VOL 4 NO 4 • NOVEMBER 2024

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Laws and regulations in the agri sector

Fumigation and pest control compliance

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Planting a product in a new territory

By Ferdinand Meyer, group sales manager, Ronin System Solutions

It has been one of my biggest privileges to build a career in the South African grain handling and processing industries. Coming from a time and place that now feels distant, it is heartening to see that many of the relationships I treasure continue to drive their passion for this industry forward every day.

Relationships, trust, support and reliable products are key for any service and technology-orientated business to succeed. It takes years to establish a brand and make an original equipment manufacturer (OEM) product a household name in the industry. We have seen products that quickly spark interest and then fade away, and others you just work and live with, and they almost become part of your business DNA.

What a wonderful experience to live and function in an industry where you are the link between the OEM and the industry, selling and providing a service to the best of your ability and resources while understanding application, function, and client needs. Only when you step into the role of being an OEM supplier do you truly begin to understand your business and yourself.

For Ronin, the journey began by becoming a good distribution partner. It was essential to gain comprehensive product and application knowledge, and then identify the right place in the market to plant and grow our products. The local market provides a relatively safe environment for this. Building strong relationships with clients helps address initial technological challenges. Clients are accessible and create a suitable environment for product development. Furthermore, complying with local legislation is an integral part of the process.

Exploring new markets

Ronin has pursued international distribution since day one. It is this commitment that drives us to consistently deliver our best to our OEM suppliers of instrumentation and products. These relationships have opened opportunities to meet other international role-players, who face similar needs and challenges in grain and bulk commodity inventory management.

In 2007 we sold our first ARTEMIS laser scanning systems to Malawi and Argentina. This was followed by our largest order in 2015, which was negotiated over four years between Ronin, Cimbria Denmark, and the Egyptian government. This transaction involved supplying, configuring, and commissioning 276 ARTEMIS 3D laser scanning devices at 23 newly erected grain silo facilities across Egypt. Each project, including this one, presented unique challenges that ultimately transformed our business.

Changes and challenges

I often find myself laughing at some of our early attempts at making things work. Time is not only a healer but also a teacher. The image of striking the iron on the hot and cold side simultaneously comes to mind.

When trying to replicate a local market vision through a distribution partner and their client network, you quickly realise these two worlds operate at different speeds. The distributor's engagement is often very slow and frustrating. Approaching a new market can strain company resources and you end up pushing the distribution partner to secure that first reference sale. This helps them to become acquainted with the real-world scenario of selling, installing, and supporting your product. Realising income is essential for motivation and building sales momentum.

Ferdinand Meyer.

While preparing your distributor for success, the local business unit is also challenged to create and adapt to secure a good initiative and supply chain.

Here are some areas that required us sharpening our focus:

- Language and cultural differences: Conveying product and application knowledge through a medium and translating product software, and technical and marketing literature into various languages.
- Identifying the right distributor and putting in place distribution agreements.
- Product registration and certification: Certifications are based on international regulations and certification standards but are re-evaluated and certified by the local certification body. The procedures, documentation, and certification process are not very well defined and often have some unexplained elements. Branding, labelling, and packaging requirements must also be met.
- Business acumen and legal requirements, and the added administrative work and costs involved.
- Obtaining insurance in areas in which your business is not registered.
- Securing work visas and temporary work visas for project engineers.
- Customs and product clearance: Challenging situations do arise and there seemingly is always some person with his or her own agenda. Know the process and what to do. Involve experts if necessary.
- Product packaging for bulk shipments: Limiting size and weight while ensuring protection during transit.
- Managing challenging payment methods.
- Logistics and shipment: Navigating the complexity and cost of logistics.
- Warranty support for hardware and software.
- Product alteration for specific markets: Even though most certification entities base their certification requirement on an international standard, there is always some aspect that needs redesigning and resubmitting for certification. This creates a bigger product library, more spares and documentation.
- Cashflow as some initiatives take years to realise.
- Responsibility and procedure changes: Adjusting sales, administration, projects, manufacturing, and support departments to handle both local and international business drives. Time zones and additional work put a strain on all departments.
- Knowing the destination of your product assists in not supplying to a sanctioned country.
- International taxes and duties can be initiative killers. Know this first. Map the money flow.
- Expenses: It takes numerous annual trips to educate the distribution partner on product enhancements and applications as well as to have some interaction with their clients. Plan trips with goals and milestones.
- Understand local infrastructure: Knowing how things work in the local territory, or 'knowing the lay of the land'.

All in all, it takes years to align your business from a first visit to some measure of success.

International successes

To date, Ronin has achieved notable international success, thanks to various sales and industry approaches. We are privileged to have several OEM project houses incorporating some of our product variants in their turnkey project offerings. These companies include AGCO, Cimbria, CESCO, Bühler, SiloMaster, Alvan Blanch, and Perry Engineering. These greenfield projects take a few years to convert into sales.

Distribution is also facilitated through strategic alliances with system integration and business solution architects, particularly in the mining and industrial application side of Ronin's propriety product basket. The dynamics of product acceptance and implementation in the mining industry is more complex and solution architects play a pivotal role in facilitating the sales process – sales to a copper mine in Chile comes to mind.

Large international clients often request 'key account' status, planning their solution uptake according to their timelines and site designations. As with a distribution partner, product knowledge is provided to the in-house division responsible for implementing the solution. Seaboard Overseas and Trading Group, operational in 26 countries, is one such client.

Distribution target market

We define suitable distribution partners as businesses with the same acumen as Ronin, successfully operating in their markets with quality products and services. These partners are valuable industry role-players, already successful without Ronin but recognising the potential of our products and willing to adapt their business to include a completely new product basket. Almacenadora Sudamericana in Argentina exemplifies such a partner, not only as a distributor but also as part of the broader Ronin Latin America initiative. Ronin LA is currently developing the South American market in Argentina, Chile, Peru, Brazil, Uruguay, and Mexico. Ronin has also secured distribution sales through partners in India, Italy, the United Kingdom (UK), Saudi Arabia, Peru, Cuba, Ukraine, and Russia.

> "When trying to replicate a local market vision through a distribution partner and their client network, you quickly realise these two worlds operate at different speeds."

With a strong focus on the United States (US), UK and Australian markets, Ronin is evaluating business registration in the US and UK. Given the vast territory of the US, our approach includes direct sales and distribution partnerships to create new key accounts and present our system solutions to solution architects. After a 24-month process of shows and client visits, Ronin secured its first orders for the US in August this year.

We learn new lessons every day. Our goal is to achieve success and make South Africa proud by taking our love for grain and bulk commodities to the world, sowing a part of ourselves in these markets.

For more information, send an email to Ferdinand Meyer at ferdi@thisisronin.com or visit *www.thisisronin.com.*

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CONTENTS

EDITORIAL COMMITTEE

Editor
Wessel Lemmer
071 354 2948
wessel@agbizgrain.co.za

Agbiz Grain Steering Committee
012 807 3002
annelien@agbizgrain.co.za

Publisher
Plaas Media (Pty) Ltd
217 Clifton Ave, Lyttelton, Centurion
Private Bag X2010, Lyttelton, 0140
Tel: 012 664 4793
www.plaasmedia.com

Chief executive officer
Lynette Louw
084 580 5120
lynette@plaasmedia.co.za

Deputy editor
Jayne du Plooy
jayne@plaasmedia.co.za

Subeditor
Nanette Botha
nanette@plaasmedia.co.za

Layout & design
Inge Gieros
inge@plaasmedia.co.za

Sales manager & accounts
Marné Anderson
072 639 1805
marne@plaasmedia.co.za

Advertisement sales
Karin Changuion-Duffy
082 376 6396
karin@plaasmedia.co.za

Susan Steyn
082 657 1262
susan@plaasmedia.co.za

Luan van der Schyff
081 524 8559
luan@plaasmedia.co.za

Subscriptions
Beauty Mthombeni
064 890 6941
beauty@plaasmedia.co.za

Published on behalf of
Agbiz Grain
012 807 3002
1st floor, Grain Building,
477 Witherite Road,
The Willows, Pretoria
Email: annelien@agbizgrain.co.za
www.agbizgrain.co.za

AGBIZ GRAIN GAZETTE

Agbiz Grain members to meet at SHEQ seminar

The Agbiz Grain SHEQ Working Group will meet on 7 November to discuss three critical aspects:

- *The Agbiz Grain SHEQ Compliance Audit*: This audit document will be drafted by a drafting committee from the sector with the help of external parties who will be part of the audit process.
- *Alcohol and substance abuse in the workplace (particularly the use of cannabis)*: Employers have been forced to review their policies and procedures as employees may exercise their right to use cannabis before and after work.
- *Injuries in the workplace (doctors not wanting to treat injury on duty [IOD], employees faking IODs for various reasons, Compensation for Occupational Injuries and Diseases Act [COIDA] claims)*: Members are experiencing reluctance on the part of some medical practitioners and institutions to treat IODs, as many of them claim that they are not paid by the Commissioner for their services.

Agbiz Grain Quarterly will report on this meeting in an upcoming issue in 2025. – *Agbiz Grain*

QCTO skills programmes: Sampling, grading and fumigation

The development of the *Sampling and Grading Skills Programme* for 2024/25 will include maize, wheat, soya beans, and sunflower seeds and for 2025/26, canola, malting barley, sorghum, and groundnuts. A total of eight skills programmes will be developed. Students will earn credits for the Quality Council for Trade and Occupations (QCTO) accredited *Grain Depot Manager and Grain Grader Qualification* developed by Agbiz Grain.

Lizelle Jacobs of Mind Alive has been appointed as the facilitator for the development of the skills programme, *Fumigation*. For more information regarding the development of the respective skills programmes, contact Lizelle at info@mindalive.co.za.
– *Agbiz Grain*

US expands grain handling safety programme

The United States (US) Department of Labour recently announced that its Occupational Safety and Health Administration (OSHA) launched a regional emphasis programme to address worker safety in the highly hazardous grain handling industry, as preventable injuries and unchecked hazards continue to be a serious concern for workers in the region. The programme in Missouri is identical to those already in place in Kansas and Nebraska.

Between 1 October 2020 and 30 September 2023, OSHA responded to three fatalities, 13 reported amputations, and 36 hospitalisations among industry workers in the three states alone. During this period, the agency completed 104 inspections, including 68 in Kansas, 28 in Nebraska, and eight in Missouri. It received 131 complaints or referrals regarding unsafe conditions in the grain handling industry.

Hazards at grain handling facilities are well documented and include dangers related to fires and explosions if combustible dust ignites, engulfment, confined spaces, falls, auger entanglements, electrical shock and electrocution, struck-by incidents, and those related to rail car operations.

The expanded five-year programme targets industry employers with grain elevators, grain storage and milling operations, and those engaged in animal feed production, farm machinery, and equipment repair or maintenance.
– *Insurance Journal*

Complaints regarding SB1 standard to be resolved by storage operators

The Johannesburg Stock Exchange (JSE) has been receiving complaints that soya beans being delivered as a SB1 standard, do not meet quality expectations. This is affecting the ability of JSE clients to access their stocks in a timely manner as they have to wait for the stock to be sifted to remove foreign matter. The JSE believes that when a storage operator issues a silo certificate, the client should receive the quality and quantity of the product stated on the JSE certificate without the need to sift the product. Sieving delays the process of getting the product to the crushers and waiting time adds costs to the processor.

The JSE advocates that storage operators should assist their JSE clients to receive the correct quality and quantity of their stock in a timely manner. In the event that a storage operator cannot find a client's stock at a particular location and has to outload at another location, it should be borne in mind that the cost of transportation is the responsibility of the storage operator. If such issues are raised with the JSE, it will refer the client to the storage operator for a resolution.
– *Agbiz Grain*

JSE: Physical deliveries amid tight stock levels

The JSE, as a licensed exchange, is obligated to ensure a fair, efficient, and transparent market in futures contracts listed and traded on its commodity derivatives market. An integral aspect of maintaining this market's integrity in physically settled commodity futures contracts is market participants' compliance with their delivery and other obligations as recorded in the *JSE Rules and Contract Specifications.*

The specifications contain extensive provisions regarding approved storage operators' obligations and responsibilities in respect of the commodities stored in terms of JSE receipts, one of which is their obligation to store and deliver the quality and quantity of commodities at the location recorded on the JSE receipt.

