Apr - Jun 2026
Vol 35 No 2

ISSN 2308-0647

Matrix

AFMA
SAFE FEED FOR SAFE FOOD
Animal Feed Manufacturers Association

Quarterly magazine of the Animal Feed Manufacturers Association

Farm Feed Regulations • AAMP update • Copper sulphate • Animal-derived protein
Animal feed industry careers • Agroindustrial by-products • Mycotoxin risk
Broiler industry competitiveness • Phytogenic feed additives

KEMIN®

Compelled by Curiosity™

INTESTINAL HEALTH

RUMINANTS

NUTRISURANCE

MILLING EFFICIENCY & FEED SAFETY

We strive to sustainably transform the quality of life every day for 80% of the world with our products and services.

NUTRITIONAL EFFICIENCY

TAILORED SERVICES

SCAN ME for more information

Kemin Sub Sahara Africa | **Contact number:** +27 11 206 8000 | **Website:** www.kemin.com | **Email:** info.sa@kemin.com


bester
Progress is a mindset
Specialist in Feed ingredients
Bester Feed & Grain specialises in the supply chain management of feed commodities.
We supply the following:
• Maize
• Soya Products (Meal & Fullfat)
• Sunflower Meal
• Vitamins & Minerals
• Urea & Phosphates
• Amino Acids
• Chop & Bran
• Fishmeal
Contact us
+27 (0)21 809 2500 | info@bester.co.za
www.bester.co.za

Navigating pressure, strengthening the value chain

By Liesl Breytenbach, executive director, AFMA

Many of our members and industry stakeholders are operating in a consistently high-pressure environment. Disease management, evolving regulatory requirements, and broader economic uncertainty continue to test operational resilience across the value chain. Yet, this industry has demonstrated its ability not only to withstand disruption, but to adapt and move forward with purpose.

Encouragingly, positive production estimates for maize and oilseeds provide a measure of stability in terms of raw material availability. Improved crop prospects strengthen domestic supply fundamentals and offer welcome relief to procurement planning, providing a firmer foundation from which the industry can plan and operate with greater confidence.

Disease pressures

Among the most immediate pressures facing the livestock sector is the ongoing threat of animal disease outbreaks. We are operating in an environment where foot-and-mouth disease, African swine fever and avian influenza continue to place strain on South Africa's livestock and animal protein value chain. These outbreaks have had direct and measurable impacts on production systems, trade flows, and market stability. Each instance reinforces how interconnected our system truly is, from grain production to feed manufacturing, livestock production, processing, and ultimately the consumer's plate.

When biosecurity measures tighten and markets respond, feed manufacturers remain a stabilising force. We must continue producing, maintain consistent quality, uphold regulatory compliance, and safeguard feed and food safety. AFMA's role remains vital.

It is during times like these that the industry cannot afford division. Disease outbreaks test alignment, trust, and collective responsibility. No single stakeholder can manage systemic risk alone; coordination, discipline, and unity across the value chain are essential. AFMA members are fully committed to prioritising stringent biosecurity measures, traceability, and responsible sourcing within their operations. As an association, we will continue to promote responsible conduct and proactive risk management.

A more cohesive industry

AFMA recently convened another round of committee meetings, all held in person. Across five committees – technical, regulatory, trade, training and skills development, and marketing and promotion – we engaged directly with 113 member representatives. These sessions remain among the association's most valuable engagements, ensuring that AFMA stays closely aligned with industry realities and responsive to the challenges facing our members. They also provide an important platform for members to exchange information and network with peers.

Regulatory progress

After many years of no significant updates to feed-specific regulations, the amended *Farm Feed Regulations* under the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)* were published in January 2026 for public comment, marking the first major regulatory revision in over a decade.

Following extensive engagement with members across multiple committees, AFMA consolidated and formally submitted comprehensive industry inputs to the registrar's office. We will continue to engage with authorities to ensure that the final framework supports feed safety and industry credibility while reducing unnecessary regulatory burden and remaining practical and workable for manufacturers. Implementation of the updated regulations is expected in June 2026.

AFMA Forum 2026

Preparations for AFMA Forum 2026 are well underway. The entire AFMA team is working with focus and purpose to create a platform where the industry can come together, engage, and reflect on the future of feed manufacturing. The theme, "The feed factor – the chain that feeds a nation", reflects a simple but powerful reality that without feed, there is no livestock production; without livestock production, there is no animal protein; and without animal protein, there is no food security.

The AFMA Forum will be a strategic space designed to challenge conventional thinking, encourage robust dialogue, and inspire new perspectives. Our objective is clear: that every delegate leaves knowing they were part of a pivotal industry moment, one where ideas were tested, assumptions were challenged, and the future direction of our sector was thoughtfully shaped.

Looking ahead

In this edition of the *AFMA Matrix*, we continue to broaden the conversation beyond feed manufacturing alone. We include articles dedicated to industry issues – the competitiveness of the South African poultry industry, updates on animal health developments, and the latest progress in terms of the *Agriculture and Agro-Processing Master Plan*, to name but a few. These contributions provide important insight into the broader industries we serve, and the structural and policy changes affecting their future.

I encourage all stakeholders to engage with these articles. Staying informed assists not only to anticipate change, but to lead through it. A sustainable feed industry depends on a resilient and competitive livestock sector. ❖

For enquiries, send an email to Liesl Breytenbach at liesl@afma.co.za

OUR SOLUTIONS... HER LIFETIME PERFORMANCE.

Offer her a prosperous life with Adisseo solutions

By contributing to dairy cow health and ensuring long-term productivity, Adisseo's solutions help dairy producers improve the sustainable lifetime performance of their herds

Discover more about our solutions

www.adisseo.com

ADISSEO
A Bluestar Company

CONTENTS

On the cover:
Adisseo
Hermann van der Westhuizen
Key accounts manager
Sub-Saharan Africa
Cell: +27 (0) 82 356 7022
hermann.vanderwesthuizen@adisseo.com
www.adisseo.com

EDITORIAL COMMITTEE

Published by: Plaas Media (Pty) Ltd
217 Clifton Ave, Lyttelton, Centurion, RSA
Private Bag X2010, Lyttelton, 0140, RSA
Tel: +27 12 664 4793 • *www.agriorbit.com*
info@plaasmedia.co.za

Associate editor: Liesl Breytenbach
+27 12 663 9097 • liesl@afma.co.za

Chief editor: Lynette Louw
+27 84 580 5120 • lynette@plaasmedia.co.za

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

News editor: Susan Marais
susanmarais@plaasmedia.co.za

Design & layout:
Inge Gieros • inge@plaasmedia.co.za

Advertising:
Karin Changuion-Duffy
+27 82 376 6396 • karin@plaasmedia.co.za
Susan Steyn
+27 82 657 1262 • susan@plaasmedia.co.za

Sales manager: Marné Anderson
+27 72 639 1805 • marne@plaasmedia.co.za

Subscriptions: Beauty Mthombeni
+27 64 890 6941 • beauty@plaasmedia.co.za

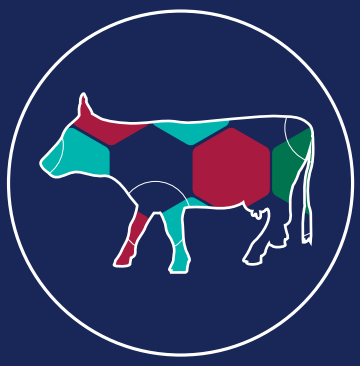
Printed and bound by:
Business Print
+27 12 843 7600

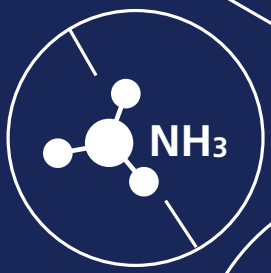
Published on behalf of AFMA
Agri-Hub Office Park, Block B,
477 Witherite Str, The Willows, Pretoria
+27 12 663 9097 • *www.afma.co.za*

It starts with **mycotoxins.** It ends with **Toxibind Plus.**

- Multi-spectrum mycotoxin binder, specifically designed to target the African challenges of **DON, ZEA & FUM, amongst other mycotoxins**
- Synergistic blend of essential **phytogenic compounds** to bolster the immune and liver systems
- Reduces ammonia buildup in litter

Locally manufactured at our world-class facility, Toxibind Plus delivers superior quality and uncompromising protection against mycotoxins.





Toxibind Plus:
Science you can trust | Protection you can prove

Feed smarter | Perform better

BiTEK INDUSTRIES

www.bitek.co.za
Tel: +27 11 393 1182

NEWS & VIEWS

China turns to Black Sea for feed meal

China is ramping up imports of feed meals from Russia, Ukraine, and Kazakhstan to supply its vast livestock sector. Customs data shows surging volumes in 2025, as China turns to the Black Sea to offset shifting global markets. Stable access to feed grains is now a strategic priority.

During the first eight months of 2025, Russia delivered 657 000 tonnes of plant cakes and meals to China, 130% higher than a year earlier. In monetary terms, the export reached US$203 million, more than twice that of a year earlier. China remains one of the most important markets for Russia's oil, fats and feed products, according to Dmitry Kurbatov, director of international trade at Zheng Dong Corporation. China has also emerged as the leading buyer of Ukrainian rapeseed meal, with deliveries reaching 155 000 tonnes. – *All About Feed*

NC State tackles feed costs with AI

At North Carolina State University in the United States (US), researchers have embarked on a new project designed to help feed mills lower costs while optimising nutrition. With seed funding from the NC Plant Sciences Initiative, an interdisciplinary team is studying ways to use low-cost, real-time sensors paired with artificial intelligence (AI) to make feed milling more precise.

Currently, many of North Carolina's 130 plus feed mills rely on historical data about the ingredients, adjusting mixtures from week to week or every two weeks. As the project's team leader, optical sensing expert Mike Kudenov explains the researchers are pursuing a low-cost optical sensing system that could detect protein, energy, and moisture levels in real time. The data captured by the sensors would be analysed instantaneously by an AI-based solution, allowing feed mills to adjust ground ingredients from batch to batch to meet precise animal nutritional needs.
– *National Hog Farmer*

French feed production up 1,1%

French animal feed production grew modestly in 2025, reaching 18,88 million tonnes – a 1,1% year-on-year increase according to the French National Union of the Animal Nutrition Industry (SNIA). Growth was largely driven by increased demand for cattle feed. In the pig sector, however, an opposite trend can be observed. Production of pig feed decreased by 0,9% to almost 4,1 million tonnes. In the fourth quarter of 2025, feed production for pigs had dropped by 2,8% compared to the same quarter in 2024.

Feed for dairy cows showed an increase of 4,6% to almost three million tonnes while products for other cattle increased by 0,2% to 1,16 million tonnes. The lion's share of over the more than eight million tonnes produced went to poultry production. That was a 0,9% year-on-year increase. The French feed industry also produced 720 000 tonnes for goats and sheep as well as 578 000 tonnes of feed for other farm animals like rabbits and horses. – *Pig Progress*

Closing maize yield gap could elevate SA levels

Improving a harvest begins with a well-developed agronomic foundation and stronger agronomic knowledge among producers. This was the core message from Nico Barnard, agronomist for Pannar Seed in South Africa's central region, who spoke at the Pannar Extravaganza held on 4 March in Val, Mpumalanga. He opened on an encouraging note, pointing out that South Africa's maize yields outperform those in the US.

After presenting an overview of maize yields across the country, Barnard compared the average yields of Mpumalanga with those of producers competing in yield competitions in the same region. The comparison, used as a practical guide for improving overall yields, revealed a 10t/ha gap. According to Barnard, closing this gap by just 2t/ha would place South Africa on par with the US. – *Yantha Wolmarans, Plaas Media*

Rainbow Chicken – from turnaround to titan

Rainbow Chicken recently released its interim results for the six months through December 2025, which showed the effectiveness of the turnaround strategy it has been implementing for the past few years. Its revenue from contracts with customers increased by over 11% to R8,79 billion, while its profit for the six-month period more than doubled to reach R663,84 million.

These strong results allowed the poultry producer to declare an interim dividend, its first since being unbundled and separately listed from its former parent company, RCL Foods. Following the release of these results, Rainbow Chicken CEO Marthinus Stander said the company's turnaround started in September 2023, when the company still formed part of RCL Foods and was struggling amid frequent bouts of load-shedding and a widespread outbreak of avian flu.

