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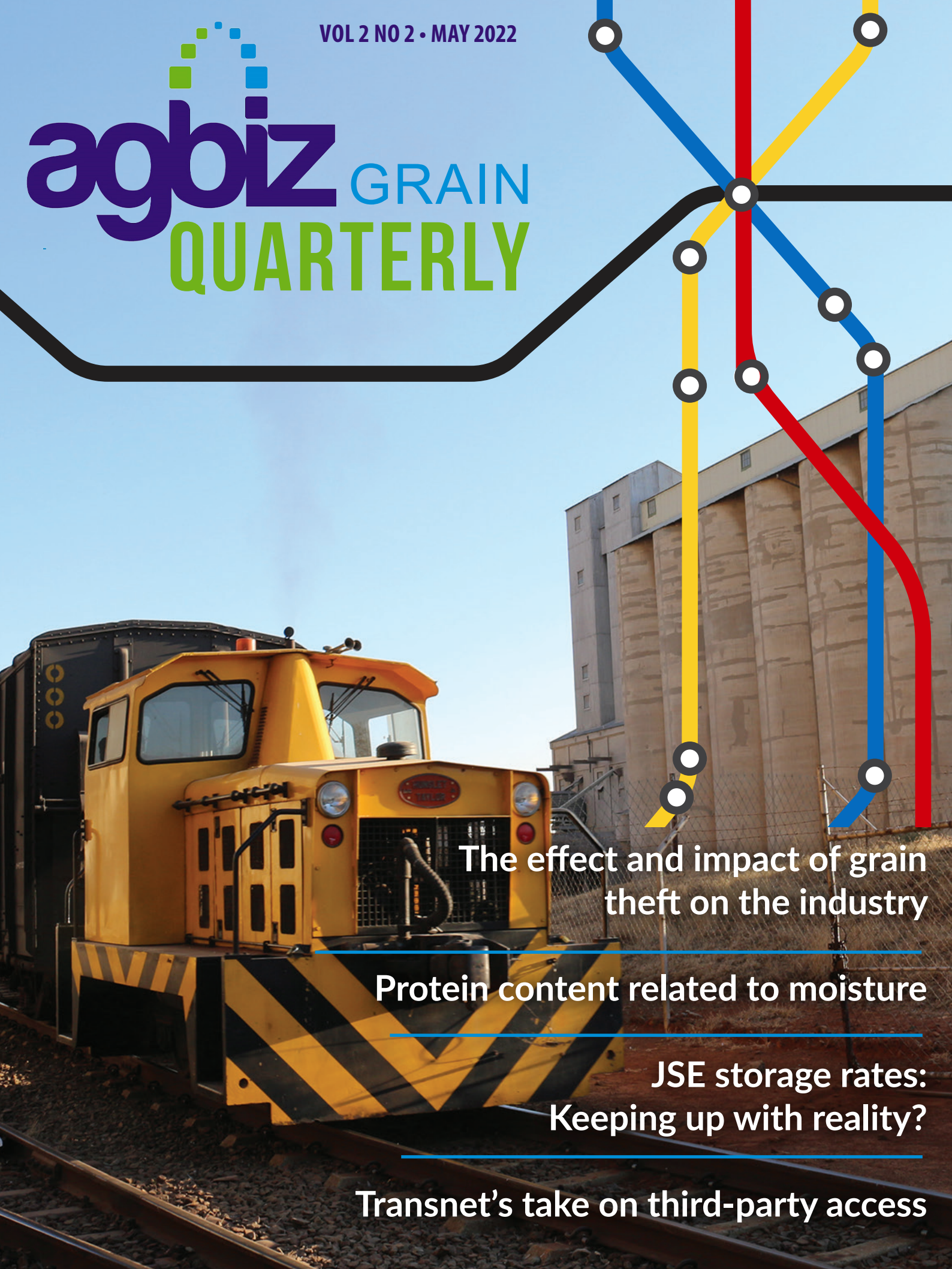
# agbiz GRAIN QUARTERLY



## The effect and impact of grain theft on the industry

## Protein content related to moisture

## JSE storage rates: Keeping up with reality?

## Transnet's take on third-party access

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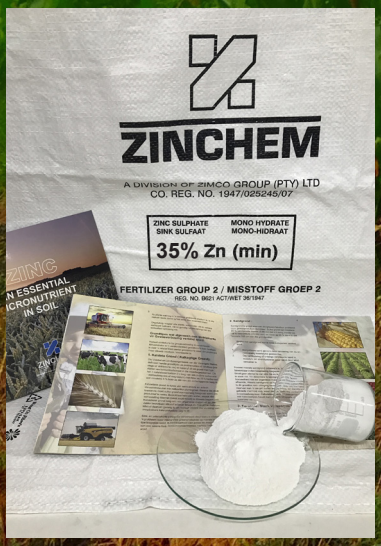



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# The grain storage sector's economic and socio-economic contribution to the rural economy

*By Tom Meintjes, vice-chairperson, Agbiz Grain and managing director, GWK Trading*

Grains are produced in most of South Africa's rural regions. In the summer rainfall region, the production area stretches from Mpumalanga in the east through the Free State, to the western-most parts of North West. The winter rainfall region comprises the Western and Southern Cape.

Some regions have an average rainfall of 500mm and higher per annum, while production in the drier parts of the country, such as in the Northern Cape and Limpopo, is done under irrigation. Although we received ample rain in the grain production regions over the past two years, South Africa does experience sporadic drought every few years, and producers therefore sometimes produce grain under the most extreme climatic conditions in the world.

Notwithstanding, grain production is still the prime input used in animal feed and human food manufacturing, and therefore plays a crucial role in our economy.

## Contribution of infrastructure

The agricultural sector is the anchor of the South African rural economy, providing various economic opportunities to allied industries and employment for just over 868 000 South Africans as at the end of 2021 (up 7% year-on-year). Over the past two years, the sector has been on a positive growth path, supported by favourable rainfall and increased investment, which supported expansion in the area farmed. These gains were spread across all the significant agriculture subsectors – field crops, horticulture and livestock.

Primary agriculture directly contributes 2,5% to the South African GDP, but considering value chain activities, the sector makes up an estimated 10% of the nation's fortunes. Unlike various commodities, the grain industry is interlinked with the livestock industry, and therefore has the broadest impact on the sector's performance. For example, some 53% of the 11,5 million tons of maize domestically consumed per annum goes to the livestock industry. A significant consumption share in soya beans, sunflower seed and sorghum also goes to the livestock sector, illustrating the grain industry's widespread impact within agriculture.

> "The storage and handling of grains play a major role in the rural economy through job creation and employment, as well as the added value of the products produced."

Infrastructure that handles and stores grain crops normally receives these crops over a short period of around three months per season, and distributes it to the local and international grain manufacturing sector over a period of up to 18 months. There are more than 289 commercial bulk grain storage facilities in South Africa that can handle an average annual crop of over 19 million tons (95% of these facilities is found in rural regions).

Without these facilities, food cannot be sustainably supplied throughout the year. It also allows the sector to store grain over extended periods, with carry-over stock assisting when production is low, such as during a drought.

Moreover, these facilities contribute to the workings of a well-defined agricultural derivative market for trading, hedging and price discovery functions. Secure grain storage is essential for the proper functioning of the physical and derivative markets in South Africa.

Agriculture's contribution to the national GDP and the sustainability of food supply throughout the country over extended periods is, however, not the only thing to consider when the value of these storage infrastructure is studied. It also contributes to the political stability of Southern Africa through the surplus grains that can be stored and exported throughout the region when crops in other countries fail, as has been experienced in the past.

## Investing in the community

The storage and handling of grains play a major role in the rural economy through job creation and employment, as well as the added value of the products produced. In most small towns in the grain production regions, the storage sector employs a sizable portion of the local community.

Agricultural businesses also invest in social schemes in these towns and contribute to schools, medical centres and infrastructure such as roads and power supply, either on their own or by joining forces with the local or national government. The local government does, however, often fail and in such cases some of the most crucial functions are taken over and managed by role-players in the agricultural sector, purely in a bid to keep businesses and the community going and growing. This has a positive influence on the entire community.

The cost of doing business in rural areas are becoming more expensive, and all affected role-players must stand together to assist local governments in coming up with solutions to keep our rural and national infrastructure from deteriorating further. Without infrastructure such as roads, the railway and efficient harbours, the pressure on our economy will only get worse, which will affect our ability to be competitive on a global scale and rural communities' ability to survive.

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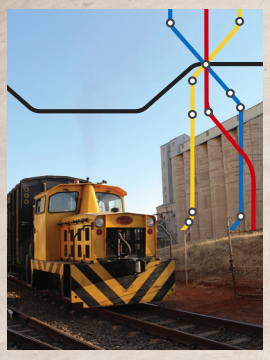


**On the cover:**
A train at VKB's Frankfort silo.
Photograph courtesy of VKB.

# CONTENTS





# AGBIZ GRAIN GAZETTE

## Agbiz Grain storage cost index

The Bureau of Economic Research updated the grain silo storage cost index (GSCI) with the latest sub-indices in April. Based on these sub-indices, the Agbiz Grain GSCI increased year-on-year by 7,1% compared to the year-on-year increase in the producer price index of 7%. An actual survey of storage cost increases may indicate a fairly higher increase than 7%. – *Agbiz Grain*

## Business opportunity: Third party access to Transnet rail network

Transnet recently announced that it has rolled out Phase 1 for third party access to slots on 8 April 2022. Should there be slots available to Durban due to low uptake of container slots, the opportunity exists to avail one slot between Bethlehem and the Durban complex for grain. – *Agbiz Grain*

## Consumer food prices moderated in March

Since the war in Ukraine began and disrupted the global grains market, agricultural commodity prices have increased significantly, with the Food and Agriculture Organization's (FAO) Global Food Price Index in March averaging 170 points, the highest level since the inception of the index in 1990. The rise in grain and vegetable oil prices has been the primary driver of the surge in the index.

As interlinked to the global agricultural markets, South Africa has also experienced increases in agricultural commodity prices. The resulting observation of these developments has been a potential uptick in consumer food price inflation.

However, there is a lag between farmgate price increases and the retail level. Hence, the most recent data released by Statistics South Africa showed that the country's consumer food price inflation moderated to 6,6% year-on-year in March 2022, from 6,7% year-on-year in the previous month. This is on the back of softer price increases in fish, milk, eggs and cheese, oils and fats, and vegetables. The moderation in the 'oils and fats' product prices is temporary. – *Wandile Sihlobo, Agbiz*

## Matutu assumes new role at JSE

The JSE recently announced that Anelisa Matutu will take on the role of head of commodities in the Capital Markets Division. She will be reporting to Valdene Reddy, director of Capital Markets. Anelisa is the fourth generation to lead the division after its creation in 1995, and has worked with all the previous heads as the market matured.

Anelisa joined the JSE in November 2008 as part of a graduate programme and has been exposed to all spheres of the commodities business. More recently she also completed her MBA through GIBBS Business School. She hails from the Eastern Cape and is a committed family person and proud mom of two daughters.

Anelisa resumed her new duties on 3 May 2022.

## Beetle should not limit grain deliveries

Due to exceptionally wet climatic conditions, the occurrence of the dried fruit beetle is widespread. However, grain deliveries should not be rejected based on the presence of the live dried fruit beetles in consignments. The key lies in the definition of insects in the grading regulations – 'insect' means any live grain insect that is injurious to stored grain, irrespective of the stage of development of that insect.

With the definition in the grading regulations, two beetles are excluded as they do not damage grain but feed on fungi. One is the dried fruit beetle, and the other is the foreign grain beetle (*Ahasverus advena*). These are the only two insects (beetles) on the list of important insects that are not injurious to grain. (Note that the grading regulations do not specify a list of important insects or injurious insects on stored grain.)

Deliveries of grain should therefore not be rejected based on the presence of live dried fruit beetles in consignments. – *Agbiz Grain*

## Weekly producer delivery returns

Relevant parties are requested to note that Agbiz Grain does not compel members to submit the weekly producer delivery returns to SAGIS voluntarily, but supports the industry application to render the weekly returns compulsory, as this will improve the integrity of the weekly returns to SAGIS.

## New industry qualifications registered

Through our continuous involvement and support to AgriSETA and the Quality Council for Trades and Occupations, the Grain Depot Manager and Grain Grader qualifications was finally registered by the South African Qualifications Authority on the National Qualifications Framework under the Occupational Qualifications Sub-Framework in April 2022. – *Agbiz Grain*

## Proposed amendments to monthly declarations

Ministerial approval has been requested for the existing statutory measure in respect of the monthly declarations to the SA Grain Information Service (SAGIS) on maize, oilseeds, sorghum and winter cereals, as published in *Government Notice No 606* of 4 June 2008 as amended, to be amended again to include that monthly maize deliveries and stock levels be reported on per class and grade of maize on a national basis. It is important that reporting be on a national basis only and not on a provincial, regional or municipal district level.

It has also been requested that the minister approve the proposed establishment of a new statutory measure, namely records and returns on weekly producer deliveries of maize, wheat, soya beans and sunflower seed. The submission of the records and returns on weekly producer deliveries of these commodities must be mandatory and inclusive of all stakeholders that receive producer deliveries for commercial storage purposes. – *Agbiz Grain*

## Principles to be set for grain inspections

Agbiz Grain and the Department of Agriculture, Land Reform and Rural Development (DALRRD): Directorate Food Safety and Quality Assurance have met to discuss the way forward following the ruling by the Board of Appeal in December 2021.

The appeal board that was appointed by the director-general of the DALRRD to rule on the implementation of the inspection services on grain and oilseeds, found that it was unlawful and not procedurally fair. The board ruled that the fees cannot be rationally linked to the capabilities that need to be exercised, nor to the duties that need to be performed.

Agbiz and Agbiz Grain have met with stakeholders in the broader grain and oilseeds value chain, and an agreement was reached to jointly formulate a document containing proposals and principles which the industry proposes be adopted by the DALRRD for the regulation of grain and oilseeds under the *Agricultural Products Standards Act, 1990 (Act 119 of 1990)*, and which will guide further consultations.

The industry will be submitting the document to the DALRRD by 30 May. – *Agbiz Grain*

## Standard operating procedure withdrawn

The Department of Agriculture, Land Reform and Rural Development (DALRRD) has notified Agbiz Grain that it withdrew the standard operating procedure on risk profiling of food business operators for regulated grains, oilseeds and grain products for inspections by the designated assignee, Leaf Services.