The JSE has been informed that the 2023/24 summer grains and oilseeds crop has had a difficult season due to dry weather, resulting in a lower harvest than the previous season. In these circumstances, and as a result of the transition from one season to the next with lower stock levels compared to the previous year, there may be concerns regarding the availability of commodities in certain regions.

Market participants are urged to manage their outloading booking slots promptly and are reminded of the 25% booking slots designated for JSE receipts on the main hedging months. Furthermore, clients are urged to utilise the *JSE Stock of Grain Report* to identify where the majority of JSE stock levels per silo are stored and to consult the *Silo Unavailability Report. – JSE Market Notice*

Latest developments concerning SHEQ audit

As the grain storage industry is unique and has unique risk and mitigation applications for those risks, the need for audit criteria focussed solely on the grain storage sector has been raised. The idea is to have an audit document that covers all the aspects that grain storage facilities should comply with. This document will be drafted by a drafting committee from the sector with the help of external parties who will be part of the audit process.

Issues that will be discussed at the Agbiz Grain SHEQ seminar on 7 November this year include: What are the advantages and disadvantages of such an audit document? Will all members of Agbiz Grain participate? Will this add value to the work SHEQ teams perform in the industry? What are some of the basics we would like to see in such an audit document? The following panel members will assist in reaching conclusions: Gerard Ramage of VKB Group, Ebbe Rabe of Price Forbes, Jaco Joubert of Overberg Agri, and Japie Greyling of AFGRI. – *Agbiz Grain*

Viridis appointed in SAWCIA open tender process

The South African Winter Cereal Industry Agency (SAWCIA) has appointed Viridis as the administrator and to communicate with collection agents concerning the collection of statutory levies for wheat, barley, and oats. This follows an open tender process during September this year. Be sure to read the full article elsewhere in this publication. For more information, Agbiz Grain members and all other collection agents are welcome to contact Gert Kok of Viridis at admin@viridisafc.co.za. – *Agbiz Grain*

GrainCorp fined for fumigation mishap

GrainCorp Operations Ltd has been fined AU$15,000 by the New South Wales (NSW) Environment Protection Authority (EPA) after an alleged system error led to a phosphine gas emission at the company's Port Kembla grain terminal in New South Wales, Australia earlier this year. Phosphine gas is used by grain companies to control pests during fumigation processes.

The NSW EPA said the error occurred after an operator at the grain terminal connected the wrong gas sample line to the grain fumigation monitoring equipment. As a result, both of the terminal's monitoring and control systems failed, which allowed the emission of the phosphine gas at levels above the licensed limit.

A GrainCorp investigation found no environmental or public health risks, but the company said it is implementing corrective actions and additional engineering controls to prevent future incidents. NSW EPA is the primary environmental regulator for New South Wales. The agency partners with business, government, and the community to reduce pollution and waste, protect human health, and prevent degradation of the environment. – *World-Grain.com*

Olam looking to expand in Africa

After recently announcing plans to construct a new pasta production facility and expand its wheat flour production capacity in Ghana, Olam Agri said it is looking at further expansion in Mozambique and other Southern Africa Development Community (SADC) countries.

Consumption of wheat-based products in Mozambique has increased significantly over the past two decades, almost tripling since the early 2000s, with annual wheat consumption reaching 700 000 tonnes. The country is a gateway to SADC countries as it shares a border with Tanzania, Malawi, Zambia, Zimbabwe, South Africa, and Eswatini.

Olam Agri, which has operated in Mozambique for the past 25 years, has a strong presence across all 11 provinces with operations in Maputo, Beira and Nacala, where the main ports are situated. The company is a leading distributor of edible oils and rice, and is aligned with national efforts to improve food security. An expansion into wheat milling and pasta production will add value to local processing capabilities, the Singapore-based company said. – *World-Grain.com*

Effect of storage problems on commercial equine feed: Austria

In a recent study, researchers at the Austrian University of Veterinary Medicine evaluated the effects of storage on maize, oats, and barley, which are some of the main cereal grains in equine feeds. The researchers examined commercial cereals manufactured by different local companies and bagged for sale including native oat, barley, and maize as well as flaked oats, flaked barley, and flaked maize.

Some interesting results from the 36 samples include:

- Impurities were found in 28 samples, including rye, wheat, wild oats, chaff, husk, sand, earth, and manure.
- Oats had higher impurities than barley or maize.
- Unopened samples had higher impurities than the opened samples stored for 42 days.
- All barley samples had pest components, such as moth larvae, meal mites, and booklice.
- Control samples contained flawed grains and pests, with maize having the fewest impurities.
- All samples had concentrates of secondary metabolites of fungi.
- Fumonisin was only found in maize.
- Barley had the most concentrations of pesticides, including piperonylbutoxide, but at low levels.
- All samples retained dry matter content above 88%, with levels below 85% considered unacceptable. – *Equine Management*

Agco focusses on precision agriculture

The Agco Group, which owns tractor brands including Fendt, Massey Ferguson, and Valtra, is selling its grain storage and processing division, Grain and Protein, for US$700 million (equivalent to €648 million) to investment firm American Industrial Partners. The deal involves five brands: GSI, Automated Production, Cumberland, Cimbria, and Tecno. Under these brand names, Agco manufactures grain silos, dryers, and conveyors. However, Agco will retain the Chinese operations of Grain and Protein.

According to Agco, divesting this division allows the manufacturer to focus on the production and development of agricultural machinery and precision agriculture technologies. Agco plans to use the proceeds from the sale for predetermined priorities, including paying off debts, investing in technology, business growth, and paying shareholders. – *Future Farming*

Improved grain storage mitigates food crisis

Building resilience requires action across the food production chain, and Egypt's government has taken a multi-pronged approach. One of the foundational elements of this strategy is to improve and expand the capacity of grain storage.

The World Bank's Emergency Food Security and Resilience Support Project is part of these efforts to expand and renovate Egypt's food silos. The Assiut food silo in the Upper Egypt governorate is one of the first to be expanded under the project, which involves rehabilitating and expanding seven silos and building two new ones. At the Assiut silo, storage will be expanded from the current level of 60 000 to 100 000 tonnes of grain annually. – *World Bank*

Manildra wheat starch silos collapse

The Manildra Group is developing a recovery plan and safety assessment after the collapse of two silos spilt thousands of tonnes of wheat at its starches factory at Bomaderry on the New South Wales coast, releasing grain into the Shoalhaven River on 17 October, *ABC News* reported.

The flour mill has been shut down, but two-thirds of the plant are still operating. Each of the collapsed silos held around 1 000 tonnes of grain. The site has four silos, and a third silo containing 500 tonnes of grain was also badly damaged.

The silos are situated on the edge of the river, and the collapse impacted a hydrant, with the resulting water flow carrying wheat into the river, according to authorities. It is unknown what caused the silos to collapse or how much wheat entered the river. – *World Grain*

Ukraine's grain exports up from last year

Ukraine's grain exports for the 2024/25 July to June season totalled 13 million metric tonnes as of 21 October, up from approximately 8,3 million tonnes on 23 October 2023, according to data from the agriculture ministry. The volume included 7,2 million tonnes of wheat, 3,8 million tonnes of maize, and 1,7 million tonnes of barley.

Ukraine's government and farm associations have agreed to limit wheat exports in the 2024/25 season to 16,2 million tonnes to ensure sufficient supplies for the local population. Traders have utilised almost 44,5% of the agreed wheat export quota so far, with no restrictions on exports of other commodities.

The ministry reported that traders had exported around 2,6 million tonnes of grain in October compared to 1,6 million tonnes over the same period last year. The combined grain and oilseed crop for this year is expected to fall to 77 million tonnes, including approximately 54 million tonnes of grain, the ministry said. Ukraine's grain exports in the 2023/24 marketing season increased to roughly 51 million tonnes from 49,2 million tonnes the previous year. – *XM*

Focus on China and Middle East agri trade

By Wandile Sihlobo, chief economist, Agbiz

With South African president Cyril Ramaphosa's state visit to China concluded, the next stop should be the Middle East. But before transitioning to the Middle East, let's briefly examine China's agricultural trade.

Trade data provides South Africa with some signposts of what to do next: aggressively drive exports to the Chinese market. This market, with over US$200 billion in annual agricultural imports, currently regards South Africa as a small player, holding just 0,4% of the market share. From now on, the focus should remain on nudging China to lower import tariffs on various agricultural products and addressing the phytosanitary barriers for some products. This effort will build on the success of the existing export market possibilities for South African beef, avocados, and wool, among others.

As technical experts from various departments work on implementing the agreements from the recent state visit, the political leadership of the Department of Agriculture, Department of Trade, Industry and Competition, and the Department of International Relations and Cooperation, should also refresh their focus on the Middle East. At the start of the year we highlighted the need for a comprehensive agricultural trade and investment strategy for the Middle East. We believe there remains merit in the idea, and it should be a priority for the government of the national unity.

Worthwhile investments

There is a strong investment case to be made for the eastern regions of South Africa and the former homelands, which could benefit from Middle Eastern and Chinese capital. These areas are typically on the periphery of agricultural progress because of poor land governance and weak infrastructure, isolating them from the formal value chains of the food, fibre, and beverage sectors.

In some areas, the transaction costs of moving agricultural produce to consumption points become too high because of the lack of roads, rail, and storage facilities. In the regions that are historically part of the commercial farming sector, the deteriorating network infrastructure is also increasingly becoming a significant cost driver for businesses. These include roads, rail, water, dams, storage facilities, and on-farm infrastructure.

Beyond China, it is worthwhile assessing whether the Middle Eastern countries are better positioned to form commercially viable business ventures that address the said challenges. Some investments could involve partnerships with South African agribusinesses and farming enterprises that aim to expand their operations and require capital for such activities. The significant funds in these Middle Eastern countries often involve some level of government participation.

The South African government, particularly the Department of Trade, Industry and Competition, in collaboration with the Department of Agriculture, should develop a 'South Africa-Middle-East Agricultural Trade and Investment Strategy'. This would require active political leadership to support South African businesses willing to partner with them.

Crucially, South Africa will need to act swiftly to simplify its investment regime and create a more predictable environment for foreign investment, which it sorely needs. The University of Columbia's Prof Karl Sauvant recently made a compelling case for South Africa to work on strategies to improve its investment climate.

Eastern Cape possibilities

The Eastern Cape province remains one of the regions that could expand both horticultural and grain production. For some time now, Grain SA and the Bureau for Food and Agricultural Policy have argued that the Eastern Cape could compensate for the agricultural land lost due to the mining industry in areas such as Mpumalanga.

However, for the grain industry to thrive in the Eastern Cape, investment in handling and storage infrastructure is essential. This is where investment from China and the Middle East could play a crucial role, contributing to the production of grain exports to these regions. The maize and soya bean industries already export sizable volumes to the Far East, which can only be increased through an expansion in production volume. Therefore, when discussing potential expansion in investment and trade, we mainly include the grain and storage industry. These industries are also at the heart of the livestock feed industry.