Halfway into its 2026 financial year, the poultry producer has already surpassed this full-year profit, setting it up for another strong set of results. Stander explained that its 'brilliant basics' strategy worked because it forced Rainbow Chicken to focus on things it could control. – *Daily Investor*

South Africa plans local market for poultry

The leaders of the poultry industry in South Africa are developing contingency plans to expand into domestic markets in case of further conflict in the Middle East that could affect exports to the United Arab Emirates (UAE). Izaak Breitenbach, CEO of the South African Poultry Association (SAPA), spoke at an industry roundtable, saying the industry currently sells approximately 50 000 tonnes of cooked chicken products into the UAE annually.

Breitenbach said if the shipping routes are interrupted because of the existing conflict in the Middle East, the industry has strategies to channel the products to the local market, rather than lose them. He said in the present circumstances in the Middle East, where ships are not allowed to deliver produce, the produce will be sold in South Africa, where it will be packaged as frozen chicken or processed foods and would not go to waste.

A poultry report by the Bureau for Food and Agricultural Policy (BFAP), commissioned by SAPA, reveals that the consumer demand for poultry in South Africa has increased by 8,8% over the last decade. Nevertheless, this growth has been lower in comparison to poultry production, which was up by 11,8% in the same period. – *Poultry News Africa*

Mycotoxin analysis reveals insights

Trouw Nutrition, Nutreco's livestock feed business, shared findings on the levels of mycotoxin contamination in 2 025 feed ingredients, silage, and complete feeds. A predictive model capable of assessing mycotoxin concentration levels globally and regionally analysed more than 120 000 samples from 47 countries.

The most frequently detected mycotoxins were deoxynivalenol (DON) and zearalenone (ZEN), present in 57 and 62% of global samples, respectively. Swamy Haladi, global category manager for mould and mycotoxin risk management at Trouw Nutrition, noted that it is unclear why ZEN prevalence is increasing. The increase could be a response to changes in climate and weather, or an ongoing issue with ingredient management.

The mycotoxins found at the highest average concentrations include DON, 583 ppb, and fumonisins, 961 ppb, which also accounted for the highest maximum concentrations. Concentrations (amounts) of mycotoxins were similar between 2024 and 2025. However, concentrations tended to peak in different months for several mycotoxins. – *Aquafeed*

VIV Health & Nutrition Asia concludes on high note

VIV Health & Nutrition Asia 2026 brought the region's animal feed and health community together for three high-impact days at BITEC, Bangkok. Running from 10 to 12 March alongside VICTAM Asia, GRAPAS Asia, and Horti & Agri Asia, the four co-located shows together welcomed 10 639 visitors from 73 countries across the agrifood value chain, showing a significant 23% increase in visitor number attendance from the past edition. The surge in attendance was reflected in an equally impressive exhibition presence with 300 exhibitors.

The scale of the 2026 edition was defined by the strength of its co-locations with VICTAM Asia having brought together the world's leading feed technology, pelleting, and grain processing innovators, providing manufacturers and equipment suppliers with a targeted platform for technology transfer and commercial dialogue. The conference programme was among the most compelling draws of the 2026 edition, with sessions spanning the event's four core species – poultry, aquaculture, cattle, and swine – and tackling the challenges most relevant to professionals working across the feed and health value chain.

Held under the theme "Shaping the future of animal feed and health through sustainability and innovation," the programme featured 73 expert speakers across more than 34 sessions. – *Grain Journal*

Saudi Arabia to fund single-cell protein plant for aquafeed

Alternative feed ingredient supplier Unibio is teaming up with Saudi Industrial Investment Group (SIIG) to build a large single-cell protein plant in Al Jubail, Saudi Arabia. In a joint announcement, the companies said the plant will aim to produce 300 000 metric tonnes of protein, predominantly for aquaculture feed, claiming it will be the world's largest producer of single-cell protein.

SIIG will fund 80% of the project. Unibio is a Denmark-based bio-fermentation company producing single-celled proteins, named Uniprotein from natural gas for use in feed. In 2023, SIIG invested US$70 million (€61 million) in Unibio. With an abundance of natural gas, Saudi Arabia is an ideal location to use Unibio's technology, said the companies. – *IntraFish*

Cargill opens new plant in India

Underscoring its long-term confidence in India's livestock sector and to help accelerate growth in Punjab's dairy industry, Cargill Animal Nutrition & Health opened a state-of-the-art dairy feed plant in Wazirabad, Punjab, India at the beginning of March. The new plant will provide dairy farmers access to world-class feed solutions and deliver science-based dairy nutrition at scale. This expansion marks an important step from Cargill towards making India self-reliant in dairy feed, contributing to the Indian Government's initiative of 'Atmanirbhar Bharat' which means 'Self-Reliant India'.

Spread over 15 acres, with an annual production capacity of 400 000 metric tonnes, the new facility will be Cargill's largest dairy feed plant in South Asia and second plant in the state of Punjab (after Bhatinda). It will add over 1 000 (direct and indirect) jobs, creating livelihood opportunities for the local community and helping the company meet rising demand from core dairy markets of Punjab. Products manufactured here will be marketed under the globally renowned brands Provimi and Purina, and cater to multiple customer segments including dairy farmers, producers and feed mills. – *Grain Journal* ❖

The amended *Farm Feed Regulations*: What they mean for the industry

By Bonita Cilliers, technical and regulatory advisor, AFMA

The footprint of every litre of milk, tray of eggs, and kilogram of meat produced in South Africa is made long before it reaches the farm gate or supermarket shelf. It starts with one essential input: animal feed.

Feed sits at the very beginning of the food production chain. Its quality and nutritional value affects animal health, farm productivity, and ultimately the safety of the food that reaches consumers. Scientifically formulated and responsibly manufactured feed supports efficient livestock production and helps ensure that farmers can produce safe, reliable food for the country.

Because of this central role, the South African feed industry operates within a regulatory framework governed by the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)*. Together with its associated regulations, this framework governs the registration, manufacture, importation, distribution, sale, and advertising of feed products. It sets clear standards, promotes fair competition, and protects farmers from misleading or substandard products.

In January this year, the *Farm Feed Regulations* were amended and published for public comment, representing the first major revision in nearly two decades. The amendments consolidate four existing farm feed regulations and introduce several updates that align with the latest feed technologies and feed safety measures; it also reduces unnecessary administrative burdens in product registration.

Why the change?

The animal feed industry has evolved over the last two decades. Modern livestock production relies heavily on specialised ingredients, advanced nutritional science, and sophisticated quality management systems. Moreover, global and local demands for traceability, antimicrobial stewardship, and transparency in food production have grown rapidly. Updating the regulatory framework was therefore necessary to align feed sector rules with modern production practices and scientific knowledge.

Key updates introduced in the amended regulations:

- Improved definitions and terminology reflecting modern animal nutrition.
- Streamlined administrative processes for product registrations and amendments.
- Improved manufacturing controls and feed safety.
- Revised feed classifications and species categories.
- Improved labelling requirements.
- Updated contaminant limits and new carry-over controls.

AFMA coordinated industry's inputs throughout the consultation process, focussing on issues that will influence compliance, feed safety, enforcement, and fostering of an enabling environment for feed manufacturing.

Definitions and terminology

The amended regulations introduce several updates to the definitions that modernise regulatory terminology, broaden the scope of certain regulated products, and introduce several concepts that were previously applied in practice but not explicitly defined in legislation.

One notable change is the redefinition of 'additives' as 'feed additives'. This expanded definition now includes micro-organisms, nutraceutical-type products, preparations, and certain herbal supplements, acknowledging that these substances may be administered through feed or drinking water. These updates reflect advances in modern animal nutrition and the growing importance of functional nutrition in livestock production, thereby bringing a wider range of products within the regulatory framework.

A stronger focus on feed safety and risk management is also evident, with definitions that have been introduced for carry-over, undesirable substances, restricted substances, withdrawal periods, and hazard analysis critical control points (HACCPs), supporting the legal basis for managing contamination risks and cross-contamination in feed manufacturing. References to recognised laboratory accreditation systems such as SANAS and ILAC have also been incorporated.

Terminology relating to product registrations has been added, including amendments, minor administrative amendments, as well as parallel and daughter registrations. The definitions also clarify the difference between a feedstuff and an ingredient, aligning regulatory language with modern feed formulation practices.

For most stakeholders, these changes to definitions will not alter day-to-day operations, but will provide a stronger regulatory foundation and reduce uncertainty in the application of feed legislation.

Registrations and amendments

A major improvement is the introduction of a notification process for minor administrative amendments. Previously, even routine updates required full amendment applications, creating unnecessary delays and administrative burden. The new process reduces this constraint and allows technical advisors to focus exclusively on technical amendments that require assessment and may affect the composition, safety, or efficacy of a feed product.

Examples of minor administrative amendments include packaging artwork changes, additional pack sizes, removal of claims or pictorial elements, addition or removal of foreign language text,

changes to registration holder address and contact details, and voluntary cancellation of a registration.

The regulations also recognise parallel and daughter registrations:

- **Parallel registration:** Permits the same registration holder to register an identical product under a different product name.
- **Daughter registration:** Allows another company to register an identical product under its own name, with the original holder's consent. If the 'mother' registration lapses or is cancelled, all associated daughter registrations automatically lapse as well.

Professional accountability

The new regulations expand the allowance for professional accountability in declarations of nutritional adequacy for pet food. Such a declaration confirms that a feed/food product is formulated with appropriate ingredients and nutrient levels for the intended species, age, and stage, and that it complies with requirements regarding prohibited substances, undesirable substances, and unintended adverse effects relating to the specific mixture of feed/food ingredients and feeding recommendations of the product.

Previously, both farm feeds and pet food required validation by a professional animal scientist registered under the *Natural Scientific Professions Act, 2003 (Act 27 of 2003)*. Under the new regulations complete and complementary pet food may be submitted with a declaration signed by a veterinarian, while nutraceuticals and supplementary pet food may be signed off by a pharmacist. Both veterinarians and pharmacists must demonstrate appropriate expertise and experience in animal feed. Recognised international equivalents of these professionals are also accepted under the new regulations.

Professionally registered animal scientists will continue to be responsible for nutritional adequacy declarations for all farm feeds. AFMA notes the new allowance for pet food and cautions that it places an additional burden on the *Act 36* technical advisor, who is professionally registered at SACNASP, to ensure that all pet food entering the market is nutritionally adequate, safe, and has the correct feeding recommendations on the label.

Updated feed classes

Continuous advances in animal nutrition technology have rendered many nutrient specifications and guaranteed analyses outdated.

AFMA has collaborated with the office of the Registrar of *Act 36* over the past few years to review and update all livestock and poultry feed in line with the latest scientific developments as per the National Research Council (NRC). Reference sources were documented, and maximum tolerable levels (MTLs) for certain nutrients and substances were revised according to global best practice. The incorporation of updated nutritional specification tables and guaranteed analysis requirements into the *Farm Feed General Guidelines* is still pending.

A major new development is the addition of nutritional standards for game, which can now be regulated in South Africa for the first time. AFMA convened experts in game nutrition and after extensive research and discussions, submitted a recommendation to the Registrar for classification and nutrient specifications. This recommendation was adopted and is now included as a recognised animal feed type in the new regulations.

Other feed classes and types – such as complete, complementary and supplementary feeds, concentrates, as well as production-stage categories (pre-starter, starter, grower, finisher, post-finisher, weaning, and maintenance feeds) – have also been updated.

These revisions enable manufacturers to incorporate the latest feed technologies into formulations without requiring additional substantiation, ensuring alignment with international standards.

More practical labelling rules

The amended regulations also introduce improvements to feed labelling – date marking is now mandatory on all feed products. While AFMA members have already been voluntarily including date marks under the *AFMA Code of Conduct*, the new regulations make this practice compulsory across the market.

AFMA has, however, submitted a recommendation to the Registrar for a correction to the proposed date marking in the proposed regulations that will more accurately reflect a mechanism for the customer to evaluate the efficacy and safety of the animal feed product.

The proposed regulation amendment currently refers to 'expiry date' or 'use-by date', terminology typically associated with food safety risks in perishable products. Therefore, applying these terms to most animal feed may create confusion, as the majority of feeds and shelf-stable pet food are quality-stable products rather than safety-limited products. In practice, most feeds do not suddenly become unsafe after a specific date. Instead, product quality and certain nutritional characteristics may gradually decline depending on storage conditions.

cjp CHEMICALS
Driving Innovation and Excellence

CJP CHEMICALS

Importer and distributor of raw materials and ingredients
for all major food and beverage industries in South Africa.