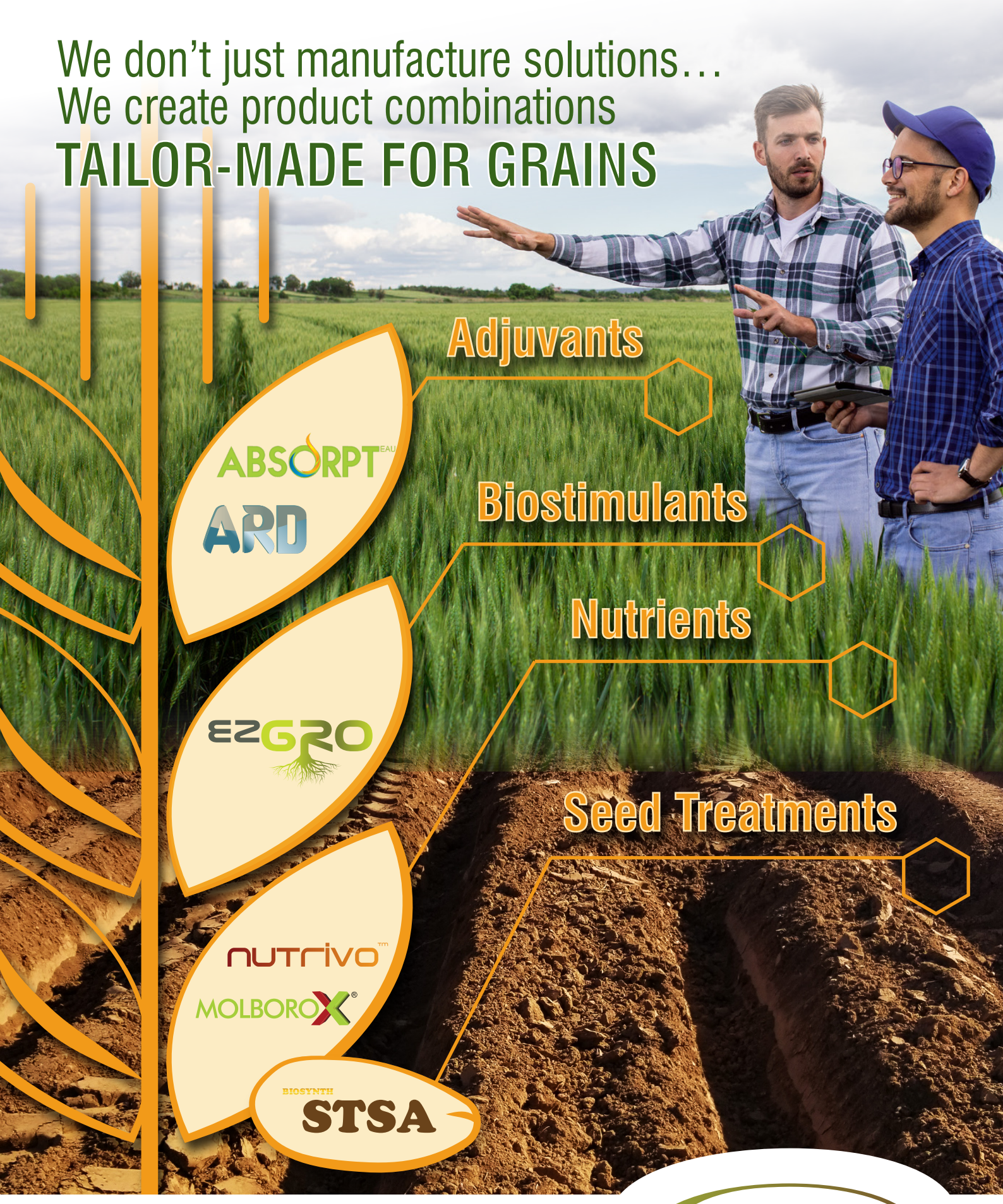
The DALRRD withdrew the existing applicable standard operating procedure (SOP) dated 22 September 2017, as well as two draft documents circulated on 17 June 2021 and 13 December 2021. No provision in the law compels the executive officer to have an SOP in place before an assignee can begin with their determination and publication of inspection fees. *The obligation to consult with stakeholders regarding all relevant aspects that affect their rights, in terms of PAJA and section 33 of the Constitution, must still be respected.*

The DALRRD relies solely on the applicable provisions from the *Agricultural Products Standards Act, 1990 (Act 119 of 1990)* and its attendant regulations to apply and enforce the *Act*. – *Agbiz Grain*

## Report theft of grain and oilseeds

The current high prices of grains and oilseeds have led to an increase in theft, falsified identities and out-loading instructions, hijacking of vehicles transporting grain, and grain in transit robberies. Indirectly, this may lead to increased insurance premiums for road transporters.

A number of stolen cargo leaves for destinations in Africa via road. In the case that stolen/robbed cargo and vehicles are heading for border posts/ports of entry (Beitbridge, Lebombo, Maseru Bridge, Ficksburg, Oshoek, Kopfontein, Groblersbrug, Vioolsdrift, Ramatlabana, Nakop and Qachasnek) contact Gene Ravele of the Border Management Authority on 076 011 0189. – *Agbiz Grain*

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# The effect and impact of grain theft on the industry

*By Christal-Lize Muller, Plaas Media*

Theft and fraudulent activities pertaining to grain are costing the South African handling and storage industry dearly. The impact of the different forms of grain theft, especially theft of dry harvested maize on-site and while being transported, are resulting in additional costs for the industry, especially where security is concerned. In the process, insurance premiums will increase for those who are insured, and where ambiguities occur with truck bookings, additional waiting times are sure to follow.

As a result, the handling and storage sector was forced to put systems in place as preventive measures relating to the loading, unloading and storage of grain.

*Photograph courtesy of AFGRI.*

## Theft during delivery

The various forms of grain theft taking place at silos are notable. Barnie de Klerk, chief executive manager of grain at TWK Agri, says one of the methods employed by perpetrators takes place during the delivery of harvested grain at silos.

In this instance, offenders open a legitimate account at the facility, deliver stolen grain to the silo and receive payment for the load delivered. The silo facility only later establishes that stolen grain was delivered by a so-called producer who, in most instances, does not own land on which they can produce grain (the facility cannot refuse these perpetrators from opening an account).

## Fraudulent truck bookings

Another form of theft occurs while grain, which is destined for processors, is being unloaded. De Klerk says offenders arrive at silos with the necessary unloading instructions. Grain is then loaded onto trucks, after which the perpetrators disappear with the load, which never shows up at the buyer.

Jerry Maritz, managing director of AFGRI Grain Management, says fraudulent truck bookings at silos are also a factor and occur when trucks are falsely booked for loading turns. This is a result of cargo bookings that need to be done before trucks can be loaded. Perpetrators forge email addresses in the process while subcontractors also pass on false vehicle details to the agency that has to book loads.

## Transportation and hijacking

Perpetrators also target the transportation of harvested maize to and especially from these facilities to processors or harbours for export purposes.

De Klerk says in some instances trucks transporting grain are hijacked after a load has been loaded. In some cases, the truck is recovered but the load has vanished. He says this type of theft has a major impact on stakeholders, as grain prices are high and grain loads are valuable.

Maritz adds that truck hijacking usually takes place between the out-loading silo and the end user of the grain.

## Bribery and physical theft

According to Maritz, bribery takes place when staff at silo and processing facilities or truck drivers are bribed to engage in illegal activities. Physical theft occurs when perpetrators break into facilities, especially bunkers. Grain is also stolen from transit vehicles where a larger number of people are used to load vehicles by scooping up grain with buckets.

## Monitoring between two points

Gideon Jordaan, who is responsible for sales and marketing at Tontrac, says the theft of commodities occurs mostly when transport vehicles enter a site without permission, load products and leave the site (cloning of vehicles). Theft also takes place when products are offloaded between the loading and off-loading site.

Tontrac is a supply chain intelligence support company that offers a real-time data capturing solution. It consists of a cloud-based system that is updated in real-time to monitor products being transported between two points where the company's system is implemented.

Tontrac is utilised at over 30 sites in the coal industry (mines, wash plants, processing plants and sidings) and their system can be used in the grain industry as well, as coal and grain are mostly transported by road.

## Cloning of vehicles

When vehicles are cloned, says Jordaan, 30 tons or more coal or grain can be stolen in a single load. Anything from one to two tons

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can be stolen between points, especially if there is no control on the receiving side or where the product is loaded. Some grain producers and most storage facilities and buyers have weighbridges, but a problem can occur when it takes too long to reconcile the date and an agreement must be reached on the weight.

This is where Tontrac's real-time system comes in handy. Any difference within a set tolerance is flagged. Both parties have access to this data, and it can be investigated immediately.

## The proper system for the job

Maritz says a proprietary transactional system (Minibem) has been installed at each AFGRI site to monitor the intake and dispatching of grain. The software is connected to the weighbridge on-site where all intakes and dispatches are conducted and captured on the transactional system. This system is linked to the accounting system at AFGRI's head office.

AFGRI also uses the Ronin ART system, which can function independently from the Minibem system. The Ronin ART system consists of the following:

- The ART software runs on a PC at each facility. It has a mimic panel displaying each bin on-site.
- A laser scanner is installed inside each bin. This device measures the distance to the grain as well as the grain profile.
- The ART software uses the measurements from each bin to calculate the mass inside each bin.
- Daily comparisons are done between the weighbridge system and the ART system. Any deviations are noted and investigated.

## Additional security systems

Additional security systems are in place at AFGRI. It includes electric fencing around each facility to prevent illegal entry onto the premises. Access to weighbridges is restricted by using boom gates. "These booms are controlled by the AFGRI proprietary software and only vehicles with the correct authorisation will get access onto the weighbridge," Maritz says.

There are beams around each weighbridge to ensure that vehicles are parked correctly on each weighbridge. Vehicle drivers as well as the details of each vehicle are checked against information provided during a 'slot' booking.

Along with this, CCTV cameras are installed at strategic locations, especially where grain theft can take place. Alarm systems with alarm sensors are also installed, and all CCTV footage and alarms are monitored at a central point or control room.

## Impact on insurance claims

Hanlie Kroese from Santam Segment Solutions says although agricultural production depends on the weather more than any other economic sector does, the industry also faces greater agricultural risks than ever before as a result of stock theft.

No matter whether you are a producer, an input supplier, an agricultural machinery manufacturer, grain trader or a player in the food industry, agricultural risks affect the entire supply chain. The insurance industry therefore has a major role to play in protecting clients and businesses from losses.

In the agricultural environment, silo bags, bunkers or silo storage have become an integral component of a grain storage management system. It therefore necessitates the need for comprehensive insurance of the asset against any eventuality, be it weather-related events or other unexpected accidents.

It is imperative that producers and the rest of the value chain are covered against losses, which can be extensive if large silos, bins and equipment are damaged.

## Adaptation and mitigation

These are the first steps in agricultural risk management. The theft of grain from silo bags, bunkers or silo storage has an impact on insurance claims, as the claims can be for sizable amounts depending on the claim itself and certain circumstances.

Theft cover is based on a first loss basis. It is therefore the responsibility of the insured to determine the first loss amount, which should be the maximum value of goods that may be stolen in any single event. This amount may differ according to the insured's trade, as well as the type of security measures in existence at the risk address.

## Risk of theft and existing security

Kroese says the risk of theft cover is underwritten by several factors, of which the type of content, method of storage and security is the most important. For this reason, factors such as exposure, security and risk management are taken into account when a client wants to take out insurance.

In terms of security measures, says Kroese, the insurer takes into consideration aspects such as the construction of the surrounding fence, controlled entry, security, electrified fencing, the number of gates as well as the locked gates at a site to be insured.

Santam does not receive a lot of claims pertaining to grain theft at this stage, she says, which can be attributed to existing good security measures. Good risk management is, however, key in ensuring that goods are safeguarded.

## Theft of harvested maize

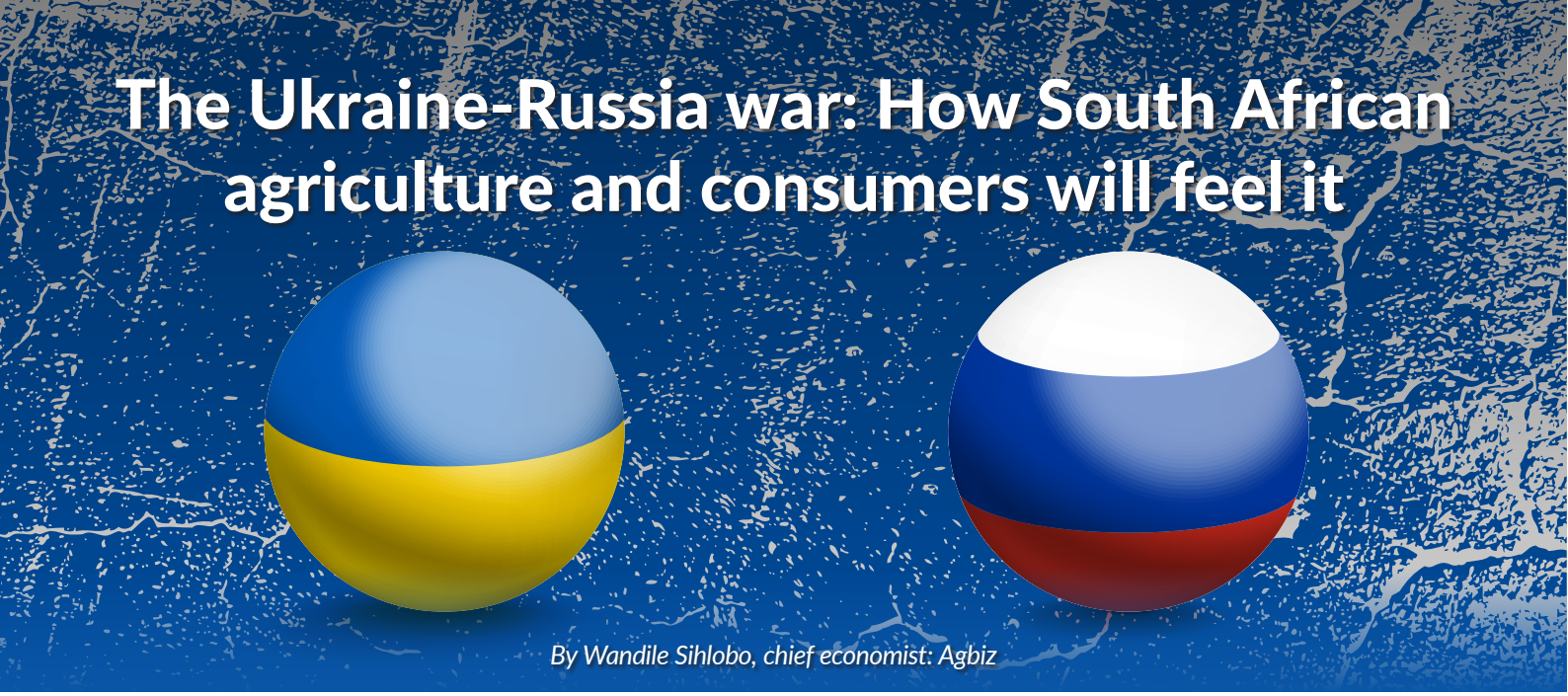
Dr Jane Buys, safety and risk analyst at Free State Agriculture, says maize theft is a seasonal crime that occurs when maize is ready to be harvested on farms. In some instances, harvested maize is stolen from trucks and trailers that are kept close to fields on farms. Trucks with harvested maize loads amounting to 30 tons and more are also stolen in the process.

Another form of theft involves harvested maize that the producer loads onto trucks at the farm. On the way to the silo, between one and three tons of maize can be illegally offloaded from the truck. This is the result of the weight of the actual truckload not being determined due to the lack of weighing facilities on farms.

She says at this stage all maize produced by commercial, subsistence and upcoming producers is delivered to silos of corporations or farming enterprises. She proposes the introduction and use of a special permit similar to the one being used when selling and transporting red meat and animals. A permit can prove helpful with regard to monitoring and avoiding theft during the transportation and selling of maize.

For more information, contact Barnie de Klerk at bdk@twkagri.com, Jerry Maritz at jerry.maritz@afgri.co.za, Gideon Jordaan on 066 472 9894 or gideon@tontrac.co.za, Hanlie Kroese on 082 378 2326 or hanlie.kroese@santam.co.za, or Dr Jane Buys on 051 444 4609 or jane@vslandbou.co.za.

# The Ukraine-Russia war: How South African agriculture and consumers will feel it



*By Wandile Sihlobo, chief economist: Agbiz*

Since the start of the Russia-Ukraine war, there have been rising concerns regarding global food security, as both Ukraine and Russia are major agricultural producers and exporters. In 2021, these countries together accounted for almost 30% of global wheat exports, approximately 14% of global maize exports, roughly 32% of global barley exports, almost 60% of global sunflower oil exports, and around 14% of global fertiliser exports.

The destruction of economic infrastructure within Ukraine, combined with various shipping lines avoiding the Black Sea region and the extensive sanctions that Western countries have imposed on Moscow, mean there will be limitations on the movement of agricultural products from these countries. This will be exacerbated by other factors, such as the agreement to exclude some Russian banks from global payment systems such as SWIFT.

## Current economic context

Notably, the Russia-Ukraine war occurs at a time when global agricultural commodity prices are already elevated as a result of relatively lower grain and vegetable oil stocks. The drought in South America, specifically Brazil and Argentina, which together account for 14% of global maize and 50% soya bean production, has already pushed up global prices for much of the past two years.