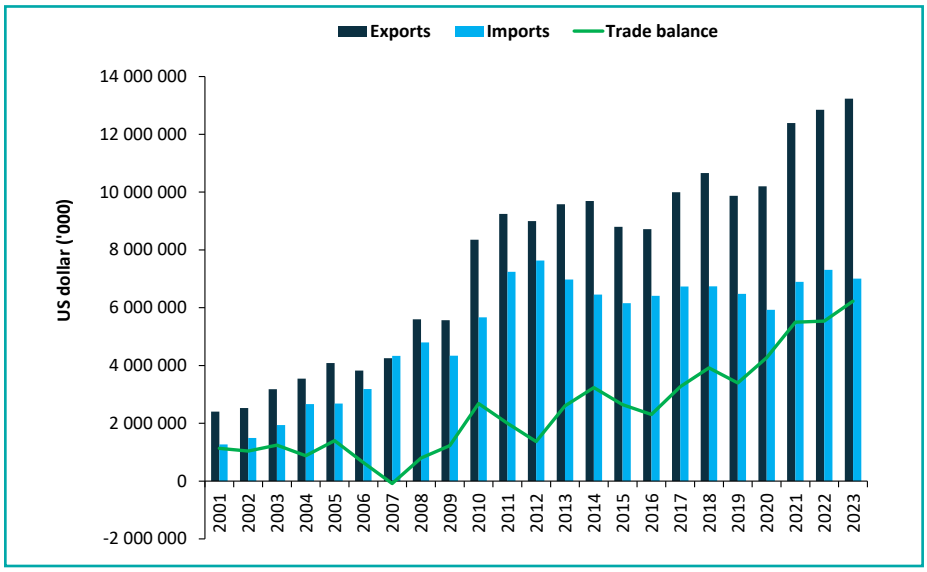
Agricultural trade prospects

The Middle East region is increasingly important in the South African agricultural trade, alongside China. In 2023, Asia and the Middle East accounted for 28% of South Africa's agricultural exports, with total exports valued at US$13,2 billion, making it the second largest region for these exports.

However, when focussing on the key Middle Eastern economies, South Africa plays a peripheral role in agricultural markets. For example, according to Trade Map data, Saudi Arabia imported US$29,5 billion worth of agricultural products in 2022. South Africa was one of the most minor exporters, accounting for a mere 1% of the Saudi Arabian imports and ranking 31st on the agricultural imports list.

Moreover, the UAE is a large agricultural market, importing US$23,3 billion of agricultural products in 2022. South Africa had a 2% share and was the 16th largest supplier. Qatar imported US$3,9 billion of agricultural products in 2022; South Africa ranked tenth with a 2% market share.

Figure 1: South Africa's agricultural trade. (Source: Trade Map and Agbiz research)



Countries with a larger market share in these Middle Eastern countries were India, Brazil, Australia, the United States, Canada, New Zealand, United Kingdom, Denmark, Netherlands, Italy, Spain, Argentina, Russia, France, and Turkey.

Regarding products, the Middle East primarily imports various meat products, grains, oilseeds and fruits, among others. Given that South Africa has some of these products in surplus, the country could benefit by increasing its market share if there is targeted promotion and marketing of products, along with government support, to nudge the Middle Eastern countries to address any remaining phytosanitary barriers for the South African products in these countries.

Key actions on the path forward

- The Department of Trade, Industry and Competition, together with the Department of Agriculture, should formulate a South Africa/Middle East agricultural trade and investment strategy. This strategy would help rank the priority list of products for investments and identify any barriers that should be addressed within the government's official channel (timelines ought to be included). The document would also outline possible investment paths aligned with industries highlighted in the *Agriculture and Agro-Processing Master Plan*. A similar document is vital for China.
- The Department of Agriculture should appoint capable attachés in the Middle East to facilite communication and lobby for South African agricultural products. These officials would also help maintain constant communication with South African farming enterprises interested in the Middle East.
- The Department of Trade, Industry and Competition, and the Department of International Relations and Cooperation should actively promote South African agriculture and agro-processing as a preferred investment. There should be constant communication with the private sector and organised agriculture groupings to source insights and facilitate relationships for the good of 'South Africa Inc'.
- Importantly, these efforts should take place while South African government officials and businesses maintain a strong relationship with existing trading partners in Europe, the Americas, Africa, Asia, and other regions of the world. China and the Middle East should be an additional focus, and should not replace existing commercial interests.

For more information, email Wandile Sihlobo at wandile@agbiz.co.za or visit *www.agbiz.co.za*.

Source: AFGRI.

Future-proofing food security

By Wessel Lemmer, general manager, Agbiz Grain

According to an article by Wolfram Schlenker, a professor at Columbia University, and David Lobell of Stanford University, published in *Environmental Research Letters*, climate change could cause medium-term production declines in sub-Saharan Africa. The implications for this region, where agriculture accounts for 40% of the gross domestic product (GDP) in some countries, could be severe. Furthermore, agriculture is responsible for 80% of employment in some of these countries, making most of the population directly or indirectly dependent on agriculture for their survival.

South Africa makes a significant contribution to food security in sub-Saharan Africa through exports. Our country takes the lead in respect of production of grain and oilseeds. From May 2001 to August 2024, South Africa imported only ten million tonnes of maize, compared to total exports of maize and maize products of 47,6 million tonnes over the same period. Of this, a total of 3,4 million tonnes were exported to African countries. Thus, South Africa is increasingly taking the lead in promoting food security in sub-Saharan African countries.

Grain and oilseeds market

The production of maize surpluses available for export has surged dramatically over the past decade, with exports growing by an astronomical 24,4% per year. On the other hand, the domestic consumption of maize, both as a staple food and animal feed, has stagnated at 1,5% per year. This rate mirrors the population growth over the same period, which also increased by 1,5% per annum. In other words, the growth in domestic maize consumption correlates with the average population growth.

The past ten years South Africa has exported five times more maize than it had to import. Remarkably, we only imported more maize than we exported in four out of 23 marketing years since 2001 (2006/07, 2007/08, 2015/16, 2016/17). This is a phenomenal achievement.

In the last 30 years, South Africa exported more maize than it imported in a period of only five years. Consequently, we are largely self-sufficient and increasingly a net exporter despite the risks posed by climate change. With average long-term rainfall of 480mm per year (global average rainfall is double that at 980mm per year) we produce enough food to meet local consumption at export price levels.

Growth in the domestic market

We must develop strategies to stimulate our domestic market for staple foods such as maize and maize meal. An annual growth rate of 1,5% in domestic consumption is not sufficient. We must prevent government from interfering in our free grain market, especially in years of shortage when we import more maize than we export. South Africa imported maize in only two of the last ten years.

One way we can potentially stimulate domestic demand for maize and maize products, as well as address access to staple foods in years in which there is a shortage, is the implementation of a 'food stamp' programme.

The 'food stamp' programme

The United States (US) has a programme providing nutritional benefits to low-income individuals and families. The programme was launched in 1933 during the Great Depression, a time when maize prices plummeted sharply and producers across the US were unable to sell their surplus supplies. (In South Africa, white maize and white maize products would typically qualify for such a programme.)

President Johnson published the *Federal Food Stamp Act, 1964 (PL 88-525)* in 1964. The objectives of the *Act* were to stimulate domestic demand for surplus commodities and to improve the nutritional levels of low-income groups. By 2011, the Supplemental Nutrition and Assistance or SNAP programme supported 45 million Americans via

Table 1: Maize supply and demand growth in the local market.

	2013	2022	% per year
Population growth	52 982 000	62 028 000	1,5%
	Three-year average 1 May to 30 April 2014/15 to 2016/17	**Marketing year 1 May to 30 April 2023/24**	**% per year**
Local consumption	10 004 741 tonnes	11 753 244 tonnes	1,5%
Producer delivery	10 363 855 tonnes	16 222 935 tonnes	5,2%
Exports	1 353 946 tonnes	4 031 043 tonnes	24,4%
Imports	1 421 868 tonnes	32 844 tonnes	-16,4%

food assistance, accounting for 14% of the total US population.

Through the food stamp programme low-income consumers can purchase food at participating stores. These food stores are licensed and monitored by the government. Consumers qualifying for the programme receive a card, while authorised retailers are issued with electronic card devices, which they pay for. Retailers can also supply vouchers to eligible consumers. Participants in the programme can only sell staple foods that make up the majority of consumers' diet and are used at home to prepare meals.

A study in Mexico found that the government should provide cash in the form of food stamps, rather than food itself, to qualifying consumers. These food stamps can be used exclusively to purchase food. According to the study, consumers receiving cash assistance make better choices and utilise the cash more cost-effectively than the government can. It is far more costly for the government to manage the logistics of food and reserve stocks than to simply issue cash. The logistical administrative costs of handling food and commodities result in less food being distributed. Additionally, the losses associated with government intervention in the free grain market can cause significant damage and overwhelming economic losses.

A final thought

To ensure the uninterrupted production of surplus maize for exports without government interference for decades to come, we may want to give serious consideration to implementing a food stamp programme. This would enhance the food security and nutritional levels of our low-income population and improve the domestic market for maize. In South Africa, 25% of the population is not sufficiently food secure.

The next decade presents a unique opportunity, given the anticipated role of our platinum-based exports in the South African economy and increased government revenue.

Send an email to Wessel Lemmer at wessel@agbizgrain.co.za for more information or sources.

INTRODUCING

LIVIN

SOYBEAN - LIQUID SBP1

A liquid *Rhizobium* bacterial inoculant for enhanced nitrogen fixation in Soybeans

THE UNIQUE FORMULATION OF LIVIN-SBP1 OFFERS:

- A high concentration of *Bradyrhizobium japonicum* WB74 (2 x 10^9 CFU/g)
- Protective layer allows seeds to be treated up to 2 days before planting
- Natural sticking properties
- Superior plant health and yield
- Compatible with standard seed treatment equipment

LIVIN SBP1 at work

LIVIN SBP1 has been put to the test during many field trials, across various bioclimatic zones. While the number of nodules is important, the colour inside of the nodule is also of significance. **Nodules that are cut open and are red, pink, or orange inside are actively fixing N and are beneficial to the plant as shown here for Soybeans treated with SBP1. LIVIN SBP 1** outperformed the industry standard and untreated control on all parameters tested:

29 %	40	8 %
YIELD	**NODULE COUNT**	**NODULE SIZE**
increase compared to untreated control.	extra per plant, when planting 2 days after treatment.	increase compared to industry standard.

ALWAYS READ LABEL BEFORE USE / NOT CLASSIFIED IN TERMS OF GHS / HAZARD STATEMENT: None. / **ACTIVE INGREDIENT:** *Bradyrhizobium japonicum* 2.0 x 10^9 cfu/ml / Reg. No. L11643, Act 36 of 1947. **REGISTRATION HOLDER:** In Line Trading 112 (Pty) Ltd. (Co. Reg. No. 2003/008663/07) Cedar Lake Industrial Estate, C/O M57 & Porcelain Roads, Olifantsfontein, 1666, Gauteng, RSA

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0372 ENG FP

Livin SBP1: A strategic investment for soya bean growers

The demand for sustainable and high-yielding crops such as soya beans is paramount in today's rapidly evolving agricultural landscape. To meet the growing demand while addressing environmental concerns, innovative agricultural practices and inputs are essential.

Livin SBP1 is a new Nutrico seed treatment solutions product offering a reliable and effective solution for soya bean growers seeking to optimise yields, reduce costs, and promote sustainable farming practices. By incorporating this innovative inoculant into their production systems, producers can enhance the profitability and resilience of their soya bean operations.

Key features of Livin SBP1

Livin SBP1 carries a high concentration (2×10^9 cfu/g) of the beneficial soil bacterium *Bradyrhizobium japonicum*, which forms a symbiotic relationship with soya bean roots. By facilitating nitrogen (N) fixation, this inoculant reduces the need for excessive N fertiliser applications, leading to cost savings and environmental benefits.

When the legumes utilise fixed N, they form green leaves (rich in chlorophyll). This improves the plant's photosynthetic capability making the plant grow faster and healthier, directly affecting the potential yield. Healthy soya beans are also in a better position to withstand environmental stresses, such as drought and nutrient deficiencies.

The efficacy of bacterial inoculants can be affected by certain environmental conditions such as temperature, radiation, pH, presence of the nutrients phosphorus, sulphur, molybdenum, cobalt, iron, as well as water availability.

