural Development (DALRRD), facilitated by Agbiz, to clear up misunderstandings and uncertainty. The objective is to pave the way for constructive engagement between the industry, DALRRD and Leaf Services on the agreed-upon principles that will guide the way forward. DALRRD and Leaf Services are committed to fully complying with the requirements of the *Promotion of Administrative Justice Act, 2000 (Act 3 of 2000)*, or *PAJA*.

The position of the storage sector on fees charged per duty illustrates that on some issues, there may be a differentiated approach and individual associations must be free to raise these. The stakeholders agree on the principle as stated in the framework document that fees should be charged per duty performed. The industry now requires from DALRRD a clear indication of how stakeholders will be involved in future processes.

## New sampling protocol to address disputes

Agbiz Grain members collaborated in the finalisation of a globally recognised sampling protocol to be used for dispute resolution. The proposal will be shared with stakeholders in the grain and oilseeds sector for their additional input.

The proposed sampling protocol specifies a thoroughly pre-evaluated sampling apparatus certified by recognised and independent certifying bodies. The apparatus must be globally recognised and must comply with global standards, take a representative sample, and prevent biased sampling. In addition, it must be suitable to transport, be affordable, cost-effective, and accessible to producers, storage operators and processors, and must be able to be operated in the South African business environment characterised by power outages.


The accompanying revised dispute protocol for commodities delivered in bulk will be supported by the new sampling protocol. For more details on the protocol, read an article elsewhere in this issue of *Agbiz Grain Quarterly*. – *Agbiz Grain*

## Agbiz welcomes the 2022 MTBPS

This year's medium-term budget policy statement came at one of the most challenging times for the South African economy. Rising inflation, tighter financial conditions, electricity outages, inadequate roads and challenges in the rail and ports networks, among other challenges, continue to weigh on the South African economy.

The National Treasury now expects the South African economy to grow at 1,9% in 2022 and to remain at sub-2% over the next three years. This means the challenge of joblessness and tough business operating conditions will

likely remain for some time. These are issues that finance minister, Enoch Godongwana, reflected on in his medium-term budget policy statement and outlined the steps the government is taking to move the country out of this low-growth trap.

In a statement, North-West University Business School economist Prof Raymond Parsons said: "Against the background of difficult global and domestic economic circumstances, finance minister Enoch Godongwana generally delivered a realistic and credible fiscal message in the MTBPS today." – *Agbiz Newsletter* 



# Optimising food production to feed billions

By Izak Hofmeyr

Earlier this year the Bühler Group brought together leaders in the international food and feed industries at their headquarters in Uzwil, Switzerland, to grapple with the challenge of feeding ten billion people by 2050. This will have to be accomplished on less agricultural land and with less impact on the environment. In fact, maintaining the status quo will have devastating consequences for the planet.

The theme of this instalment of the Bühler Networking Days was “Accelerating Impact Together”. Hardus Dupper, chief engineer at AFGRI Grain Management, attended the event and, he says, the general impression he was left with is one of awe.

“The group of people that gathered in Uzwil are collectively responsible for feeding four billion people in the world. Apart from this, the level of technology and perfection this industry strives for is equally mind blowing. Everything revolves around sustainability and reducing the negative impact their respective industries might have on the environment. They operate at a level of responsibility that we in South Africa are not used to.”

His experience in Uzwil, he says, was a huge wake-up call in terms of how first-world countries view their responsibility towards sustainable and ethical business.

“I think in South Africa, and in many other developing countries, we are so easily caught up in the daily struggle to get certain things done, that we lose touch with the effect our actions have on the environment in which we live.

“It would behove all of us to have a serious look at what is happening in the developed world and strive towards all the sustainable and environmentally friendly technologies that are available. Many of these technologies will not necessarily show immediate production advantages, but will show advantages very quickly in terms of our wellbeing in the longer term.”

## Private sector solutions

During the Networking Days, he says, he had the opportunity to engage in conversation with many people of various nationalities from all over the world, and the conclusion he came to was that our challenges in South Africa are not unique.

“Everybody is fed-up with bureaucracy, red tape, and self-serving politicians and governments, not just us. Everybody perceives these issues as stumbling blocks, even though they might be from first world countries.

“The consensus, it seems, is that we should forget about these stumbling blocks and simply get on with it as the private sector. The solutions to these stumbling blocks will reveal themselves as the private sector builds up momentum based on a ‘can do’ attitude. Obviously, this is much easier said than done, but it is no doubt achievable.”

## Partnerships for success

One of the revelations for him, says Hardus, was when Ian Roberts, chief technology officer at Bühler, referred to the skill of partnering as a crucial skill that should not be taken for granted.

“This, I think, is especially applicable to us in the southern hemisphere. We need to learn how to partner effectively. We need to build partnerships with strategic players in our field who can bring to the table expertise that we do not necessarily have, so as to create a mutually advantageous situation for all partners.”

Bühler, he points out, has a track record that serves as a good example of the benefits of partnerships (the company has partnered with a variety of other companies over the years).

“If you look at these partnerships, it is clear that it is mutually beneficial, with each partner bringing its own set of expertise to the table to create a synergy that would have been very difficult to achieve outside of the partnership.”

The Networking Days also highlighted very impressive examples of global achievements. A good case in point is the

Carrinho family group from Lobito, a town in the southern part of Angola, which launched a €350 million project last year that is expected to create 1 000 jobs and feed 15 million people. It also provides 40 million meals per year to school children. The project, which includes a sugar refinery and an oil mill, has 17 manufacturing units for agricultural and food products (rice, wheat, corn, cake and paste).

## Securing the right funding

It is a fact that technology is expensive in South Africa but, says Hardus, the message during the Networking Days was clear: funding is available.

“Accessing funding, however, is another skill that needs to be developed. The proviso is that we will have to demonstrate to these funders that we are able to apply the funds in a responsible and sustainable manner. I believe the skills to procure funds and technology is available in South Africa. We just need to focus those skills correctly.”

Adherence to sustainability requirements, however, will play an increasingly important role in the successful procurement of funding from international funders, he stresses.

“The key concept is sustainability, and if you look at the international targets of halving your carbon footprint by 2030, halving it again by 2040, and be at a zero emissions level by 2050, the challenge for developing countries is clear.”

## Streamlined technologies

Also highlighted during the Networking Days were several new technologies that could be classified as possibly ‘disruptive’ in the food industry. Some of these are insect-based protein, single-cell food, plant-based protein and the replacement of animal-based proteins.

These technologies, he says, need not be regarded as a threat to the animal protein industry. The fact is that by 2050, the world simply will not be able to provide the global population with high-quality animal-based protein. New sources of quality protein must be developed to be able to feed the world.

“My opinion is that these technologies will initially have little effect on our local industry. We will grab the ball on the second bounce, and this is not necessarily wrong. In fact, it is prudent in a developing country such as ours, and with our specific challenges, to first observe how these technologies mature and become more accessible and affordable before we commit to it.”

In the design of any new expansion of production capability, however, these technologies should be factored in so that, should the time come, it would be possible to incorporate it into the existing infrastructure.

“There is the so-called cost-of-technology curve. Invariably, technology becomes

cheaper and more accessible over time. This is the second bounce of the ball. To wait for it is sensible in most instances.”

In his own company, he points out, there are good examples of this. “Take the cloud-based programmable logical controller (PLC) system, for example. At the time, we simply could not afford installing these systems, but just a few years later the price had come down to such an extent that it became a no-brainer. It caused massive efficiency gains in our plants.

“As an example, a fan that previously operated at full tilt for eight hours of the day now only kicks in when necessary, and not necessarily at maximum capacity. This was not new technology. We were forced to wait for the second bounce of the ball, when the technology became much more affordable, despite the value of the Rand and all the supply chain issues we experienced. Renewable energy sources also fit into this category.”

#### Optimisation for efficiency

Optimisation is another concept that enjoyed centre stage. “Obvious examples

of optimisation include process and plant optimisation, but there is another facet to this, which could be classified as a mindset. This is an overall approach to your entire system where every single aspect is scrutinised in terms of optimisation. Is there a better, more efficient way?”

Bühler focusses on providing a service to their clients to enhance efficiencies that they call the My Bühler Support Service, says Hardus. The idea is that they keep inventory of an entire plant, and that they then inform owner/management timely of new technology that could enhance efficiency.

“It is clear that Bühler wants to be more than a supplier. They want to become a partner in optimising your business, not only through the equipment they sold to you, but also in terms of support to optimise the use of that equipment. They are setting a great example for the industry.”<sup>a</sup>

For more information, phone Hardus Dupper on 084 245 2342.

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# Future of grain in the spotlight

By Koos du Pisanie

**T**he grain trading house Silostrat's hugely successful market information day is an annual event on the agricultural calendar, and this year was no different with over 700 producers, grain traders and other industry role-players who attended the event held in September at Nampo Park in Bothaville.

The jampacked programme boasted speakers such as former Springbok rugby player Schalk Brits, well-known economist Theo Vorster, and meteorologist Tonie Rossouw, who has worked in the industry for 45 years.

## A day of knowledge sharing

Schalk, who has combined his love for the sports field, the farm and business, started off by stating that it is essential to have processes in place to achieve the best results. In the pursuit of results, however, one should never lose sight of the human aspect. From what he's experienced on the sports field and in business, happy people are typically more successful – an aspect that a manager or leader needs to develop.

Tonie had some good news for producers. He expects that another good rain season

is on the cards for the maize regions. He also warned, however, that this season could be the last of the current wet cycle and that the 2023/24 season could likely start to trend drier weather – producers should keep this in mind when planning for the coming seasons.