In addition, China and India's rising demand for soya bean and other vegetable oils, combined with poor palm oil production in Indonesia, has added upside pressures to global vegetable oil prices. When the Russia-Ukraine war started, the Food and Agricultural Organization (FAO) of the United Nation's *Global Food Price Index* averaged 141 points in February 2022 – an all-time high – and increased further to 159 points in March, a new highest level since the inception of the index in 1990.

Given these realities, it is important that we understand South Africa's linkages to the Russian and Ukrainian agricultural trade, and how the unfolding war could potentially impact domestic food supplies.

## SA's agri trade with Russia and Ukraine

South Africa has relatively weak agricultural import ties with both Russia and Ukraine. Russia is the 17th largest agricultural products supplier to South Africa, and Ukraine the 44th. In value terms, agricultural imports from these two countries accounted for just 2,4% of South Africa's total agricultural imports of US$5,9 billion in 2020.

The major products both countries export to South Africa, are wheat and sunflower oil. From 2016 to 2020, South Africa imported an average of 1,8 million tons of wheat per calendar year, roughly half the country's annual wheat consumption needs. Of this, wheat imports from Russia and Ukraine averaged 34 and 4% respectively.

The significance of Russia in South Africa's wheat import basket may raise concerns regarding near-term supplies. From this perspective, namely the current wheat marketing year of 2021/22 which ends in September, South Africa has already imported 40% of its estimated imports of 1,5 million tons. However, it will likely be able to close the import gap for the remaining balance for the year from various other countries such as Germany, Canada, Australia, Latvia, Argentina, and the Czech Republic, among others.

The JSE approved the delivery of imported wheat against JSE short wheat contracts from Latvia, Lithuania, and Poland. Wheat imports from the Ukraïne and Russia declined in the two years before the war to about 15%. Consumers are worried about imported wheat supplies but based on the access to additional origins for delivery on the JSE and the decline in wheat imports from Russia and the Ukraïne over the past two years, consumers' concerns may have timely been addressed by South African stakeholders in our value chain.

But this will probably be at higher cost than the volumes already imported, because of the upside pressure the war has added in the commodities market. Moreover, South Africa imported an average 174 138 tons of sunflower oil per year from the world market between 2016 and 2020. During this period, imports from Ukraine averaged 4% of the total. Bulgaria supplied 40% of South Africa's imported sunflower oil, Romania approximately 22%, and Argentina 15%.

## The ties that bind

That said, the data does not minimise the importance of these countries for South Africa's food basket. Russia and Ukraine may not be major suppliers of

agricultural products to South Africa, but they have strong ties with the global grains and oilseeds market, given their large export share contribution – and this has an important bearing on commodity prices.

This means the impact of the disruption in trade will, in the near term, be felt via prices rather than through a shortage of products. The *FAO Global Food Price Index*, which was already at all-time high in March, could remain elevated for some time.

Conversely, from an export perspective, Russia is a notable market – the 13th largest. South Africa's products to Russia and Ukraine are mainly citrus, nuts, vegetables, and tobacco. Importantly, in 2020, Russia accounted for 7% of South Africa's citrus exports in value terms, and for 12% of apple and pear exports in the same year – the country's second largest market.

Aside from the Black Sea region, South Africa generally has stronger agricultural export ties with the African continent, Asia, the United Kingdom, and the European Union (EU). In the third quarter of 2021, the African continent and Asia were the largest markets for South Africa's agricultural exports, accounting for 35 and 33% in value terms, respectively. The EU was the third largest market, taking up 23% of South Africa's agricultural exports. The balance of 9% constitutes the Americas and other regions of the world.

## Dependence on imported inputs

Russia is also integrated in global agriculture through input markets, and here lies a major risk for import dependent countries such as South Africa. Russia is the world's leading exporter of fertiliser materials in value terms, followed by China, Canada, the US, Morocco, and Belarus. These fertiliser mixtures include a variety of complex minerals and chemicals, including nitrogenous, phosphoric and potassic fertilisers.

Fertiliser prices increased sharply throughout 2021 and have remained elevated since the beginning of this year. For instance, in January 2022, international ammonia, urea, diammonium phosphate, and potassium chloride prices were up by 220, 148, 90, and 198% from January 2021, respectively. There are many factors behind these sharp input cost increases, such as the supply constraints in critical fertiliser-producing countries, mainly China, India, the US, Russia, and Canada. Rising shipping costs as well as oil and gas prices are also contributing factors to the price increases, along with firmer global demand from growing global agriculture.

The Russia-Ukraine conflict will add upside pressure to these already higher fertiliser prices, particularly if Russia's exports suffer as a result of sanctions. The primary markets for Russia's fertiliser material are Brazil, Estonia, China, India, the US, Finland, Mexico, Poland, Romania, and Latvia, among others. Still, even countries with minimal direct fertiliser imports from Russia, such as South Africa, which is the 36th largest fertiliser materials market for Russia, will feel the price pressures from the international market.

Unlike the US and Canada, with notable domestic fertiliser production capability, South Africa's domestic fertiliser production capacity is weak, in part because of the lack of some input minerals. South Africa imports some 80% of its annual fertiliser needs and is a minor player globally, accounting for 0,5% of total global consumption. Therefore, local prices tend to be influenced by developments in the major producing and consuming countries, such as Russia and the other major fertiliser players mentioned.

## The war and the SA consumer

Aside from the products discussed, South Africa is generally a net exporter of agricultural products and has sufficient supplies for domestic consumption and exports to typical markets. Still, given the possible spike in demand for major grains such as maize, South Africa should keep a close eye on its supplies to ensure that while exports continue, the country retains sufficient supplies for domestic use.

To be clear, this is not a call for policy intervention on the movement of crops *per se*. Rather, regular monitoring and publication of output and export volumes allows market pricing to adjust accordingly, as is already the general practice in the case of most major commodities such as grains. Information regarding supplies and domestic stocks will serve as a sufficient signal to the market, which will adjust export volumes through price. When South Africa's stocks are stretched, price increases will force buyers to look elsewhere, thus ensuring availability of supplies in the country.

For the South African consumer, the inescapable effect will be higher prices. The rise in agricultural commodity prices, domestic and global, along with rising fuel costs, presents significant upside risks to consumer food price inflation. However, it should be noted that agricultural producers do not necessarily always produce food products, but rather agricultural commodities that are inputs into manufactured food.

This means that the end food-product price consumers pay, is a combination of a range of factors which include aspects such as labour, transport, and processing. This also means that an increase in commodity prices does not necessarily mean an instant increase in retail prices. There is typically a lag, especially for grain-related products, as manufacturers usually keep several months' worth of inventories for their production processes.

## Other commodities

We operate in an environment marked by increasing grain and vegetable oil prices, but fruits and vegetables could also come under pressure. With Russia – a key market for some fruits – temporarily disrupted, products that would have been exported there will remain in South Africa or be diverted elsewhere.

Meat price inflation dynamics are also uncertain, as some producers could increase slaughtering on the back of higher animal feed costs (maize and soya beans) while there is also the latest outbreak of foot-and-mouth disease to contend with. This means that food-basket products are not all increasing at the same rate, and there is a possibility of moderation in some products. However, with fuel being an underpinning product for the movement of most food products, the risks to overall consumer food price inflation are generally to the upside.

Overall, much remains unknown about the coming weeks and months. However, there is little doubt that local agricultural markets and consumers will be affected by these geopolitical events, primarily through the price transmission of a range of commodities and inputs.

For more information, contact the author at email wandile@agbiz.co.za.

# Rhine Ruhr:
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Rhine Ruhr was established in 1956 by Dr Erich Schach von Wittenau. The purpose of the company was to import the best technology from Europe and supply it to the Southern African market while offering superior aftersales service. This ethos still drives the company's management team and employees to this day.

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We aim to keep each instrument we supply functioning to factory specifications for the entire lifetime of the instrument. We employ factory trained technicians for each type of equipment supplied. Our customers also derive value from our continuous technical training on the correct operation and use of equipment.

Rhine Ruhr carries enough stock of recommended spare parts and reagents to optimise uptime. Our preventive maintenance plans give customers peace of mind. In this regard, certified technicians repair and perform preventive maintenance schedules on-site. Downtime is greatly reduced through our remote support division, which works closely with the service team to ensure customer operations remain on time and run smoothly and efficiently.

Rhine Ruhr represents global market leaders of world-class instrumentation locally. Our two offices in Southern Africa ensure a firm footprint in key food and feed production segments.

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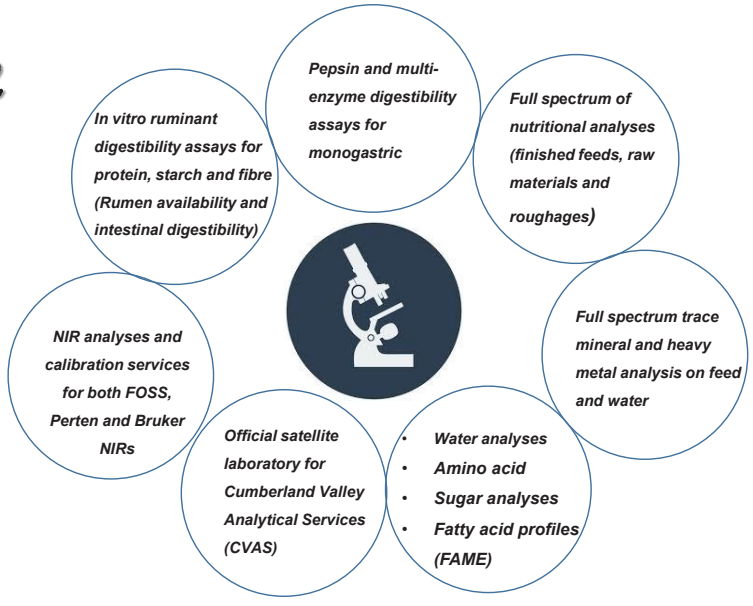


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# Food security should be declared a national asset

*By Infoworks on behalf of GOSA*

The export of agricultural products such as wine, maize and citrus, is one of the few resources that still contribute positively to growth in the South African economy – and the grain value chain plays an integral role in this.

"South African agricultural producers' record exports last year exceeded the import value of agricultural products and food. Food and beverages worth R177,8 billion were exported in 2021. This is 5,2% more than in 2020, which means that goods worth R75,4 billion more were exported than imported," said Hein Rehr, president of the Grain Handling Organisation of Southern Africa (GOSA), at the organisation's symposium in Mossel Bay.

## The bigger picture

According to Rehr, GOSA's members had a share in the exports, whether in the grading of maize, its storage, trading, financing or transport. The estimated current maize crop of 14,6 million tons – and the annual consumption of 11,8 million tons – indicate similar exports this year.

Given the conflict between Russia and Ukraine, South Africa may not experience any shortages in the short term, but the crisis is sure to have an impact on food price inflation as prices are already rising worldwide. "Agriculture is keeping South Africa's doors open. With about 30 million people receiving their income from the state, 36 000 producers and workers feed South Africa's 58 million residents every day. The government should classify food security – just like Eskom – as a national asset," Rehr added.

GOSA's 37th symposium was held in March this year. The speakers were economist Dr Roelof Botha, independent political and policy specialist, Theo Venter, Wessel Lemmer from Agbiz Grain, and Benoit le Roy of the South African Water Chamber. Grain-specific breakaway sessions were facilitated by Pieter Fourie of Eko Design, Japie Snyman of Olam South Africa, Wayne Rosewall of Premier Milling, and Alta Swanepoel of Alta Swanepoel and Associates. Attendees at a GOSA business breakfast were addressed by Prof Jannie Rossouw of Wits Business School.

## New season begins

Due to the Covid-19 pandemic, the GOSA symposium and annual general meeting – which has been held annually since 1980 – could not take place but need-driven workshops were successfully presented online. In addition to the symposium, GOSA plans four workshops per year, two of which will be virtual and two in person. The annual GOSA Cape will also continue to take place.

"GOSA is proud of its name, its management, its members, honorary members and what has been achieved since 1980. Therefore, it can rightly claim certain reservations to protect its identity and integrity in the form of established rules," Rehr said.

A brand-new GOSA emblem was introduced during the symposium. A modern depiction of the GOSA lettering is rounded off with a green leaf that symbolises growth as well as the slogan, "Connecting the grain value chain".

*GOSA president, Hein Rehr (second from the right), with some of the speakers at the GOSA 2022 symposium. From the left are Prof Jannie Rossouw of Wits Business School, Dr Roelof Botha, economist, and Theo Venter, independent political and policy specialist.*

*The GOSA board was unanimously re-elected at the annual general meeting. Front (from the left) are Willem Strauss, Anzel Oosthuizen (secretary), Hein Rehr (president), Marco Pretorius (treasurer), George du Plessis (GOSA Cape president), (back from the left) Lukas Swarts, Stefan van Staden, Ferdinand Meyer, Johan van Rensburg (vice-president), Dries Dannhauser and Tom Terblanche.*

For enquiries, contact Hein Rehr, president of the Grain Handling Organisation of Southern Africa (GOSA), on 082 451 1569 or hein@natfum.co.za.

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# Sustainability and resilience in the spotlight at Agbiz Congress 2022

*By Karen Grobler*

The Agbiz Congres 2022 takes place just as the world and South Africa are emerging from the Covid-19 pandemic devastation, which led to increased unemployment and constrained economic growth – now exacerbated by the Russia-Ukraine war that has introduced even more uncertainties, particularly for agricultural trade and food prices.

The pandemic has caused the most notable disruption in many decades, and we have all had to adapt quickly and drastically to limit the damage. The single most important factor that has ensured the longevity of the agricultural sector in a rapidly changing environment, and particularly during the pandemic, has been the ability of its business leaders to recognise the changing times, and then to adapt and reposition to address the changes and challenges successfully.

South Africa and the agribusiness sector again face a determining crossroads of challenges and choices. The wellbeing of our country is held firmly in the hands of our agricultural and agribusiness sectors. It is for this reason that we have purposefully decided on the congress theme 'Building resilient and sustainable agrifood systems'.

Standard Bank will again be the main sponsor for the Agbiz Congress 2022 that will be held at the Sun City Convention Centre from 22 to 24 June 2022.

## Insights from industry experts

Top international and local experts will address key issues such as the global geopolitical environment we operate in, the global and local political economy, and new dynamics in the global risk landscape that many sectors face. Furthermore, the key issues of sustainable energy supply, market access for South African agricultural products, and the impact of technology and innovation on the competitiveness of South Africa's industries will be addressed.

The dynamic programme promises to provide insights from high-profile speakers such as Richard Smith-Bingham, leader of a global team that helps frame Marsh McLennan's thinking on big risks, and is a long-term contributor to the *World Economic Forum Global Risks Report*, who will cover the current topical trend where crises arrive fast on top of one another with compounding effects.

Prof Mills Soko, professor of international business and strategy at Wits Business School, will bring an outlook on geopolitics and the role of South Africa in the world. Kuben Naidoo, deputy governor of the South African Reserve Bank, will provide an economic outlook, and André de Ruyter, chief executive officer of Eskom Holdings, will address the congress on the energy crisis in South Africa.

The session on creating market access will feature experts such as Anton Kruger of the Fresh Produce Exporters' Forum, Niki Kruger of the Department of Trade, Industry and Competition, the director-general of the Department of Agriculture, Land Reform and Rural Development, Mooketsa Ramasodi, and Portia Derby of Transnet.

A session not to be missed is the one on creating an enabling environment for innovation where industry leaders, academia and relevant government departments will discuss how to create an environment where innovation and new technology could be fostered.

## Sequence of events

The congress will kick off with a golf day sponsored by Absa at the Lost City Country Club. In the evening, delegates will be welcomed at the official welcome reception, hosted in the exhibition hall, providing a place for delegates to meet, and sponsors and exhibitors the opportunity to showcase their businesses.

As an exciting service to the agri-food industry, the Agbiz Congress 2022 will also provide agribusinesses and their input suppliers an opportunity to showcase their latest products and services as exhibitors in the trade exhibition.

The plenary session of the congress starts on the morning of 23 June, with parallel panel discussions in the afternoon. The gala dinner on Thursday, 23 June, sponsored by John Deere Financial, is the social highlight of the congress, featuring excellent food and great company. The plenary session continues on Friday 24 June until lunch, followed by the Agbiz annual general meeting.