The advanced formulation of Livin SBP1 features the high-performing *B. japonicum* strain WB74, known for its adaptability to diverse African soil conditions, and includes a protective layer which not only boasts natural sticking properties but allows seeds to be treated up to two days before planting. The liquid format promotes rapid and efficient colonisation of soya bean roots and is compatible with standard seed treatment equipment, maximising its convenience and effectiveness.

Independent trials

Independent trials are crucial to ensure the effectiveness of any agricultural input. These trials evaluate product performance under various field conditions, providing valuable insights for producers. By analysing key parameters such as yield increases, N fixation rates, nodule number and overall crop health, producers can make informed decisions regarding the use of soya inoculants. While the number of nodules is important, the colour inside of the nodule is also of significance. Nodules that are red, pink, or orange inside are actively fixing N and are beneficial to the plant.

Livin SBP1 has been put to the test during many independent field trials, across various bioclimatic zones. To show the efficacy of SBP1 when applied as indicated on the product label, the average number of nodules per plant, the soya bean yield, and the average nodule size of Livin SBP1 were compared to an untreated control and various registered standards (competitor products).

Livin SBP1 outperformed the industry standard and untreated control on all parameters tested (*Figures 1* and *2*) for trials carried out in South Africa and Zimbabwe. For the trials in South Africa, an average yield increase at plant maturity of 29% was seen compared to untreated control, and the average yield increase compared to the *B. japonicum* standard in Zimbabwe was measured at 26%.

It is also important to note that up to 40 additional nodules per plant were determined, even when planting two days after treatment, as well as an 8% increase in nodule size compared to the industry standard.

Figure 1: Effect of different inoculants on soya bean average grain yield at crop maturity (kg/ha) in South Africa.

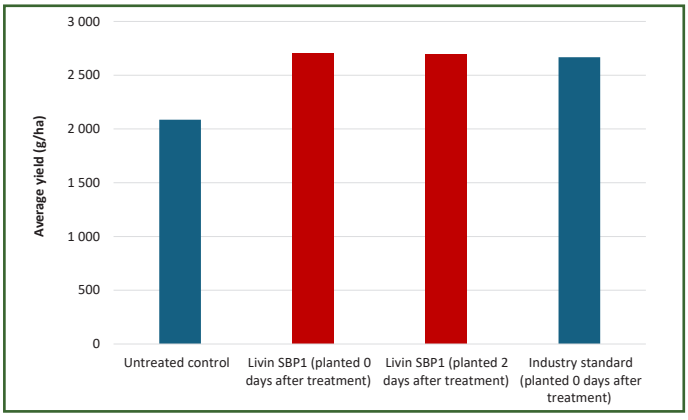
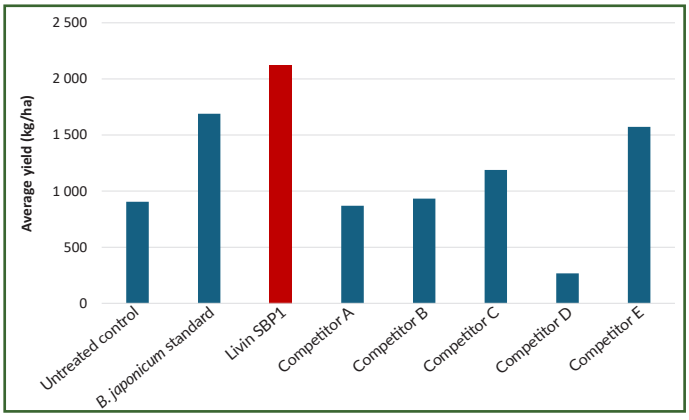


Figure 2: Effect of different inoculants on soya bean average grain yield at crop maturity (kg/ha) in Zimbabwe.



For more information on Livin SBP1, visit *www.nutrico.co.za* or phone 011 392 4072 or 021 807 5922.

Laws and regulations in the agricultural sector

By Koos du Pisanie, Plaas Media

Source: www.freepik.co.za.

Agriculture is constantly evolving, whether in respect of products, working conditions, or marketing strategies. As technology, market dynamics, and consumer needs and preferences change, those involved in agriculture must adapt to meet market demands and operate sustainably.

In this context, the regulatory environment is essential because it provides a framework for promoting fairness, sustainability, and innovation, ensuring agricultural practices align with industry standards, protect resources, and maintain competitiveness in a rapidly evolving market. Over the years, laws and associated regulations have been introduced in the agricultural sector to regulate product quality, ensure food safety, and protect consumers and other value chain participants.

Being heavily involved in exports, the grain industry must take into consideration the directives of overseas markets and the needs of their clients, requiring all stakeholders to adapt accordingly.

Legislation protects all parties

Prof André Jooste of the Department of Agricultural Economics at Stellenbosch University emphasises that legislation is a complex environment for producers, other value chain role-players, and the consumer. Legislation not only protects all participants in the food system, but also establishes a regulatory environment in which they must function.

Government policies and legislation include international guiding principles and conventions, such as the *Sustainable Development Goals*, the *Paris Agreement* on climate change, and the *African Agenda 2063*, ensuring that global requirements are integrated into the South African context. These policies align with local economic development frameworks such as the *National Development Plan 2030* (NDP) and the more recent *Agriculture and Agro-Processing Master Plan* (AAMP).

In some instances, government is required to mandate citizens to engage and comply with specific legislation. For example, with the recently signed *Climate Change Act, 2024 (Act 22 of 2024)* various government departments and stakeholders must now develop regulations in accordance with the law, ensuring that all parties in the sector are aligned and working towards the same goals.

However, Prof Jooste mentions that the process of drafting new legislation or new regulations is inclusive, allowing anyone to participate and contribute, not just politicians. This is why everyone in the agricultural value chain needs to engage in legislative processes impacting the sector.

Consider the local context

Wessel Lemmer, general manager of Agbiz Grain, says unfortunately individuals in the private sector, who possess a great deal of industry expertise, are often unaware that they can contribute to the practical implementation of laws and regulations to ensure their feasibility. “Agbiz Grain regularly seeks input from its members, such as the employees of agricultural companies. People do not realise what an important role they can play in their own future workplace and business environment.”

Legislation resulting from overseas policies, which may be applicable to the South African agricultural environment, cannot be implemented locally without considering South Africa’s unique

production and market environment. "We can't simply accept everything without considering the South African context. The agricultural environment here differs significantly from that of developed countries such as Europe and the United States (US) where producers benefit from government subsidies.

"South Africa is not Europe or Australia. For example, traceability legislation in the grain sector works well in France, where European Union (EU) consumers require it. There, co-operatives are tasked with selling the producer's products – the producer retains ownership until the product is sold. However, in South Africa, where grain is blended and storage operators manage grain for multiple owners, traceability systems are more complex to implement.

He explains that the Johannesburg Stock Exchange supports price discovery and risk management in South African agriculture, making it impractical to apply EU regulations to local commodities. Overseas policies and their value require careful interpretation and adaptation to fit the local context. Individuals with in-depth industry knowledge are invaluable in this regard. Risk arises when people unfamiliar with the agricultural sector provide feedback on draft legislation, potentially leading to laws being implemented without sufficient input from experts within our agricultural circles.

Co-operation and consensus

According to Lemmer, there is sometimes a lack of consensus in the grain industry due to role-players not working towards the same goal, leading to unnecessary and preventable costs. These costs can be avoided if existing legislation is interpreted correctly.

The grain industry, he says, is unique and input regarding policy formation, determination of legislation, and amendments to regulations cannot be left solely in the hands of those who do not have a direct interest in the agricultural environment. Food and fibre production is expensive and often comes with great risk. Mistakes are therefore costly and must be avoided. This is where industry experts must take the lead, ensuring that legislation and regulations protect all stakeholders in the value chain, and uniform outcomes for everyone involved. Insufficient legislation requires collaborative input to guide policy and thus make the law relevant.

Legislation: A slow process

Politicians, government departments, and the private sector can all start policy discussions and contribute to the development of legislation. Prof Jooste explains that drafting laws is a complex and time-consuming process in which public and private sectors, including non-governmental organisations and lobby groups, can actively participate.

He refers to the promulgation of *Act 22* in June, pointing out that it resulted from South Africa's obligations under the *Paris Agreement*. *Act 22*, signed into law by president Cyril Ramaphosa in July this year, forms part of the country's efforts to align national climate policies with global commitments, such as those outlined in the *Paris Agreement*. This law sets a framework for the country to address climate change through mitigation and adaptation measures, aiming to reduce greenhouse gas emissions and build climate resilience.

First, a policy framework is established to lay the foundation for the legislation. This framework is then reviewed through consultations with key stakeholders, including politicians, government departments and the private sector, ensuring broad input and consensus. Once finalised the framework is transformed into a bill and enters the parliamentary process. It is first considered by the National Assembly, followed by the National Council of Provinces, both operating within a consultative structure. Upon approval from both bodies, the bill is sent to the president for final signature, and once signed, it officially becomes law.

Once a bill is signed into law, the next step involves developing regulations to align with the law's objectives. For example, in the case of *Act 22*, this includes creating sectoral emission targets, which are crucial for guiding emissions reductions within various sectors. Active industry participation in this process is essential; otherwise, these targets might be developed on their behalf without considering the unique characteristics and needs of different sectors and subsectors. Each industry has distinct attributes, and a lack of input could result in misaligned or impractical regulations.

Everyone should get involved

Prof Jooste says *Act 22* is just one example of many, and that every law signed into effect is not simply rushed through the system, but is instead meticulously scrutinised. Both the public (including civil servants) and private sectors are given ample time to provide feedback, ensuring legislation reflects a wide range of perspectives. However, in recent years, and even currently, some bills have been signed into law without full consensus among stakeholders. Fortunately, South Africa's democratic system allows for these legislative processes and laws to be challenged through the legal system. It is vital for all stakeholders to actively participate in the legislative process to ensure laws are comprehensive and inclusive.

Moreover, he also believes that industry structures play a pivotal role in fostering collaboration between the public and private sectors, a necessity for achieving the goals of the NDP and AAMP. These structures provide critical expertise, facilitate knowledge sharing, and help ensure policies and regulations are aligned with industry realities. Their active participation is essential in creating a regulatory environment that promotes growth, innovation, and sustainability.

Without the collective input and co-ordinated efforts facilitated by industry structures, it would be nearly impossible for any individual stakeholder to successfully meet the ambitious targets of lifting people out of poverty, ensuring household food security, and driving inclusive economic growth. The complexity and scale of these challenges require a united approach, where no single entity – whether in government or the private sector – can succeed alone. The involvement of industry structures ensures that all voices are heard and that the solutions developed are comprehensive, practical, and to the benefit of all South Africa's citizens.

For more information, contact Prof Andre Jooste on 083 307 3703.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Revolutionising farming with agritech

By Susan Marais, Plaas Media

Nico Groenewald, former head of Agribusiness at Standard Bank, conveyed a strong message at the TLU SA congress in September this year: "Don't let poor technological decisions impede financial decisions." With over 30 years' experience in agricultural financing, Groenewald has witnessed the rise and fall of several primary agricultural businesses based on their decisions pertaining to technology.

Since humanity transitioned from hunter-gatherer societies to formalised agriculture, four agricultural revolutions have propelled the world forward. The first was the Neolithic Revolution around 12 000 years ago when the first human settlements figured out how to cultivate crops. The second was in the eighteenth century, introducing machinery to aid in planting and harvesting.

"The Green Revolution followed during the 1960s, marked by the introduction of synthetic fertiliser, genetic improvements, and a rise in agrochemicals." The Digital Revolution began in the 1980s, bringing with it advancements such as the Internet and artificial intelligence. As this revolution continues, some believe that regenerative agriculture will be the next big agricultural revolution. "Opinion leaders regard technological advancements as the answer to agriculture's challenges."