Theo, in turn, looked at the sustainability of farming in South Africa as well as the sustainability of family farming enterprises. According to him, the reality is that the numbers in a family farming business usually increase faster than the growth and profit of the business does. He also gave advice on how to manage a farming enterprise successfully over generations.

## The future of grain

Werner Rossouw, director of Silostrat, says they were grateful to host the event again after the Covid lockdown restrictions, adding that he is very positive about the future of the grain markets.

"Thanks to excellent moisture transfer and the prospect of an excellent rain season ahead, I believe we can expect a record summer season planting, in line with that of the past season. Looking at white and



Economist Theo Vorster in action during the information day.



Rugby personality Schalk Brits had a powerful message regarding the role of happiness in success.



Meteorologist Tonie Rossouw elaborated on the prospects of rain in the maize production areas.



Over 700 producers, grain traders and industry role-players attended the Silostrat market information day in Bothaville.

yellow maize, sunflower, soya beans, grain sorghum, dry beans and groundnuts, the expectation is that we might see the largest total summer planting since the inception of the free market," he says.

He warned, however, that a shift between commodities is coming. Maize's input costs have skyrocketed and he anticipates a shift to soya beans as the commodity has fared very well over the past year. Soya has performed well in previous years in terms of yields, and he expects as many as 150 000ha of maize to be switched to soya beans.

Although record summer crop plantings are on the cards, Werner anticipates that maize supplies might be lower this coming season. This is due to the move from maize to soya bean plantings, strong domestic consumption, and good maize export figures to countries outside Africa.

Moreover, the prices that producers are fetching at the moment are excellent and he expects these prices to remain strong. This is based on a number of factors.

"Firstly, there are the weak exchange rate and international grain prices that are strongly supported by American carryover stock, which are fairly under pressure. Added to this is South Africa's carryover stock, which is the second smallest in the past six seasons, and the smaller than expected plantings this coming season which could result in strong prices," he says.

Yet it will not be plain sailing all the way. In their experience, says Werner, strong maize prices are typically followed by American producers increasing their plantings.

"America is seeing good prices, which is why we believe there will be a big move towards maize plantings in the country. This could drive down prices from April next year, once the first maize plantings have been established."

### Export prospects

Werner is positive about the role South Africa plays in supplying maize to the rest of Africa. "Our neighbours are still buying

large volumes of maize and this year there is a fair maize export programme to Africa."

Large quantities of maize are also being exported to countries outside the African continent. South Africa mainly exports yellow maize, but sizable volumes of white maize have also been exported to Italy over the past year. There are also indications that Mexico will import more than 400 000 tons of white maize from South Africa this year.

In terms of yellow maize, Werner says that Japan has already bought more than half a million tons from South Africa, Korea more than 100 000 tons, Taiwan almost 400 000 tons and Vietnam more than 300 000 tons.

Given these figures and the prospect of another year of excellent rain, the future indeed looks bright for South Africa's crop producers and grain traders. [a](#)

For more information, contact  
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▶ Commercial Banking

# Building sustainable agricultural foundations to drive job creation, food security and economic growth.

By John Hudson,  
Nedbank's National Head of Agriculture.



The agricultural sector is a vital contributor to the overall well-being of the South African population and economy. With more than 70% of the South African rural population relying on agriculture for their livelihood, it is critical that the sector remains sustainable and leverages transformation opportunities.

But how can the sector achieve these goals and build on transformation and investment to become a more resilient and robust source of economic and social growth?

The United States Agency for International Development believes that the approach should include five key elements: access to markets; improved productivity; increased private investment; promotion of consumption of nutritious foods; and development of policies that support growth in the sector. Similarly, the 32nd session of the United Nations Food and Agriculture Organization's Regional Conference for Africa found that innovative approaches, traditional knowledge, crop diversification and climate resilience are proving stable foundations on which farmers in Africa are building their businesses.

A recent report compiled by the Stellenbosch Business School, in collaboration with the Agricultural Business Chamber and Agri SA,

found that agricultural value chains are vital to our economy, not only in the context of food security, but also to drive economic growth and employment. It is essential that the entire agricultural value chain continually focuses on transforming their agribusinesses, concentrating on inclusive growth and enhancing our internationally competitive standing.

Transformation also extends to technological innovation and investment, which must be included in the sector to bring increased stability to an environment fractured by unpredictable infrastructure. A recent report released by the United States Department of Agriculture highlights that the agricultural sector in South Africa has shown tremendous growth, with a positive trend in record exports and investments. However, it is being constrained severely by load-shedding, and because this remains a pervasive challenge for the foreseeable future, the sector must look at alternative solutions for generating power to maintain its growth and potential.

To overcome the anticipated deceleration of growth predicted by the Bureau for Food and Agricultural Policy towards the end of 2022 and into 2023, the sector must find new ways to manage the complexities

that impact growth. In addition, financial institutions need to prioritise the development of new investment and financial solutions that are customised to suit the specific requirements within agriculture. These solutions must go beyond lip service and paperwork, measurably empower entrepreneurs, companies, and enterprises, and build sustainable foundations in the sector.

Nedbank is committed to the growth and transformation of the agricultural sector and has put its sustainable growth and development at the forefront of its agenda. This commitment extends to job creation and a sustainable economy, as well as developing sustainable, tailor-made solutions that fit clients' requirements and growth expectations.

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# Overview of the 2021/22 season's wheat crop quality survey

By Jolanda Nortjé, laboratory manager, The Southern African Grain Laboratory NPC

The 2021/22 season's commercial wheat crop, set at 2 285 000 tons, was the largest crop in 20 years and almost 8% higher than the previous season's crop, which was the highest since the 2008/09 season. A total area of 523 500ha was utilised for wheat production during the 2021/22 season and the average yield was 4,36 tons per hectare (source: Crop Estimates Committee).

According to the latest bread wheat grading regulations published in *Government Gazette No 42862* and detailed in *Government Notice No R 1547* of 29 November 2019, the classes of wheat are Bread Wheat and Other Wheat. The grades for Bread Wheat are Super Grade, Grade 1, Grade 2, and Grade 3. No grades are determined for Class Other Wheat (COW).

## Survey results

The 335 representative crop survey samples received of the 2021/22 season were graded as follows (Figure 1): 22% as Super Grade, 19% as Grade 1, 14% as Grade 2, 14% as Grade 3, and 31% as COW.

Of the 105 samples received that were downgraded to COW:

- 28% had falling number values below 220 seconds.
- 6% had hectolitre mass values below 76kg/hℓ.
- 19% had screening levels higher than 3%.
- 49% had other grain and unthreshed ear levels exceeding 1%.

- 13% had total damaged kernel levels higher than 2%.
- 4% had combined/collective deviation levels exceeding 5%.
- 10% had field fungi levels higher than 2%.

Single samples reported protein contents lower than 9,5%, foreign matter, heat damaged kernel, insect damaged kernel and sprouted kernel percentages exceeding the maximum permissible deviation, or the presence of poisonous seeds and an undesirable odour.

A total of 50% of the downgraded samples originated in the Western Cape, 29% in the Free State, and 21% in the irrigation areas. A total of 22% of wheat samples originating in the Free State was graded as Super Grade, whereas 39% of the wheat samples from the irrigation areas and 5% of wheat samples from the Western Cape were graded as Super Grade.

## Hectolitre mass

The average hectolitre mass of 79,9kg/hℓ is 1kg/hℓ higher than the previous season, but still 0,4kg/hℓ lower than the ten-year national average of 80,3kg/hℓ. A total of 18 samples (5%) had values below the 76kg/hℓ minimum level for Super Grade, Grade 1 and Grade 2 wheat – of these six samples originated in the Western Cape (winter rainfall area), nine in the Free State, two in North West and one in Gauteng. Regional averages ranged from 78,8kg/hℓ in the Free State, 79,2kg/hℓ in

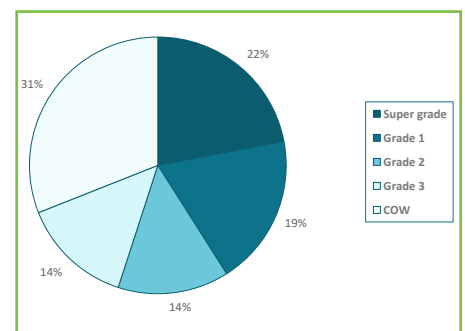
the Western Cape and 81,3kg/hℓ in the irrigation areas.

## Falling number values

The average falling number of the crop quality samples this season was 341 seconds, which is lower than the 372 seconds of last season's average and the ten-year weighted average value of 364 seconds. Of the samples analysed, 11% (37) had falling number values below 250 seconds – of these, 29 (almost 9%) were below 220 seconds and downgraded to COW as a result. These downgraded samples originated from the Free State (16 samples), KwaZulu-Natal (seven samples), North West (four samples) and Gauteng (two samples).

Falling number values this season ranged between 56 and 495 seconds. Last season

**Figure 1: Percentage of crop survey samples per class and grade according to the current grading regulations in the 2021/22 season.**



4% of the samples analysed as part of the survey was downgraded to COW due to a low falling number. All falling number values reported were corrected for the altitude at which the test was performed.

**Protein content**

The national whole wheat protein average decreased slightly from 12% in the previous season to 11,9% this season. The ten-year national average is 12,1%. The percentage samples from this crop survey with a protein content equal or higher than 12,5% (minimum protein content for Super Grade) was 37% (42 and 64%, respectively, during the last two seasons).

The irrigation areas reported the highest whole wheat protein average, namely 12,5%. The production regions in the winter rainfall area of the Western Cape averaged 11,1%, and the summer rainfall and irrigation areas of the Free State averaged 12,2%. Protein content is generally a function of the growing environment (soil and climatic conditions) as well as fertiliser application.