We also supply raw materials to the animal feed and health industry, and are suppliers to the agricultural sector. CJP is a member of the Animal Feed Manufacturer Association (AFMA) offering a wide range of raw materials:

- Animal nutrition and additives
- Vitamins & minerals
- Natural antioxidants & botanical extracts

Johannesburg (headquarters): Tel: +27 11 494 6700 • Fax: +27 11 494 6701
Marilyn Kerr: marilynk@cjpchemicals.co.za • GPS: S26* 15' 2" E27* 58' 34"
60 Electron Avenue, Isando, 1600, Johannesburg, South Africa
Durban: Tel: +27 31 902 3939 • Fax: +27 31 902-3940
Cape Town: Tel: +27 21 534 0727 • Fax: +27 21 534 0733
Port Elizabeth: Tel: +27 41 487 0277 • Fax: +27 41 487-0291

Visit our website or contact your nearest regional office
for more information and to request a quotation.

www.cjpchemicals.co.za

AFMA
SAFE FEED FOR SAFE FOOD
★★★★★ CODE OF CONDUCT COMPLIANCE

AFMA therefore recommended the use of the following terms on feed product labels to support a risk-based approach and avoid misleading the customer into believing that stable feeds automatically become unsafe after a stated date:

- **Best before/minimum storage life** for products that retain their expected quality and nutritional characteristics.
- **Use-by/expiry date** for products where safety risks may arise after a specific date.

The amended regulations also provide greater flexibility in label layout. Mandatory information no longer needs to appear in a fixed sequence, allowing manufacturers more flexibility in label design while ensuring required information remains clearly presented.

Practical approach to advertising

Previously, advertisements had to be approved by the Registrar before products could be marketed. This created delays particularly when approval backlogs occurred, making it difficult for manufacturers to promptly communicate product information or market innovations.

The amended regulations now allow for a post-market compliance approach where advertisements no longer require prior approval. All advertisements must, however:

- Still comply with the registered product label.
- Remain within the scope of the product registration.
- Avoid misleading or therapeutic claims.
- Avoid unsubstantiated endorsements.

Advertising of unregistered feed products is explicitly prohibited. This change removes a significant administrative bottleneck while maintaining safeguards against misleading marketing.

Feed safety and traceability

The amended regulations place greater emphasis on feed safety systems, traceability, and recall readiness. Manufacturers must ensure that facilities are suitable for feed production and may be required to demonstrate compliance with recognised quality or feed safety management systems. This typically includes good manufacturing practices for livestock feed and HACCP-based systems for pet food production.

Traceability and record-keeping requirements have been improved. Manufacturers must retain traceability records for at least five years and be able to demonstrate the ability to execute a product recall within four hours where necessary.

Updated provisions for reference sample retention have also been introduced. Reference samples must now be kept for the declared shelf life of the product plus one additional month, or until any product-related dispute has been resolved. Together, these measures reinforce the principle that feed safety should be managed proactively through structured quality systems, rather than relying solely on end-product testing.

Substance and carry-over risks

The regulations introduce updated provisions for undesirable substances in feed. Several maximum allowable levels have been updated, including limits for heavy metals, mycotoxins, dioxins and pesticides, and now align closely with values used within the European Union regulatory framework.

The unavoidable and unintended carry-over of veterinary medicine in feeds are being regulated in South Africa for the first time. Carry-over occurs when residual substances remain in manufacturing equipment and unintentionally enter subsequent feed batches. Manufacturers will have to demonstrate through verification that carry-over levels in untargeted feeds remain within permitted limits.

AFMA supports the inclusion of this regulation and provided the Registrar with science-based technical recommendations for establishing the required limits in the regulation. In December 2023 AFMA also published a *Carry-over Code of Practice*, providing practical guidance for feed manufacturers and premix producers on how to assess carry-over levels.

What happens next

The public comment period on the proposed amended regulations relating to farm feed closed in February this year and the Registrar is currently reviewing all comments submitted and drafting the final regulations for publication.

Most provisions will come into effect six months after publication, allowing industry time to align labels, documentation and systems. However, Section 19 relating to controlled and undesirable substances takes effect immediately.

It will be critical to update the *Act 36 Farm Feed General Guidelines* and *Farm Feed Registration Guidelines* and that it be published in conjunction with the final regulations. These documents are incorporated by reference in the regulation and provide guidance on the registration of products, formulation of feeds, and guaranteed analysis on labels.

It is proposed that implementation is phased-in to prevent overflooding of the registration process due to label amendment requirements of the new regulation. AFMA will continue to collaborate with *Act 36* and support the industry in ensuring a practical and reasonable implementation.

What the changes mean for industry

For feed manufacturers and suppliers, the amended regulations provide greater flexibility and use of technologically advanced products, improved definitions that contribute to greater regulatory clarity, and a more efficient registration process for minor administrative amendments and advertisements. For farmers and producers, the changes support improved product labelling and feed safety oversight.

Ultimately, effective regulation supports more than compliance. It strengthens trust across the agricultural value chain and helps ensure that feed entering the market is safe, consistent, and fit for purpose. The *AFMA Code of Conduct* will be updated to reflect the new regulatory requirements and continue to provide a supportive self-regulating mechanism whereby industry can confirm compliance and provide customer assurance.

Together, these measures strengthen the foundation of South Africa's livestock value chain, from feed mill to farm to food production, and reinforce the principle that has guided the industry for decades: Safe feed for safe food. ❖

For more information, send an email to the author at technical@afma.co.za

Afma Forum
ANIMAL FEED CONFERENCE

EARN CPD CREDITS

AFMA Forum 2026

8–10 September 2026 • Sun City • South Africa

The Feed Factor – The Chain That Feeds a Nation

Registrations now open

Sponsorship opportunities available

→ www.afmaforum.co.za

Follow AFMA on social media and stay informed

Enquiries +27 (0)12 663 9097 events@afma.co.za

Hosted by

AFMA
SAFE FEED FOR SAFE FOOD
Animal Feed Manufacturers Association

Attendees of this year's Act 36 in-practice short course held from 12 to 13 February.

Building practical compliance capacity in the feed industry

By Wimpie Groenewald, membership liaison officer, AFMA

The Animal Feed Manufacturers Association (AFMA) introduced its first *Act 36* in-practice short course in 2024, to help members gain a better understanding of the legislation governing the animal feed industry.

As regulatory oversight in the feed sector continues to evolve, a practical understanding of the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)* remains essential for maintaining high standards and ensuring compliance across the industry. Since its launch, the course has been presented three times with success, reflecting the relevance of the content and the strong demand for practical, compliance-focussed training.

The *Act 36* in-practice short course is specifically designed to provide real-world insight into the interpretation and application of the *Act*. This sought-after training opportunity is available exclusively to AFMA members. To ensure meaningful engagement and practical interaction, attendance is limited to 20 delegates per course, with participation confirmed on a first-come, first-served basis.

To ensure continued accessibility for members seeking to boost their regulatory knowledge and compliance capability, planning for the next course is already underway.

What participants will gain

The course offers a comprehensive and practical learning experience, including:

- A clear understanding of *Act 36* and how it should be interpreted.
- Practical guidance on applying the legislation in day-to-day operations.
- Legal and regulatory knowledge to support effective compliance.
- Course handouts for ongoing workplace reference.
- A day-two assessment to demonstrate comprehension.
- An electronic certificate of attendance or achievement (subject to assessment outcome).
- An electronic continuing professional development (CPD) certificate, with 1,6 CPD credits awarded to professionals registered with the South African Council for Natural Scientific Professions (SACNASP).

Who should attend

The course is ideally suited to:

- Management teams within feed manufacturing businesses.
- Regulatory and compliance personnel.
- Quality assurance and technical managers.
- SACNASP-registered animal scientists.
- Individuals involved in the registration of farm feeds under *Act 36*.

Expert facilitation

Training is presented by Herman van Zyl of Afri Compliance, who brings to the table over 44 years of experience in the interpretation and application of *Act 36*. He began his career in 1980 as a member of the *Act's* inspection service and later served as head of the division, where he introduced mandatory training for new employees.

His extensive contributions across public and private sectors have established him as a widely respected authority in regulatory compliance. His experience provides delegates with practical insight into regulatory expectations from both enforcement and industry perspectives.

Positive industry feedback

Feedback from previous delegates have been overwhelmingly positive. Participants praised the practical examples and interactive discussions that make complex regulatory requirements easier to understand and apply. Many valued the opportunity to engage with peers from other companies, debate interpretations of the *Act*, and gain insight into raw material and farm feed regulations. The facilitator's passion, openness to discussion, and ability to connect theory with real-world scenarios were also praised. The course bridges the gap between legislative requirements and practical implementation within feed manufacturing operations.

Through this initiative, AFMA continues to demonstrate its commitment to equipping members with the knowledge and practical skills required to operate responsibly, remain compliant, and uphold the integrity of South Africa's animal feed industry. In doing so, AFMA plays a proactive role in regulatory competence across the sector, supporting feed safety, responsible manufacturing practices, and sustained confidence in South Africa's animal feed industry. ❖

Send an email to Wimpie Groenewald at admin@afma.co.za for more information.

The protein behind the feed sector

By Petru Fourie, operations manager, AFMA

Oilcake forms the main plant-protein base in South Africa's compound feed industry. Protein is one of the most crucial components in feed formulation, and oilcake provides most of it. Its availability, quality, and price influence feed and animal protein costs, as well as livestock performance.

Oilcake sits at the intersection of oilseed production, crushing capacity, and feed manufacturing – linking South Africa's grain and oilseeds sector to its livestock industry. Over the past two decades, AFMA's raw material data show how this protein base has shifted from import dependence to domestic supply. AFMA represents South Africa's formal animal feed manufacturing industry, accounting for around 58% of formal feed production.

More than two decades of growth and change

Analysis of AFMAs raw material dataset shows an expansion in oilcake usage over the past two decades. Total oilcake inclusion among AFMA member mills amounted to 521 223 tonnes in 2001, with local and imported supply split almost evenly. Domestic soya bean production was only approximately 220 000 tonnes in 2001, and crushing capacity could not meet demand. As a result, feed manufacturers were exposed to exchange-rate volatility and global supply conditions.

The structure of the sector changed markedly over time. Imported oilcake peaked at 76% of total usage in 2007 but declined steadily as domestic oilseed production and crushing capacity increased. By 2025, oilcake inclusion had risen to 1 457 219 tonnes, representing growth of around 180% since 2001.

The most significant change, however, has been the move from import dependence to predominantly local supply. Local crushing capacity now exceeds 2,9 million tonnes, supported by soya bean production of more than 2,8 million tonnes. As a result, locally produced oilcake supplied 87% of usage in 2025, with imports reduced to 13%. This transition means the feed sector is less exposed to foreign exchange fluctuations and enjoys greater supply stability.

Oilcake mix composition

The composition of oilcake usage has changed over time. In 2001, feed formulations relied on a diversified mix of oilcake. Soya bean oilcake, mostly imported at the time, accounted for 54,8% of usage; sunflower contributed 37,2%, cottonseed 6,6%, and canola only 0,2%.

As local soya bean production and crushing capacity grew, the oilcake mix centred on soya bean oilcake, which accounted for approximately 78% of total usage in 2025; sunflower's share declined to around 15%, canola rose to roughly 5%, and cottonseed fell to around 1%.

This shift is a result of improved availability and competitive pricing, together with the high nutritional value of soya bean oilcake. Soya bean oilcake provides a high-quality, consistent protein source suited to all major livestock sectors. Given the increase in local supply, it became the primary base protein in compound feed production. *Table 1* compares the volumes and proportional shares of the main oilcake types in 2001 and 2025, and shows the move towards soya bean oilcake dominance.

Oilcake dominance in feed

Oilcake is not only nutritionally reliable but also cost effective, which is reflected in the volumes used every year. As a high-quality, digestible protein source, oilcake enables precise formulation across species and production systems.

Animal by-product meals such as fish meal, blood meal, and poultry by-product meal are important but specialised high-value ingredients used in targeted applications such as broiler, pig and aquaculture diets and pet food. However, their overall inclusion levels are relatively small.