Join Agbiz and agribusiness leaders from across the food, fibre and beverage sectors, as well as policymakers to help shape the future of the broader South African agrifood industry.


For more information on the programme, to register and book accommodation, visit the congress website at *www.agbiz.co.za/events/congress-2022* or send an email to Karen Grobler at karen@agbiz.co.za.

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## Become a Participant in the 2022 Ag & Food IT Benchmark

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Grovation is presenting the 2022 Ag and Food IT Benchmark for the third consecutive year. This benchmark is the only IT-focussed industry study worldwide that zooms in on agricultural (ag) and food industries in Africa.

The study is designed to assist executive management teams of businesses in the ag and food value chain to benchmark their IT spend, IT strategies, technologies deployed, and much more against trends and industry averages. This will help them develop better IT strategies to execute their business strategies more successfully.

The 2022 report will be released during a prestigious online event on 28 October 2022, where leaders from the ag and food industries who participated in the report will share their knowledge and experience – an all-round highlight on the ag and food calendar!

Mbali Nwoko, CEO of Green Terrace, will act as host and you can look forward to gaining practical insights and data at the event as well as in the published report. The event is free for anyone interested in IT and technology trends in the ag and food industries. You can register via *www.agfooditbenchmark.com*.

### Smart farming with the latest IT

The evolving field of disruptive technologies has gained significant interest in various industries, including agriculture (both primary and secondary) and manufacturing (which includes food and beverage manufacturing or processing). The fourth industrial revolution has reshaped the context of agricultural and manufacturing technologies with applications of artificial intelligence, data-driven analytical techniques, additive manufacturing, 3D printing and IoT (Internet of things) solutions.

Motivated by advances in precision farming, digital-to-physical conversion and human-machine interaction technologies, executive teams must now have robust IT strategies to enable smart farms and smart factories more than ever before.

### Get the competitive edge you need

This benchmark and industry study was initiated by Sarel Visser, CEO of Grovation, to assist executive teams in developing robust IT strategies, evaluating their spending, and reviewing industry trends that might provide them with the competitive edge they need to execute their business strategy successfully.

For many executive teams and even boards, it is a first to have IT playing such a strategic role in executing their business strategy. And with an overwhelmingly increasing number of options and solutions to choose from, this may be a daunting task and one that should not be left to the sales teams of these ever-increasing number of technologies. Executive teams must take the lead and ensure that their strategies are developed around their business, and not a specific technology solution or vendor.

Participating in this benchmark and industry study will provide your management team with the insights and data to take the lead and challenge proposed strategies and tactics to ensure your IT strategy and team are well positioned to help your business grow and pivot as and when needed, ensuring you stay in the game and even take the lead in your industry.

Grovation is a boutique management technology consulting firm that has helped various businesses grow in the ag and food industries over the past decade, and can share many success stories.

The timelines of the 2022 Ag and Food IT Benchmark study are as follows:

- 1 April to 30 June 2022: Register to participate.
- 1 May to 30 June 2022: Participants to submit their data by completing the selected questionnaires.
- 1 July to 30 September 2022: Processing of the submitted data by the Grovation team.
- 28 October 2022: Launch of the 2022 results at our online event.

If you want to participate in this benchmark and industry study, or you would like to register for the event on 28 October 2022, feel free to register at *www.agfooditbenchmark.com*. Follow us on LinkedIn at *https://za.linkedin.com/company/grovation-we-grow-businesses* for more updates about this IT benchmark.

For additional enquiries, contact Grovation SA at 087 057 2311 or visit *www.grovation.com*.

# JSE storage rates: Keeping up with reality?

*By Wessel Lemmer, general manager, Agbiz Grain*

The annual adjustment in the storage tariffs for stock on JSE silo certificates is done three times a year in respect of the marketing years for oilseeds, summer grains and winter grains. This annual adjustment in the JSE storage tariff and storage tariffs in general, is based on the PPI (producer price index) and is not determined by supply and demand.

The PPI is the result of a group of sub-indices that calculate and represent the average increase or decrease in the selling prices of a country's local production over time. It is a measure of inflation that applies to the input costs of producers (manufacturers/processors). The PPI differs from the consumer price index (CPI) in the sense that the PPI measures costs from an industry point of view, whereas the CPI measures costs from the consumer's point of view. The PPI is considered to be an objective indicator according to which prices in long-term purchase contracts can be adjusted.

However, the storage sector's basket costs are also exposed to some unique challenges and specific cost increases that are not fully reflected in the PPI. The weight of a certain cost item for storage differs from its inclusion in the PPI or relevant sub-index. Electricity is one such example. The availability and cost of electricity play an extremely important role in the storage sector and the weight of the item compared to the total storage cost is 13,1%.

The number of fumigants registered in South Africa is limited and the actual increase in 2022 prices against the PPI is threefold. The annual increase in storage tariffs should be more than the annual PPI and consequently more than the annual increase in the JSE storage tariff based on the PPI. Price formation in the case of storage tariffs is not determined by the demand for and supply of storage capacity.

The cubic metre capacity for fixed storage structures such as concrete and zinc silos, is equivalent to 14,5 million tons of maize. In the previous season, South Africa produced a total of almost 22 million tons of grain and oilseeds. Storage rates were supposed to respond sharply to the

**Figure 1: Storage tariffs are determined by the PPI and not by supply and demand.**

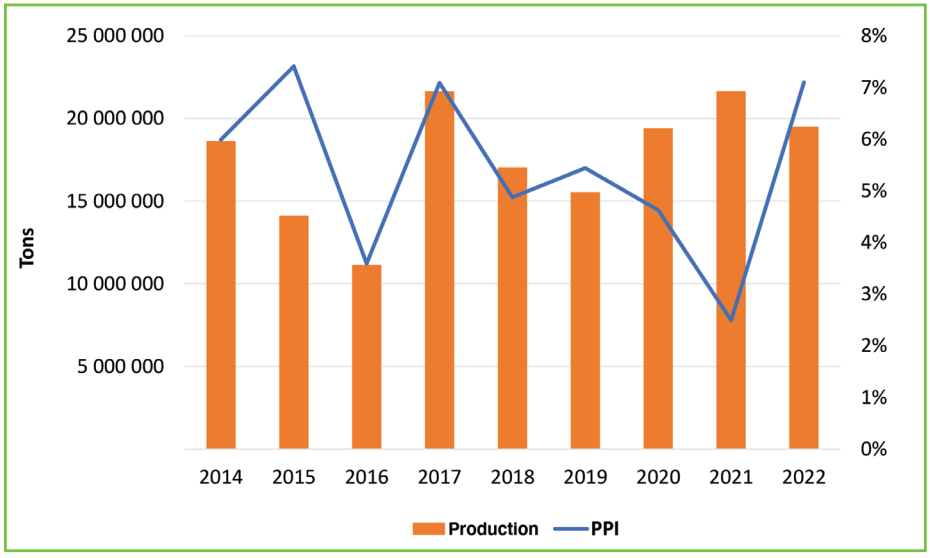



**Figure 2: Change in the PPI compared to the JSE storage tariffs for maize, soya beans, sunflower seed and wheat.**

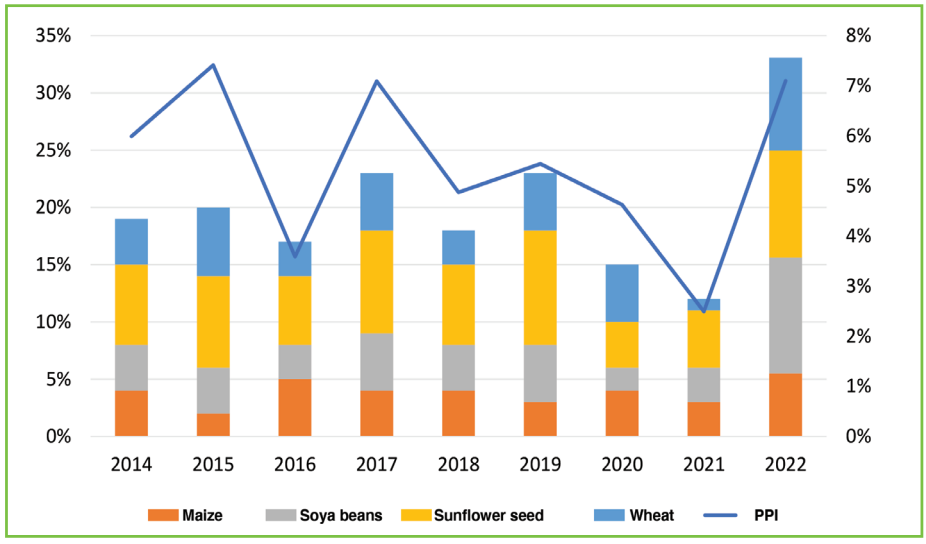


Table 1: Expected increase (%) in certain cost items for the storage sector. (Sources: Agbiz Grain, BKB Grainco and Absa)

| Year | PPI | Electricity | Interest cost | Diesel | Pest control (PPI) | % increase in JSE daily storage tariffs (c/day) | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Wheat | Maize | Soya beans |
| **2020** | 2,5 | 12,0 | 7,00 | -27,4 | 2,5 | 1,0 | 5,0 | 2,3 |
| **2021** | 7,1 | 18,0 | 7,25 | 54,8 | 7,1 | 8,0 | 3,0 | 3,5 |
| **2022*** | 8,7 | 16,0 | 8,50 | 61,1 | 8,7 | n/a | n/a | 10,1 |
| **3-year avg** | 6,1 | 15,3 | | 29,5 | 6,1 | n/a | n/a | 5,3 |
| **Weight** | | 13,1 | 5,5 | 2,9 | 4,3 | | | |

increased demand for storage, but that was not the case.

Due to the use of the lower PPI, the JSE's storage tariff did not reflect reality. An increase in the demand for storage should lead to higher storage tariffs, which therefore sends out a market signal indicating that investment in additional storage capacity is necessary.

The following factors can lead to additional costs that are also not reflected in the PPI and consequently in storage tariffs. This could lead to an under-recovery in storage tariffs for JSE listed stock and for storers.

- The *Agricultural Product Standards Act, 1990 (Act 119 of 1990)* requires that, despite sufficient self-regulation, inspections be conducted. The last proposal regarding the carrying out of inspection services in 2021 amounted to R74 million.
- Demands for greater transparency and the introduction of a generic passport system which all producers must comply with during the delivery of grain and oilseeds at silos. Additional functions and requirements cannot be carried out without the implementation of systems and the necessary staff. As a result, it will contribute to additional costs in the value chain.
- Limited availability of fumigants, the phasing out of methyl bromide and the consequent use of more expensive fumigants. Insect resistance is increasing and locally we are spending less than the international norm for expenses regarding storage related crop protection products.
- Producers have increasingly diversified in certain production areas and planted more soya beans than maize. The percentage of silo utilisation decreased over time, and return on capital decreased. The reason for this is that the soya bean yield in dryland production conditions is about one third of the maize yield. As a result, less grain and oilseeds are produced in the catchment or service area of certain silos compared to when those areas' production consisted only of maize. Soya beans produce a lower yield but a higher-value product. The risks associated with a higher-value crop are also greater. The storage tariffs for soya beans are not three times that of the storage tariffs for maize. In 2002/03, the JSE's storage rate for soya beans was 30c/ton/day and for maize 28c/ton/day. In 2021/22, following the remarkable increase in soya bean production, the storage tariff for soya beans was 89c/ton/day and for maize 86c/ton/day. Tariffs did not keep up with changing production patterns – to the detriment of the storage sector. The result was that the profitability of certain silo complexes came under pressure. This local demand and supply is not reflected in tariffs.
- Producers are demanding that grain and oilseeds be dried during a wetter stage so that it can fetch better prices earlier. Disruptions in electricity supply, along with increases in electricity and diesel tariffs, has led to this function becoming more expensive to perform. The PPI does not necessarily take these additional costs into account.
- The quality of grain changes over time and presents additional challenges and costs. Trends indicate that the grinding index and the incidence of stress cracks are on the rise. Sieve losses are increasing and this can affect the efficiency of aeration and fumigation, along with an increase in associated costs.
- Storers must also comply with increasingly more requirements set by insurers. These requirements mean that storers must incur additional capital expenses that were not necessary. Failure to incur these capital expenditure could lead to an increase in premiums. This is an additional and extraordinary cost not taken into account in the PPI.
- Security systems at silos have to be upgraded in order to store grain safely and protect systems. Grain theft has been increasing in several ways. In addition, computer systems must increasingly enjoy protection against ransomware and hacking attempts.

## In summary

The demand for and supply of storage does not reflect in storage tariffs, as would be expected under free market conditions. Storage tariffs are determined by the annual increase in the PPI. The JSE's daily tariffs are based on the annual increase in the PPI and storage tariffs for storers are forced to keep pace with this. As a result, tariffs do not fully offset the additional requirements and associated costs to which the storage sector is exposed. This is not fair practice and has negative implications for the maintenance and sustainability of our world-class storage facilities, run by a competitive storage sector.

Finally, we expect storage rates in 2022, but especially in 2023, to increase significantly. The main reason is that the PPI for 2022 will only be reflected in the storage tariffs for 2023. Storage tariffs are not based on the market conditions for storage and hence, supply and demand.

For more information, email Wessel Lemmer at wessel@agbizgrain.co.za.

# Security risks at intake and outloading of grain and oilseeds

*By Wessel Lemmer, general manager, Agbiz Grain*

Anecdotal evidence and observations by stakeholders in the grain and oilseeds industry suggest that crime related to post-harvest theft of grain and oilseeds, has increased over the past three years. Rising commodity prices cause criminals to focus more intently on the sector.

This article focusses on aspects to consider in the fight against financial losses, with a specific focus on stock losses incurred by end users (e.g. millers and feed manufacturers) through organised crime that can take place at the point of delivery at the silo or processor, or during outloading.

The systems that storage operators implement are very similar to that which financial service providers put in place to combat financial crime when accepting deposits, or when cash is withdrawn.

## Know your supplier

Storage operators cannot refuse suppliers that approach the sector to open accounts and deliver grain. However, it is important to know that your customer and storage operators have systems in place to verify legitimate suppliers.

Financial institutions are focussed on combating financial crime, and are strictly regulated to meet high standards. The trading in and storage of grain is not as strictly regulated, but storers do apply some of the same principles.

## Legitimate suppliers at intake

Agricultural companies carefully determine whether the supplier of grain, whether a producer, farm worker or transport contractor, is a legal supplier at the time of delivery. It is not a prerequisite for the individual to provide proof of a production unit. As long as he has a folio number and complies with legislation to be able to open an account, he can deliver grain on it.

Silo owners cannot question the ownership of the grain delivered, but can verify the legitimacy of the truck, the driver and membership along with a delivery instruction document.

Individuals with production units who supply grain must be known to agricultural companies. Individuals who do not have production units cannot deliver grain to silo complexes at will. Unloading instructions are checked against the mandate of the buyer or miller. Individuals who arrive at a silo complex with the necessary documents and unloading instructions are therefore verified.

## Legitimate off-takers at outloading

Similarly, it is verified at unloading whether the transport contractor, recipient or buyer of grain at the point of unloading is legal – thus it is determined whether the entity approaching a store operator with the aim of doing business, really exists.

## Compromised business emails

Customers give a mandate in the form of the necessary legal documentation to individuals who arrive at a silo to unload grain. The instructions can be verified through a legal email address or signature on a legal document.

However, it could happen that an individual shows up in person at a silo and provides relevant, seemingly legitimate documents. This, for instance, may occur when a business email has been compromised.

With a crime of this nature, you probably have a tech-savvy individual in the company's service who monitors communications. They therefore have access to the documents that have been supplied and can even see when grain needs to be collected. If they know grain has to be collected at 10:00, for instance, they can simply print the document that has been shared via email and submit the document for the grain that needs to be collected.

To combat these crimes, controls must be in place at the collection point. When an individual is committing this type of crime, one assumes that a specific individual will be signing the delivery instruction document. Because business emails can be compromised, it is necessary to initiate a call-back for the delivery instruction received.