Waste not, want not

Groenewald stated that while the saying "success breeds success" holds true, agriculture's success story has also created new challenges. "The application of technology has led directly to a significant global population explosion."

When agriculture started thousands of years ago, there were only 4,5 million people on the planet. This number has accelerated significantly over the past 200 years. In 2024 the United Nations (UN) estimated that there were 8,2 billion people on Earth, and this figure could jump to 9,7 billion by 2050.

This increase in production and population has led to a corresponding rise in greenhouse gas emissions (GHGs). Groenewald noted that food production contributes around 23% of these GHGs, encompassing the entire value chain from farm to fork.

"In addition, some literature argues that agriculture uses up to 90% of the world's fresh water." With this in mind, addressing food waste, which comes at a significant environmental cost, is crucial. The World Wildlife Fund or WWF, in collaboration with multinational food giant, Tesco, has released a report titled *Driven to waste: Global food loss on farms*, revealing that globally an estimated 2,5 billion tonnes of food go uneaten every year. "This comes to 40% of all food grown! Tackling this problem alone would be an improvement towards lowering GHG emissions," Groenewald pointed out.

To put this into perspective, he referred to the fact that while South Africa's current crop estimate for the 2024/25 maize season stands at just over 17 million tonnes for white and yellow maize, China's annual maize wastage stood at 35 million tonnes per year.
This is where technology could play a major role in improving humans' wastage patterns. To find innovative technological solutions, active engagement from younger people is important.

Technology adoption

According to a McKinsey & Company survey on the status of agritech, North America and Europe are leading the adoption of agritech, with Asia lagging. Globally 39% of producers are either already using or planning to use at least one technology within the next two years, the most popular being farm management software.

A total of 62% of producers in Europe already use agricultural technology or plan to implement it soon. Besides farm management software, remote sensing is also very popular in this region. In North America, 61% of producers are in the process of upscaling their farm technologies, primarily with farm management software.

South America is slightly behind the Northern Hemisphere leaders with 50% technology adoption, with remote sensing being the most popular technology. Asia trails the three leading continents with only 9% adoption, with farm automation and robotics topping the list of most desired technologies.
Several reasons contribute to producers' scepticism when it comes to adopting new technologies, including:

Table 1: Current state of the Fourth Agricultural Revolution. (References: University of Johannesburg and the Organisation for Economic Co-operation and Development)

Opportunities	Challenges
• Precision agriculture could potentially increase productivity while managing input costs. • The Fourth Industrial Revolution introduces smart farming technology, bringing advanced and sustainable changes for both production and agro-processing. • There is an opportunity to work towards sustainable development goals. • It could bridge the food insecurity gap. • Enhancing agricultural efficiency and production while reducing harmful environmental effects.	• High barriers to accessing agritech solutions and technological advancements for emerging producers. • Data communication and knowledge transfer of these technological advancements to rural agriculture regions. • South Africa is still in the early phase of the Fourth Agricultural Revolution, lagging behind first-world countries. • The adoption of technology could lead to a decrease in the demand for agricultural labour, making some skills obsolete.

- High cost of technology (47% of producers cited this as one of the top three barriers to adoption).
- Low willingness to pay (half of producers are unwilling to pay anything for technology).
- Unclear return on investment or ROI (30% of producers cited this as one of their top barriers to adoption).
- High ROI expectation (a 3:1 minimum expected ROI before considering purchasing).

Connectivity is key

Groenewald emphasised that connectivity is the single most important factor to consider when implementing technology. "If we can get connectivity right, we could boost the global agricultural sector's profits by R500 billion."

This trajectory is expected to grow, given the UN's projection of the global population numbers. Significant growth will take place in Africa. "In Africa alone a 2,2% per annum growth in protein demand is expected," he noted, adding that this rise in demand will necessitate greater soil cultivation. "Water and soil management practices is set to become even more important going forward. Conventional tilling leads to around 1,5mm of topsoil eroding per year, meaning a loss of one inch of topsoil every 20 years."

Strategic and knowledgeable use of technology is critical. The reality Africa faces is that its population will continue to grow, as will the number of pests and diseases. Meanwhile, the continent's producers continue using ineffective production systems while infrastructure such as dams, roads, and railways keep on deteriorating. At the same time, climate change and food waste persist. "While the world's temperature is rising at around 0,65°C every decade, South Africa's temperature has risen at a rate of 1,5°C per decade for the past five decades," Groenewald said.

Upsides and downsides

While modern technology can significantly advance the entire agricultural value chain, Groenewald highlighted the importance of acknowledging its downsides. "Single-point-of-failure issues have caused major problems in the past." He refers to security challenges faced in the banking sector, which occur when producers consolidate data on a single system. If something goes wrong, it could lead to an entire system collapsing due its interconnectedness.

"Another obstacle in the way of technology adoption is usability," Groenewald said. "If a system isn't user-friendly, clients and workers will not want to use it."

It is also crucial to consider everything that happens on a farm, not just what is being measured. "Often we become so focussed on the measurable aspects that we neglect the unmeasured ones, which could prove costly in the long run."

Finance and technology

Given the aforementioned, what then is the primary reason for implementing technology? The answer is simple: People believe that it offers a more effective way to accomplish tasks. Technology investments should rest on two key pillars: improving efficiencies and being relevant.

"The inclusion of technology in a business only makes sense if it improves the efficiency with which the operation is being run, if it is relevant to the business, and if the timing is right." All three criteria must be met, otherwise it is a waste of money. Efficiency refers to measurable ways to reduce wastage. Relevance means the technology must provide a relevant economic benefit and meet business needs. Timing indicates that the technology needs to align with the current era.

Groenewald shared one lesson he learned the hard way when he purchased state-of-the-art security equipment for his farm, which turned out to be incompatible with 3G Internet technology. The technology itself was not bad, but it was irrelevant to his circumstances.

"To make profitable, financial sense it is important to 'sweat your assets'. You basically need to bolster the balance sheet with the right technology to ensure business growth. This is a crucial consideration."

Make smart choices

When evaluating ROI, it is important to focus on technology that increases one's own capital. "Don't invest in things that deliver the wrong ROI. Often, these investments lead to a return on ego, rather than a return on equity."

While it might be tempting to buy a beautiful piece of machinery, it needs to make financial sense. If the timing, relevance, and efficiency are right, it should improve the business's operational and financial predictability, reducing outcome variation. "If you can get this right, you are most likely on the right track." One example is the use of solar panels. The more panels are used, the cheaper they become over time.

Between 2018/19 and 2022/23, South African producers invested 19% more in agricultural machinery, indicating a reasonable investment in technology. However, the question remains whether these investments were sensible. Every business needs to honestly reflect on whether they spent their money on the right technology.

For more information, send an email to Nico Groenewald at nicog466@outlook.com.

Source: www.freepik.com.

South Africa's mineral wealth and its importance to agriculture

By Wessel Lemmer, general manager, Agbiz Grain

The long-term global growth in the production of staple foods and commodities such as maize, sorghum, wheat, soya beans, and sunflower seed is dependent on population growth. Long-term trends over several decades indicate a strong correlation between global population growth and the production of these staple foods. Ultimately, the production and consumption of staple foods cannot exceed the world's population growth rate.

However, average annual global gross domestic product (GDP) growth significantly outpaces both population growth and the increase in the production of agricultural products, including staple foods. This trend also applies to the production of energy sources and minerals.

South Africa has the potential for long-term local consumption of agricultural products outpacing population growth. For this to happen, however, the per capita income of consumers needs to improve. Growth in per capita consumer income could be boosted in the next decade by developments in the local mineral sector.

Income and population growth

The potential for growth in per capita consumer income is unfortunately limited because of South Africa's focus on exporting raw materials rather than adding value to them. As a country, we would have benefited from the growing demand for minerals if we had a comprehensive production industry for batteries and electric or hybrid cars. Due to our high unemployment rate and low per capita income, our per capita demand for energy and such technology is also low. South Africa relies on the export of minerals or value-added products.

China is an example of a country in which the per capita income of consumers of crude oil, minerals, grains and plant-based oils is much higher than in India for instance. Although these two countries share a similar population growth rate, China's local consumption of commodities such as crude oil, coal, minerals, grain and plant-based food is significantly higher. This is attributed to China's GDP growth over the last 25 years being four times greater than India's.

China's usage of metals has roughly tripled the past 25 years, while usage in advanced economies and the rest of the world has stagnated. This sharp increase was driven by innovation and technological developments that led to a surge in demand for products such as iron ore, copper, and the platinum group of metals.

National policies the world over have a significant influence on the demand for commodities. For instance, in the United Kingdom, resource security is a priority. The country focusses on enhancing GDP by adding value to raw materials, replacing exports and establishing robust trade agreements. In centrally planned economies such as those in Eastern Europe, Russia, Cuba and China, the emphasis is on self-sufficiency. The United States supports the income of its producers (*US Farm Bill*).

Norway aims to protect its producers from, for example, volatile energy prices through subsidies. The European Union (EU) is committed to phasing out harmful products that pose risks to the environment and public health. Countries such as Ireland, Belgium, and Finland are leading efforts to promote wealth equality. Countries with affluent consumers and strong income growth can better support the production of agricultural products compared to those where growth relies on population growth.

South Africa's population grows at an average of 1,5% per year, which is insufficient to support agricultural production. Therefore, the country relies on profitable exports to sell surplus products to countries and consumers with strong economic growth.

Rising demand for platinum

The demand for the platinum group of minerals is expected to increase drastically in the next ten years, driven by growth in the production of electric and hybrid vehicles. These minerals are essential for the battery systems that power these vehicles.

Although research is ongoing to find alternative minerals, none have been identified yet. South Africa is a leading producer and exporter of the platinum group of minerals. This prominent role suggests that the country's development and economic growth hold great promise. Resultingly, a sharp increase in the demand for exploration and permits is anticipated.

Despite the promising outlook, we must remain vigilant regarding the potential impact on agricultural production. This new trend poses risks for production, as producers are already concerned over the growing number of prospectors on their agricultural lands. These prospectors and subsequent mining activities can disrupt agricultural production in areas with mineral deposits.

A final thought

The global development of electric vehicles holds great promise for South Africa over the next decade, an opportunity that should be fully utilised. The economic growth stemming from the extraction of the platinum group minerals and the anticipated increase in consumer income holds the promise of growth in the domestic consumption of higher-value local agricultural products. This growth will not only be to the advantage of the local market, but also to exports to countries such as China and its affluent consumers where value is added to these minerals.

In bilateral trade agreement negotiations, concessions are made by both parties. For instance, in the past, South Africa had to grant greater tariff-free market access to the EU for wheat imports into South Africa. A fair bilateral trade agreement with China would be for them to give preferential market access to our agricultural products in exchange for the export of raw materials of the platinum group minerals to China. South Africa has leverage here, the value of which should not be underestimated in these discussions.