AFMA members used approximately 95 500 tonnes of animal protein meals in 2025 compared to 1,45 million tonnes of oilcake. This means oilcake supplied nearly 15 times the volume of animal protein, confirming its central role in South Africa's feed sector. Oilcake accounted for around 20% of total raw materials used in compound feed in 2025, while animal by-product proteins contributed only about 1,4%. Plant-derived proteins supply the majority of the feed sector's protein requirements.

Canola's growing role in feed

Canola oilcake has emerged as an important addition to South Africa's protein base. Although much smaller in volume than soya bean oilcake, its inclusion increased from negligible levels in 2001 to more than 80 000 tonnes in 2025, which is roughly 5,5% of total oilcake usage. This growth can be attributed to the rapid expansion of local canola production. The planted area increased from 27 000ha in the early 2000s to an estimated 174 515ha in 2025/26, while national production increased from approximately 26 000 tonnes to more than 310 000 tonnes over the same period.

Figure 1: Total oilcake usage among AFMA members (2001 to 2025).

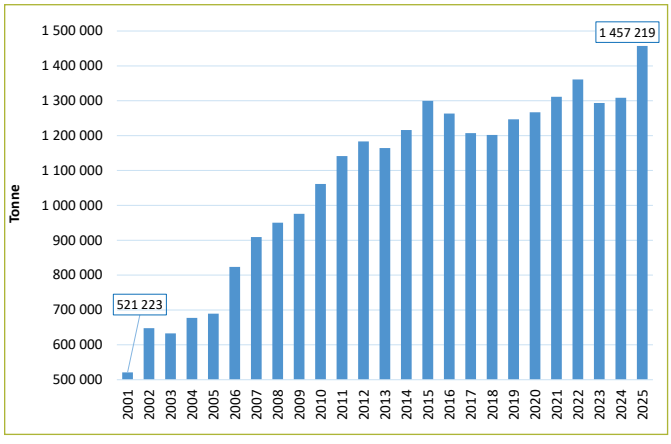


Table 1: Comparison of oilcake usage in AFMA member feed mills: 2001 versus 2025.

Oilcake type	2001		2025		Key observations
	Tonne	% share	Tonne	% share	
Soya bean	285 600	54,8%	1 137 578	78,1%	Strong expansion driven by growth in local crushing; now the dominant protein base across all livestock sectors.
Sunflower	193 677	37,2%	222 007	15,2%	Reduced share as soya bean expanded; remains important in ruminant diets.
Canola	810	0,2%	80 065	5,5%	Substantial growth, particularly in the Western Cape; higher inclusion in pig and dairy diets.
Cottonseed	34 527	6,6%	8 083	0,6%	Reduced use over time; now a niche ingredient in certain formulations.
Other*	6 609	1,3%	9 486	0,7%	Minor contribution, used in specialised formulations.
Total	521 223	100%	1 457 219	100%	Total oilcake inclusion increased by 180% between 2001 and 2025.

**Palm kernel, maize germ, groundnut, copra.*

The expansion has been driven primarily by the Western Cape and supported by improved cultivars, better agronomic practices, and increased crushing capacity. Canola oilcake's suitability for pig and dairy diets further supports its inclusion. Although soya bean is still the dominant player, canola has firmly established itself as a complementary protein source.

Conclusion

The evolution of oilcake usage over the past two decades tells the story of a maturing and self-reliant feed industry. What began as a largely import-driven protein input has developed into a domestically supported and strategically important component of feed formulation.

Growing oilseed production and crushing capacity have placed oilcake at the centre of South Africa's feed protein supply. Its reliability and economic significance make it essential to efficient livestock production.

Looking ahead, maintaining a competitive domestic oilseed sector is crucial. Continued investment in genetics, agronomy, and crushing capacity will determine whether South Africa sustains this advantage in an increasingly competitive global protein market.

In 2025, more than 1,45 million tonnes of oilcake were incorporated into compound feed, a clear indication that oilcake is not merely an ingredient but foundational to the stability and competitiveness of South Africa's feed sector.

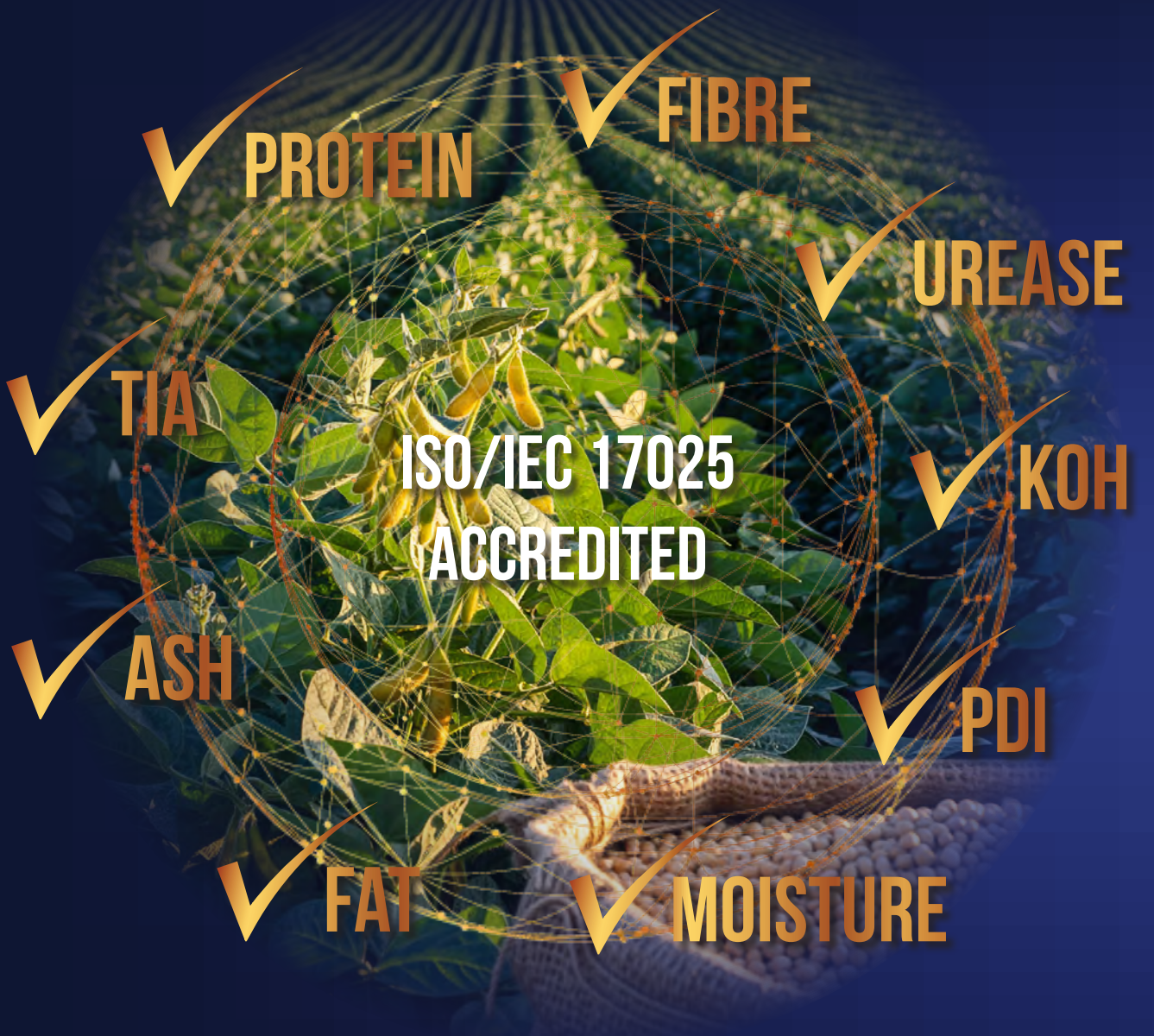
For more information, send an email to Petru Fourie at petru@afma.co.za

GOLD STANDARD IN SOYA TESTING

CHEM NUTRI ANALYTICAL

sanas Testing Laboratory T0713

THE FIRST AND ONLY FULLY ACCREDITED AUTHORITATIVE SOYA QUALITY LABORATORY IN AFRICA



YOUR CONFIDENCE STARTS WITH ACCREDITED RESULTS

FAST ACCURATE ESSENTIAL

+27 (11) 316 8800
www.chemnutri.co.za

South Africa's soya bean boom

By Petru Fourie, operations manager, AFMA

South Africa's soya bean industry has undergone remarkable expansion over the past decade. Higher production volumes, supported by a bigger planting area and investment in local crushing capacity, have reduced South Africa's reliance on imported soya bean products and improved raw material availability for feed manufacturers.

Soya beans have also become South Africa's second largest summer crop after maize, highlighting the rapid growth of the country's oilseed sector. The area planted to soya beans has expanded from roughly 134 000ha in 2000 to more than 1,2 million ha today. This expansion, together with improvements in cultivar performance, has supported a more than tenfold increase in national soya bean production over the past two decades.

The 2025/26 production season indicates a further expansion in soya bean plantings. According to the latest Crop Estimates Committee figures (released on 26 February 2026), the area planted increased by around 5% to 1,213 million ha, compared to 1,151 million ha in the previous production season.

Despite the larger planted area, total production is estimated slightly lower at 2,66 million tonnes, compared with 2,80 million tonnes in the previous season, which was a record crop for South Africa. The lower production estimate is mainly linked to lower yield expectations following excessive rainfall early in the season that delayed planting in several regions, followed by periods of mid-season dryness that affected the yield potential. Nevertheless, overall production conditions remain favourable and continue to support a positive local soya bean supply outlook.

Supply-demand balance

South Africa's soya bean market has become increasingly well supplied over the past three marketing seasons. Total supply for the 2026/27 marketing year is estimated at approximately 2,97 million tonnes, supported by good local production and higher carry-over stocks.

One of the most notable developments in the market is the rise in ending stocks and soya beans available for export. Ending stocks are also projected to increase from around 140 000 tonnes in the 2024/25 marketing year to approximately 370 000 tonnes by the end of the 2026/27 marketing year (28 Feb 2027). Over the same period, soya bean exports are expected to increase from roughly 150 000 tonnes to 235 000 tonnes, reflecting greater soya bean availability in the local market and the growing role of exports in balancing supply.

Local demand continues to be driven primarily by the crushing industry, with roughly 2,2 million tonnes of soya beans processed annually into oil and oilcake. This highlights the importance of the

Figure 1: Soya bean opening vs ending stock.

Say YES to more

We understand that overall lifetime productivity of dairy cows impacts your profits and the planet. That's why we developed Hy-D®. It provides rapid access to the vitamin D3 your herd needs for peak health and performance.

Now you can say **YES** to:
Yield increase of milk
Enhanced calcium and phosphorous metabolism
Strengthen immunity

So that you can turn possibility into profitability.

For more information, please contact Riaan.De-Beer@dsm-firmenich.com or George.Wiehahn@dsm-firmenich.com

Learn more at
dsm-firmenich.com/anh

dsm-firmenich

livestock feed sector as the primary downstream user of soya bean protein. *Figure 1* illustrates the change in South Africa's soya bean balance, with increasing exports and higher ending stocks indicating better supply conditions in recent marketing years.

Prices ease as supply improves

Price dynamics in the soya bean market shifted over the past three marketing years, with soya bean prices that traded close to import parity levels during the 2024/25 marketing year, due to the impact of drought. More advantageous production conditions during the 2025/26 marketing year changed the market balance. Higher local production increased soya bean availability, placing pressure on prices and gradually shifting the market away from import parity levels.

As illustrated in *Figure 2,* soya bean prices have since declined and are currently trading closer to export parity levels at the start of the 2026/27 marketing year. With both production and carry-over stocks being higher, the local market is likely to rely on exports to balance supply.