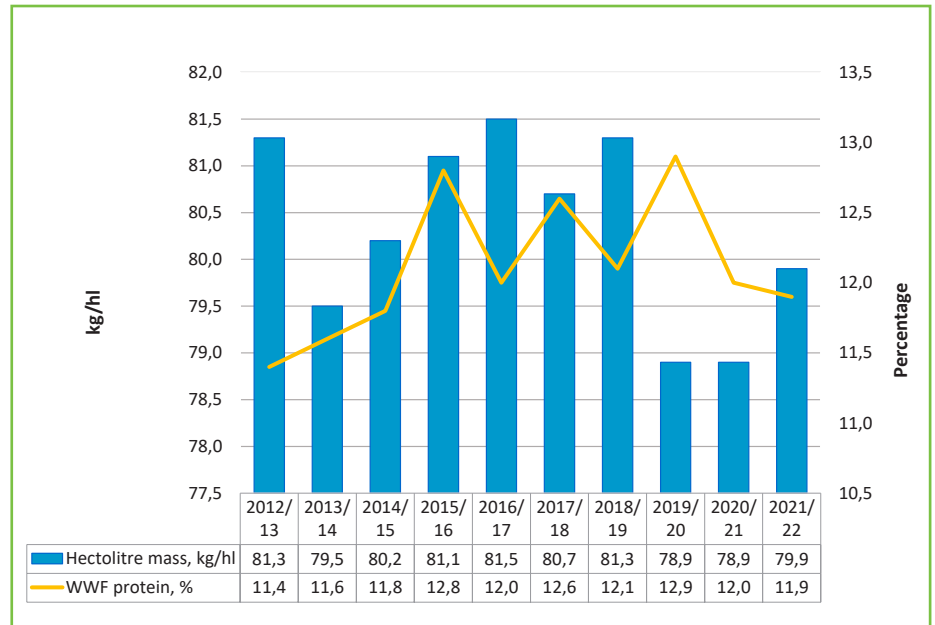
Flour protein content is on average 0,5 to 1,2% lower than that of wholewheat and averaged 10,9% this season, which is 0,3% lower than the previous season. The difference in the protein content between wholewheat and flour protein can be attributed to the removal of the bran and aleuron layer, as well as the germ during milling. The protein content is reported on a 12% moisture basis.

**Screening and milling**

The weighted average percentage screenings obtained with a 1,8mm slotted sieve was 1,2%, compared to the 1,63 and 1,92%, respectively, of the previous two seasons. The summer rainfall and irrigation areas reported the highest average percentage, namely 1,49%, and the irrigation areas the lowest at 0,76%. Of the 335 samples tested, 20 (6%) exceeded the 3% maximum permissible screenings level for Super Grade to Grade 3 (half of these samples originated in the Free State).

The 1 000-kernel mass, reported on a 13% moisture basis, increased from 38,2g last season to 40,3g this season. The 2019/20 season's average was 35,6g. Averages over production areas varied from 39,7g in the summer rainfall and irrigation areas of the Free State, to 40,1g in the winter rainfall areas and 41g in the irrigation areas.

**Figure 2: Weighted average hectolitre mass and protein results over ten seasons.**



WWF = Whole wheat flour.

The mixogram peak time of flour milled on the Quadrumat Junior mill equalled the average 3,2 minutes of the 2020/21 season. The ten-year average is 2,9 minutes. The mixogram peak time of the flour milled on the Bühler MLU 202 mill was 2,9 minutes, which is also equal to the previous season. Mixing time is a measure of optimum dough development and thus also of protein quality.

All national, seasonal and regional averages provided in this report are weighted averages.

**Mycotoxin contamination**

The accredited multi-mycotoxin assessments included in the annual wheat crop quality survey for the past 11 seasons provide the most comprehensive overview of the multi-mycotoxin risk in commercial wheat produced and delivered to commercial grain storage companies in South Africa. Approximately 10 to 20% of the wheat crop samples were selected every season to proportionally represent all the production regions.

Constant monitoring of mycotoxin occurrence is crucial as it is well documented that mycotoxin risk can vary significantly between production seasons and production regions. Application of good agricultural practices and storage conditions, and effective mycotoxin risk management programmes are essential elements in preventing the negative effects

of mycotoxins. Continued research on the prevention and mitigation of mycotoxin contamination is also necessary.

The only proven way to determine whether grain, cereals, feed or food are contaminated is to obtain reliable testing data through analytical testing.

Mycotoxin analyses were performed on 40 wheat samples, randomly selected to represent different regions as well as grades. The absence of aflatoxin B<sub>1</sub>, B<sub>2</sub>, G<sub>1</sub>, G<sub>2</sub>, fumonisin B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, ochratoxin A, T2-toxin and HT-2 toxin in the wheat samples over the past 11 seasons were confirmed in the 2021/22 season. This is the second time that zearalenone residues were detected on a wheat crop sample; residues were also detected on a sample during the 2019/20 season.

The deoxynivalenol prevalence this season is the second highest of the 12 seasons for which accredited test results are available. A total of 35% of the samples tested positive for deoxynivalenol residues, compared to the 43% of the previous season. None of the positive residue levels measured this season exceeded the national maximum allowable level (2 000 µg/kg) for cereals intended for further processing.

For more information, contact Jolanda Nortjé on 012 807 4019 or visit [www.sagl.co.za](http://www.sagl.co.za).



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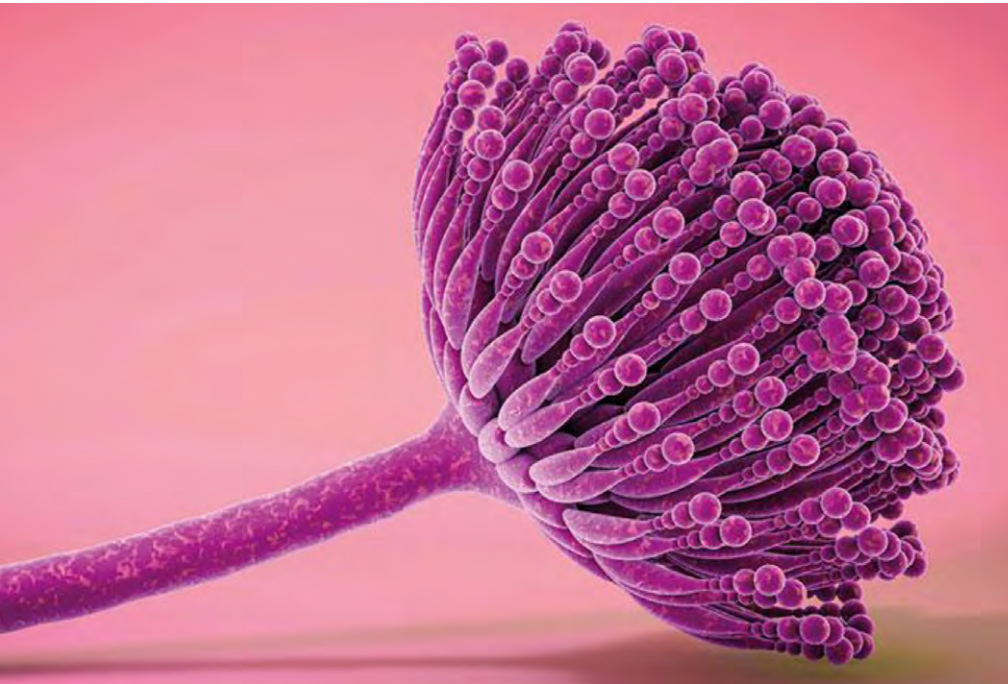
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# Mycotoxins: The PPB challenge in grains

By Hannalien Meyer, technical specialist, The Southern African Grain Laboratory NPC



It seems peculiar that small, organic molecules such as mycotoxins, at parts per billion (ppb) concentration levels, can be a health risk for both animals and humans, considering that one ppb represents only one second in 32 years.

Exposure to high-risk chemical contaminants that may occur in food and feed, such as mercury, arsenic, dioxins and polychlorinated biphenyls, pesticides, veterinary drugs and mycotoxins, can affect both human and animal health. In this list, only arsenic and mycotoxins are natural chemical contaminants that are not introduced by human activities.

Mycotoxins have been around in crops long before the scientific community started to describe the different types that caused the adverse effects observed in humans and animals exposed to specific mycotoxins in processed food and feed.

## Why focus on mycotoxins?

Nowadays, maximum allowable mycotoxin levels in agricultural products, as well as processed food and feed products, are specified in worldwide regulations based on toxicity risk assessments. Globally, the most concerning of these are aflatoxins (B<sub>1</sub>

and M<sub>1</sub>), deoxynivalenol (DON), fumonisins or FUM (FB<sub>1</sub> and FB<sub>2</sub>), ochratoxin A (OTA) and zearalenone (ZEN).

Aflatoxin B<sub>1</sub>, which is found mainly in nuts and maize, causes cancer in humans and liver diseases in animals. The occurrence of DON (also known as vomitoxin) became dominant in the early 1980s in different regions of the world in maize, wheat and barley. DON-contaminated feed may cause vomiting, feed refusal and kidney problems.

FUM is detected worldwide in maize, sorghum and barley, and OTA is mainly produced in stored grain. These mycotoxins may cause kidney and liver diseases, and are tumour promoters. Increases in the contamination levels of ZEN in maize, wheat, sorghum and barley have recently been reported across the globe. Long-term exposure of animals to feed that is contaminated with ZEN may cause abortion and small litter sizes.