During a call-back, additional information is required from the person collecting the grain, in addition to the information

provided such as the registration and number plate details of the vehicle, driver identification and proof of employment at the transport company or processor collecting the commodity. The collector of grain needs to know the additional information required during the call-back before the grain can be released.

## Principles for client verification

- Ensure the entity involved in the delivery or outloading of grain and oilseeds exists, and that they have legitimate production and processing units. Verify the company's existence with the Registrar of Companies.
- Perform site visits to ensure you are not doing business with a shelf company. Something as simple as Google Maps will reveal whether the company has a corporate office or facilities, and is engaging in legitimate operations.
- Requirements stating that specific types of clients need to be registered with an authoritative body, is an option. In the grain and oilseeds storage sector the licencing of transporters, producers, suppliers or buyers of grains is not required. Exporters of grain and oilseeds do need to be registered as a food business operator with the Department of Agriculture, Land Reform and Rural Development, but this requirement is currently not inclusive of transporters, producers, importers and processors servicing the local market.
- When receiving documents from an entity it is prudent to verify those documents, as well as to use independent sources to verify them.
- When onboarding a client, it is necessary to determine if the client is a legitimate entity and whether their reputation is sound. Use key words to screen media and perform Google searches to this effect.
- The Financial Intelligence Centre (FIC) is South Africa's reporting authority regarding money laundering. They have free tools available on their website *fic.gov.za*, one of which is for sanction screening against a South African list. You can screen a person or entity and receive feedback on whether the entity or individual is on the United Nations Security Council Consolidated List. In addition, the FIC website also offers a template to submit suspicious transactions. This will allow the authorities to build a profile of people involved in crime and suspicious activity, and can even assist in the arrest of such parties.
- Identify red flags and draft scenarios so that employees know what to look out for and escalate these, so that additional or enhanced checks can be performed before confirmation is given that the delivery or outloading of grain can proceed.
- Storage operators and traders develop applications (apps) that increase control measures to ensure that farm-loaded consignments reach the intended silo, buyer or silo, ensuring that the hijacking of trucks or freight does not go undetected between the production unit and place of storage.

It is in the interest of everyone involved in the grain industry, as well as consumers, to fight crime. If this is not done, grain owners will not only suffer direct monetary losses, but the rise in crime is sure to be reflected in their insurance premiums.

For more information or a list of references, email Wessel Lemmer at wessel@agbizgrain.co.za.

# Protein content related to moisture: Implications for South Africa

*By Izak Hofmeyr*

In South Africa, the protein content of grain, and specifically wheat, is reported on a 12% moisture level. This is different from most other countries, where protein content is reported on a dry matter (DM) basis. This difference has the potential to cause misinterpretation of results in the industry and thus necessitates a common understanding.

It is for this reason that Agbiz Grain and Rhine Ruhr recently presented a workshop to discuss the issue.

The goal of the workshop was threefold:

- It was aimed at clarifying the approach taken in South Africa to report protein content on a moisture level of 12%, compared to the different approaches in export destinations or countries from which we import products.
- It discussed why other countries report protein content on a DM basis.
- It touched on the differences in the results of the analysis of moisture content (moisture %) by individual companies compared to the Southern African Grain Laboratory (SAGL).

## Protein content and analysis

While it may be that the SAGL and individual companies use different approaches to analysing protein and moisture content, a common standard is necessary. There are several analytical methods that may be suitable and approved, but some may apply to the unprocessed commodity while others apply to the milled product. This may result in the reporting of different moisture levels, as moisture is lost in the milling process or in the case of low moisture unprocessed grain, the milled product can also absorb moisture from the surrounding environment.

Wouter Oosthuizen from Rhine Ruhr presented an overview of the situation, which served as a point of departure for the discussion.

Moisture content, he pointed out, has a huge impact on the calculation and reporting of protein results of grain. This could lead to discrepancies when grain is imported, based on the protein content in the country of origin being reported at a different moisture level than the standard in South Africa. The net result is that grain, when analysed in South Africa, may not yield the expected protein content at which it was bought.

Protein analysis can be expressed at three different moisture levels, namely at an 'as is' moisture content, a DM basis or, as in the case in South Africa, at 12% moisture.

One of the official methods to analyse protein content is called the Kjeldahl method. According to this method, the sample goes through a digestion process and then a distillation phase. The result is expressed as a percentage of nitrogen, which is then converted to a protein percentage.

When analysing two samples, it is therefore possible that they could show the same protein content, but if the moisture content of the two samples is not the same, the results should not be

compared without taking the respective moisture levels into consideration.

## A straightforward calculation

Wouter illustrated how the calculated protein result can differ when two samples with the same protein content but different moisture levels are converted to the same moisture basis – dry basis in this example.

Sample 1 = 11,2% protein and 7,5% moisture; Sample 2 = 11, 2% protein and 10,5% moisture.

The two samples clearly have different moisture contents, making it necessary to have a basis for comparison. The moisture content has to be brought to the same level – in this case, zero moisture – or dry basis.

The following formula can be utilised:
P2 = P1*(100-M2)/(100-M1)
*Where P2 = calculated protein content; M2 = moisture at zero percentage; P1 = known protein value (as is); M1 = known moisture level (as is).*

Using this formula, the protein content of Sample 1, with a protein content (P1) of 11,2% and a moisture content (M1) of 7,5%, can be calculated as follows:

P2 = 11,2*(100-0)/(100-7,5)
P2 = 12,1% protein DM

Sample 2 has a P1 of 11,2% and a M1 of 10,5%:

P2 = 11,2*(100-0)/(100-10,5)
P2 = 12,51% protein DM

This illustrates clearly that moisture content has a huge influence on protein content, and that a universal basis of comparison is critical to be able to compare apples with apples, or in this case grain with grain. This, he pointed out, is exactly where the problem lies, as most other countries express protein content on a DM basis, and not on a 12% moisture basis as South Africa.

To illustrate the difference in protein value when the dry basis results calculated above are reported on a specific moisture basis (12% mb), the following formula can be used:
P2 = P1*(100-M2)/(100-M1)
*Where P2 = calculated protein; M2 = new moisture; P1 = known protein (DM); M1 = known moisture (DM).*

Sample 1:
P1 = 12,1, M1 = 0
P2 = 12,1*(100-12)/(100-0)
P2 = 10,65 protein 12% M.

Sample 2:
P1 = 12,51, M1 = 0
P2 = 12,51*(100-12)/(100-0)
P2 = 11,0 protein 12% M

This is where the discrepancy often starts when grain is imported from a country that calculates protein content at a different moisture basis than South Africa. Although the protein content is stated correctly in terms of their standards, there often is a discrepancy when that grain is off-loaded here and analysed using measuring instruments calibrated for South African standards.

Grain that might have been bought based on a 12% protein content may now only show a protein content of 10,6% when calculated on a 12% moisture basis. This might have a substantial effect on the grain's grade. (To obtain 12% protein at 12% moisture, the grain would need to have 13,7% protein on a DM basis.)

Why does South Africa base its protein content on a 12% moisture basis? There is no clear answer, Wouter said, but it came about during the period of the Control Boards. The nett result, however, is that there may be confusion about the protein content of imported grain when the differences in reporting standards are not taken into account.

## Moisture determination

As moisture content is so important in calculating and reporting protein content, it is critical that a universal standard is used for determining the moisture content as well. There are many methods to determine the moisture content, but the two most used options for wheat are:

- Whole grain, 72-hour oven method at 103°C.
- Whole wheat flour (milled), two-hour oven method at 130°C.

With the 72-hour method there is no moisture loss as the grain is dried as whole kernels. With the two-hour method, however, there is some moisture loss due to the grinding process. Furthermore, moisture loss can be different for different types of mills. A hammer type mill, for example, causes more moisture loss than a cyclone type mill.

When comparing moisture results, it is important to establish which method has been used to determine the moisture content of a specific sample. If the same method or type of sample (milled vs unmilled) has not been used, it will be difficult to compare the results.

In most grain silos in the country, wholegrain analyser instruments are used to determine the moisture content of the grain and the 72-hour method is used as the reference method to calibrate the wholegrain analysers. Nevertheless, there are circumstances where the two-hour method has to be used, such as when the falling number of wheat has to be determined.

## The necessity to change or not

Is it necessary for South Africa to change to fit in with the rest of the world? Changing the way in which we do things in South Africa would have enormous implications, although it is not impossible. The consensus at the workshop was, however, that converting values to the system used in South Africa is nothing strange or new. We convert pounds to kilograms and bushels to tons all the time. Converting protein content on a DM basis to a moisture basis of 12% is done in a similar manner.

There is no monetary advantage for any party in the value chain in reporting a protein value based on DM as opposed to 12% moisture. It is all about the way in which it is expressed. The only prerequisite is that protein values need to be converted to the South African standard before these values are compared.

Protein values to be compared should always be calculated/reported on the same moisture basis. In addition, moisture content should always be interpreted with the testing method in mind: was it according to the wholegrain, 72-hour method; or the milled grain, two-hour method?

Our thanks to the SAGL for their contribution. For more information, phone Rhine Ruhr on 021 843 3445 or contact Wiana Louw of SAGL at email Wiana.louw@sagl.co.za.

# Insects commonly found in grains, oilseeds, legume seeds and their products

*By Annatjie Swanepoel, AM Grain Solutions (Pty) Ltd*

In the industry there is a misconception that a consignment can be rejected if it contains any living insect. This is, however, not true. The key to understanding the standards for a consignment of grain, oilseeds, legume seeds and their product lies in the definitions in the grading regulations of that specific commodity.

'Insect' is defined as any live grain insect that is injurious to stored grain, irrespective of the stage of development. The insects that are commonly found in grain and grain handling facilities that are injurious to stored grain, are divided into two groups (note that this list is by no means complete or published in any Government *Gazette*).

**Group 1: The non-adult stage develops inside a single grain kernel, and most of them can infest grain on the field due to their ability to fly.**

Granary weevil
***Sitophilus granarius***

Rice weevil
***Sitophilus oryzae***

Maize weevil
***Sitophilus zeamais***

Common bean weevil
***Acanthoscelides obtectus***

Cow pea weevil
***Callosobruchus chinensis***

Lesser grain borer
***Rhyzopertha dominica***

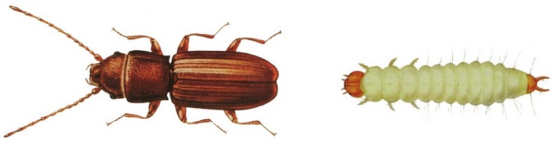
Larger grain borer
***Prostephanus truncatus***

Angoumois grain moth
***Plodia interpunctella***

## Group 2: All stages develop freely among the grain or product.

Rust-red grain beetle and larva
***Tribolium castaneum***

Confused flour beetle and larva
***Tribolium confusum***



Flat grain beetle and larva
***Cryptolestes pusillus***

Confused flour beetle and larva
***Tribolium confusum***

Saw-toothed grain beetle and larva
***Oryzaephilus surinamensis***

Grain lice
***Psocids***

Khapra beetle and warehouse beetle
***Trogoderma Granarium/variable***

Indian meal moth and larva
***Plodia interpunctella***

Tropical warehouse moth and larva
***Ephestia cautella***

Foreign grain beetle
***Ahasverus advena***

Dried fruit beetle
***Carpophilus hemipterus***

### Insects not injurious to stored grain

Insects that are commonly found in grain, but are not injurious to stored grain, mainly feed on fungus and decaying plant material. These insects include various species in the genera *Carpophilus* such as the dried fruit beetle and the corn sap beetle, as well as the foreign grain beetle (*Ahasverus Advena*).

These insects are thriving due the heavy rain and damp conditions, as well as high humidity. No control measure in the grain producing areas is in place to control the numbers of these insects, as they are not injurious to stored grain.

*Carpophilus* spp. are excellent fliers. The female will also lay up to 1 000 eggs over her lifespan of twelve days when the temperature is optimal (32°C) and humidity is high.

### In conclusion

The rejection of a consignment due to any living insect that is present in that consignment, especially the dried fruit beetle or the foreign grain beetle, must be done in accordance with the regulation that clearly stipulates the insect must be injurious to stored grain.

For more information, contact Annatjie Swanepoel on 082 329 0778, or send an email to annatjie@amgrainsolutions.co.za or info@amgrainsolutions.co.za.

Kuphela Environmental
Sustainable solutions

# Kuphela Environmental Solutions

Kuphela Environmental Solutions was established in 2020 by industry specialists wanting to consolidate a range of expertise into a single offering. The company and its partners bring a wealth of knowledge in dust suppression, various sealing solutions, production roadway construction and management, infrastructure upgrades, environmental consulting, equipment supply, product supply and manufacturing, and various agricultural applications.

## Dust suppression

Applied in various driving surface upgrades and dust suppression projects, KUP60-S Emulsion has an environmental impact certificate issued by Digby Wells, stating that the product is environmentally friendly, non-hazardous, and non-detrimental to soil, humans, animals, and water, and safe to use around food stuffs (grain and crops). Tests were conducted in a sensitive water area and the results showed no downstream effect on the environment during and after application.

The product, after initial sealing of areas, is versatile enough to offer a sustainable and dust-free work area, accessible during rain. There are no delays to start-up of production, compared to the dry-off period as per conventional processes.

KUP60-S seals bunker floors with a solution that is imperviable by water (does not leach) and allows for drainage of rainwater out of the bunker areas, to dedicated drainage areas. Correct sealing of floors also eliminates capillary action of water from soil, preventing rot and/or germination of crops.

It allows for a potential reduction in the need for plastic liners in these bunkers to enable the above results during harvest and storage periods. The cost benefit achieved with a typical bunker floor once-off treatment is similar to liners used per season, with continued and reduced annual resealing of areas only as and when necessary.

For more information visit www.k-enviro.co.za, email admin@k-enviro.co.za or phone 082 464 9860/082 4197.

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**For more information contact**
**Annatjie Swanepoel-Nel**
on 082 329 0778
or send an email to
annatjie@amgrainsolutions.co.za.

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## The Southern African Grain Laboratory NPC

**The Southern African Grain Laboratory NPC** is an independent ISO/IEC 17025 accredited laboratory, acting as reference Laboratory for the South African Grain Industry.

The **Crop Quality Division** focusses on grain and oilseed quality analysis:
- Grading & Milling
- Nutritional analyses
- Rheology & Baking
- Vitamins, Minerals & Amino Acids
- Mycotoxins

The SAGL also have a **Crop Protection Division** with ISO/IEC 17025 accreditation and OECD GLP Compliance for analyses on plant protection products:
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SCAN ME

# Preventive maintenance of grain silos in South Africa

*By Carl Geldenhuys, director: Stugua Consulting*

According to the Agbiz Grain website, there are currently 243 grain silos in South Africa with a total storage capacity of more than 15 million tons. These are only the grain silos owned and operated by the members of Agbiz Grain. Were we to add silos privately owned by producers and millers to the figure, the figure could be as high as 20 million tons.

## Replacement value

If the replacement value of all the Agbiz Grain member silos is estimated at a conservative R2 000 per ton, it adds up to a value of around R30 billion. If the silo contents are calculated at a conservative R3 000 per ton, this amounts to a cool R60 billion.

If the average size of the 243 silos is approximately 60 000 tons, the replacement value of such a silo can be calculated to be R120 million.

The rule of thumb is that one should annually spend approximately 0,5% of the structural and building replacement cost of an industrial installation (read grain silo) and approximately 1,25% of the mechanical/electrical/electronic replacement cost on preventive maintenance. In the case of a grain silo, the distribution is roughly 65:35. This would mean that an amount of approximately R390 000 per year should be spent on structural preventive maintenance and R525 000 per year on the mechanical/electrical/electronic installation, with the emphasis on preventive maintenance and not repairs.

## Inspecting for corrosion

The vast majority of concrete silo bins in the country are 40 years plus old, and the corrugated steel silo bins are not much younger. This means most of our silos have been somewhat long in the tooth for a while now.

Given their age, one important issue that comes to mind is how often intrusive inspections are carried out on steel bins? This is especially relevant when it comes to the corrosion of plates, stiffeners, and bolts and nuts. The problem is exacerbated when the stiffeners are located on the inside of the tubes. It is interesting to note that steel bins in South Africa and worldwide tend to collapse more often than concrete bins do. The reason is obvious.