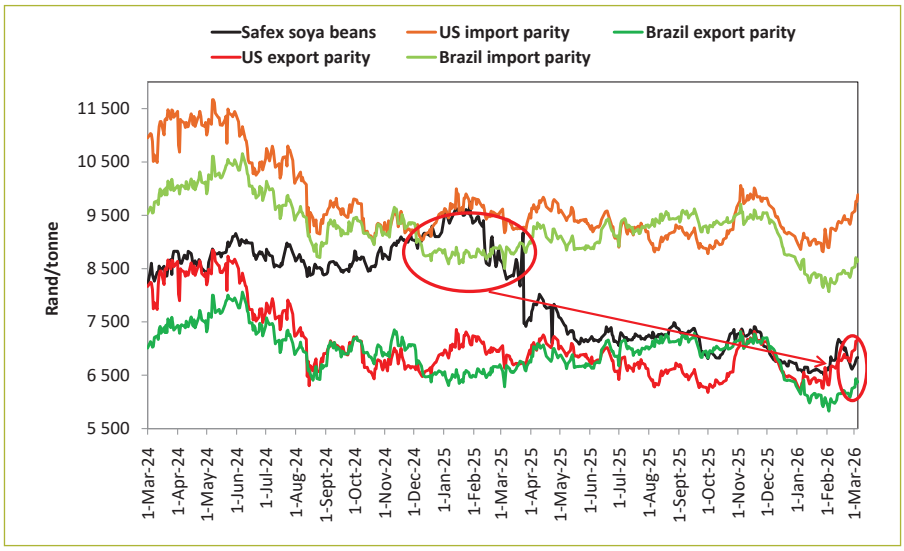
At the same time, ample global soya bean production, particularly from major producers such as Brazil and the United States, continues to limit upward price momentum. South African soya bean prices are expected to remain closely aligned with international oilseed market fundamentals.

Crushing capacity anchors demand

South Africa's soya bean processing industry has grown the past decade, supported by investments aimed at reducing reliance on imported protein oilcakes. This crushing capacity now forms an integral part of local soya bean demand. A decade ago, South Africa relied heavily on imported soya bean oilcake to meet feed industry demand, but the expansion of local crushing capacity has changed this position, with the majority of soya bean oilcake now produced locally.

Furthermore, most of South Africa's soya bean crop is processed locally, producing oilcake for the feed industry and oil for the food sector. Local processing ensures the consistent availability of soya bean oilcake and reduces reliance on imported protein sources; it also boosts the resilience of feed ingredient supply chains. Soya bean oilcake is the primary protein ingredient used in compound feed rations in South Africa, making developments in the soya bean market particularly important for feed cost management.

Figure 2: Safex soya bean prices relative to import and export parity levels, Randfontein delivery point (2024/25 to 2026/27 marketing years). (Source: Grain SA, 2026)



The role of export markets

As local production continues to grow, exports are becoming a structural component of the soya bean market rather than an occasional outlet for surplus supply. South Africa exported more than 597 000 tonnes of soya beans during the 2023/24 marketing year – this illustrates the growing role of exports in managing local supply. The country's soya bean exports are currently dominated by regional markets, particularly neighbouring countries such as Zimbabwe, Eswatini, Mozambique, and Botswana.

In seasons when South African soya beans are internationally price competitive, shipments have also been sent to Asian markets, such as China, Malaysia, Thailand, Vietnam, and European markets.

The development of stable export markets will be critical for the long-term sustainability of the soya bean sector. Without sufficient export demand, local oversupply could place downward pressure on prices. Export competitiveness, however, depends on several factors, including logistics efficiency, port capacity, and price competitiveness relative to major global suppliers.

Summary

The soya bean market is expected to remain relatively well supplied both locally and globally. If favourable production conditions continue, South Africa could see another strong crop, supported by expanding production and robust domestic crushing capacity.

Ample global oilseed supplies are likely to keep prices under pressure, with South African soya bean prices expected to trade close to export parity levels unless weather disruptions occur in major producing regions.

For feed manufacturers, this environment offers greater input cost stability and reinforces the need to monitor global oilseed market developments when managing feed ingredient procurement.

At the same time, the rapid expansion of South Africa's soya bean sector has transformed the country into a significant oilseed producer. Sustaining this growth will depend on stronger export markets, improved logistics, and continued competitiveness across the soya bean value chain.

Article was written with information available on 5 March 2026. For more information, send an email to Petru Fourie at petru@afma.co.za

ADVERTORIAL

Precision soya crushing:
Quality over volume

Globally, soya bean meal accounts for roughly two-thirds of the protein meal used in animal feed, making it central to modern livestock production. From broiler houses to dairy farms, performance relies on the consistency and digestibility of this ingredient.

Record harvests in major producing regions have lifted meal volumes worldwide, with South Africa reflecting this trend. The 2024 and 2025 seasons have produced an exceptional soya bean crop, with forecasts of 3,1 million tonnes in 2026, supported by favourable La Niña rains. In these conditions, volume is no longer the differentiator. Quality is.

This shift comes as the local poultry industry reaches a new level of competitiveness. The BFAP 2025 *Competitiveness Benchmark Report* ranks the South African sector second globally, behind Brazil and ahead of the United States, on key production metrics and feed conversion. Feed accounts for roughly 70% of broiler input costs, with soya bean meal as the primary protein source. In a system operating at such high biological efficiency and fine margins, small differences in digestibility or heat treatment can affect growth rates and feed conversion.

Indepenent performance testing

It is against this backdrop that Pretoria Protein Company, which began operations in October 2024, subjected its soya bean meal to independent blind growth trials at the broiler research facility of Stellenbosch University. Birds were allocated to groups and fed identical diets containing soya bean meal sourced from eight major suppliers. The results, published in *Oilseeds Focus*, placed Pretoria Protein Company's meal at the upper end of observed feed conversion and growth performance outcomes among the evaluated samples.

In practical terms, this indicated efficient nutrient utilisation per kilogram of feed. The findings were notable not only for their performance metrics but also for the speed with which they were achieved. Optimisation in oilseed processing often takes several seasons of adjustment. Achieving competitive biological results within the first year of operation suggests a focus on process control from inception. That focus starts inside the plant.

Bean to product process control

Pretoria Protein Company structures quality assurance around three critical points: the condition of the incoming bean, the discipline of processing, and verification before final release. This framework replaces assumptions with measurements throughout the process.

Quality is assessed upon the arrival of raw materials and throughout crushing and extraction, with laboratory testing embedded in daily procedures. Hourly analyses measure protein, fibre, fat, moisture, and urease activity, while physical factors such as cracked-bean size and flake thickness are also monitored because they influence extraction efficiency and the quality of downstream meals.

Heat treatment forms the central balancing act. Just enough heat is required to deactivate urease and other anti-nutritional factors; too much can impair amino acids and reduce digestibility. Real-time data interpretation by trained laboratory personnel allows adjustments before small deviations affect larger volumes. The process concludes with final batch approval and the issuance of a Certificate of Conformance, providing clients with documented assurance that all specifications have been met. Regular independent external verification adds a further layer of accountability.

While Pretoria Protein Company focusses on manufacturing excellence, Pretoria Protein Trading oversees market engagement across South Africa, emphasising consistent quality as the foundation for purchasing decisions and building long-term supply partnerships. In a competitive poultry industry where biological performance is crucial, the dependability of soya bean meal is a primary consideration rather than an afterthought.

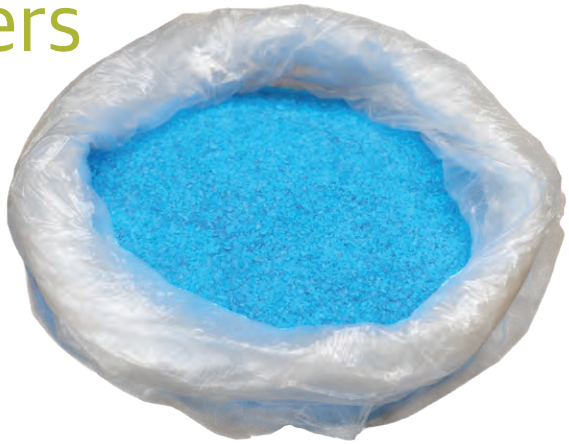
As global surpluses grow and domestic production strengthens, competition in animal nutrition will continue to move towards precision rather than volume. In that context, disciplined crushing, verified quality, and measurable feed results form a continuous loop. Pretoria Protein's early trial results indicate that, in a market flooded with supply, careful processing remains one of the few benefits that cannot be commoditised.

Disclaimer: The trials were conducted independently at Stellenbosch University's broiler research facility and published in *Oilseeds Focus* (Vol 11, No 4, December 2025). The publication does not endorse any supplier or product. The interpretation of the results presented here reflects Pretoria Protein Company's analysis.

Contact Pretoria Protein Trading at 012 004 3166 or info@pptd.co.za and Pretoria Protein Company at 012 004 1120.

Copper sulphate tariff increase: Alternative duty-free supply options for South African importers

By Dr Lucius Phaleng, trade advisor, AFMA



South Africa's International Trade Administration Commission (ITAC) reviewed a request from a domestic manufacturer to raise the import duty on copper sulphate from 0 to 10% *ad valorem*. The application cited increased imports and low-priced products as factors reducing local producers' profitability. Domestic producers face competition from cheaper imports originating from South America and Asia. Copper sulphate is a strategic input used in agriculture, mining, and manufacturing.

The amendment, published in the *Government Gazette* on 20 September 2024, raised the Most Favoured Nation (MFN) duty rate to 10% *ad valorem*. However, imports from preferential trade partners, such as the European Union (EU), United Kingdom (UK), European Free Trade Association (EFTA), Southern African Development Community (SADC), and countries under the African Continental Free Trade Area (AfCFTA), remain duty-free. Imports from the Southern Common Market (MERCOSUR) are now subject to the new 10% duty.

Alternative zero-duty suppliers

The tariff increase does not apply to all copper sulphate imports. Importers can mitigate higher costs by selecting suppliers from trade partners that continue to benefit from zero-duty arrangements.

Copper sulphate importers can adapt quickly by choosing suppliers from FTA-covered markets instead of non-preferential global sources. European suppliers remain duty-free and provide reliable quality for the agricultural value chain. EFTA countries also offer high purity copper sulphate for specialised uses like water treatment and pharmaceuticals. While shipping may cost more, not paying import duty helps balance the total cost.

The SADC region present a substitution option due to geographic proximity and simplified customs procedures. Importers can source from regional producers and distributors in neighbouring countries while maintaining zero duty. In addition to cost savings, regional sourcing often reduces lead times and exchange rate exposure. SADC sourcing is especially suitable for agricultural and mining-grade copper sulphate, where specification tolerances allow multiple equivalent suppliers.

Building on regional options, the AfCFTA offers even wider duty-free access, expanding it across the larger African market. Importers may consider suppliers from North and East Africa where chemical production capacity has grown in recent years. These countries offer competitive pricing due to shorter logistics distances compared to intercontinental imports, while still qualifying for duty-free treatment.

A new approach

Sourcing from MERCOSUR and other non-preferential global suppliers will now incur the 10% duty, which means suppliers that were previously cost competitive may no longer offer the lowest landed price. Importers should therefore re-evaluate supplier contracts and consider price renegotiations or alternative origins under existing trade agreements.

From a procurement strategy perspective, this tariff change shifts the decision from purely price-based sourcing to origin-based sourcing. The landed cost calculation now depends not only on the invoice price and freight but also on trade agreement eligibility and proof of origin documentation. Ensuring valid certificates of origin becomes critical to securing zero-duty benefits.

In practical terms, importers can stabilise cost by prioritising suppliers located in the EU/UK, EFTA and African trade agreement regions while gradually reducing reliance on non-FTA suppliers, subject to supplier qualification, regulatory compliance, and logistics considerations. This approach allows businesses to absorb the tariff change while limiting supply chain disruptions.

Conclusion

The tariff increase does not necessarily result in higher costs for local users of copper sulphate. Instead, it encourages a restructuring of sourcing patterns towards preferential trade partners. By aligning procurement strategies with existing trade agreements, South African importers can continue accessing copper sulphate at zero duty while maintaining supply continuity and supporting cost competitiveness.

For more information, send an email to Dr Lucius Phaleng at trade@afma.co.za

Feeding animal-derived protein: What is allowed and what is not

By Cile-Mari Schultz and Bonita Cilliers

A query that AFMA often receives is whether bloodmeal and other animal-derived protein can be used in animal feed. This article sets the record straight by outlining the science and practical implications of meeting regulatory requirements when using processed animal proteins in animal feed.

Processed animal proteins are produced through the rendering of animal by-products generated during the slaughter and processing of livestock, primarily poultry, pigs, cattle, and sheep. These materials, which are not suitable for human consumption, are collected and processed through controlled rendering systems that convert them into safe and valuable feed ingredients.

Rendering plays an important role in the circular use of agricultural resources. By converting animal by-products into usable protein and mineral sources for animal feed, the livestock industry can utilise nutrients efficiently and reduce waste that would otherwise require disposal. This improves environmental sustainability and supports the responsible use of natural resources within modern food production systems.