## Where to find mycotoxins

Specific fungi, present on the grain in fields and/or present during storage of grain, produce specific mycotoxins as secondary metabolites on specific grains.

Uncontrollable environmental conditions such as high rainfall, the timing of rainfall, drought stress, temperature stress and insect damage are favourable for fungal activity to increase and produce mycotoxins.

Research results confirmed that certain agricultural practices and cultivar selections are also key biological factors that play a role in increased fungal activity in fields. In addition, incorrect storage practices and a lack of awareness may cause increased mycotoxin contamination of stored grain.

Common in South Africa are *Fusarium* fungus species that produce FUM, DON and ZEN. The fungus *Aspergillus flavus* produces aflatoxin B<sub>1</sub>.

Mycotoxins are chemically stable compounds and are not destroyed or removed during processing methods at food and feed mills. Therefore, they are found in the final products consumed by humans and animals.

## How to detect mycotoxins

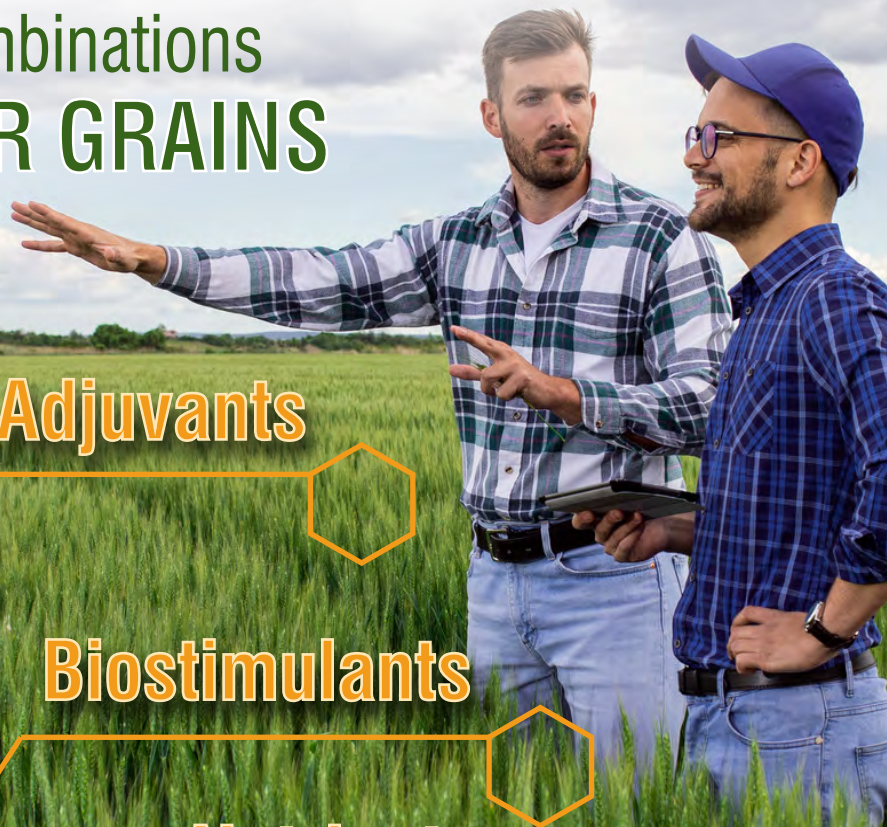
When it comes to detecting mycotoxins, the biggest challenges are their unpredictable production and occurrence in grains, the ppb contamination levels, and a lack of understanding of the type of mycotoxin causing the contamination and how to control it.

Mycotoxins are unevenly distributed in the consignments at harvest because the fungus infections are never evenly spread on the grain in the fields. High fungal activity in the grain may result in visually defective kernels reported by graders. Often graders will, based on their visual observations, indicate the presence of mycotoxins; however, it is impossible to visually identify chemical compounds such as mycotoxins at ppb levels in maize or wheat kernels.

No correlation exists between the grading results and the mycotoxin content because mycotoxins may also be detected in sound maize kernels without any visual defect caused by a fungal infection. Specific mycotoxin sampling plans to take representative samples are designed to



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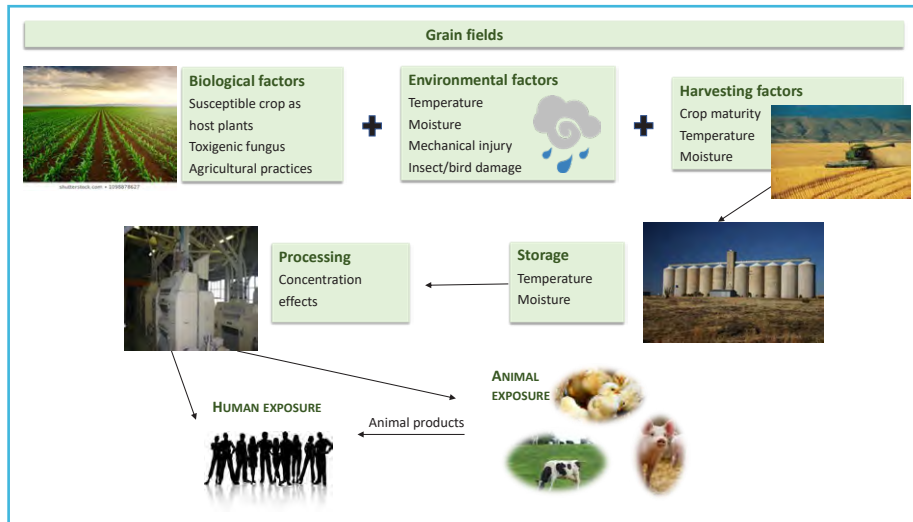
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**Figure 1: Factors affecting mycotoxin occurrence.**

minimise the risk of reporting incorrect concentrations in the consignments. The only proven way to determine if grain, feed or food are contaminated is to conduct an analytical test on a representative subsample, using a well-designed sampling plan.

The Southern African Grain Laboratory (SAGL) developed an LC-MS/MS analytical method to determine the 13 most important mycotoxins simultaneously in grains, oilseeds, and related final food and feed products. With the availability of multi-mycotoxin methods, the co-occurrence of different mycotoxins in the same consignments is now confirmed worldwide. Different screening kits to test for the most important mycotoxins in non-laboratory environments at silos complement these chromatographic multi-mycotoxin methods.

### Maximum allowable concentration

The number of countries with regulations for mycotoxin maximum allowable levels in different grains for further processing, as well as related food and feed commodities, has increased significantly worldwide. In this regard, the aim is to protect the consumer from the harmful effects of these compounds.

Since 2004, only aflatoxin B<sub>1</sub> (5µg/kg) and total aflatoxin (10µg/kg) have been regulated in South Africa in foodstuffs for human consumption. The *Government Gazette* of September 2016 contained maximum allowable levels for DON in grains (2 000µg/kg) and processed products (1 000µg/kg), and FUM in maize

(4 000µg/kg), maize flour and maize meal (2 000µg/kg).

To protect animal health, the allowable levels for different mycotoxins in either specific feed ingredients or the complete feed for different animal species were published in February 2010.

### How to control exposure

To reduce the risk of mycotoxin exposure, all role-players in the grain value chain must know the mycotoxin concentration levels in the grain consignments. Producers, grain silo owners, buyers and processors need to develop sound practices to reduce mycotoxin contamination along the value chain.

Researchers confirmed that climate change already contributes to the changes observed in mycotoxin occurrence patterns worldwide. The choice of agricultural practices on the farm, rotation of crops and selection of cultivars will therefore become more important for grain producers in future.

Moreover, the control of moisture and temperature in storage facilities and the handling of consignments with too high mycotoxin concentrations are vital. Processors must understand the contamination levels in the consignments to perform meaningful blending before milling. Mycotoxin binders are also available for final feed.

### Mycotoxins in South Africa

South Africa's maize and wheat industries have an excellent overview of the

occurrence of the most important mycotoxins in commercially produced maize and wheat in all the country's production regions over 11 seasons. This is made possible with the ongoing participation of Agbiz Grain members who annually collect representative maize and wheat crop quality samples at intake (the Maize Trust and South African Winter Cereal Industry Trust provide the funding, and the SAGL conducts the mycotoxin analyses).

Mycotoxin occurrence and concentration levels in unprocessed grain differ from season to season, and between production regions. In wheat, only DON is found in less than 35% of the wheat crop, with concentration levels below the maximum allowable regulated level of 2 000µg/kg.

Of the 3 850 maize crop samples analysed in 11 production seasons from all the regions, no ochratoxin A, T2-toxin and HT-2 toxin were found, and aflatoxins were found in only five maize samples. FUM, DON and ZEN are present in South African maize.

FUM occurrence decreased gradually from 60% in 2015/16 to 22% in 2020/21. However, individual samples with FUM concentrations of more than 4 000µg/kg (the maximum regulated value) were reported.

An increase in DON and ZEN contamination year-on-year has been reported since 2015/16, with 90% of the maize in 2019/20 contaminated with DON and 13% with ZEN. DON concentrations of more than 2 000µg/kg were reported in 8% of the white maize in 2019. In 2020/21, 63% of the white maize and 66% of the yellow maize contained DON.

Detailed results on the occurrence of mycotoxins in the different production regions of South Africa are available in the annual *SA Crop Quality Reports* ([www.sagl.co.za](http://www.sagl.co.za)).

The seasonal variations in the occurrence of the different mycotoxins in South African wheat and maize confirmed the importance of collecting representative samples, as well as continuous monitoring to reduce the health risks to consumers. [a](#)

For more information, contact Hannalien Meyer on 012 807 4019 or visit [www.sagl.co.za](http://www.sagl.co.za).