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

ABC Hansen Africa: A leader in silo innovations

By Marion van Niekerk, chief operating officer, ABC Hansen Africa

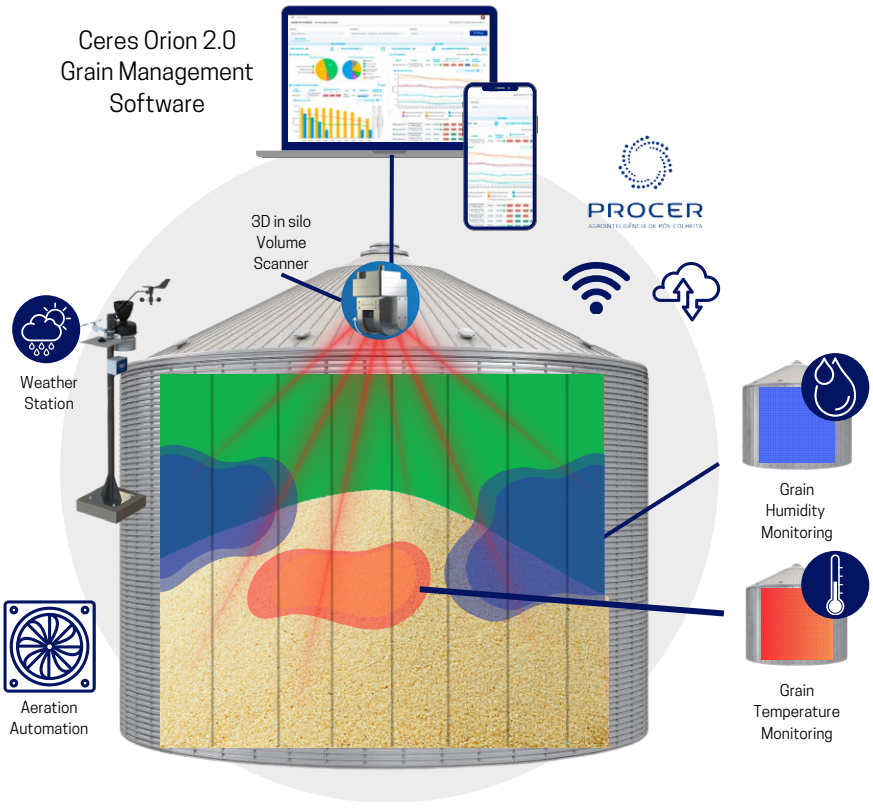
ABC Hansen is renowned for being one of the leading silo project companies in Southern and East Africa, having installed analogue temperature monitoring systems in silos for the past 30 years. Dreams have now become a reality with digital applications, such as the new All-in-One Silo monitoring system, accessing many more measurables.

The All-in-One Silo monitoring system can be used for:

- Grain temperature monitoring.
- Grain humidity monitoring.
- Smart aeration automation based on temperature and humidity, and interpreting weather station data.
- A weather station measuring and interpreting relative humidity (0 to 100%), temperature (-40 to 90°C), rain (to 0,2mm accuracy), and anemometer (measuring wind speeds with 0,1m/s accuracy). This data activates aeration within the set goals such as dry aeration, maintaining moisture, or adding moisture.
- The 3D in-silo volume scanner maps 350 points in the silo and integrates seamlessly into the Ceres web platform. This inventory management tool gives real-time stock reports with variance reports, enabling reconciliation with weighbridge systems and tracing all discrepancies.
- Ceres Orion software provides a platform to more than 9 000 silos globally with access via PC, iOS and Android. It can manage every detail of a facility: drying, storage, temperature, humidity, aeration conditions, silo volume, weighbridge activity, security, sampling, dispatching, and much more.
- Liquid spray-on insecticide for grain: Steel silos, which are impossible to seal entirely, makes gaseous fumigation not a good option. Contact residual insecticides, such as K-Obial EC 25, mercaptothion super and Gravista, among others, are approved on-grain sprayed insecticides, ensuring even distribution throughout the grain. They can be easily applied to empty silos, aeration channels, fans and all perimeters, halting latent infestation before storage commences. With the manual or PLC-controlled mobile application system control, it is now easy and far safer than gaseous fumigation, and keeps the integrity of measuring devices inside silos free from gaseous fumigant damage.

ABC Hansen brings appropriate technology to its quality grain hardware systems.

For more information, email Mario van Niekerk at projects@abchansenafrica.co.za, phone 082 577 1247 or visit *www.abchansenafrica.co.za/wp/grain-monitoring/*.



Hyperspectral imaging: See grain grading differently

By Susan Marais, Plaas Media

Combining machine learning with data collected from light interactions with objects, hyperspectral imaging could one day enable grain storage operators to grade grain more quickly, efficiently, and with less bias.

This was highlighted in a recent discussion involving Dr Paul Williams, senior lecturer and researcher at Stellenbosch University's Department of Food Science, Agbiz Grain, The Southern African Grain Laboratory (SAGL), and AFGRI.

Participants in the discussion were, from the left, Tobie Janse van Rensburg, AFGRI's manager of niche markets, Wiana Louw, general manager of The Southern African Grain Laboratory (SAGL), Wessel Lemmer, general manager of Agbiz Grain, Dr Paul Williams, senior lecturer and researcher at Stellenbosch University's Department of Food Science, and Dr Martin Brits, technical specialist at SAGL.

Dr Williams has been using near-infrared (NIR) hyperspectral imaging on maize since 2007 to explore its applications for maize safety and quality. NIR spectroscopy measures how light scatters off an object – in this instance, a maize kernel – providing scientists with insights into the material's properties without altering the sample.

For instance, this technology could be used to detect the presence of pathogens that could produce mycotoxins. In addition to identifying pathogens, it can also quantify the presence of specific substances at a microscopic level. "While our eyes cannot detect these rays, they excite molecules to a point where we can obtain an observable measurement we can then use," Dr Williams explained. He added that everything has its own unique 'fingerprint', which scientists can use for identification or quantification purposes.

Potential silo uses

Until recently, hyperspectral imaging equipment came with a hefty price tag and was rather large. However, technological innovation led to equipment becoming more compact, to the point where it can now be condensed into a handheld device resembling a single-lens reflex (SLR) camera. While hyperspectral images can be taken at different wavelengths, Dr Williams said that engineers can develop a hyperspectral imaging camera specifically for the limited range needed for grain and oilseed grading.

"It is possible for researchers to determine when specific matter becomes excited or agitated, and through this, establish certain criteria such as moisture content by taking an image of the object." However, a minimum of 100 samples are required to establish a robust model, so a lot of research is still required before machine learning can be effectively used as a quality control system in storage facilities.

Engineers at Stellenbosch University are already working on ways to address the sampling issue to ensure that samples accurately represent the entire population, such as a load of grain or oilseeds.

Current practical limitations

Even if we overlook the high cost of this equipment making commercialisation unfeasible, several other practical reasons render this technology an unreachable dream. Wiana Louw, general manager of SAGL, highlighted that the machinery still cannot outperform a trained human eye in detecting defects in grain and oilseeds. "The imaging cannot view the kernel from all sides, so it cannot accurately identify issues such as water damage."

Both Louw and Dr Williams agreed that the purpose of this technology is not to eliminate the human factor, but rather to eliminate subjectivity. "We still rely on people for tasks such as regular updates to the system," Dr Williams said.

Another issue discussed was that hyperspectral images capture information only from the top, meaning the camera only 'sees' the side of the grain or kernel facing it. Therefore, the grain needs to be physically turned to observe all sides. "It is important to keep in mind that there is a big difference between doing something in a controlled laboratory environment versus an outside environment, such as a grain storage unit," Dr Williams added, noting that fungi (micro-organisms) do not grow in isolation but in communities. This is one area where machine learning will play a pivotal role if this technology is ever implemented at the storage level.

Dr Williams stated that while there are more unknowns than knowns in this field, they hope to secure enough funding to allow researchers to find solutions that will make this technology a commercial reality for South Africa's grain storage industry.

Send an email to Dr Paul Williams at pauljw@sun.ac.za for more information.

Statutory measures for winter grains
A new era of stability

By Elmarie Smit, Plaas Media


Source: GWK

The South African winter grain industry is set to benefit from newly introduced statutory measures that came into effect on 1 October this year. These measures, announced by the minister of agriculture, John Steenhuisen, aim to provide consistent financial support to the industry, focussing on market information, research, development, and transformation projects.

Administered by the newly formed South African Winter Cereal Industry Agency NPC (SAWCIA), the measures cover essential levies for wheat, barley, and oats for the marketing year from 1 October 2024 to 30 September 2028.

The statutory levies introduced for winter grains are designed to fund critical industry functions. For the 2024/25 marketing season, the levies are:

- Wheat: R12 per metric tonne.
- Barley: R12 per metric tonne.
- Oats: R10 per metric tonne.

These levies are collected at the first point of sale, ensuring that every produced or imported tonne contributes.

The role of SAWCIA

SAWCIA was established to collect and administer the statutory levies for the winter cereals industry, replacing the previous voluntary system. According to Richard Krige, chairperson of the agency, the transition from voluntary to statutory levies was necessary due to the inconsistent participation rates in the voluntary system. This inconsistency made it challenging to secure stable funding for long-term projects, including research and development initiatives.

The levies will also support institutions such as the South African Grain Information Service (SAGIS) and The Southern African Grain Laboratory (SAGL), both of which play crucial roles in grain delivery statistics and grain quality monitoring. The shift to statutory measures provides the industry with much-needed stability, ensuring that research, quality testing, and other key functions continue uninterrupted.

SAWCIA's origins lie in the South African Winter Cereal Industry. The voluntary system, though beneficial for a time, struggled to meet the growing demands of the industry. After four years, the industry opted to transition to a more formal structure governed by the *Companies Act, 2008 (Act 71 of 2008)*. This shift allows for better governance and ensures a consistent flow of funds necessary for industry operations.

Statutory levies: Rates and impact

The statutory levies introduced for the marketing season mark a decrease from the previous voluntary levy. Wheat, for example, will see a levy of R12/tonne, down R2,50 per tonne from the previous voluntary levy. While this is lower than the voluntary levy, the statutory system ensures that all producers and imports contribute, lowering the overall financial burden on participants. Levies on barley and oats are respectively R12/tonne and R10/tonne.

One of the positive outcomes of the statutory levy system is that 20% of the funds collected will be allocated to transformation projects. These initiatives aim to promote inclusivity and diversity within the Winter Cereals Industry, ensuring broader participation and growth.

Krige explains that the statutory system addresses one of the major challenges faced under the voluntary system: low participation. The new system guarantees consistent contributions from all producers and imports, with an estimated 3,4 to 3,6 million tonnes of grain utilised annually in South Africa. This widespread contribution not only secures the necessary funds for research and industry activities, but also helps keep the levy rates manageable for individual producers.

SAWCIA leadership

SAWCIA's board, established at its founding meeting on 1 October, includes representatives from across the grain value chain. Chaired by Krige who represents Grain SA, with Boikanyo Mokgatle of the National Chamber of Milling serving as vice-chairperson, the board includes representatives from various sectors: baking (South African Chamber of Baking), handling and storage (Agbiz Grain), grain trade (South African Cereals and Oilseeds Trade Association), and grain producers including Grain SA, the South African Grain Farmers Association, and a representative of the minister of agriculture.

The National Agricultural Marketing Council or NAMC also plays a key role in overseeing compliance with statutory requirements. This includes annual audits of the agency's financial statements to ensure transparency and accountability.

The introduction of statutory measures for winter cereals marks a turning point for the South African winter cereals industry. This shift ensures that producers can continue to operate profitably while maintaining the quality and competitiveness of South African grain in both domestic and international markets.

For more information, email Gert Kok at admin@viridisafc.co.za.

Fumigation and pest control compliance

By Christal-Lize Muller, Plaas Media

Fumigation and pest control in the grain sector are important topics due to past fatalities. To improve safety, Agbiz Grain and CropLife SA have joined forces to promote best practices and regulatory compliance. Dr Gerhard Verdoorn, the operations and stewardship manager at CropLife SA and director of the Griffon Poison Information Centre, led the ninth Agbiz Grain virtual safety, health, environment and quality (SHEQ) workshop on these issues.

Dr Verdoorn outlined the complex regulatory framework for pesticides, which encompasses more than just the *Fertilizers, Farm Feeds, Agricultural Remedies, and Stock Remedies Act, 1947 (Act 36 of 1947)*. He noted that while the *Act* establishes broad principles, specific regulations provide detailed compliance guidance. Emphasising the need for trained professionals, he stressed the importance of proper handling, transportation, storage, and disposal of chemicals to ensure food safety, manage residue levels, and prevent environmental and health hazards.