Many rendered animal proteins are highly nutritious ingredients that are sources of amino acids, minerals, and other nutrients used in animal nutrition. However, the use of certain animal-derived proteins is subject to strict regulatory control, particularly when it comes to ruminant animals.

What is 'ruminant protein'?

In feed regulation, ruminant protein refers to protein derived from animals in the ruminant group, such as cattle, sheep, and goats. These proteins originate from rendered animal by-products produced during the slaughter and processing of livestock – examples include meat-and-bone meal, bone meal, meat meal and blood meal derived from ruminant animals. The use of these materials in ruminant feed is strictly prohibited due to the potential disease risks associated with feeding ruminant-derived material back to ruminants.

Why does this matter?

The principal risk in using ruminant protein in ruminant diets is the potential transmission of transmissible spongiform encephalopathies (TSE), including bovine spongiform encephalopathy (BSE), scrapie, and chronic wasting disease to ruminant animals. These diseases are caused by abnormal proteins or prions, which are highly resistant to heat and conventional sterilisation processes. Scientific evidence underscores the seriousness of this risk: As little as 1mg of infected tissue can transmit BSE to a calf (DAERA, 2019).

In addition to animal welfare concerns, the introduction of BSE into the feed chain could compromise South Africa's animal health status and restrict export market access, undermining consumer confidence in the safety of livestock products.

Major trading regions enforce the same core rule, namely that ruminant-derived protein must not be fed to ruminant animals (*Table 1*).

Local ruminant protein regulation

South Africa's approach to regulating ruminant-derived proteins in animal feed developed progressively in response to global concerns surrounding BSE. In 2001,

Table 1: Instruments regulating ruminant-derived protein.

Region	Instrument
European Union	*Regulation (EC) 999/2001* and *2021/1372*
United States (FDA)	*21 CFR 589.2000 Feed Rule*
Australia and New Zealand	*Ruminant Feed Ban Standard 2008; Biosecurity (ruminant protein) Regulations 1999*
Canada	*CFIA Feed Ban Program* (Enhanced 2007)
WOAH (OIE)	*Terrestrial Code Ch. 11.4* (BSE)

Table 2: What is allowed and what not.

Processed animal proteins (origin)	Permitted in ruminant feed?	Permitted in monogastric feed?
Ruminant protein	No	No
Bovine blood meal	No	With an exemption/permit
Milk and milk products	Yes	Yes
Mammalian protein from non-ruminant origin	No	Yes, with conditions and approval of the registrar
Non-mammalian protein (e.g., poultry meal, feather meal, etc.)	Yes	Yes

AFMA members voluntarily implemented a ban on the use of ruminant-derived proteins in ruminant feed as a precaution to protect the local livestock industry and align with emerging global feed safety standards.

From 2006 onwards, the use of mammalian-derived proteins in animal feeds became subject to stricter regulatory control. Under South African legislation, mammalian-derived animal protein (except for milk and milk products) may not be used in farm feeds intended for livestock unless the registrar grants specific exemptions in terms of the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)*. In certain cases, additional approval is required from the director of veterinary services under the *Animal Diseases Act, 1984 (Act 35 of 1984)*.

The two key regulations that govern these controls are:

- **Regulation 24 of *Act 35 of 1984*** prohibits the feeding of ruminant-derived protein to any animal other than predators and carnivores, but written approval may be granted by the director for feeding ruminant blood meal to non-ruminant animals.
- **Prohibition Notice R356 of *Act 36 of 1947*** restricts the handling and use of mammalian-derived proteins in feed manufacturing facilities. Feed mills must operate under strict permit conditions, including traceability systems, measures to prevent cross-contamination, and appropriate labelling such as: NOT TO BE USED IN RUMINANT FEEDS OR FEEDING.

A special case: Bovine blood meal

An exemption may be granted for the use of bovine blood meal in non-ruminant feeds, such as poultry feed, provided strict regulatory conditions are met. These requirements are governed through *Veterinary Procedural Notice 34*, which outlines the process for obtaining approval from the director of animal health and the registration of the feed product under *Act 36 of 1947*.

The exemption applies to the entire supply chain, including abattoirs supplying bovine blood, rendering plants producing blood meal, and feed manufacturing facilities. These facilities must undergo official veterinary inspections and operate under strict traceability, auditing and record-keeping requirements.

Ultimate takeaway

The rule is clear: Keep ruminant-derived proteins out of ruminant feeds – without exception. Where specific exemptions exist, strict regulatory oversight, traceability systems, and auditing requirements apply. By adhering to these protocols, South Africa's feed industry upholds not only high standards but also the integrity of the feed and livestock sectors.

For more information, send an email to Bonita Cilliers at technical@afma.co.za

Now hiring! The animal feed industry

By Susan Marais, Plaas Media

There is no shortage of jobs in the animal feed industry, especially for skilled and experienced workers. According to Marianne van der Laarse, managing director of Agrijob, the number of job postings from member companies of the Animal Feed Manufacturers Association (AFMA) has risen sharply since 2023. Agrijob estimates that positions advertised by AFMA members have increased by roughly 50% year-on-year over this period.

"Agrijob has had an official agreement with AFMA since 2021 that allows its members to advertise vacancies on our platform at no cost," says Van der Laarse. "The growth we've seen spans all job categories, including operational, commercial, and technical roles. Although these figures reflect activity on the Agrijob platform rather than the entire industry, the trend is a strong indicator of growing recruitment activity within the formal feed sector."

Agrijob categorises jobs in the animal feed industry into three groups:

- **Operational roles** such as feed mill operations and management, warehousing, logistics, SHEQ (safety, health, environment, and quality), maintenance and engineering, as well as feedlot, farm and broiler production.
- **Commercial roles** encompass technical sales, marketing, key account management, business development, and executive and financial management.
- **Technical roles** include animal nutrition, animal health, technical scientific support to producers and feedlots (non-sales related), as well as research and product development.

The increase in advertised positions has persisted despite macro industry challenges such as outbreaks of foot-and-mouth disease (FMD) and pressure on livestock profitability. "These challenges can lead to short-term hesitation in hiring for certain production-adjacent roles," says Van der Laarse. "However, feed manufacturing companies tend to remain relatively stable employers with ongoing talent needs."

For senior technical, commercial and executive roles, companies often rely on headhunting because few highly experienced industry specialists actively apply for positions. This trend, however, impacts the development of younger professionals, as fewer junior candidates are recruited and trained internally.

Where most jobs are concentrated

Agrijob's involvement is strongest in the formal feed manufacturing and animal nutrition sector due to their agreement with AFMA. Based on positions advertised on the platform, the highest concentration of jobs is found in commercial and customer-facing functions (technical sales, marketing, key account management); technical management and advisory roles (nutritionists, technical specialists supporting farms and feedlots); feed mill operations (operators, shift supervisors, mill managers); quality and regulatory roles (SHEQ, food/feed safety compliance, laboratory technicians); logistics and warehousing; and maintenance and engineering.

"While farms, feedlots, and broiler operations also provide employment, most structured recruitment activity we see comes from formal feed manufacturers."

Employers show high demand for technical sales representatives (particularly monogastric and ruminant sectors), feed mill operators and supervisors, maintenance and engineering personnel such as electricians, millwrights and mechanical technicians, SHEQ and food safety/quality professionals (including laboratory personnel), animal nutritionists, technical advisory specialists, and production managers for feedlots and broiler operations.

The most difficult roles to fill are commercial and technical sales positions. "These roles require a combination of scientific knowledge, commercial aptitude, and practical industry experience," says Van der Laarse. "That combination is relatively rare."

More than just nutrition

Running a modern feed mill requires far more than expertise in animal nutrition. A wide range of specialised skills is needed. Key positions include feed mill operators and production personnel, shift supervisors and mill managers, quality control and food/feed safety officers, laboratory technicians, SHEQ officers, maintenance technicians, electricians, millwrights and engineers, warehouse and dispatch personnel, logistics coordinators and drivers, procurement and raw material planners, and administrative, financial and human resources support.

Feed mills have become more automated and technically sophisticated, placing greater emphasis on mechanical, engineering and compliance-related skills.

Economic factors influencing hiring

The health of the livestock sector plays an important role in hiring decisions. When production margins are tight, companies often slow hiring in commercial roles linked to sales volumes. Expansion-related recruitment is also postponed, placing more pressure on existing personnel to take on additional responsibilities.

However, core feed mill operations, maintenance, quality control, and compliance roles are considered essential

and remain stable even during economic downturns. While livestock diseases such FMD create temporary uncertainty, they do not have a major impact on the medium- to long-term talent needs of feed manufacturers.

Seasonality can also influence recruitment. Broiler and feedlot production roles may fluctuate with market cycles, while seasonal raw material handling often aligns with harvest periods. Technical advisory and sales roles usually increase during peak production seasons, and maintenance staff are often recruited ahead of planned shutdowns or upgrades. "Feed milling itself operates year-round, which means core staffing levels are relatively stable," says Van der Laarse.

Qualifications and skills in demand

- BSc Animal Science or Animal Production, especially for technical and commercial roles.
- MSc in Animal Nutrition for specialist nutritionist positions.
- A combination of Animal Science and a commercial qualification (BCom or MBA) is very valuable for technical sales and general management roles.
- Engineering or trade qualifications (millwright, electrician, mechanical technician) for operational and maintenance roles.
- Feed milling qualifications, such as the National Certificate: Grain Milling (AgriSETA registered), Occupational Certificate: Miller, offered by the Southern African Grain Milling Academy (SAGMA), and AFMA's industry-recognised professional development programmes.

"Soft skills remain equally important," Van der Laarse says. Communication, problem-solving, customer engagement, and the ability to operate in a regulated production environment are highly valued.

The importance of education versus practical experience varies by role. In feed milling operations, hands-on experience is often more important than formal tertiary education. In contrast, nutrition and technical advisory roles require academic qualifications, often at postgraduate level. Technical sales roles require both a scientific qualification and practical industry experience.

Agrijob consistently observes shortages in several key areas:

- Experienced technical salespeople.
- Qualified animal nutritionists with industry experience.
- Skilled maintenance and engineering personnel.
- Millwrights and electricians familiar with feed milling environments.
- Middle- and senior-level commercial managers with in-depth industry knowledge.
- SHEQ and food/feed safety professionals with feed-specific experience.

The industry also faces an ageing workforce, with many senior specialists nearing retirement and too few young professionals entering technical or operational career paths.

Opportunities and challenges

Professionals in feed mills can progress from entry-level positions to senior management: Operational employees can advance from feed mill operator to supervisor, production manager and eventually mill manager. Technical sales professionals often progress to key account or regional management roles and later move into commercial or executive leadership positions. Laboratory technicians, nutritionists and engineering professionals similarly have opportunities to develop into specialist or managerial roles. Many companies prioritise internal promotion, recognising the value of long-term experience in this highly specialised sector.

Training and structured apprenticeships are essential for developing new talent. Industry programmes for feed mill operators, AFMA training courses and engineering apprenticeships provide foundational skills. Many large feed manufacturers also offer in-house training in technical sales, research and development, as well as operations.

Across the sector, practical workplace experience remains the most effective pathway to a successful career.

Recruiting and retaining skilled employees is a challenge. The pool of professionals with feed-specific expertise is limited, and competition from related industries such as poultry, livestock production, animal health and agri-processing is intensifying. Geographic factors also play a role. Many feed mills are in rural areas, which can make attracting younger professionals more difficult. High-performance expectations and extensive travel can also affect retention in technical sales roles.

Agrijob recommends structured graduate placement programmes across disciplines such as animal science, nutrition, engineering, commercial management, IT and data analytics to develop a steady talent pipeline. Similar programmes already exist in South African industries such as the Fresh Produce Exporters' Forum (FPEF) and the wine sector.

A changing workforce

Technology, automation and sustainability are also creating new career opportunities within the industry. Emerging roles include positions in automation and process control, data analytics, precision nutrition, sustainability and environmental compliance, digital marketing, and research and development for alternative proteins and feed additives. As feed mills become more high-tech, even entry-level positions require greater digital and technical competence.

Diversity and inclusion are gradually gaining momentum within the sector. More women are entering technical, production and commercial roles, although some young animal science graduates still struggle to secure entry-level positions and may seek opportunities elsewhere in agriculture.

Companies are encouraged to incorporate diversity into their recruitment strategies so as to meet governance and transformation objectives. While some operational areas remain male-dominated, the industry is moving towards a more inclusive workforce.