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## Why protocols are necessary to settle disputes

By Wessel Lemmer

The South African grain and oilseeds sector is a significant role-player in the global trade of grain and oilseed commodities. It is therefore important that protocols applicable to the domestic grain sector align perfectly with global standards. A protocol, simply put, is a system of rules that explains the correct conduct and procedures to be followed in formal situations.

Sampling is a procedure that requires both a method and apparatus that are suitable for the task. Any analysis of the characteristics of a consignment and any interpretation of the results would prove futile if the sample was not representative of the consignment from which it was taken. An industry-wide agreed-upon protocol for sampling during disputes is

necessary to address those that cannot be resolved without the assistance of an approved independent arbiter.

### Standardisation requirements

If we consider a protocol to be followed in the sampling of grain and oilseeds, the following needs to be standardised:

- Acquire the apparatus specified for dispute resolution purposes to sample the commodity.
- Make sure the sampling apparatus is certified by an independent certification body.
- Follow the prescribed procedure for the proper handling of the sampling apparatus.
- Only qualified and experienced personnel who completed an accredited sampling course should be involved in the sampling of a commodity for dispute resolution purposes.
- Follow the agreed sampling procedures that align with global standards. ICC Standard No 101/2 (2018) published by the *International Association for Cereal Science and Technology* should be used as a basis for the sampling protocol.

- The protocol must comply with the minimum requirements of the grading regulations and legal requirements of the *Agricultural Product Standards Act, 1990 (Act 119 of 1990)*, or *APS Act*.

The principle of the sampling method is to obtain several increments that, when combined and homogenised, compose the bulk sample from a representative sample. This sample will represent the consignment in every respect, following the prescribed method for unbiased sampling, compositing and reduction.

The bulk sample is carefully homogenised and then further reduced by successive division, using approved methods to obtain representative sub-samples for laboratory analysis. The samples should be 'fit for purpose' in representing the consignment from which they were taken (ICC Standard No 101/2).

### The requirements

In terms of suitable apparatus for sampling, the sampling apparatus needs to be specified and should be the only apparatus used for dispute resolution.

Although the regulations allow for any apparatus fit for purpose, the agreed protocol for dispute resolution should prescribe a singular, specified, and certified apparatus for dispute resolution purposes.

The apparatus must:

- Be globally recognised and must comply with global standards.
- Take a representative sample.
- Prevent biased sampling.
- Be suitable for transportation.
- Be affordable, cost-effective and accessible to producers, storage operators and processors of all sizes.
- Have clearly defined and standardised specifications for manufacturing. Specifications mean the specifications for the specified and certified apparatus to be used in dispute resolution.
- Be certified by an independent certifying body(ies). The apparatus supplied by the supplier/manufacturer should be certified by an independent agency to comply with the specifications set by the industry.
- Be suitable to operate in the South African business environment which has to deal with regular power outages.

### Required qualifications

In terms of conducting sampling during dispute settlement, only experienced sampling personnel whose training complies with the SAQA unit standard 8156 (collect representative sample) should be allowed to take samples for dispute resolution purposes (training material can be accessed at [www.regqs.saqa.org.za/viewUnitStandard.php?id=8156](http://www.regqs.saqa.org.za/viewUnitStandard.php?id=8156)).

Sampling personnel should follow the prescribed procedure for the uniform handling of the apparatus relevant to the specific commodity. Only personnel who have been trained to use the appropriately certified apparatus should take a sample.

### Declaration of a dispute

Upon the first arrival of the commodity at the buyer's/receiver's premises and initial inspection, if it is found that the commodity does not conform to the contractual quality/grade/specifications, then the following is to apply:

- The commodity is not discharged/offloaded from the applicable vehicle(s).

- After the consignment has been fully offloaded, a dispute cannot be registered. If the consignment has been offloaded, it means the receiving point accepts the grading of the point of dispatch. A dispute can only be declared if the consignment/cargo has not been offloaded.
- If some of the cargo in question has already been pulled into the silo, what is left in the hopper is no longer representative of the consignment and a dispute cannot be declared.
- If the receiving point has no qualified personnel, sampling or grading apparatus, a dispute cannot be declared except if the consignment does not comply with the standard of the APS Act.
- If a consignment does not comply with the standard and grade for that agricultural product as described in the grading regulations in the APS Act, because the consignment identifies as under-grade, a dispute can also not be declared.
- If a sample cannot be taken according to the prescribed methods, a dispute cannot be declared.

- If a dispute is declared, the reasons for the dispute must be stipulated. The seller is to be advised immediately telephonically within one hour during working hours, and later in writing, as the applicable demurrage charges only take effect after the written declaration of the dispute.
- An independent, recognised arbiter as agreed upon by the seller (or the buyer – whichever the parties contractually agree to at the time of finalising the contract) must visit soonest the premises where the product is situated, and properly sample the product in the applicable truck/trucks. The sampling procedure must be of such nature that it is taken on the truck.
- Sampling should be done as described in the grading regulations. The specified apparatus for dispute settlement should be the only apparatus used in a dispute. Personnel handling a dispute should be qualified, experienced and well trained.

- It is agreed that the findings of the appointed independent arbiter will be final and binding to all parties (i.e., seller, buyer and vendor). Once the dispute is finalised, the receiving point cannot declare another dispute on the same consignment. The arbiter is not present to investigate the reasons to reject the same consignment.
- Should the independent, recognised arbiter find that the product is out with the contractually agreed quality/grade specifications:
  - All applicable demurrage charges are incurred from the time of submission of the written declaration of the dispute.
  - Demurrage charges only take effect 24 hours after the dispute was declared.
  - The removal of the product is for the care and cost of the seller, and such product should be removed soonest by the seller.
- The costs to be incurred to resolve the dispute must be acceptable to both parties involved. All costs applicable to the visit of the independent arbiter will be for the party who is found to be in the wrong, and payable immediately.

### Conclusion

The expedient resolution of disputes in the grain and oilseeds sector is an important aspect. The approach to handling disputes needs to be uniform and protocols can be of great value to reach this objective. To address disputes fairly, the industry must specify a suitable and sufficiently evaluated apparatus (there may be more than one apparatus needed to best sample each commodity). The specified apparatus also needs to be certified by independent certification bodies. It is equally important that personnel are qualified and experienced, and that the procedure necessary to use the sampling apparatus is applied.

In the end, the underlying apparatus to be specified for dispute resolution purposes needs to be affordable to all stakeholders in the industry. In addition, the industry is busy finalising a sampling and accompanying dispute resolution protocol that benchmarks best practices in sampling worldwide. [a](#)

For more information, send an email to Wessel Lemmer at [wessel@agbizgrain.co.za](mailto:wessel@agbizgrain.co.za).



# An introduction to health and safety legislation

By Christal-Lize Muller

Agbiz Grain members involved in the grain handling and storage industries realise the importance of health and safety legislation in the workplace and welcome the workshop and activities of the newly established SHEQ Forum to improve awareness and understanding of these issues. A recent virtual SHEQ (safety, health, environment and quality) workshop hosted by Agbiz and presented by Lucinda van Rensburg of Implex had precisely this as its aim.



Lucinda van Rensburg, managing director of Implex.

Implex focusses on legal compliance solutions aimed at proactively assisting employers in the safety, health and environmental sphere to understand legislation – different laws on different levels (national, provincial and local), and to implement and comply with this legislation.

## Background of the SHEQ Forum

Theo Boshoff, CEO of Agbiz, said the chamber established the SHEQ Forum to share relevant industry information on compliance with agribusinesses (Agbiz members) in a bid to reduce the costs and red tape associated with it. This is accomplished through the forum’s policy advocacy, which has a strong focus on occupational health and safety.

According to Gerard Ramage, SHEQ manager at VKB Group, the Agbiz team added a lot of value by sharing information regarding newly promulgated and published legislation with its members during the Covid-19 pandemic. This sparked the establishment of the forum.

The focus of the forum is on legislation and information processing that will assist SHEQ practitioners in implementing this information in a constructive manner. This is done through quarterly workshops hosted by subject matter experts who engage with members on legislation issues. He said the forum also aims at creating industry benchmarks, starting with lost time injury frequency rates and total injury frequency rates. The recent work session on health and safety legislation was the first of these quarterly workshops.

## OHSA and COIDA

During the workshop, Lucinda focussed on two specific health and safety related

acts, namely the *Occupational Health and Safety Act, 1993 (Act 85 of 1993)*, or the OHSA, and the *Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993)*, or COIDA. Both Acts fall under the purview of the Department of Employment and Labour, with the COIDA resorting under the Compensation Commissioner within the department, and the OHSA under the Health and Safety Inspectorate.

## Importance of the Acts

These laws are important in the workplace as workers are entitled to a safe working environment that is not detrimental to their health – a right also contained in Article 24 of the *Constitution*. On the other hand, employers want to (or should) avoid occupational related illnesses and injuries, wherever possible, at all costs. “Likewise, it is important that all employees have access to benefits for reasonable medical treatment, and loss of income regardless of how financially stable the employer is,” adds Lucinda.

According to her, both pieces of legislation may apply to an incident in the workplace. The OHSA portion will look at reasonable steps an employer has put in place to avoid the incident, while the COIDA entails paying benefits to an employee or next of kin for the losses incurred due to the work-related injury.

## Interpretation of legislation

Lucinda said that during compliance audits, Implex has found that employers interpret legislation differently. “Legislation gives you a basic requirement and it allows an employer to implement what the employer regards as reasonable steps.”