US studies show that the life expectancy of steel bins is approximately 60 years in the inland areas and as little as 40 years near the coast. Thereafter serious replacement work is needed and includes aspects such as replacing especially bolts, nuts and stiffeners.

## Concrete pipe maintenance

As far as concrete bins are concerned, it is especially the carbonation of the cement in the concrete and the consequent corrosion of reinforcing steel that require attention. This condition leads to the chipping of concrete on the bin walls, usually on the outside of the bin. Careful inspection of bins using a set of good binoculars or, better yet, a drone, is all that is required.

Attention should also be paid to the formation of vertical cracks in concrete walls. The width of these cracks can be measured with the help of a special magnifying glass and be recorded as such. The old proven method of gluing thin sheets of glass over the cracks is also a simple way to determine if crack widths are increasing.

In the past, pressure tests were performed on concrete bins to determine whether a bin was waterproof and where a possible leakage might occur. Moisture does not necessarily penetrate the wall of a concrete pipe where the wet spot on the inside of the wall is observed. There are special instructions as to how available pressure tests should be done, but the execution is quite cumbersome and consequently it is no longer done.

## Legal obligations

No matter the type of silo, the catastrophic collapse of a few silo bins on the premises must be avoided and this necessitates preventive maintenance. There have been cases of especially steel bins collapsing, some of which were catastrophic, but fortunately with no loss of life.

Silo owners and managers must take note of the legal obligations resting on the shoulders of a silo owner. These obligations are determined by the National Building Regulations of the *Occupational Safety and Health Act, 2014 (Act 647 of 2014)*, and include conducting annual inspections and ensuring that the structure is safe for continuous use. Grain silos are included in these regulations.

The great advantage of such an annual inspection is that it will naturally lead to preventive maintenance that will prevent unnecessary repairs and replacements.

De Sittert, the guru of preventive maintenance management's 'Law of 5' principle, speaks for itself: The R1 you do not spend on preventive maintenance today, will five years later cost R5 in repair costs. And the R5 you do not spend on repair costs in five years' time, will amount to R25 in terms of replacement costs five years later.

For more information, contact the author on 082 450 8177 or email stugua.consulting@telkomsa.net.

# Climate challenges and the grain storage industry

*By Volker Josel and Saioa Villodas, Bühler*

Climates differ from country to country, and for the grain handling and storage industry, this also implies different storage methods and markets. For example, in South Africa grain is stored for a longer period than for instance in the United States (US), as South African grains are destined mostly for human use, while the US exports most of its maize – yellow maize is cultivated for the animal feeds market and for alternative fuel production.

Although the efficient, suitable and safe handling and storage of grain is a crucial issue everywhere, the fact is that heavy rains, high ambient temperatures and relative humidity in some environments pose significant challenges for everyone. These challenges include:

- **Grain losses:** A large proportion of grain losses occur in storage, but high air temperatures and higher humidity of ambient air make the proper drying and storage of material more difficult.
- **Food safety:** Around 25% of crops worldwide coming from the field are contaminated with mycotoxins, and additional contamination may occur if grain storage is not optimal. Certain climate conditions mean favourable growing conditions for mycotoxins, mould and pests, making it more difficult to control and minimise contamination.
- **$CO_2$ footprint:** With increasing temperatures experienced worldwide due to climate change and a growing population, all processes need to substantially save water and energy and avoid waste, a goal set by the Kyoto and Paris Protocols.

Often the level of industrialisation in some countries is still so low, that traditional methods of grain handling remain widely used. However, these methods have their limits with regard to the aforementioned challenges, and cannot decrease losses or increase food safety.

To ensure food safety, hygienic and energy efficient industrial processes in grain cleaning, conveying, drying and storage are strongly advised. Besides that, harvest volumes create the need for industrial grain handling solutions as offered by large technology companies such as Bühler GmbH.

## South African systems

In South Africa, the main area housing silos is located towards the northeast. The country's total capacity is 19 million tons housed in 289 silos. The major companies with silos are members of Agbiz Grain who handle and store more than 67% of the grain and oilseeds produced.

South Africa has a relatively good core network of national economic infrastructure. The challenge is to maintain and expand its electricity, water, transport and communications infrastructure in order to support economic growth and social development goals, especially in building new silos in South Africa.

Research findings revealed that community unrest and land proclamation were the highest ranked factors posing a major challenge where the construction of roads, cash flow, proper planning, resources, delivery of material, plants and equipment, and the availability of skilled labourers are concerned.

There are several factors that contribute to poor infrastructure, including the lack of, or shortage of funds, insufficient provision of resources, inefficiency of labour, as well as poor repair and maintenance.

Three ways to improve the quality of infrastructure investments include:

- Creating markets for infrastructure projects and services.
- Enhancing the attractiveness of infrastructure projects for private funding.
- Overhauling infrastructure for radical innovation and productivity growth.

In terms of investment, capital costs are initial expenses incurred on the purchase of property, construction, as well as equipment to bring a project to a commercially operable level. Project design criteria and specifications ultimately drive equipment capital costs.

## Cost of silos, shop welded

Cylindrical shop-welded tanks with conical bottoms are limited to shippable sizes, typically about 2,43m for a legal truck load, often up to approximately 3,05 to 3,66m when routes permit loads with more height, and rarely more than 4,27m and larger.

Cylindrical tanks (silos) are typically used for free-flowing dried material and include bin activators and air locks. They may be carbon steel painted, but most frequently are stainless steel due to the economy of shop manufacture and interior coating difficulties with a closed welded vessel. Budget pricing for this type of hopper silo ranges from R850 000, depending on volume requirements.

## Cost of silos, site bolted

Cylindrical site-bolted tanks with conical bottoms are manufactured in shippable segments and site erected. They are large diameter, high volume silos and are used for free-flowing dried material, with bin activators and air locks or live bottom screws for dewatered sludge.

The cylindrical shape is the most economical per volume to manufacture, but is not as efficient for storage as a rectangular or square footprint. As the vessel segments can be produced in manageable sizes, high-quality coatings can be applied to carbon steel during the manufacturing process. This is typically the first choice. Stainless steel is also an option for this tank.

The budget capital cost of a cylindrical silo vessel can vary from R850 000 for a small, bolted silo to over R108 424 000 (around US$7,5 million) depending on the size and materials of construction.

Overseas options offer galvanised corrugated silos and material handling equipment for grain storage, as well

as reduced breakage and waste, and protection against pests, rats and other rodents. The capacity of galvanised silos ranges from 50MT to 15 000MT. Turnkey services include designing the most economical silo system to suit site conditions, as well as silo erection and supervision.

## A proper grain handling process

To ensure food safety, poisonous impurities and defective grain, along with contaminating spurs, need to be removed by way of a comprehensive cleaning process right at the start. At the same time, the positive effect is doubled – removing impurities also means that there is less material to be dried and stored.

Compared to the traditional methods still in use in some countries, industrial drying processes are much more stable and hygienic. Bühler's industrial dryer, for example, dries at high capacity, maximising the grain's homogeneity and therefore quality, while minimising energy consumption and costs.

To achieve homogeneous drying of the grain and maximum product quality, an optimal airflow within the dryer's product column is needed – one way to achieve this is Bühler's patented diagonal arrangement of conical ducts. Hence, the grain is gently dried in a controlled way to the required storage moisture level.

Some regions also see many types of biomass used to fire heat sources, and Bühler dryers can be flexibly operated with a huge variety of sources – for example, with steam heat exchangers or indirect biomass furnaces.

Finding skilled operators can be difficult, driving the desire for excellent drying results that can be achieved independently of the operator. Bühler's DryMate enables the plant manager to achieve optimal drying results and boosts the crop's quality and yield while minimising energy consumption. DryMate is an innovative digital service comprising an automatic moisture control, allowing for automatic drying to the target moisture, as well as dashboards and a mobile view for full process transparency and customised tech reports to support the plant's continuous improvement.

Other services are also provided, such as maintenance schemes, training and retrofits, to maximise the uptime of the dryer and the entire collection point in a challenging environment.

## Storage of grains

When storing material, it is necessary to avoid the creation of hot spots that can cause the degradation of the grain. Keeping the material at lower temperatures means that the storage time can be maximised and infestation by pests can be avoided.

Given high ambient air temperatures, mere aeration may not be sufficient, or may even be harmful due the warm and humid air entering the silo. In these cases, the use of one or more coolers is necessary. In this regard, there are three factors that must be managed, namely temperature, moisture and storage time. Low temperature and low moisture content allow for substantially longer storage times and vice versa.

This is key to success for grain conservation under certain ambient conditions with high moisture and temperature over most of the day.

A further challenge is energy consumption. Once the target temperature and moisture are achieved, these storage conditions should be maintained in an efficient way by cooling in consecutive cycles, in order to minimise the energy used. At the same time, grain losses due to respiration are minimised as well as the appearance of insects.

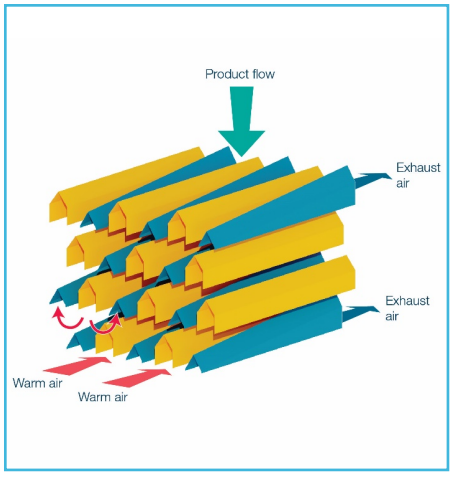
## Problem-specific solutions

It is Bühler's aim to provide solutions by 2025 that allow for a 50% reduction in water consumption, energy consumption and waste in the value chain. To achieve this target, the company has developed, and is continuously developing, new digital services such as Bühler Insights silo monitoring that allows for the monitoring of ambient and grain conditions (temperature and moisture).

The user can set alarm levels based on critical and warning temperatures – all layers in a silo can be easily monitored and the aeration and cooling precisely adjusted, saving energy and optimising grain quality. The user receives notifications once a deviation of the defined parameters appears, enabling instant action and avoiding discoloration and grain losses as a result of hotspots.

Energy-saving solutions minimise operational costs and maximise yield, compared to traditional grain handling methods. In addition, errors coming from an inappropriate operation or overlooked deviations are minimised through these digital solutions.

**Figure 1: Bühler's patented diagonal arrangement of conical ducts ensures homogeneous drying of the grain and maximum product quality.**




Where environmental protection is concerned, the exhaust air of the dryer can be a major source of air pollution, but the comprehensive dedusting system of Bühler dryers can substantially reduce the dust level in the exhaust air.

Coping with climate change is an everyday struggle. However, Bühler machines are highly energy efficient (and they maximise yield). Efficient grain storage can reduce energy and waste, along with the demand for fertiliser.

The Bühler example shows that industrial grain handling solutions are the appropriate solutions for even the most demanding environments. Process losses are minimised as proper cleaning preserves the 'good material', homogeneous drying to the exact target moisture maximises yield, and carefully controlled storage minimises losses in the silos.

And, crucially, food safety is ensured by comprehensive cleaning, exact and hygienic drying, and proper storage to keep the grain in a healthy and safe condition.

For enquiries, send an email to taryn.browne@buhlergroup.com or visit *www.buhlergroup.com*.

# Prevention is better than cure!

**TREATMENT WITHOUT PREVENTION IS SIMPLY UNSUSTAINABLE.**

★ **Bill Gates** (Businessman and philanthropist)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# “Prevention is better than cure” with K-Obiol®EC 25

Production of grain crops, from sowing to harvest, and processing, requires considerable human and financial resource investment. Pre-harvest loss to biotic factors (pests, pathogens and weeds) is a major challenge translating to investment losses. Cumulative losses incurred during transport, pre-processing, storage, processing, packaging, and export can be substantial.

Each stage of the grain value chain is a source of grain losses, each with a different loss ratio. This article focuses on loss prevention during storage, particularly with those associated with insects.


Storage is the most critical post-harvest operation in the grain value chain. Losses during storage are caused by several factors, both direct and indirect. Direct losses being the physical loss of grain, while indirect being the loss in quality and nutrition. Storage losses can further be classified into biotic factors (insect pests, mites, bacteria, fungi) and abiotic factors (temperature, humidity, rain).

It's estimated between ¼ - ⅓ of grain loss annually occurs during storage, much of which stems from insect damage. Damage caused by insects can be referred to as physical deterioration (e.g., holes in the grain) and quality (value) loss. Some important stored grain pests include the lesser grain borer, rice weevil and rust red flour beetle. Most grain pests inflict damage through direct feeding, thereby reducing the protein content of feed grain. This decreases viability, leading to poor seed germination. Additionally, insect excretions, moults and bodies contaminate the product, which is not commercially desirable.

## // Prevention

When it comes to controlling stored grain pests, prevention is always the best course. It is essential that on-farm storage should limit the infestation of grain from the onset, ensuring acceptance and marketability of the grain in domestic and foreign channels. Pest management best-practice knowledge is key to avoiding or mitigating costly losses with on-farm storage. Through an integrated pest prevention approach, and a proactive attitude to quality assurance and control; avoiding grain insect pest infestation and the ensuing damage is possible. Successful pest prevention strategies combine hygiene and structural treatment, aeration cooling, monitoring and grain protectants.

## // Store Hygiene and structural treatment

- Hygiene is the first line of defense in any grain storage system and involves the removal of grain residues from empty storages and grain handling equipment, including harvesters, augers, field bins and silos to ensure an uncontaminated start.
- Following storage and handling equipment cleaning, structures should be treated with a residual insecticide such as Bayer's K-Obiol®EC 25, which can provide residual protection up to ten months depending on the type of application method and surface.

## // Aeration Cooling

Aeration of stored grain serves four main purposes. It assists in inhibiting insect development, maintaining seed viability and reducing grain moisture and preventing . Grain aeration allows growers to maintain grain quality during harvest and storage and, while aeration cooling may not eliminate the need for chemical insect control, it will dramatically slow insect development.

## // Monitoring

Frequent monitoring allows early detection of problems to be managed before significant grain damage occurs. Monitoring entails regularly recording stored grain temperature and moisture to confirm they are within optimal parameters, as well as inspecting for insect activity and mold.

## // Grain Protectants

Grain protectants are designed to prevent pest infestations, not to control pre-existing insect infestations. They should be applied only to clean, pest-free grain. To give protectants the best chance to defend stored grain, it is imperative to combine their use with storage hygiene practices before and after harvest.

Other than treating structures, K-Obiol®EC 25 can be applied directly to the grain during grain intake. It can be used in any type of storage, sealed or unsealed and is suitable for use by grain growers and grain accumulators.

Grain markets and regulatory bodies have become less tolerant of protectants because of their residual activity and growing grain consumers' desire to avoid grain with excessive residual levels. Inappropriate treatment or multiple treatment as the grain moves along the supply chain due to inadequate quality assurance may result in higher residue levels. Applied appropriately, K-Obiol®EC 25 guarantees the level of residues. Always read the chemical label before choosing a protectant to ensure it is registered for use on the desired grain target insects.

BAYER

# The future of employment in the grain and oilseeds sector until 2035

*By Wessel Lemmer, general manager, Agbiz Grain*

A question that is often posed is what the future holds for jobs in the agricultural industry and, in the case of Agbiz Grain and its members, the handling and storage sector? Will workers in future possess the knowledge and expertise needed for successful employment in the grain and oilseeds sector? Are there training opportunities in place to ensure this expertise, ensuring maximum impact on the sector in future?

The remuneration of employees is the largest, most important cost item in the handling and storage of grains and oilseeds. Expressed as a percentage of the total annual expenses, the remuneration of employees amounts to 23,4%. The latest annual update of the *Grain Storage Cost Index* published on 30 March 2022, indicates that the cost of remuneration increased by 4,3% year on year.