For more information, contact Marianne van der Laarse at marianne@agrijob.co.za or 082 388 1000 and Majella van der Arend, operations manager at Agrijob, at majella@agrijob.co.za or 064 757 1140.

Improving South Africa's crop estimates

By Petru Fourie, operations manager, AFMA, and Rona Beukes, senior statistician, Department of Agriculture

Reliable crop estimates underpin planning certainty across South Africa's animal feed manufacturing industry. As maize and oilseed markets respond quickly to production conditions, early crop estimates influence procurement strategies, price formation, and raw material risk management long before grain is harvested and enters the market.

The past two summer grain seasons presented markedly different production conditions, ranging from drought stress to excessive rainfall. These extremes resulted in larger-than-normal revisions between early and later crop estimates, prompting industry discussion on how estimation methodologies perform under rapidly changing growing conditions.

Recognising the importance of maintaining confidence in official estimates, the Crop Estimates Liaison Committee (CELC) convened a special industry meeting during November 2025 to evaluate the accuracy of recent summer grain crop estimates and consider potential refinements to the estimation process. Rather than questioning the value of crop estimates themselves, industry discussions confirmed the need for continual methodological refinement to ensure estimates remain reliable under variable climate conditions.

Estimates and data confidence

Early-season hectare and production estimates are essential to market transparency, providing the first indication of grain supply available to the value chain.

Following the review process, the January hectare estimate was retained, confirming the importance of early market information. These early signals are critical for feed manufacturers operating within narrow margin environments. The objective of recent changes has therefore been to improve the reliability of estimates rather than delay information availability.

The crop estimation framework relies on independently derived producer independent crop estimates system (PICES) data as a central component of planted-area estimation. This statistically based approach provides a foundation for determining national planting estimates. Recent review processes reaffirmed the use of PICES data, while placing greater emphasis on verification, critical assessment, and analytical review prior to incorporation into official crop estimates.

Planted area estimates may be adjusted later in the production season, where improved crop classification and satellite information becomes available, allowing estimates to better reflect observed production conditions as the season progresses.

Improving yield assessment

Weather and yield modelling already form part of South Africa's crop estimation approach, supporting interpretation of seasonal production conditions. Recent discussions placed renewed emphasis on strengthening collaboration with research institutions to enhance the use of historical weather data, simulation tools, and analytical modelling in support of yield assessments.

Additional flexibility has also been confirmed for objective yield surveys, allowing field assessments to be delayed in late production seasons where crop development timelines require adjustment. This enables surveys to better reflect actual crop maturity under variable seasonal conditions.

The possible use of an independent analytical review was further discussed as a future enhancement to improve statistical assessment and long-term consistency in crop estimate outcomes.

On-farm storage

Changing marketing behaviour has heightened the importance of understanding grain held in on-farm storage. As producers retain grain for marketing flexibility, visibility of national supply becomes more complex. Industry discussions identified the availability of reliable information on grain stored outside commercial silo systems as an area requiring attention, since improved visibility can assist in aligning production estimates with actual market availability.

Timing of estimate release

Several procedural changes have been implemented to boost the integrity of crop-estimate releases. Committee meetings commence at 10:30, during which administrative and internal matters are addressed. Official deliberations on crop estimate figures begin at 12:00, once commodity markets have closed. Official crop estimate media releases are issued at 15:30, ensuring simultaneous access to information across the industry and reducing the risk of unintended market disruption.

Participation in estimation meetings has changed to mandatory in-person engagement, and stricter confidentiality measures, including restricted communication during deliberations, have been introduced to prevent premature information flow and safeguard the controlled release of official estimates.

Conclusion

South Africa's crop estimation system remains a collaborative effort involving producers, analysts, research institutions, and government bodies. The recent refinements reflect a move towards greater transparency and governance practices, as well as improved scientific integration.

For the animal feed industry, these implemented changes mean more planning certainty across the grain-to-feed-to-food value chain. More reliable crop estimates support informed procurement decisions, improved market stability, and ultimately contribute to long-term food security in South Africa. These developments reinforce the importance of credible market information in supporting decision-making across South Africa's livestock, feed, and food production systems.

Send an email to Petru Fourie at petru@afma.co.za for more information.

The AAMP: Where do we stand?

By Malapane Thamaga, agricultural economist, National Agricultural Marketing Council

The signing of the Agriculture and Agro-processing Master Plan (AAMP) on 12 May 2022 marked a major milestone towards the implementation of a social compact for the agricultural sector. The AAMP's implementation is achieved through two key deliverables, namely value chain round tables (VCRTs) and production schemes (public-private partnerships [PPPs] for transformation).

The VCRTs are sector engagement platforms established to create strategic dialogue aimed at collectively advancing industry and government priorities for growth and competitiveness in the agriculture and agro-processing sectors. At these round tables, key industry leaders from across the value chain meet with national and provincial government officials. Industry representatives include suppliers, producers, processors, food service companies, retailers, traders, producer associations, and labour and civil society groups.

Creating an enabling environment

Production schemes are transformation initiatives aimed at enabling emerging producers to operate in a modern, commercial, and market-linked environment. The establishment of such schemes results in structured arrangements for emerging producers, expanded production output, economies of scale with bargaining power to access affordable agricultural inputs and seeds, government support, and secure market offtake agreements. The schemes are implemented through PPP arrangements agreed upon per industry or commodity grouping, with participation from government, commodity associations, as well as commercial and emerging producers to ensure sustainability, competitiveness, and profitability.

Through the VCRTs and production schemes, the AAMP provides an approach for developing commodity value chains through PPPs that can generate growth, investment, employment, improved working conditions, ethical trade, transformation, and sector development. The AAMP is therefore regarded as a catalyst through which some of the objectives of the *Marketing of Agricultural Products Act, 1996 (Act 47 of 1996) (MAP)* and the ambitions of Chapter 6 of the National Development Plan (NDP) 2030 can be realised, especially in relation to transformation targets. The production schemes framework presents an opportunity to achieve these targets.

To date, five VCRTs have been established: grains and oilseeds, wine, livestock, fibre, and fruit. Last year marked the foundational phase of the Grain Value Chain Round Table, during which five working groups (WGs) were established to align with the pillars of the AAMP. These WGs are trade; logistics, transport and infrastructure; research and technology; policy and regulation; and transformation.

Table 1: List of working groups.

Working group	Chairperson	Deputy chairperson
Trade	Dr André van der Vyver (SACOTA)	Heleen Viljoen (Grain SA)
Transformation	Praveen Dwarika (Agbiz/AFGRI)	Frans Matsholo (AFASA)
Research and technology	Dr Godfrey Kgatle (GDARD)	Joseph Mahlabe (DoA)
Logistics, transport, and infrastructure	Boikanyo Mokgatle (NCM)	Theo Boshoff (Agbiz)
Policy and regulation	Corné Louw (Grain SA)	Roleen la Grange (CropLife)

Each WG has identified priorities and is working towards achieving them. The following is a summary of the top three priorities of each WG.

Trade WG priority areas

The trade WG has identified three priority areas: the wheat import tariff dispensation, the BELN (Botswana, Eswatini, Lesotho, and Namibia) rebate facility on imported wheat, and trade data synchronisation.

Wheat import tariff dispensation

- *Background*: International Trade Administration Commission (ITAC) investigation into tariff revision (applied May 2024) still pending after 11 months.
- *Intervention*: An urgent request for ITAC and the Department of Trade, Industry and Competition (the dtic) to finalise and publish the outcome.

BELN rebate facility on imported wheat

- *Background*: BELN countries import wheat duty-free and export flour/by-products to South Africa, thereby undercutting local producers.
- *Intervention*: Apply import duties on processed products from duty-free wheat entering South Africa via BELN countries.

Trade data synchronisation

- *Background*: There is misalignment between export data from the Perishable Products Export Control Board (PPECB), Directorate: Inspections, South African Revenue Service (SARS), and South African Grain Information Service (SAGIS). Engagement with SARS has been unsuccessful.

- *Intervention*: Ministerial facilitation of a meeting with senior SARS officials to align data systems.

2 Transformation WG priority areas

Transformation in the grain and oilseeds subsector is characterised by multiple funding schemes operating at different levels, resulting in fragmentation. The WG proposes that these schemes be streamlined and consolidated to enhance effectiveness. One approach is the relaunch of the production scheme framework. It is also noted that private-sector enterprise development (ED) and supplier development (SD) funds are often tied to direct-impact projects, which may limit broader participation.

3 Research and technology (R&T) WG priority areas

The R&T WG aims to support the AAMP goals and initiatives through research and development to increase grain production and support transformation. The R&T WG serves as a support platform for other WGs, including trade (biosecurity issues such as Goss's wilt), policy (new breeding techniques, CARA, and chemicals regulation), and transformation (digitisation of on-farm support, agronomy, plant health, etc.).

Priorities are:

- Data and digital systems, climate resilience, knowledge management, plant health, sustainable production, human capital, and value chain integration.
- National Department of Agriculture (NDoA) online producer support – develop producer, extension officer, researcher, etc. registries.
- CSIR PAIS App – digital tools to improve efficiency and guide funding and extension decisions.
- DSTI/GSA/NAMC Mixed Farming Project – maps out current grain production status at provincial level, to determine the support needed for smallholder producers.
- Information hub – digitise real-time distribution of pests/diseases to inform management.
- Agronomy trials – providing guidance to smallholder producers on best practices and funders on optimal fund disbursement timing.

4 Logistics, transport and infrastructure WG priority areas

The logistics, transport and infrastructure WG identified three priority areas: port logistics and infrastructure, rail transport decline, and rural rail subsidies. Many of these priorities fall outside the direct mandate of the NDoA and therefore require engagement with other government departments.

Port logistics and infrastructure: The grain sector depends on bulk and containerised imports and exports. Engagements with Transnet are underway regarding grain-specific PPP investments, while Transnet is planning upgrades to common-use infrastructure (e.g., deeper harbour facilities). In the interim, the WG requests equitable functioning of port facilities to prevent congestion that could threaten food security.

Rail transport decline: The sector aims to increase the share of grain transported by rail from 15 to 30% by 2030. However, rail volumes continue to decline, with Transnet Freight Rail withdrawing from key routes. Private-sector operators have been approved, and concession-based rail maintenance models are being explored. The WG requests expedited introduction of private-sector operators to curb further declines in rail volumes.

Call for rural rail subsidies: While road infrastructure is subsidised, rail transport operates on a full cost-recovery basis. Without subsidies, rural rail lines serving the grain sector may become economically unviable. The WG therefore requests that the minister urge cabinet to consider subsidy support for rural rail. Additionally, logistics initiatives are fragmented, and the minister is requested to facilitate a more integrated, long-term logistics strategy aimed at moving more grain back onto rail.

5 Policy and regulation WG priority areas

This WG developed a matrix of legislation affecting the sector, allowing members to rank the Acts and identify areas of major concern. The *Genetically Modified Organisms Act, 1997 (Act 15 of 1997)*, including new breeding techniques, and the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)* were identified as top priorities.

Discussions between industry and the NDoA regarding the *GMO Act* and new breeding techniques are ongoing. At the same time, reviews of *Act 36 of 1947* are underway. In addition, the WG proposes supporting the Registrar through PPPs to strengthen capacity and address challenges with the online registration system. ❖

For enquiries, send an email to Malapane Thamaga at mthamaga@namc.co.za

Bühler strengthens its market position

Thanks to its broad and innovative product portfolio, global footprint and strong supply chain, it was possible for Bühler to expand and grow its market share in key sectors in 2025. In a challenging global climate for investment goods, order intake in local currencies was stable. Turnover decreased, reflecting the low order intake in the prior year. The company was able to increase its EBIT (earnings before interest and taxes) margin to 8% (from 7,6% in the previous year) despite a lower turnover.

"Our strong financial position gives us the flexibility to advance our customers' businesses through innovation, serve them in more markets globally, and support them throughout the asset lifecycle with expanded services," said CFO Mark Macus.

Grains & Food had a positive year with stable orders and gained market share in several segments, while Advanced Materials retained market share but experienced lower orders due to subdued market activity. The Customer Service business increased its share of group turnover for the third year in a row. The strongest growth in turnover originated from Africa, which for the first time became the largest region for Bühler's food and feed businesses.