The starting point, however, should be aligned with the legal requirements. In order to ensure compliance, there are three basic rules of interpretation of legislation:

- Definitions as a starting point when interpreting legislation. There cannot be a standard definition of who the employer is, but the definition must be applicable to the legislation used at the time. The definition of an employer in the *OHS Act* for instance excludes a labour broker, while the *Act* deals with incidents – in this regard, the definition of an incident is a workplace accident where somebody is injured and it has to be reported. The *COIDA* applies to the same accident, but in this instance the accident also has to be reported to the Compensation Commissioner. “When you look at the definition of an employer in this *Act* it includes a labour broker,” says Lucinda.
- When interpreting the law and there is no definition, the next step is to use its dictionary meaning, give it an ordinary meaning, or use an everyday word.
- Do not interpret legislation in isolation. “When your responsibility is legal compliance, you do not comply with only one part of the law, but with the law in its entirety.”

### Difference between the Acts

The *OHS Act* requires an employer to maintain, as far as is reasonably practicable, a working environment that is safe and without risk to the health of its employees. This boils down to an employer being obligated to ensure as far as possible that the workplace is free of dangerous substances, micro-organisms, objects, equipment and processes that can cause injury, damage or illness. Where it cannot be avoided, the risk of exposure must be controlled. The employer must implement a system to achieve this and needs to inform employees about these dangers, how they can be prevented, how to work safely, and other protective measures for a safe workplace.

The *COIDA* provides for benefits such as reasonable medical treatment, compensation for loss of income, compensation to next of kin in case of death on duty, and compensation for occupational diseases and permanent occupational disability (for the loss of body parts and bodily functions and for severe disfigurement).

The employer registers with the Compensation Fund and submits annual assessments, based upon which an employer’s contribution is worked out, and which must be paid. In this regard, the employer pays to ensure that the employee is entitled to the benefits for occupational injuries and illnesses.

### To whom do these laws apply?

According to Section 1 of the *OHS Act*, this *Act* does not apply in respect of a mine, mine site, and a mining operation. With the exception of mines, the law therefore applies to all employers, large and small, and in all industries. The definition of an employer excludes labour brokers, which means the employer is responsible for labour broker employees.

“This boils down to an employer being obligated to ensure as far as possible that the workplace is free of dangerous substances, micro-organisms, objects, equipment and processes that can cause injury, damage or illness.”

The *COIDA* applies to all employers, and pays compensation to permanent workers, temporary workers, workers in training and apprentices who are injured or become ill in the performance of their duties and who, as a result, lost income. The definition of an employer in the *COIDA* includes a labour broker.

### Advantages of these Acts

Lucinda added that occupational diseases and injuries have a detrimental impact on employers and employees, and there are associated financial implications involved such as loss of production, and possible criminal fines and penalties. It can also damage an employer’s reputation and by eliminating these risks in the workplace, the employer ensures that workers are safe and healthy, and avoids potential financial and reputational damage.

By being registered and fully paid with the Commissioner of Compensation, the employer ensures that an employee who is injured or contract an illness while

performing his or her duties, and who as a result loses his or her income, or have to incur medical expenses, will be entitled to compensation.

Furthermore, Section 35 states that an employee and his or her dependents cannot bring a civil claim against the employer – the employer is therefore protected against civil claims for work-related injuries and illnesses. The strict burden of proof that would apply in a civil case is alleviated when the employee instead submits a claim to the Compensation Commissioner; the employee only needs to prove that he or she was injured on duty and in connection with work.

### Draft law: Suggested amendments

The *OHS Act* has not been updated in the past 29 years, but the minister did publish draft amendments to the *Act* in May 2021. Lucinda said quite a few definitions were adjusted. There were also some changes related to the Advisory Board for Occupational Health and Safety.

Focussing on the implications for the employer, notable changes include the following:

- The chief inspector may instruct employers or a group of employers to implement a health and safety system.
- More formal requirements for risk assessments.
- Changes regarding the requirements for health and safety committees in the workplace.
- Requirements regarding reporting and investigations of occupational diseases and incidents.
- Identification of inspectors through the use of a card system.
- Appeal against and review of administrative instructions received from inspectors and the chief inspector.
- One of the most important changes is the introduction of administrative fines: Schedule 1 with fines for criminal offenses in terms of legislation that are increased from R50 000 and R100 000 to R200 000, R500 000 and then between R1 million and R5 million; and Schedule 2 with increased fines of between R25 000 and R50 000. [a](#)

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# How to curtail mechanical grain damage

By Christal-Lize Muller

**M**echanical grain damage, especially with regard to maize, remains a challenge. This issue was highlighted during a recent virtual Agbiz Grain workshop focussing on minimising mechanical grain damage during the handling and storage process.

Johan Olivier, an independent professional mechanical engineer with years of experience in malting, maintenance and legal compliance in the grain storage sector, presented this session. According to him, the composite of available maize varieties that had shifted to, among others, fast growers with a high yield, disease resistance and short ripening periods, have been a definite contributing factor to grain damage and can be attributed to the rate at which harvesting is currently taking place.

## Grain damage at malting plants

Johan's presentation was constructed around the experience he gained while serving on the technical team responsible for the specifications, design and building of SAB Maltings' new Alrode malting plant in Johannesburg. He worked closely with the plant supplier, Malt Europe, which currently operates 24 plants in 15 countries with a total malting capacity of 2,3 million tons annually.

At the time, grain damage in barley and malted barley was a key performance indicator at all plants, while dust and broken kernels contributed to physical input losses, especially on the barley side. Johan said although barley production is not on the same level as maize, which makes up almost 65% of grain production in South Africa, the concepts are equally applicable.

As engineering manager at SAB Maltings, Johan and his team managed to cut breakage damage of malt by half – down from 1,6 to 0,8% at the Caledon plant – by implementing equipment changes and incorporating the 'umbrella' concept.

## Mechanical grain damage

Mechanical grain damage is brought on by several factors, he says, one of which is the cutting or milling of grain as it passes through small-sized gaps or when it is damaged by sharp edges in the equipment. Damage is caused by the high-speed impact and directional changes of the grain product onto steel or grain.

Factors influencing the level of mechanical damage during handling include the following:

- *The type of grain:* Research has shown that different grains vary in their susceptibility to mechanical damage.
- *Speed of drying:* Research relating to

the drying of maize has shown that fast drying increases stress cracking in grain, leading to an increased risk of mechanical grain damage.

- *Moisture levels:* Research has shown that higher moisture levels result in lower mechanical damage of grain during handling. However, the opposite is also true for grain damage due to storage of too moist grain, says Johan.
- *Speed of malting:* Speed is a significant factor as the grain is subject to Newton's law and is not fully elastic. High-speed impact can cause sizable damage.

## Low-impact equipment

Cutting and impact damage of grain occurs in equipment used during the handling and storage process. This, says Johan, includes generic equipment inside grain silos and typical storage facilities in South Africa.

Belt conveyors with a recommended speed for grain of 3 to 4m/s (metres per second), and with transfer chutes at the end of the conveyor, cause the least grain damage as minimal relative movement occurs between the belt and the product. Some damage can, however, occur at loading or offloading points.

Minimal grain damage also occurs in a bucket elevator owing to minimal movement between grain particles and



between the grain and bucket. The minimum and maximum belt speeds, which are determined by a pulley diameter and the design of the bucket, play a role. It is important that bucket elevators are operated at the optimum speed; if the speed is too high, increased damage at the loading and offloading points can occur.

**High-impact equipment**

While screw (worm/auger) conveyors are the most versatile conveyors, says Johan, they can cause the most damage to grain during transfers. Grain damage increases if a sufficient gap between auger flights and pipe housing is not in place. The length of the worm can cause sagging, resulting in too small gaps between flights and housing. Sufficient flight support on longer augers is therefore needed.

Without a sufficient outlet opening, the flow in the auger is restricted. The discharge opening length needs to be 1,5 times the diameter of the conveyor, and the infeed grain regulation should not exceed auger capacity. Damage to and temporary repairs of auger housing can cause sharp edges that will increase grain damage.

A large screw that runs slowly should always be considered instead of a smaller screw that runs at too high a speed. An



The silo umbrella concept in action. An umbrella with a flow rate of 120t/h was installed inside a concrete bin to reduce malt breakage. (Photograph: Johan Olivier)

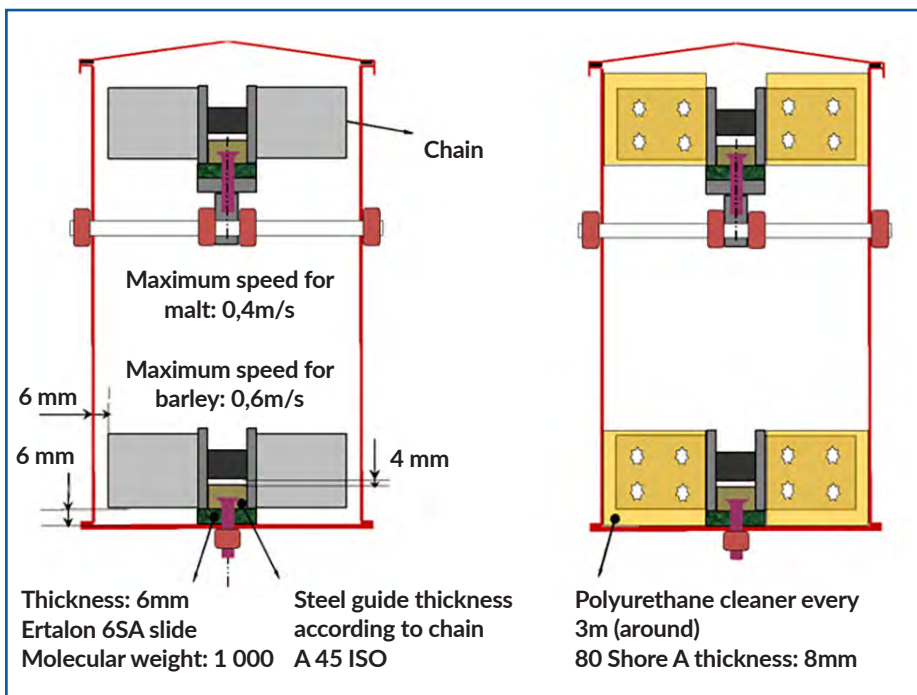
auger with an angle of more than 45° should not be considered as it increases grain damage substantially.