Regulatory framework 1

Dr Verdoorn explained that *Act 36* is the primary legislation governing pesticide use in South Africa. Although quite old, it remains foundational and comprises 28 sections. Key points include:

- **Section 7(1)**: Only registered pesticides (identified by an L number) may be sold, used, or possessed. This includes all forms of sale, transportation, and promotion.
- **Section 7(2)(a)**: Pest control services for business must be provided by a registered pest control operator (PCO). Offering advice is permitted, but charging for it classifies it as a service. This regulation is particularly important for grain fumigation.
- **Section 7(2)(b)**: Registered PCOs must apply pesticides according to label instructions. Off-label use, especially by non-professionals, poses risks. Proper use and personal protective equipment (PPE) are essential for safe fumigation practices.

He highlighted that the *Regulations relating to agricultural remedies* of 25 August 2023 introduce stricter controls on pesticide use. The Registrar can now restrict pesticide use for specific applications or users, and sellers must provide safety information and training to buyers. A key update is that label instructions are now legally binding, not just recommendations.

This mandates strict adherence to labels to ensure safe and effective pesticide use, addressing risks to people, animals, and the environment. *Regulation 1716* (26 July 1991) also requires pesticides to be used as specified on the label.

The *OHS Act*

Dr Verdoorn noted that while the *Occupational Health and Safety Act, 1993 (Act 85 of 1993)*, or *OHS*, is important, full compliance is lacking in many sectors, including agriculture. He praised Agbiz Grain for its efforts, particularly with regard to the *Regulations for hazardous chemical agents* of 29 March 2021, which introduced South Africa's adoption of the Globally Harmonized System (GHS) for chemical classification and labelling.

These regulations align with European Union standards but not with the United States' practices and aim to manage risks associated with hazardous chemicals, including pesticides, by requiring accurate reclassification and clear communication of necessary PPE and safety measures.

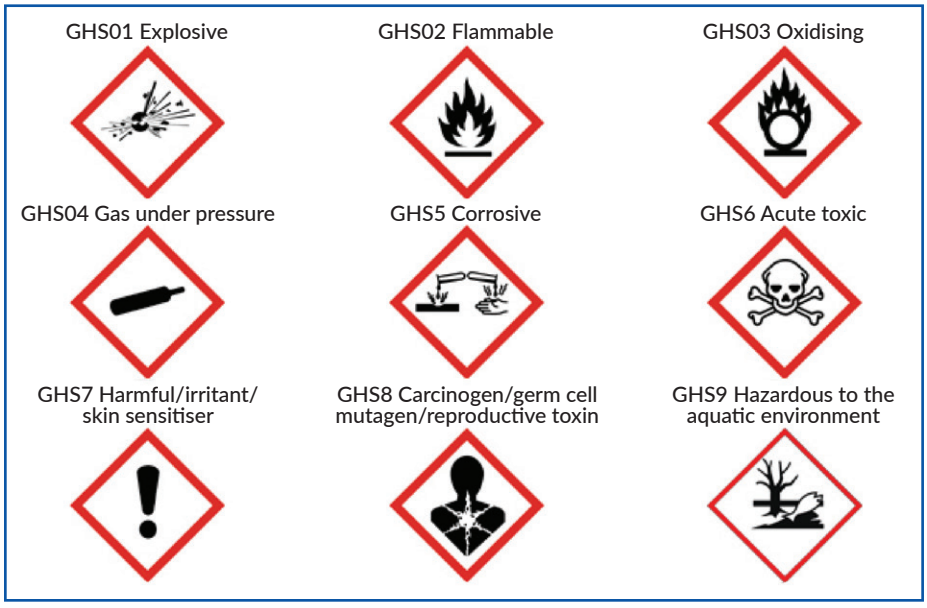
Compliance responsibilities now include pesticide registrants, sellers, applicators, and buyers, with SHEQ officers playing a crucial role in enforcement. The Department of Employment and Labour extended the compliance deadline for GHS regulations to September 2023. Starting 1 October 2023, all pesticides must feature GHS-compliant labels. Employers are required to train workers on chemical hazards, provide appropriate PPE, and arrange regular health checks. Retailers must also inform consumers of hazards and safety precautions.

GHS format labels

A GHS label contains several critical elements. Here is what you should look for:

- **Hazard symbols**: These symbols highlight the risks associated with the chemical. Designed to catch attention

Figure 1: The most important hazard symbols and associated hazard statements in terms of fumigation in the grain industry. (Source: Dr Gerhard Verdoorn)



and quickly convey the nature of the hazard, examples include a skull and crossbones for acute toxicity (commonly seen with chemicals such as phosphides or methyl bromide); a chest with a star symbol for chronic toxicity, such as carcinogenicity; an environmental symbol for harm to aquatic environments; and a gas under pressure symbol indicating the chemical is pressurised.

- **Associated hazard statements**: Accompanying each symbol, these statements describe the nature of the hazard, such as 'acutely toxic' or 'corrosive'.
- **Signal words**: Labels use two classifications for pesticides to indicate the severity of the hazard: 'danger' for more severe hazards, such as acute toxicity, and 'warning' for less severe hazards. If something is chronically toxic, it might be labelled as 'warning' rather than 'danger'.
- **Precautionary statements**: Labels must include a table with hazard symbols, safety measures, and necessary PPE, such as respirator masks for grain fumigation. Labels should also detail procedures for exposure and emergencies, including Dr Verdoorn's contact number for disaster management. Additionally, the label must specify storage requirements and disposal of packaging and leftover stock.

The *HS Act*

Dr Verdoorn considers the *Hazardous Substances Act, 1973 (Act 15 of 1973)*, or *HS*, to be outdated and legally weak, with numerous loopholes. The Regulations of 14 November 1997 and the Schedules of 12 August 1994 are also not aligned with *Act 36* or the *OHS*. These regulations are currently being reviewed and should be promulgated in the near future but are not legally binding as yet. Despite its flaws, the *Act* remains in force and classifies certain chemicals as hazardous, imposing conditions on their sale, storage, and record-keeping.

The *Act* requires a Section 4 licence for handling Group 1 hazardous substances – licences must be obtained by importers, manufacturers, wholesalers, and retailers, among others. Individuals under 16 are prohibited from acquiring these substances. The 1997 Regulations mandate a Section 4 licensee to sell Group 1 hazardous substances. This applies to sellers, including wholesalers, retailers, producers, and homeowners.

In terms of storage, it outlines that Group 1 hazardous substances must be stored in a double-locked facility. When selling Group 1 hazardous substances, the seller must verify the identity of the buyer and maintain detailed records for five years. These records must include buyer information (name, address, ID number, contact details) and transaction details (product purchased, active ingredient, quantity and reason for purchase). Accurate records are essential to prevent illegal sales and misuse of hazardous substances.

Group 1 substances are classified based on toxicity. The August 1994 Regulations categorise any pesticide with a GHS toxicity class of 6,1 as a Group 1 hazardous substance. Dr Verdoorn advocates for a unified regulatory body, such as a South African Environmental Protection Agency, incorporating departments of environmental affairs, agriculture, and labour to improve chemical regulation.

National Road Traffic Act

Dr Verdoorn highlighted the complexity of the *National Road Traffic Act, 1996 (Act 93 of 1996)*, focussing on Chapter VIII of the 23 November 2005 *Regulations and dangerous goods classification* under *South African National Standards (SANS) 10231*. Despite good administration, compliance remains poor. Chapter VIII governs the safe transport of dangerous goods, including most pesticides, requiring licensed vehicles with safety features such as separate loading areas and proper cabling. Drivers must have accredited training and follow segregation rules to keep pesticides separate from foodstuffs and flammables. A *Dangerous Goods Declaration*, including safety data sheets (SDSs) or transport emergency cards (TREM cards), is required for handling emergencies.

The South African Bureau of Standards' *SANS 10231* outlines dangerous goods classifications and United Nations (UN) numbers. Vehicles must be inspected by local authorities, and drivers need a professional driver's permit for vehicles over 3,5 tonnes. Producers are exempt from on-farm use, with limits on quantity and distance. He advised PCOs to ensure that vehicles are licensed, and drivers are certified to address compliance issues. For more details, refer to the University of Pretoria's Laws of Africa website and Table C1 in *SANS 10231*.

The *Waste Act*

Dr Verdoorn emphasised the importance of the *National Environmental Management: Waste Act, 2008 (Act 59 of 2008)* and indicated that he has dedicated significant effort to it. On 21 November 2021, the Department of Environmental Affairs introduced the *Extended Producer Responsibility (EPR) Regulations*, shifting waste management duties to commodity producers in a bid to enhance waste reduction, reuse, and recycling. CropLife SA, having already achieved around 70% of these goals, welcomed the EPR Regulations. The *EPR Scheme* for the pesticide sector was published on 23 March 2023.

Under these regulations, leftover pesticides and unrinsed packaging are classified as hazardous waste. Pesticide containers, if not cleaned according to CropLife SA's best practices, are considered hazardous but, if cleaned properly, can be classified as normal farm waste, easing recycling and disposal. Hazardous waste cannot be disposed of in landfills without special permits.

Key principles of the regulations include the mandatory registration of pesticide producers with the Department of Forestry, Fisheries, and the Environment and active engagement in waste management. Producers must develop plans for packaging recovery and waste management, either individually or through a product responsibility organisation (PRO). CropLife SA, registered as the first pesticide PRO on 4 April 2023, manages the collection, recycling, or disposal of pesticide packaging and waste, supported by 77 subscribers paying waste management fees.

Technical details

Dr Verdoorn emphasised that PPE is essential when working with pesticides. The type of PPE required depends on the pesticide used. According to CropLife SA, PPE should cover the entire body, including the head, eyes, nose, mouth, hands, and feet. The *OHS Act* and product labels specify the necessary PPE. Legally, employers must provide appropriate PPE, but it is the employee's

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responsibility to wear and maintain it. Not using PPE is a severe occupational hazard when handling pesticides.

There are two types of PPE:

- For grain treatment with deltamethrin, piperonyl butoxide, or permethrin sprays, use a cotton hat, overalls, a dust mask with a filter, and calf-length rubber boots with non-slip soles and rubber gloves.
- For fumigation, a fully chemical-impenetrable suit is required, including rubber boots, neoprene or PVC chemical-resistant gloves, and safety goggles. Fumigators and assistants should also wear a respirator with chemical filters and use duct tape to seal the suit sleeves and legs over gloves and boots. The suit should be cleaned daily with a decontamination spray.

Sequence of fitting PPE

- Wear an overall and cotton hat or a suit with a hoodie.
- Put on boots with trousers draped over them and sealed with duct tape.
- Apply a respirator mask or dust mask and safety goggles.
- Use neoprene or PVC gloves with sleeves over gloves, sealed with duct tape.
- Wear a plastic, slash-proof apron for mixing.

Dr Verdoorn highlighted that proper PPE use is crucial for health and safety. Avoid smoking, eating, or drinking while handling pesticides, especially in grain silos with fumigants, as contaminated hands can introduce pesticides into your body. Before using ablution facilities, remove your PPE, wash your hands and face, use the toilet, and then re-fit and seal your PPE with duct tape. Schedule adequate breaks and remove PPE to wash hands and face before eating, drinking, or smoking. Keep accurate records of procedures to prevent future issues.

Proper decontamination

He emphasised that PPE alone is not enough – proper decontamination is also essential. After using pesticides, wash your hands and arms with cold water and mild soap for two minutes, and clean your face, neck, and throat similarly. Fumigators should take a cool shower with mild soap, as cool water prevents residue absorption better than warm water. Do not take PPE home; clean it and then store it in a designated locker. Wash rubber gloves with cold water and soap before removing and cleaning PPE.

Table 1: Listed chemicals mostly used for grain fumigation. (Source: Dr Gerhard Verdoorn)

Fumigant	UN number, P and S hazard class	Exempt quantity
Aluminium phosphide	3 048, 6.1	5kg
Aluminium phosphide	1 397, 4.3, 6.1	Nil
Magnesium phosphide	2 011, 4.3, 6.1	Nil
Sulfuryl fluoride	2 191, 2.3	10kg
Methyl bromide	1 062, 2.3	10kg
Hydrogen cyanide	1 051, 6.1, 3	5kg

Under the *OHS Act*, staff and PCOs must undergo annual health screenings, with fumigators requiring biannual checks by a registered occupational health practitioner. These screenings include physical examinations and blood tests. Inform employees that alcohol, smoking, cannabis, and other narcotics can affect test results. If health issues are detected, withdraw the worker from duty for safety, regardless of actual pesticide exposure.