A well trained and motivated workforce is therefore a priority in the handling and storage sector. Although the future of employment in this sector will be impacted by the following factors, we need to focus on available opportunities to overcome these challenges – aspects limiting entry to the South African agricultural labour market.

## Good policy and infrastructure

Food security is in the national interest, and indiscriminate politically driven policy proposals can potentially disrupt food security and have a broader negative economic impact on South Africa. At the same time, government regards job creation in agriculture as one of the keys to poverty alleviation.

By remaining a net exporting country, the payment balance will be supported, demand for the rand will grow which, in turn, will contribute to a stronger exchange rate, and affordable staple food will be ensured. However, the key to poverty alleviation must be supported by sound policy proposals and infrastructure. Without it, sustainable production that alleviates poverty and promotes food security is not possible.

## Skilled, unemployed workers

Agriculture is an economically significant sector with one of the largest employment figures of all our industries. Unfortunately, the level of expertise of the overall available labour force (agriculture included) in South Africa is concerning. Of the unemployed who could be employed given a required economic growth rate of at least 5% and more, 2% are graduates, 8% possess other tertiary qualifications, 38% have matric and 51% do not have matric. The level of expertise among the unemployed in South Africa therefore does not support economic growth. Agriculturally skilled and employable labour is therefore limited.

In February 2021, the Department of Home Affairs listed 20 occupations that are in short supply in the agricultural industry. The World Bank believes that agricultural development has the greatest potential to curb severe poverty, boost wealth creation and provide food to almost 9,7 billion people by 2050. Compared to growth in other industries, growth in the agricultural sector is between two and four times more effective at improving income among the poorest segment of a population.

## Rapid technological progress

According to the Institute for Futures Research, the rapid technological progress of the primary production sector at farm level, will lead to the creation of more jobs in the food value chain, specifically the secondary agricultural sector outside the farm gate. This is especially true in countries that are becoming increasingly developed. As a result, immigrants (migrant workers) are increasingly being employed on farms while local labour prefers to urbanise or apply for work in the value chain outside the farm gate.

In addition, the fourth industrial revolution has given rise to technology that is making farming units more productive, but increasingly less dependent on a large labour force. At the same time, new technological developments are also creating new jobs in the labour market.

These new jobs will, however, require specialist technological and scientific knowledge. The educational system in South Africa must prepare the labour force of the future for this. Yet current statistics regarding the training levels of the unemployed show that only 10% have graduated and possess another tertiary qualification. These statistics relate to all sectors and cannot sufficiently stimulate economic growth.

## Fewer people cultivating land

The reality is that, in future, fewer people will be involved in the cultivation of land and, more specifically, grain and oilseeds. More agricultural job opportunities will be created outside of the farm gate and these jobs will be more acceptable to the youth. Hence, it is of the essence that the South African government negotiates greater market access to overseas markets, that infrastructure is created allowing agriculture to stimulate economic growth, and that sectors in the value chain will link with the primary production sector up and down the chain.

## Linking to and fro

The chairperson of the soya bean value chain group, a producer from the Schweizer-Reneke district, at one point remarked that we are lacking forward and reverse links with primary producers in other African countries and that commercial producers there, unlike in South Africa, are producing and marketing their produce under challenging conditions.

Agriculture is expected to create jobs, but equally so the government must be accountable and fulfil its role by ensuring satisfactory underlying infrastructure to support agricultural production and trade. After all, good infrastructure promotes forward and reverse links in the value chain.

**Table 1: Aspects limiting entry to the South African agricultural labour market. (Source: Future of agricultural employment in South Africa 2035)**

| | |
|---|---|
| **Political** | The two government departments responsible for agriculture and water are not aligned with international best practices. Policies are ideologically driven and not based on science, risk reduction and best practices. Corruption and the mismanagement of resources dominate. The decay of infrastructure has a significant impact on agriculture, specifically regarding water canals, catchment areas, roads and ports. The efficiency and capability of institutional services such as the Police Service, Transnet and SA Port Services are deteriorating. |
| **Economic** | Government institutions such as the Land Bank continue to face financial challenges. Some markets are ruined by political instability. Labour costs are high. Electricity supply is unstable, and rising energy and water costs negatively impact profitability. Arable land is becoming more expensive. Low levels of economic growth are creating a challenging agribusiness environment. Investment in agricultural research and development is below international standards. There is a chronic shortage of skilled labour. Crime is on the rise. |
| **Social** | Job seekers are unskilled due to a deficient secondary education system. Service providers in adult education and training are not sensitive to the realities in rural areas. The syllabus for agricultural education and the needs of the agricultural sector are not aligned. The Feed SA First social policy must be managed responsibly to find a balance between food security and job creation. Demographics impact social policy. The cycle in which elections take place leads to short-term solutions and failed corrective actions. Levels of syndicate activities and drug abuse keep rising and endangering safety. |
| **Technological** | Mechanisation and automation are an international trend that is shifting job opportunities in the agricultural sector. The shortage of engineering skills in the agricultural sector comes at a great cost to local research and development, and the development of locally adapted technologies. Inefficient management is hindering the implementation of certain technologies and the potential jobs that go along with it. The lack of affordable communications infrastructure limits the acceptance of precision technology and jobs that could be taken up by technologists. |
| **Ecological** | Job opportunities in agriculture decline during times of drought. Climate change is having an impact on certain parts of South Africa and on agricultural employment. In some areas soil quality is deteriorating due to ecological decay, low rainfall and intensive farming practices. The national water system is under pressure due to pollution and mismanagement. Conflict over available water has a negative effect on production in certain regions. |
| **Laws and regulations** | Market access is crucial in agriculture. Ineffective regulatory measures complicate market access. Deficient tariff and accounting structures have created uncertainty and the potential for corruption where non-compliance is becoming the norm. Water tariffs in the agricultural sector are a good example. |

## Limitations to job opportunities

The agricultural sector cannot reach its full potential if the barriers that prevent jobseekers from entering the agricultural labour market are not adequately addressed. Examples to this effect are included in *Table 1*.

## Creating new opportunities

Grain depot managers and graders will in future have the opportunity to earn credits for the many years of experience they have gained. The Grain Depot Manager and Grain Grader Course was recently registered with the South African Qualifications Authority (SAQA). The next step is to inform training institutions that will be offering this course, of what is required of them.

At the end of the day, purposeful training and expertise are essential for the efficient handling, grading and storage of producers' and customers' grain and oilseeds. It promotes price formation and the support of an efficient free market, and offers employees in the storage sector a better career.

The full report is available on Agbiz Grain's website at: *https://www.agbizgrain.co.za/content/resources?page=ag-publications*.

For job opportunities in the storage sector, visit: *https://www.agbizgrain.co.za/content/resources?page=careers*

Sources and more information available from the author at email wessel@agbizgrain.co.za.

# Occupational health and safety: Not a magic bullet for success, but nevertheless vital

*Article supplied by Beehive OH&S*

An undertaking's success can be measured in a number of different ways. Bottom-line profit is one measure of success. Another is the level of satisfaction experienced by various stakeholders, such as owners, employees, shareholders, clients or business partners.

In almost all cases where an organisation is doing well, one of the things that underpins its success is an honest risk assessment process, followed by relevant practical programmes and processes to manage risk effectively, and most importantly, to implement, track and revisit those programmes.

## Protection against non-compliance

Occupational health and safety (OHS) relate to important risks faced by any business. It is to the long-term detriment of the bottom line as well as overall satisfaction of all concerned to ignore it or merely to superficially comply to legal requirements, without in-depth consideration of important factors that affect the relevant industry.

An OHS risk assessment, together with its related plans and implementation, does not constitute a magic bullet for success, but does contribute to protecting the undertaking against non-compliance with the *Occupational Health and Safety Act, 1993 (Act 85 of 1993)*, or *OHS Act*, and other relevant regulations. In addition, there is the important new international ISO 45001:2018 standard, which provides a framework to manage and improve OHS.

Adhering to the legal requirements and ISO 45001 is important, among others, because all employers are responsible for their workers' safety and they can therefore be prosecuted both civilly and criminally (both as a business and in their personal capacity). This could come in addition to facing fines and, in extreme cases, the closure of a business until it is in full compliance.

## A suitable OHS system

Owners of grain silos have to consider numerous factors in the process of pinpointing the hazards relating to their operations. Because not all businesses are the same, each one will have its own specific OHS risk profile within the demands of its broader industry. What is true for one grain silo operation may be true for most others. However, in each case there will be environmental, human and structural factors that are slightly different from all others.

To support the *OHS Act* and related laws and regulations, official sources such as government websites provide useful background information and guidelines. However, because of the minefield of issues to consider, and because some risk assessment procedures work better than others for specific circumstances, it is often advisable to get the input of specialist OHS organisations such as Beehive OH&S to assist in finding a way through the myriad of regulations and practical pitfalls.

"We cannot undertake your risk assessment on your behalf, but we can help you to ensure that you consider not only the general OHS risks, but also the specific health risks and ergonomics relating to your relevant structures and procedures. Besides doing the right thing for your business by attending to all potential problem areas, it is worth noting those issues are covered by regular governmental inspections anyway," says Leo van der Walt, director of Beehive OH&S.

"Our experience has also taught us that, apart from the strategic importance of risk assessment, some businesses are unaware of some legal implications, such as the fact that medical reports relating to an incident at a workplace

*Photograph supplied by VKB.*

have to be kept for up to 40 years! It is also important to ensure that any risk assessment is undertaken by a suitably qualified competent person. Not only does the law require this, but such individuals are trained to note all the relevant issues."

All employees have to be registered for workers' compensation according to the *Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993)*. This *Act* protects both employer and employee and is intended "to provide for compensation for disablement caused by occupational injuries or diseases sustained or contracted by employees in the course of their employment, or for death resulting from such injuries or diseases."

However, Van der Walt points out that non-registered workers are not covered. "There have been cases where this has caused major expense for employers who did not ensure that all their employees are legal and registered.

## Exposing areas that need work

"On a more positive level, the OHS risk assessment process may show exactly how well a business is already doing and where some minor adjustments could ensure full compliance. OHS assessments can also assist in pinpointing operational, managerial and human resources-related issues that need attention.

"For instance, an OHS inspection of a silo may point to overdue maintenance work or impractical operational procedures that could ruin an otherwise well-run business' safety record. Fixing those issues could mean better performance generally, and therefore also help ensure a better income," states Van der Walt.

## Specific issues to address

A major issue for grain silo owners to consider is the fact that grain silos are confined spaces. Such enclosed or partially enclosed structures pose a danger, because they are not designed or intended to be areas occupied by people. As workplaces they constitute high-risk environments.

Some of these dangers include poor ventilation (loss of consciousness, injury or death due to airborne contaminants, and specific chemical hazards such as phosphine exposure due to fumigation of grain introduced into the silo), the presence of micro-organisms such as viruses, bacteria or fungi (these could among others cause dermatitis or lung disease), fire due to combustible grain dust, and the general risk of engulfment (literally drowning or suffocating in grain due to oxygen deficiency).

> "Owners of grain silos have to consider numerous factors in the process of pinpointing the hazards relating to their operations."

In addition, there are hazards related to electrical equipment, exhaust fumes from diesel or petrol-powered appliances, extremes in temperature, noise due to the reverberations inside the confined space and challenges relating to scaling the height of the silo. Also important to consider is access to the silo for the purposes of rescuing and treating an injured or unconscious person.

## Steps to protect workers

The risks of working in a grain silo environment implies that owners and managers are obligated to analyse the specific risk factors relevant to their silo(s), and then plan and implement a number of major steps to protect workers and ensure maximum efficiency.

This could include ensuring that no unauthorised person is allowed into a grain silo, that the 'buddy system' (at least two people working together at all times and nobody allowed to be alone in a silo) is strictly adhered to, that regular health check-ups take place, that air quality and composition is measured frequently and that all relevant workers and their supervisors are thoroughly trained on all aspects of the work, including safety procedures.

## Plans and a culture of safety

A culture of safety within grain silos is led by owners' clear and stated intent to provide suitable working conditions. An OHS risk assessment will indicate problem areas. However, this is only the start. After the risk assessment, there is more work to be done and a good OHS plan forms the basis of action. A good plan also involves the entire workforce – often only workers know about specific hazards and their assistance can be invaluable to find practical solutions to problems.

"The plan should also analyse what the law says about each possible risk area identified," says Van der Walt. "Once one has a clear understanding of what needs to be done to be fully compliant, you can start putting into place the controls that can eliminate, substitute or engineer solutions. In addition, certain problems can be solved by administrative measures and the straightforward acts of providing job-specific personal protection equipment (PPE) and training."

The solutions to existing hazards could include applying engineering controls to ensure suitable intake of fresh air and exhaust of polluted air, as well as constant measurement of air quality, regularly tested safety harnesses and rescue lines, carrying out some tasks from outside the silo space rather than inside or employing trained professionals to conduct certain tasks, and reviewing signage and security measures to ensure that only people with the relevant entry permits can enter silo spaces.

It is also crucial to provide specific, purpose-designed PPE for workers and to ensure that first aid and standby personnel are available whenever people are working in a silo, while providing easily accessed rescue, first aid and firefighting equipment marked by the relevant signage.

"Merely providing workers with the correct PPE is not enough. I also like to remind people that it is important for staff to know *why* they need safety information. Training should explain such reasons besides explaining that staff can protect not only themselves, but their co-workers by being vigilant. In the long run, investment in training and in the services of specialists to help guide the way, will pay for itself in the form of improved profits, fewer injuries and less insurance-related costs," concludes Van der Walt.

For more information, send an email to management@beehiveohs.co.za or visit *www.beehiveohs.co.za*.

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# Assignees: Overview of legislation

*By Annelize Crosby, head of legal intelligence, Agbiz*

Regulation is one of the primary ways in which government can achieve its policy objectives. According to the Organisation for Economic Co-operation and Development (OECD), regulatory policy is about achieving government's objectives through the use of regulations, laws and other instruments to deliver better economic and social outcomes, and thus enhance the lives of citizens and business. Regulation can, however, impact the ability of businesses to create innovative products or services to serve their communities and employ people.

## Regulation in the agricultural sector

Inspection services are required to ensure that sector players comply with regulatory prescripts. There has been a growing trend since the 1990s to outsource these inspection and enforcement services in various ways.

The *Agricultural Product Standards Act, 1990 (Act 119 of 1990)*, or *APS Act*, for example, provides for assignees to be appointed by the Minister of Agriculture, Land Reform and Rural Development to inspect agricultural products, as well as operations and processes pertaining to agricultural products, to ensure control over the grading and classing of agricultural products for quality control. The *APS Act* specifically envisions regulatory functions being performed by people or entities outside of the state. It does, however, expressly state that the assignee works under the direction of the 'executive officer'.

The *Marketing of Agricultural Products Act, 1996 (Act 47 of 1996)*, or *MAPA*, allows for the minister to impose statutory measures including levies, the keeping of records and returns, and compulsory reporting on the primary and secondary agricultural sectors for specified products. The *Act* also caters for the inspection of goods or premises to ensure the requirements of the *Act* are adhered to. Section 25 of the *MAPA* grants the minister wide-ranging powers to delegate functions under the *Act*, but does not specify that it must be delegated to a person in the full-time employment of the state.

**Table 1: Current legislative status quo: Assignees.**

| | Delegation within public service | Delegation outside of public service | Assignment |
|---|---|---|---|
| *MAPA* | X | Limited but applied to statutory measures | |
| *APS Act* | X | X | X |
| *Agricultural Pests Act* | X | X | |
| *Plant Improvement Act* | X | X (subject to approval from Minister) | |
| *Act 36* | X | | |
| *Fertiliser Bill* | | | X |
| *Animal Feed and Pet Food Bill* | | | X |

The *Agricultural Pests Act, 1983 (Act 36 of 1983)* grants extensive powers to the 'executive officer' so he/she may manage and prevent the importation of dangerous agricultural pests into South Africa. This legislation allows for any function performed under the *Act* to be delegated outside of the department.

The *Plant Improvement Act, 1976 (Act 53 of 1976)* regulates the recognition of plant varieties, sets conditions for the use of varietal names, requires the registration of business premises, and allows for the delegation of functions to persons outside the department.