Chain conveyors, if not maintained, can also cause grain damage. Johan says conveyor speeds should not be too high to ensure the product is transferred as a unit. In his experience the maximum chain speed for malt is 0,4m/s, and 0,6m/s for barley.

A single-link type chain is preferred for transporting the grain, while the discharge opening length should be 1,5 times the width of the conveyor and the width of the complete bottom of the conveyor in order to fully empty grain from the conveyor.

Flight clearance on the bottom of the conveyor must be sufficient to prevent the chain from damaging grain on the bottom of the wear plates. Wear lining on the bottom of the trough needs countersunk screws to fully align the entire chain length.

**Figure 1: Cross section of a typical malt/barley chain conveyor with a steel flight (left) and a steel flight with a scraper (right). (Source: Johan Olivier)**



The grain inlet/outlet location from the drive or idler sprocket needs to be greater than 500mm, while horizontal feeding is important to prevent flight-to-grain damage. Figure 1 illustrates a cross section of a typical malt/barley chain conveyor with a steel flight (image on the left) and a steel flight with a scraper (image on the right).

**Grain pipework and arrestors**

Grain is transported in chutes or pipes from a vertical to a 35° angle. The recommended maximum vertical height between grain arrestors is important (typically 3,5m for barley and 2,5m for malt), and any stoppage or directional change must employ the grain-on-grain impact principle.

- The following guidelines also apply:
- Never use a curved bend in grain pipework.
  - Do not use a patch to repair chutes or pipework – the sharp edges will cut grain.

- Chute installation should be such that alignment is maintained in the long term.
- Wear plates should not start in the grain impact zone as this creates sharp edges that will damage grain.
- Using bolt-on sections of fast-wearing areas will facilitate easy maintenance and repairs.
- Arrest grain on the straight pipe section before a bend, as it will result in slow directional changes and reduced grain damage.

Arrestors in chutes or pipes arrest the velocity of grain, and the maximum vertical height between them is essential to avoid grain fall from exceeding the height. Johan says its design must allow grain-on-grain arresting and not grain-on-steel arresting, while openings should be large enough to prevent clogging. These arrestors should be self-cleaning, with easy access to allow for assessment of their condition and functionality.

#### The silo 'umbrella' concept

Impact damage to grain in silos and bins is caused by the high terminal velocity of the stream as it falls into the silo or bin, hitting

the bottom of the bin or grain in the silo. According to Johan, grain damage was minimised and breakage reduced by half by installing a silo 'umbrella'. This concept, which was tested on malt and barley, entails an umbrella that breaks up the grain stream and converts it into a wider 'rain', which reduces the terminal velocity of the grain while reducing impact damage in the silo.

While the umbrella concept stays the same, every solution is unique with regard to silos that are fed by trouser chutes, belt or chain conveyors, or pipework.

Arrestors were installed in the trouser chute to feed the umbrella inside a bin, with openings consisting of 50mm holes. It had a simple attachment via a chain to a new safety grid, which was upgraded from a square grid to a round bar.

The photograph illustrates an umbrella with a flow rate of 120t/h installed inside a concrete bin to reduce malt breakage. This design allowed 75% of the material to move through the holes while allowing a 25% overflow. The umbrella was a bolted two-section split design to facilitate installation, with a bigger hole in the centre for taking

silo dips. Batch flow was removed with a constant feed on the belt to the umbrella.

#### The role of maintenance

High wear and chute damage should also be noted, says Johan, as they are indications of grain damage. Maintenance teams should be made aware of the impact their repairs have on grain damage, and while temporary repairs are unavoidable, it usually increases grain damage.

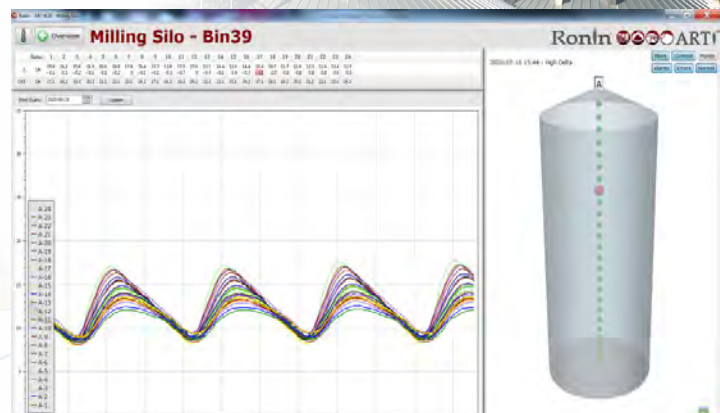
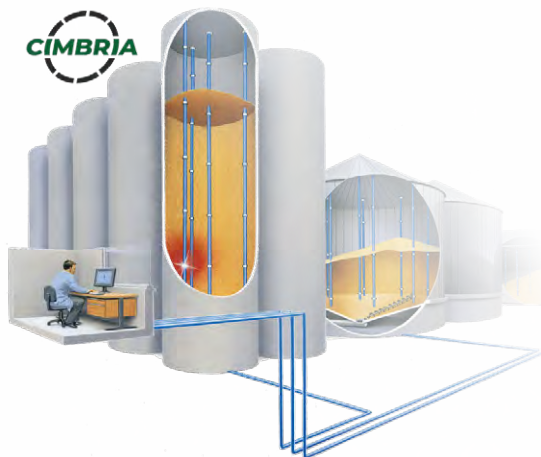
Chute maintenance is the result of high impact, misalignment, arrestors not functioning, and restoring equipment 'as is' and not the optimum. The focus should be on preventing grain damage and not only on repairing leaks, so a soft rubber impact curtain instead of an everlasting steel plate could be advantageous.

Cleaning, inspecting and reporting arrestor defects are instrumental in ensuring the effective functioning of these devices. [a](#)

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# Private sector participation: Will it save Transnet or not?

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Transnet's core mandate is to effectively manage the cost of doing business in South Africa, enable economic growth and security of supply by providing appropriate ports, rail and pipeline infrastructure, as well as operations in a cost-effective and efficient manner.

Key to delivering on its core mandate is leveraging private sector participation (PSP), which is premised on a diversified market approach that will unlock profitable and efficient supply chains.

Transnet has adopted a segment strategy approach in response to socio-economic shifts and structural changes in the economy. This represents a fundamental change for the organisation, away from a divisional, modal service offering to strategic participations and structured collaborations in integrated commodity supply chains.

The strategy will enable Transnet to participate in numerous integrated commodity value chains, and work together with the private sector to rethink, reimagine and grow Transnet's investment portfolio in a financially sustainable manner while unlocking new revenue streams.

## PSP models

Transnet is working alongside all stakeholders to ensure the success of its PSP rollout and is seeking partnerships to grow market share.

PSP models will be pursued in a number of cases. For example, where the required investments are either unaffordable to Transnet alone or are complementary to Transnet's strategy, Transnet aims to unlock efficiencies through leveraging private sector expertise, and business

opportunities within ports, rail and pipelines are non-core to Transnet's operations.

## Renewal of branch lines

Transnet's corridor model and segment strategy support the development of economic growth and activities nationally and in the region. In exploiting its core in the different operating divisions in the Transnet Group, PSP has been identified as key to accelerate growth opportunities in the business and the country.

In keeping with this and under the leadership of the chief executive of Transnet Freight Rail (TFR), an adjusted approach to branch line PSP was presented to TFR and the group's executive committee, and approval obtained to proceed and accelerate these PSP opportunities.

Branch lines are mainly situated in South Africa's rural and agricultural areas, and require resuscitation and renewal. The corridor model, headed by managing executives, have these branch lines situated within their areas of control and an integrated approach to the adjusted model is therefore being pursued.

Branch lines are important feeders into the core business and includes key objectives such as the migration from road to rail, promotion of intermodal solutions, the application of new technologies for efficiency, productivity, ease of operations such as the use of swop bodies, terminal

handling equipment and revolutionary road to rail interventions that can advance the roll-out of these PSP opportunities in the market.

The age and heritage nature of the railways and specifically branch lines, including real estate and facilities, lends itself well to the promotion of freight on rail and the creation of passenger tourism opportunities, with a focus on rail-based tourism train operations. Preservation and expansion of a rail heritage legacy in continuing with steam trains will unlock new and additional downstream jobs and job opportunities in the food, wine and agriculture markets, as well as other economic activities.

The main freight-on-rail strategy seeks to aggressively promote PSP opportunities and the continuation of the revitalisation of branch lines, thus creating and upgrading capacity in areas that will contribute to socio-economic and local development. It also aims to create employment opportunities in the areas of production for cartage services that are fully integrated into the rail and port terminal systems, as well as the development of downstream industries within this environment.

The partnerships that Transnet will contribute to in the market with the private and public sectors must innovate to contribute to growth in volumes on rail, increased densification on the branch and main lines, reducing the cost of doing



business, and injecting a fresh breeze into the broader industry.