When fumigating grain, ensure the safety of yourself and others by removing all bystanders, children, and animals from the area. Only the fumigator and trained workers in appropriate PPE should be present. Notify nearby buildings in advance and follow the PCO Regulations of 2011 by informing others of the use of Group 1 hazardous substances. Erect warning signs for highly toxic pesticides. For multi-site fumigation, issue a written pre-treatment notice to confirm that no one is present during and after the fumigation until it is deemed safe.

Post-treatment residue

Dr Verdoorn said that ensuring pesticide residues on grain comply with the Department of Health's maximum residue limits (MRLs) is critical for food safety. Maximum residue limits are updated infrequently, with the next update expected in a few months. For current data, consult the Agri-Intel database or the *Codex Alimentarius*. After treatment, perform a residue analysis to ensure pesticide levels are within MRL limits and test for mycotoxins such as Aflatoxin B2. Use an accredited laboratory for accurate results.

Maintaining detailed records of grain's journey – from farm or harbour to silos and buyers – is essential, including tracking of treatments, residues, and fungal infections. Silo managers and PCOs should conduct random checks on incoming grain to ensure compliance with safety standards and to detect any potential residue issues, particularly if the grain was treated with substances such as 2,4-D and glyphosate before harvest.

Transport requirements

He explained that only *bona fide* producers transporting fewer than 1 000 units (kg or litres) of pesticides, either mixed or single loads, for no more than 250km (with no more than 50km on a national route), are exempt from Chapter VIII of the *National Road Traffic Act, 1996 (Act 93 of 1996)*. No special vehicle or driver is needed. This exemption does not apply to others.

For commercial pesticide transport, all fumigants are classified as having primary or secondary toxic risks, according to *SANS 10231*:

- **Class 6.1**: Toxic solid or liquid.
- **Class 2.3**: Toxic gas.
- **Class 4.3**: Substances that produce flammable or explosive gases upon contact with air.

Transporting Class 6.1 or 2.3 substances usually requires specialised vehicles, with limited or no exemptions for normal vehicles.

He cited aluminium phosphide (UN number 3048) as an example. This substance is classified as Class 6.1, which means that transporting more than 5kg requires a certified and licensed vehicle and a certified dangerous goods driver. If the UN number was 1397, no amount of this fumigant could be transported without the proper certifications.

For pest control operators and suppliers, it is safer to use a licensed vehicle with

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all necessary safety measures and to have a certified driver for transporting dangerous goods. This approach avoids compliance issues. Leftover materials are automatically classified as hazardous waste. For example, leftover aluminium phosphide, while originally Class 6.1, becomes hazardous waste. There is no exemption for transporting hazardous waste, regardless of whether it is still in its container. Transporting hazardous waste requires a certified vehicle and driver.

Transport requirements

According to Dr Verdoorn, transporting dangerous goods requires strict adherence to safety regulations. Vehicles must have a licence disk marked 'Category DG' for dangerous goods and drivers need an operator's card. The vehicle should display an orange diamond on the front and placards on the back and sides indicating the classification (e.g., toxic, flammable) and emergency contact numbers. These numbers are for first responders to get guidance on handling incidents.

Inside the vehicle, there must be an orange box containing the *Dangerous Goods Declaration*, SDSs, or TREM cards. These documents are crucial for managing spills and mitigating risks. Non-compliance with these transport requirements can lead to serious consequences.

Safe storage

To prevent theft and misuse of toxic chemicals, Dr Verdoorn highlighted stringent storage practices. Pesticides classified as toxic (hazard Class 6.1) under the *HS Act* must be stored in a double-locked facility. Use a secure, lockable cage or enclosure within the main storage area.

Since many fumigants are flammable or release flammable gases when exposed to moisture, the storage area must be designated as a flammable store and kept separate from other chemicals. Access should be restricted to authorised personnel only, given the extreme hazards associated with fumigants.

He underlined that empty containers should not be reused or redistributed. Proper decontamination steps include:

- **Plastic containers**: Triple rinse and store them centrally until collected by a CropLife SA-certified recycler.
- **Aluminium canisters**: Triple rinse, flatten, and collect centrally for pickup by a certified recycler or metal recycler.
- **Phosphides**: Moisten in a well-ventilated area, soak overnight, dry in the sun, and then store in large low-density polyethylene (LDPE) bags for safe disposal.

He said CropLife SA PRO members (e.g., Degesch, Coopers, FarmAg, UPL Ltd, Enviro Bio-Chem) provide LDPE bags for phosphide disposal.

Registered pesticides

Dr Verdoorn noted that in South Africa, various pesticides are registered for grain treatment including fumigation. These pesticides include pyrethroids and mixtures such as deltamethrin and mercaptothion. While these typically have a warning hazard class and are not acutely toxic, they may pose chronic toxicity risks to organs such as the lungs, liver, and kidneys. Full PPE is essential due to these risks.

Specific pesticides include:

- **Aluminium and magnesium phosphides**: These release phosphine gas, which is highly toxic, volatile, explosive, and flammable. Only trained personnel, wearing mandatory respirator masks, should handle them.
- **Methyl bromide**: This highly toxic substance is being phased out. It severely impacts the lungs, requiring respirators for safety.
- **Sulfuryl fluoride**: Classified as dangerous with chronic toxicity hazards affecting the liver. It requires specialised equipment and training, and only certified personnel should handle it.
- **Hydrogen cyanide**: If registered under *Act 36*, it would carry a danger symbol. It is highly toxic and poses significant risks, especially with chronic exposure to a pressurised gas.

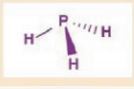
Proper handling and safety measures are crucial for all these substances to minimise risks. Exposure to most of the gasses can cause dizziness, nausea, vomiting, and breathing difficulties.

Emergency exposure protocol

- Contact a poison information centre immediately, e.g. 082 446 8946 or 0861 555 777 (Western Cape Poison Centre) and follow their instructions.
- Do not administer milk or food, or induce vomiting unless directed by the poison centre.
- Remove the patient from the source of exposure. Relocate them to a cool, well-ventilated area, and remove contaminated clothing.
- If advised, transport the patient to a hospital immediately using your own transport or an ambulance.
- Bring any pesticide containers, labels, or safety data sheets to the hospital.
- Notify the hospital in advance of the poisoned patient, providing them with the poison centre's contact details for guidance on diagnosis and treatment.

Note that only registered healthcare practitioners should handle poisoning cases.

Figure 2: Specific pesticides. (Source: Dr Gerhard Verdoorn)

Pesticide	Molecule	Hazard class	Additional hazards	Risks (unskilled)
Aluminium and magnesium phosphide (phosphine)		Danger		Very high
Methylbromide		Danger		High
Sulfuryl fluoride (specialised equipment)		Danger		Very high
Hydrogen cyanide?	HCN	Danger		Very high
Pyrethroids and organophosphates (private use also)		Warning		Low to moderate

For more information, contact Dr Gerhard Verdoorn at gerhard@croplife.co.za or 082 446 8946.

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+27 28 214 3854
johanl@overbergagri.co.za
www.overbergagri.co.za

OVK
+27 51 923 4500
rudolphvw@ovk.co.za
www.ovk.co.za

SCHOEMAN
+27 13 665 7700
brent@witklip.co.za
www.schoemangroup.co.za

Senwes
+27 18 464 7800
Wikus.Grobler@senwes.co.za
www.senwes.co.za

Silostrat
+27 57 391 1900
cassie@silostrat.com
www.silostrat.com

SSK
+27 28 514 8600
Pieter.Malan@ssk.co.za
www.ssk.co.za

TWK agri
+27 17 824 1005
aduvenage@twkagri.com
www.twkagri.com

vkb
+27 58 863 8111
francoisf@vkb.co.za
www.vkb.co.za

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ASSOCIATE MEMBERS

Malcolm Holman
malcolmh@aelab.co.za
www.AELab.co.za

Paul Burke
paul.burke@adpsa.co.za
www.adpsa.co.za

Taryn Browne
taryn.browne@buhlergroup.com
www.buhlergroup.com

Chantelle Henning
chantelle@henchem.co.za
www.henchem.co.za

Cole Stanton
cole.stanton@intreso.com
www.intreso.com

Munro van der Westhuizen
munro@thisisronin.com
www.thisisronin.com

Philip van der Merwe
philip@rhineruhr.net
www.rhineruhr.net

Hanlie Kroese
hanlie.kroese@santam.co.za
www.santam.co.za

Gianluca Della Riccia
gianluca.dellariccia@wamgroup.com
www.wamgroup.co.za

Points to ponder

By Jannie de Villiers

Seeking rewards: A deeper reflection

Setting goals for your team members, and outlining the standards and processes needed to achieve desired outcomes is an integral part of management. The more difficult part is keeping everyone focussed and disciplined to achieve these outcomes. While disciplining team members is often uncomfortable for both parties, it is sometimes warranted.

There are so many examples in life indicating what the consequences are when there is no discipline. I once asked a professional soccer coach why one sport in South Africa is competitive internationally while another is not. His response was simple: discipline. Team members must train and play in a well-disciplined environment until it becomes a culture.

Businesses use various methods to discipline and reward team members. A competitive salary is nowadays just not enough to attract the right type of team members. I have learned that financial rewards in the form of bonuses are not the only way to get and keep the team on track. The basis of non-financial rewards lies in relationships.

Building relationships with team members allows for deeper discipline and more meaningful non-financial rewards. Performance reviews focussing solely on exceeding expectations, which may lead to a bigger increase or even a bonus, are not ideal for building relationships. Relationships are forged in the trenches.

An encouraging pat on the shoulder of a struggling team member or a kind word to give direction is the type of reward that grows relationships. Showing care and concern when someone's child is sick or has won an award at school are small gestures that yield big returns for the employer. Everyone wants to belong, and your management style will determine the culture and morale of your team. Rewards in all formats motivate people to perform better.

Years ago, our family spent a weekend in the Drakenberg doing the five love languages course by Dr Gary Chapman, the point of which is to better understand each other. This understanding reduced tension among the children as they learned how to encourage each other when someone was emotionally down.

Discern true reward

It is deeply entrenched in our DNA to expect a reward for every mountain that we've climbed. For instance, young children constantly want their parents to watch them jump into the swimming pool. Even if the act is nothing special, the yearning for affirmation is always present. In this sense we all remain children at heart, seeking approval from superiors.

I encourage you to reflect on your relationship with your Creator. Luke 17:7 and 12:37 speak of spiritual rewards for servants, both on earth and in heaven. I have studied many books on leadership and servanthood and how it is supposed to be practised, and the ultimate test is if people treat you like a servant.

Recently, I felt as though I was being treated like a servant and while it is easy to discuss in theory, practising it remains tough. In my attempts to understand this, I came across scripture where Jesus explained to His disciples that there is no earthly reward for those who do what their master commands. We cannot go above and beyond what we are supposed to do, so there is no earthly reward. However, Luke 12 and 17 describes the servant sitting down, eating, drinking, and being served by Jesus.

> "Everyone wants to belong, and your management style will determine the culture and morale of your team. Rewards in all formats motivate people to perform better."

As the end of 2024 approaches, many will reflect on their year and look to superiors for a reward. I encourage you to spend time these holidays to sit down, take some time, and engage with your Creator about what still needs to be done. Ensure that when He returns, He will say: "Well done, good and faithful servant!" It is then that your true spiritual reward will be granted.

Merry Christmas.

For enquiries, send an email to Jannie de Villiers at Jannie@devilliersfamily.co.za.

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