The *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)* requires manufacturers to hold a licence to manufacture or sell fertilisers, farm feeds, and agricultural or stock remedies. The *Act* is in the process of being reviewed and both the *Fertilizer Bill* as well as the *Farm Feed and Pet Food Bill* make provision for any function to be assigned. The *Fertilizer Bill* proposes, among other things, a change in the focus of the enforcement system from a purely government-led inspection, to a system of government oversight that monitors controls established and implemented by farmers, fertiliser and feed manufacturers, and distributors themselves. It proposes that the minister shall designate **at least two** legal entities as assignees. It sets out the process that must be followed in appointing an assignee, which includes a public advertising process, proof of qualifications and a recommendation by the advisory committee. The activities of the assignee will be funded by a levy.

## Outcomes of the Agbiz PPP workshop

It seems that the different subsectors that fall under the *APS Act*, have different experiences regarding how assignees are appointed, constituted and function.

During an Agbiz workshop on public-private partnerships held at the Grain Auditorium on 1 April 2022, the livestock, fruit, grain and fertiliser subsectors shared their experiences and highlighted both the advantages and disadvantages of this system. All the subsectors agreed that standards cannot be compromised. More interaction between the subsectors on a more regular basis to enable the sharing of best practices was envisaged.

It became clear that a better understanding of what the concept of self-regulation entailed, needed to be reached between the public and private sectors. The feasibility of a system of self-regulation involving audits by accredited organisations that will perform the certification, and which accredited organisations' activities can be overseen by a statutory body, was mentioned at the workshop. It was clear that well-defined mandates for assignees are of critical importance.

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# Transnet's take on third-party access: The fox guarding the henhouse

*By David Taylor*

Third-party access describes a relationship in which private sector freight and passenger transport entities procure, deploy and operate their own rolling stock on state-owned rail infrastructure, while paying access fees to the infrastructure owner. The infrastructure owner, in turn, ensures that the quality and condition of the infrastructure is maintained to a standard that is deemed safe for operating.

## The issue with our rail network

The South African rail industry has seen a prolonged period of decline, culminating in Transnet signalling force majeure – the validity of which is questionable – on its long-term coal contracts on one of its most profitable lines and its self-proclaimed core competency.

Transnet blames cable theft and legal issues around procurement contracts which are beyond its reasonable control. However, these are symptomatic of much larger issues. The state-owned enterprise is faced with major issues, such as a lack of direct leadership and a major skills shortage as people are taking voluntary severance packages.

Furthermore, there is a shortage of serviceable rolling stock after irregular contracts with original equipment manufacturers (OEMs) were cancelled, resulting in a dearth of available locomotives and non-existent service available to the market. When service is received, it is often sporadic and far below the level required. Finally, many of the transport contracts negotiated lack any recourse for poor or non-performance.

Rail-friendly freight is often high bulk, low value, long-distance cargo which needs consistent and reliable service that should be easily provided by rail on a secure, long-term contract. An unpredictable and unreliable rail service quickly shifts freight to our overburdened road network, where

reliability and consistency can be more easily managed by stakeholders.

## The other side of the coin

Third-party access should allow members of the private sector to assume control of many of the aforementioned issues. This would not only signal a return to favour of South Africa's rail network and reduce logistics costs which reinforce upstream economies, but it will boost revenue for Transnet in the form of access fees, raise maintenance revenue for Transnet Engineering servicing a broader range of rolling stock, and increase volumes for Transnet Ports and Terminals.

The healthy competition created would also raise service levels experienced by freight owners in South Africa which, in turn, would give rail the edge in procuring logistics solutions.

## Maintaining the status quo?

In light of the aspects stated, Transnet's acceptance of president Cyril Ramaphosa's directive of third-party access was seen as an acceptance of growth and change – a move to favour progress and collaboration by working towards the creation of an efficient rail network to reinstate the backbone of our economy, for the benefit of job-creating industry and ultimately the citizens of our country.

Unfortunately, what one sees is ultimately not what one gets. In April this year, Transnet Freight Rail (TFR) stated its position on third-party access. Its position falls somewhat short, however, of presenting access as an answer to our country's rail inadequacies. Instead of embracing its potential, Transnet has taken a defensive stance, guarding its deteriorating turf, mitigating the risk of competition, enforcing anti-competitive policies, and refusing a collaborative approach to our rail network issues.

The National Rail Policy due to be gazetted by the Department of Transport creates space for third-party access on our networks in a competitive, inclusive and open manner, defining an environment that can offer access in a mutually beneficial relationship. Transnet's departure from this policy will, at best, result in an expensive revision of its position and procedures. At worst, it will undermine and potentially even kill the initiative of third-party access.

In the following section, I discuss a few important points where there seem to be a misalignment of Transnet's third-party access and the National Rail Policy.

### *Voetstoots*

After years of degradation and neglect, South Africa's rail network is currently in a state that, for the most part, cannot be operated safely. During the state-imposed lockdown, rail operations ceased, creating an environment where infrastructure theft and vandalism were allowed to destroy many parts of the network. Transnet, the network's custodian, has stated that certain routes will be made available in their current state and that private sector will need to invest in the infrastructure to operate it.

> "Rail-friendly freight is often high bulk, low value, long-distance cargo which needs consistent and reliable service that should be easily provided by rail on a secure, long-term contract."

While some pragmatism is required in accepting that the infrastructure is not in the condition that it should be, any investment by the private sector or non-government stakeholders should be accommodated with a structured reduction in access fees to compensate for this investment.

### *Grandfather rights*

Transnet's self-imposed grandfather rights hold that they have a right to retain the slots they are currently running. This is a potentially anti-competitive move that undermines the nature of third-party access. If TFR can provide a service at a level that allows it to continue or even promote its service, by all means that freight is secured, and the slot is retained.

If TFR cannot provide the service, however, then it should not retain the slot if it has neither the traffic nor capability to use it. There is thus zero incentive for Transnet to increase the level of service awarded to its customers.

The sale of slots should be subject to operators undergoing compliance screening processes, showing they are operationally capable, possessing the rolling stock needed to operate the slot, having approval from the Rail Safety Regulator and having a contract to move appropriate freight.

### *Transparency on access fees*

It was clear during Transnet's information session that slots would be sold at a rate that ensures the continued competitive position of TFR. In other words, the rates would effectively impose a level of inefficiency on every single operator that applies to operate, because Transnet cannot create efficiencies in its own operations. This undermines the competitive nature of third-party access.

Transnet should embrace the efficiencies that third-party access can bring to the rail network, and possibly even learn from them. TFR is an operator in its own right and even after third-party access starts, it will still be a viable option for freight shippers. TFR should leverage this favourable position and embrace competition instead of kneecapping non-state participants.

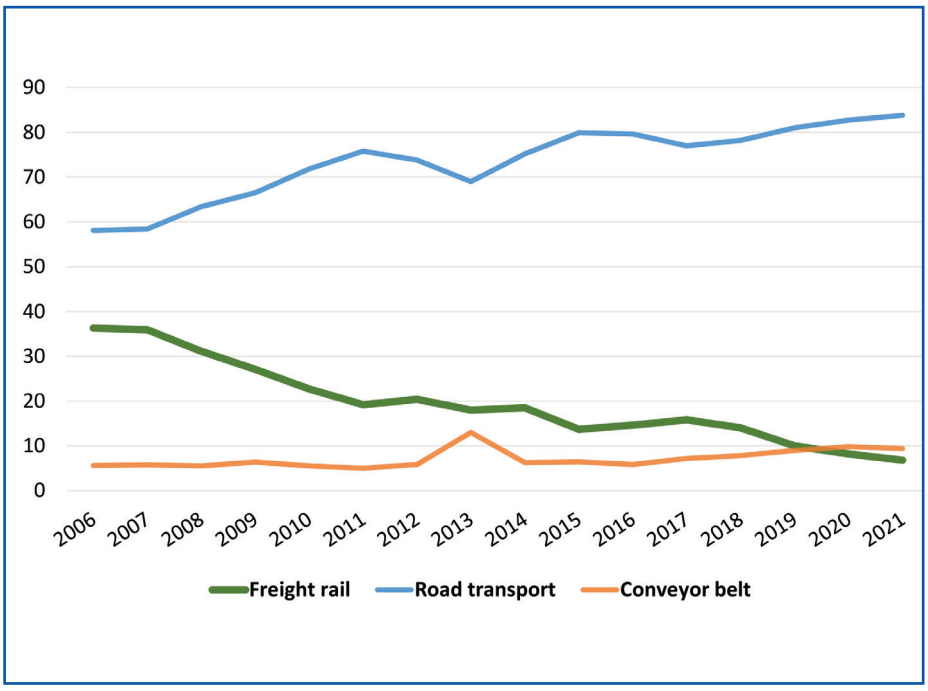
This also applies to Transnet's rule that new entrants must join bargaining councils. Passing on increased labour costs to customers is not sustainable. Rail, as a transport mode, cannot raise costs with impunity. We are still competing against other modes which have strong competitive advantages.

### *Timelines and procedures*

To offer any kind of operational efficiency on the slots offered for sale would need at least three wagon sets. The estimated investment cost in rolling stock alone would run between R500 and R600 million for an efficient service. As most rolling stock is highly capital intensive, manufacturers do not keep inventory; instead rolling stock is made to order with a lead time of around 18 months for a new locomotive. Rolling stock, by nature, has an operational life expectancy of between 30 and 50 years.

The 24-month access period for Transnet's slot offering is grossly inadequate to achieve any kind of return on this massive investment and it would be very difficult for the private sector to justify it. Other open access regimes across the world offer periods of ten to 15 years (without contractual default by the operator), with

**Figure 1: The wheat and maize transport mix (%).**




periodic reviews and options to renew, which is far more investor-friendly and encourages operators to invest in quality rolling stock that will offer the best reliability over a longer period.

Furthermore, Transnet expects operators to commence their operation within three months of access being granted – an impossibility. Should this not be adequately managed, we risk becoming an international dumping ground for end-of-life rolling stock.

## The opportunity to effect change

Transnet's first public foray into third-party access revealed its defensive position as it safeguards its dwindling market share which, at best, will likely be lost to competing transport modes such as road. An even worse scenario is that those businesses that depend on rail solutions would likely close.

Timber, a high bulk industry that moves just under four million tons per year on rail, is one sector under threat. If Transnet sheds more market share in timber, many players in the industry will become unviable, resulting in the closure of some of South Africa's largest rural employers who are already incredibly scarce.

Our bleeding rail system comes at a great financial cost to the country, but the economic cost is even greater. Conversely, there is potentially an incredible financial and economic boon on the back of a viable and competitive rail network. Decreased logistics costs lead to more viable industries, boost economic activity and create more jobs.

Rail is ultimately an enabler of an economy, and it is time that other operators are able to prove this to Transnet. Investors are waiting on the sidelines and operators are ready and willing to commence with these initiatives, under mutually beneficial conditions. Furthermore, we have the capacity on our network – yes, the speeds may be slower than before due to track condition; however, most rail freight favours consistency over speed and this consistency is achievable.

If we consider the Container Corridor, which runs between Johannesburg and Durban, 70% of these slots are currently available (TFR operates at 30%). This capacity is perfectly placed to service the agricultural industry's flow between Bethlehem and Durban.

In 2006, 36,3% of South Africa's maize and wheat was transported via our rail network – this has declined to the latest figure of 6,8% in 2021. In 2020 and 2021, more wheat and maize were transported on conveyor belt than freight rail. Likewise, 40% of our barley, oats and soya beans enjoyed rail service in 2011, meaning 2021's data is down to 7,8%. Our infrastructure has 70% capacity available to the market to reverse this modal shift.

## Our international competitiveness

Finally, while the National Rail Policy is a shining beacon in the political storm that is our rail industry, we need to understand how rail fits into our domestic and international transport mix. A market rarely exists at the railhead. Our exports also need to remain internationally competitive. It is therefore vital to understand how rail fits into the bigger logistics picture. The logistics mix must promote rail's competencies as it does with other modes.

Rail reform needs to happen alongside road and port reform to ensure that the market leverages these competencies in creating logistics solutions. Decades of viewing road and rail in their own silos have resulted in truck axle loads becoming too heavy for the country's road infrastructure to handle. Above-inflation increases in rail rates and decreasing per-ton road rates have allowed road solutions to punch above their weight – this needs to be addressed for us to have a proper conversation about rail's role in South Africa's international competitiveness.

As my mother would have said when offered something priced out of viability, "at that price, it's not for sale". The first (sideways) step toward private operation has been taken. The next step is not, as Transnet anticipates, negotiations with operators, but should rather be a realignment of its position with the National Rail Policy.

I look forward to the Department of Transport's policy launch, so that we can have meaningful conversations with current and future operators about how we can move our country forward, together.

This *Agbiz Grain Quarterly* article is derived from David Taylor's article which first appeared in *Railways Africa Magazine*. David Taylor's consultancy business, Taylorail (Pty) Ltd, specialises in third-party rail operations on the African Continent. David established Tanzania's first private rail entity on the Tanzanian Central Corridor and worked on many other rail operations on the continent. For more information, send an email to david@taylorail.co.za or visit *www.taylorail.co.za*.

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## Points to ponder

*With Jannie de Villiers*

# To follow without explanation

A big driver in one's life is trying to understand things that happen to and around us. Understanding circumstances and events helps us to improve some things and avoid others.

I've read Gene Edward's book *The Prisoner in the third cell* at least four times over the past 15 years and it proved to be an emotional journey. The book deals with the death of John the Baptist, the greatest of all the prophets and leaders in the Bible. In the run-up to John's death, he struggles to understand a Lord who did not meet his expectations.

Gene describes the possible emotions experienced by people who came to Jesus to be healed when, inexplicably, He decided to move halfway on through the long queue of the sick. Many were healed that day, but not all. Why not?

Picture a woman carrying a crippled child from a nearby town, hoping for the child to be healed. Just as she was second from the front, He departed and she had to carry the child all the way back home. Many questions remained unanswered. But have you ever considered Jesus's emotions when He made the decision not to heal all those who came to Him? It could not have been an easy decision.

### Understanding the inexplicable

I've experienced similar things which I did not understand nor could I explain it. This was especially true when I was caught up in situations not of my own making, and I am sure readers can associate.

Agriculture is an industry in which inexplicable things happen often. Take for example drought or floods, both still fresh in our minds and victims of flood damage trying to recover their losses as we speak. The knock-on tumbling of silos in Swellendam a few years ago also comes to mind. Why all of them? And why is it that a war thousands of kilometres away in another part of the world, has such a major impact on our input costs and ultimately the profitability of our farms and enterprises?

"Agriculture is an industry in which inexplicable things happen often. Take for example drought or floods, both still fresh in our minds and victims of flood damage trying to recover their losses as we speak."

In our personal lives there are illnesses and situations we haven't yet received an answer to from God. Perhaps an accident where a loved one was lost and the drunk driver in the other vehicle survived. Perhaps you have been praying for years without receiving the answer you would have liked. Surely it isn't that God isn't listening? But why then no answer?

### Do not take offense

The reply Jesus sent to John the Baptist in jail did not explain everything, but revealed something of His sovereignty: "Blessed is the one who is not offended by me." (Mat 11:6) This sentence basically means the following: Blessed is he who does not doubt Me. Blessed is he who keeps on following and trusts Me even if he does not understand Me, or can explain what I am doing and why.

Sometimes we try our best to complete a task or project at work or home, but things outside our control forces that task into failure. If you take time to think about it, there are many such examples. The question is: Will you continue to follow God, irrespective of your understanding or explanation of things? This is, after all, what faith is about. Faith shows trust in God's character, not in His way of doing things.

I can imagine John the Baptist's disappointment when God did not save him and he was eventually beheaded by a drunk and reckless king. If ever there was a man who deserved saving, it was John, but alas. Days like those await us all. Our Lord is never quite what we imagine Him to be. Make peace with this and show your faith in Him and His ways.

God does not follow prescriptions. He is a sovereign God. Trust Him, like John did, and don't try to explain everything He does. Accept that He knows what is best for each of us. This is the type of faith needed in times like we are experiencing at the moment.

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