### Branch line governance

TFR obtained approval from the Transnet Group's executive committee that the chief executive is authorised to take the various opportunities to market.

The chief executive approved memoranda and under the auspices of TFR Supply Chain Services and governance, and in conjunction with the branch line team members, tenders were prepared and advertised in the market to attract PSP.

**In the case of strategic branch lines, where the government cannot afford to invest in the non-core network, they must be put out for concessioning.**

Tender packs were prepared following SCS templates and governance – these tenders were advertised on the National Treasury e-portal for tenders and on the Transnet tender portal. The first six opportunities are out in the market and the rest will be rolled out across subsequent financial years.

### Why is this required?

Government has identified required interventions at two levels. Firstly, it notes that there is a need for infrastructure investment, as low investment and poor maintenance over many decades have caused the decline of line usage.

Secondly, enabling reforms should be implemented to address institutional and structural issues resulting from the legacy of the rail sector as a monopolistic market. Transnet acknowledges that the former monopoly state-owned enterprise (Transnet), through TFR, has in recent years narrowed its focus to protecting existing value and maintaining profitability, and has therefore not made efforts to expand its services or capabilities to meet potential market demand.

In light of these reforms, it is expected that investment opportunities will arise for the private sector. However, it is important to understand the form of such investments that Transnet will allow for, and consideration should also be given as

to whether private ownership of fixed rail infrastructure aligns with the paper.

### Decline in the rail sector

Transnet has identified a number of factors behind South Africa's declining rail sector. Railways generally rely on outdated technologies for both fixed infrastructure and rolling stock, despite the fact that South Africa is a leader in innovative technologies, such as coupling rail genetic technology which allows for much longer heavy-haul trains to run. In the freight sector, this has resulted in unsafe conditions with higher derailment and poor stopping capability.

The effectiveness of TFR's capitalised maintenance expenditure is questionable. Significant amounts are being expended with very little improvement in the output potential of track and related infrastructure spend. TFR therefore fails to meet the potential market demand.

Branch line usage has dropped dramatically over the years due to the improved road network in rural areas, coupled with the failure of initial attempts to revitalise branch lines through a concession approach.

Theft and vandalism, along with generally poor security along rail lines, reduce the ability of trains to operate, often leading to long delays due to signalling failures and track damage, among others. This escalated significantly during the Covid-19 lockdown, which made it difficult to carry out normal train services.

### Key interventions

In terms of rail infrastructure investment, the key policy driver is to focus new investments on high-performance standard gauge infrastructure, combined with the modernisation of existing network capacity. Transnet recommends that investment planning be centralised to allow for more effective expenditure.

Branch lines that are identified as 'strategic' should receive direct investment to reopen or rehabilitate the line, or introduce PSP through concessions. Transnet also identified the need for locally produced rolling stock that will service demand throughout Africa, as well as the use of private sector rolling stock leasing companies to meet further capacity requirements.

The key enabling interventions include the following:

- Restructuring of the rail sector by addressing the monopolistic nature of the market, and in particular through the promotion of PSP and investment.
- Establishing an independent transport economic regulator that will promote non-discriminatory access to rail infrastructure and facilities, as well as transparent pricing.
- Introducing more effective cost recovery via closer alignment between user fees and costs.
- Enhancing the role of the railway safety regulator in terms of oversight of registration and licensing.

In the freight sector in particular, market structure is again identified as a key area for policy intervention. According to Transnet, unbundling of vertical integration at TFR is an important imperative, although it only identifies possible alternatives for unbundling without committing to any particular option.

The issue of unbundling will be further explored by the transport economic regulator once operational, which will act as an infrastructure manager. Introducing third-party access is also a key move in opening up the freight market, with access fees and terms to be published by TFR and appropriate oversight being exercised.

### Private rail network ownership

Transnet supports greater PSP in various aspects of freight rail. The key driver of PSP in the freight rail sector is the liberalisation of rail network access, which has become necessary in the absence of TFR providing a service that can effectively realise the potential demand for freight rail. Access to the network includes core, non-core, branch line, or shared freight and commuter lines.

For open access to function properly, Transnet splits the role of an infrastructure manager from the infrastructure owner (the infrastructure manager being responsible for the care and maintenance of the line and to manage traffic, all on the basis of non-discriminatory access).

The policy statements in the freight rail sector also provide clear support for PSP from an investment perspective. According to government, the Department of Transport would spearhead the development of a PSP framework for the rail industry, in recognition of the important role that PSP can play in bridging investment gaps, and

improving operational and managerial efficiency in the rail sector.

The role of the private sector in funding of freight infrastructure is noted, with Transnet specifically identifying that “the role of train operators is to invest in ‘above-rail’ capital assets such as rolling stock, based on sound business cases”.

The use of concessions is also promoted. In the case of strategic branch lines, where the government cannot afford to invest in the non-core network, they must be put out for concessioning.

### The question of funding

Despite this, Transnet does not directly address the concept of private ownership of the rail network infrastructure, which it describes as “rail-and-below fixed infrastructure”.

In the section dealing with rail planning policy, Transnet emphasises the importance of publishing a National Rail Master Plan to guide investment and for rail investment to be guided by a rail planning component within government.

There is no specific mention of whether rail infrastructure could be privately owned and funded but according to Transnet, the lack of a co-ordinated national rail master plan has led to bottom-up investment decisions instead of “top-down planning for the national good”.

That said, in discussing freight rail investment, Transnet is giving strong indications that investment in rail infrastructure is ultimately a government role and distinguishes this from the role of the private sector in funding non-fixed infrastructure.

Transnet suggests that government being responsible for fixed infrastructure investments is appropriate due to the high costs and the importance of “well-planned and implemented projects”. However, government will leave train operators to fund their own rolling stock and, as stipulated by Transnet, operators should invest in above-rail capital intensive assets such as rolling stock.

Transnet does in a more general sense recognise the need for the private sector

to contribute to funding of infrastructure, including that the Department of Transport will generally support the identification of funding in addition to that raised by Transnet.

Transnet notes: “Government appreciates that, although PSP appears to be a ready funding source, the modalities of realising that potential are complex and delicate”.

While the new national rail policy does not strictly prohibit private ownership of rail-and-below infrastructure, there are indications in Transnet to limit private participation in rail sector investment to rolling stock, and to the extent that assisting with the rail-and-below investment is contemplated, this is secondary to the government as the ultimate investment driver. [a](#)

This article was compiled and submitted by an independent third party and does not necessarily reflect the views of Agbiz. For references, send an email to Wessel Lemmer at [wessel@agbizgrain.co.za](mailto:wessel@agbizgrain.co.za).

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# Points to ponder

By Jannie de Villiers



## Light in the darkness

Having to work through these dark months without electricity, I pondered on some of the issues and events surrounding 'darkness' that are recorded in the Bible. I was especially interested in whether any good came from these dark times. During my research, the proverbial lights came on.

In Genesis 15:12 we read about a thick and dreadful darkness that came over Abraham. Things looked bad for Abraham, but the next few verses reveal how God came into that darkness and concluded a covenant with him that we still benefit from today.

### God works in the dark

In Exodus 20:21 it is recorded that Moses approached the thick darkness where God was. Here he received instructions on how to lead the people out of the darkness. I Kings 8:12 states that God dwells in a dark cloud or dark place where we cannot see Him. Psalm 139:11-12 guarantees us that we cannot flee from God; not even the darkness will be able to hide us from His sight.

Even the darkest phase has an end, and you will be better off because of it. It is in the darkness that transformation takes place.

The well-known passage in Psalm 23 also encourages us that not even the shadow of death or darkest valley should scare us because the Good Shepherd is there

to guard us with His rod and staff. For His sheep, death is not a dark place but a glorious door to heaven. The shadow leading up to death might be daunting, but God will be there.

You should never doubt in the darkness what God has taught you in the light. In his book *Crushing – God Turns Pressure into Power*, TD Jakes wrote a brilliant chapter about the dark phase in winemaking called fermentation. The grapes might be 'complaining' about being crushed, and lying in the darkness might not make sense, but the Winemaker knows exactly what is needed to produce a good wine.

Are you feeling 'crushed'? Are you in a dark place in your life where things make no sense? Trust our Winemaker and Shepherd to guide you through this phase. Even the darkest phase has an end, and you will be better off because of it. It is in the darkness that transformation takes place. Make sure you pay close attention to the areas in your life that God wants to change for the better.

There were also three hours of darkness while Jesus hung on the cross. After the three hours in the light of physical and emotional suffering we are quite familiar with, three very important hours of darkness fell upon the earth. It was in this darkness that Jesus drank from the 'cup of

wrath' to pay for all the sins of this world. God works in the darkness. He completed the salvation plan for you and me in those dark hours so we would not have to fear death. After He drank, He called out: "It is finished!". The plan was completed.

### The blessing of Christmas

Reading through Psalm 23 again, I discovered that the same cup filled with wrath that was meant for me is now filled with God's blessings of goodness and love, all the days of my life. What a Shepherd!

I cannot solve the darkness caused by electricity outages, but I've learnt not to fear the darkness or dark periods in my life. Good things happen in the dark where God is at work. Allow Him to do what He is great at – saving people, healing them, guiding and restoring them.

Christmas is a time when we celebrate the coming of Christ to this earth to save us from the darkness. While you and your family might light a few candles on Christmas Eve – not because of decoration, but because of load shedding – use the opportunity to explain to your loved ones how our Saviour works in the dark to provide love and goodness to all the sheep in His fold, all the days of their lives.

Merry Christmas. 

For enquiries, send an email to Jannie de Villiers at [jannie@graingrowers.co.za](mailto:jannie@graingrowers.co.za).

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