Networking days 2025

In 2025, Bühler hosted its fourth round of networking days, bringing together 1 000 global leaders to explore how collective action can accelerate progress in food, feed, and mobility. At the heart of the networking days was the scientific assessment of 15 industrial value chains across Bühler's three main industries.

The results confirmed that in 11 of these value chains it is possible to reduce energy, waste, water, and CO_2e emissions by at least 50% using Bühler technologies that are already available. During the year, the company launched around 60 new products.

Leadership transition

Bühler remains an independent family enterprise owned by the fifth generation of the founding family. As part of the planned succession for 2026, the board of directors proposed Stefan Scheiber as the new chairperson of the board. He succeeds Calvin Grieder, who retired after 25 years of service as CEO, board member, and chairperson of the board. Samuel Schär, who has held leadership positions in the company since 2005, succeeds Scheiber as CEO with effect from 1 January.

At Bühler's Grains & Food Johannes Wick stepped down as CEO to assume a new strategic role within the group. He is succeeded by Mike Häfeli, a long-time Bühler leader with over 25 years' experience following an apprenticeship at the company with additional studies. ❖

For more information, visit *www.buhlergroup.com*

Voermol Feeds welcomes new managing director

Pieter Visagie was appointed as managing director of Voermol Feeds, effective 1 February. With over 20 years' experience in the agricultural sector, Visagie brings practical know-how to the table, from working in cattle production to feed milling operations across Southern Africa. This experience, combined with his proven ability to lead teams and deliver results, makes him ideally suited to guide Voermol Feeds into its next chapter.

Throughout his career, Visagie has focussed on strengthening operational efficiency, guiding businesses through challenging periods, and ensuring sustainable growth. His work centres on improving profitability, reinforcing financial stability, and developing teams in ways that support long-term resilience.

Most recently, as managing director of Aller Aqua Zambia, he led a major turnaround at sub-Saharan Africa's largest and most advanced fish feed manufacturing company. Under his leadership, the operation achieved gains in efficiency and output while rebuilding team morale.

"I'm genuinely excited to step into this role at Voermol Feeds," Visagie said. "It is a brand that farmers have trusted for decades because of its reliable, high-quality products and solid service. My goal is to build on that strong foundation, sharpen performance across the board, and create even more value for farmers, our team, and every stakeholder who depends on us."

Voermol Feeds, with a legacy spanning over 60 years, remains committed to helping livestock producers get the most from their animals through innovative, molasses-based nutrition solutions. ❖

Pieter Visagie was appointed managing director of Voermol Feeds, effective 1 February this year.

Send an email to voermol@tongaat.com or visit *www.voermol.co.za* for more information.

AFMA
SAFE FEED FOR SAFE FOOD
Animal Feed Manufacturers Association

2026 AFMA INTERVARSITY WRITER'S CUP COMPETITION

The AFMA Intervarsity Writer's Cup competition allows you to share your research in the *AFMA Matrix* magazine, a quarterly publication dedicated to the animal feed industry in South and Southern Africa, with articles based on scientific research and the latest industry news.

DEADLINES

ROUND 1..... Article submission date: **21 October 2025**
Publication date: **January 2026**

ROUND 2..... Article submission date: **23 January 2026**
Publication date: **April 2026**

ROUND 3..... Article submission date: **8 April 2026**
Publication date: **July 2026**

ROUND 1 (2027)..... Article Submission date: **12 October 2026**
Publication date: **January 2027**

Who may enter?

Final year Animal Science students or Postgraduate Nutrition Science students, studying at a South African university.

Article themes

- Feed industry: Legislative environment; Trade environment (economy/pricing/trade)
- Feed science: Additives
- Nutritional science: All species
- Feed processing: Milling/mixing/formulation/packaging

Competition categories

- Own research
- Literature review

PRIZES

AFMA INTERVARSITY WRITER'S CUP CHAMPION:

- Awarded to the university of the overall own research category winner.
- Prize: **R10 000** + the floating trophy.

OWN RESEARCH CATEGORY:

- Round 1-3 winners receive **R2 000** each.
- The overall winning author and his/her promoter each receive **R7 000**.

LITERATURE REVIEW CATEGORY:

- Round 1-3 winners receive **R1 000** each.

PLEASE NOTE:
The highest-scoring articles in each category will be published in the AFMA Matrix.
Overall winners will be chosen from the articles published in the AFMA Matrix.
Published own research articles will be considered for the AFMA Intervarsity Writer's Cup.
Overall winners in both categories will be invited to present their articles at the annual AFMA Symposium.

Stay in the loop with the AFMA Intervarsity Writer's Cup – follow AFMA on social media for the latest competition updates!

For more information contact the AFMA Office:
Telephone: +27 (0)12 663 9097 or +27 (0)72 461 2497 • E-mail: intern@afma.co.za

SCAN ME More Info

SCAN ME Entry Rules

SCAN ME Enter Here

AFMA
SAFE FEED FOR SAFE FOOD
Animal Feed Manufacturers Association

AFMA INTERVARSITY WRITER'S CUP 2026: WINNER ROUND 2 / OWN RESEARCH

The effect of genetically modified maize grain on feeding behaviour and gut health of finishing lambs

By Elzane Liebenberg

Maize (*Zea mays* L) serves as a vital energy source in small-ruminant production systems, particularly in South Africa, where grain-based concentrates are essential for optimising growth performance and carcass quality in finishing lambs (Klopfenstein *et al*., 2013).

The widespread adoption of genetically modified (GM) maize varieties, engineered for pest resistance and herbicide tolerance, has transformed agricultural practices, with GM cultivars dominating national feed supplies due to their agronomic advantages (Sadikiel Mmbando, 2024). However, this raises questions about the potential impacts of GM maize on livestock physiology, behaviour, and health when compared to non-GM counterparts (Van Eenennaam and Young, 2014).

Gut health is pivotal for nutrient absorption, immune function, and animal welfare, where the gastrointestinal tract operates as a microbially rich ecosystem influencing fermentation, short-chain fatty acid production, and metabolic responses (Celi *et al*., 2017; Liu *et al*., 2025). Feed composition profoundly shapes microbial diversity in the rumen and hindgut, potentially affecting barrier integrity and productivity (Flachowsky *et al*., 2012).

Feeding behaviour, including intake frequency, duration, and rate, provides insights into diet palatability, digestibility, and physiological feedback (Ginane *et al*., 2015; Saldanha *et al*., 2021). While international studies often report minimal effects of GM crops on livestock performance (Caradus, 2022), data on behavioural and microbial responses in small ruminants are limited.

This article synthesises findings from a controlled study evaluating GM versus non-GM maize in lamb diets, addressing gaps in understanding their effects on gut health and behaviour. The aim was to assess the impacts of nutritionally equivalent diets containing GM or non-GM maize grain on feeding behaviour and gut health in finishing lambs. The null hypothesis (Ho) posited no differences between treatments, while the alternative hypothesis (Ha) predicted that GM maize would influence gut health, with non-GM diets leading to fewer and shorter feeding events.

By integrating behavioural observations, microbial profiling, histological analyses, and volatile fatty acid (VFA) measurements, this research contributes to the discourse on biotechnology in livestock nutrition, informing sustainable feed strategies amid evolving consumer demands for ethical and health-focussed food systems.

Background

The integration of GM crops into animal agriculture has sparked extensive debate, balancing benefits like enhanced yield and reduced pesticide use against concerns over long-term health and ecological effects. In South Africa, GM maize cultivation has surged, driven by traits conferring insect resistance (e.g., MON810, MON89034) and herbicide tolerance (e.g., NK603, TC1507), making it a staple in ruminant feeds (Sadikiel Mmbando, 2024).

Regulatory frameworks, such as the *Genetically Modified Organisms Act, 1997 (Act 15 of 1997)* and *Consumer Protection Act, 2008 (Act 68 of 2008)* mandate labelling for altered GM products but exempt animal-derived foods from GM-fed livestock, reflecting a pragmatic approach to food security (Bou-Mitri *et al*., 2025; Xu *et al*., 2019).

Prior research on GM feeds in livestock generally affirms their safety and nutritional equivalence. Comprehensive reviews indicate negligible impacts on health, performance, and microbial communities in ruminants (Van Eenennaam and Young, 2014; De Vos and Swanenburg, 2018). For instance, long-term feeding of Bt maize to sheep showed no adverse effects on ruminal function or overall health (Trabalza-Marinucci *et al*., 2008). Similarly, studies in cattle fed Bt176 maize reported stable bacterial dynamics (Einspanier *et al*., 2001; Wiedemann *et al*., 2007).

Systematic analyses of GM diets across species, including maize and soya beans, confirm no consistent alterations in feeding behaviour or gut integrity (Snell *et al*., 2012). However, inconsistencies arise in small ruminants, where subtle changes in microbial diversity or behaviour may occur due to diet-specific interactions (Abdullah *et al*., 2025; Korwin-Kossakowska *et al*., 2020).

Glyphosate residues, associated with Roundup Ready GM varieties, add complexity, with potential toxicities noted in animal models despite levels below maximum residue limits (MRLs) (Duke, 2018; Bøhn *et al*., 2014; Bai and Ogbourne, 2016). MRLs for feeds are lenient (e.g., 150mg/kg), but stricter for commodities (Safemeat, 2010). Behavioural studies highlight how palatability influences intake patterns, with hedonic responses affecting

meal size and frequency (Baumont, 1996; Kenney and Black, 1984). In lambs, circadian rhythms modulate feeding, with peaks during daylight potentially amplified by diet novelty (Nikkhah, 2012; Nugroho *et al*., 2015).

The current study addressed these gaps using 48 Merino cross ram lambs (initial weight 32,21kg ± 3,95kg), sourced from a uniform flock and assigned randomly to GM or non-GM maize diets (n=24 per treatment). Diets were formulated per NRC (2007) guidelines, pelleted for uniformity, and provided *ad libitum* via the GrowSafe™ system for behavioural monitoring over 43 days post-adaptation.

Genetic verification confirmed GM events (e.g., MIR604 in GM feed only), and glyphosate was quantified via LC-MS/MS (Chamkasem and Harmon, 2016). Post-slaughter (15 April 2025), gut histology scored epithelial injury, inflammation, goblet cell depletion, and keratinisation (Tao *et al*., 2014; Ferguson *et al*., 2022). VFAs were analysed via HPLC, and rumen microbes via 16S rRNA sequencing on Illumina MiSeq, with bioinformatics using QIIME 2 and R packages (Caporaso *et al*., 2010; McMurdie and Holmes, 2013). Statistical analyses included ANCOVA, t-tests, Kruskal-Wallis, and PERMANOVA, with significance at P<0,05 (SAS Institute Inc, 2023).

This design enabled a holistic evaluation, building on prior work to elucidate GM maize's role in lamb production.

Discussion

Genetic analyses confirmed distinct profiles: GM feed contained events MIR604, MON810, MON89034, NK603, and TC1507, while non-GM showed all except MIR604, with trace GM content (<10%) likely from cross-contamination (Lang and Otto, 2010; Viljoen *et al*., 2005). Glyphosate residues were higher in GM feed (0,9067mg/kg) versus non-GM (0,0673mg/kg), with aminomethylphosphonic acid (AMPA) exclusive to GM, though below MRLs (Duke, 2018; Safemeat, 2010). These differences may stem from herbicide applications during cultivation (Bøhn *et al*., 2014; Havens *et al*., 2018).

Feeding behaviour revealed preferences for non-GM diets. During adaptation and overall trial, non-GM lambs had larger meal sizes (P=0,0102 and P=0,0002), higher eating rates (P=0,0058 overall), and shorter durations (P=0,0365), suggesting superior palatability (Baumont, 1996; Kenney and Black, 1984).

GM lambs exhibited more frequent trough visits (e.g., 6,2 vs 4,8 in 12:00 to 18:00 slot), potentially compensating for smaller meals, aligning with studies on reduced efficiency in GM-fed animals (Buzoianu *et al*., 2012; Ferreira *et al*., 2024). This could elevate residual feed intake due to increased activity costs (Świątkiewicz *et al*., 2013). Diurnal patterns showed daytime peaks, consistent with circadian influences (Abecia and Canto, 2023; Nikkhah, 2012), but GM diets may fragment rhythms subtly (Nugroho *et al*., 2015; Zhang *et al*., 2022). Overall, results contrast with neutral effects in Bt maize studies (Trabalza-Marinucci *et al*., 2008; Snell *et al*., 2012) but highlight possible glyphosate-linked aversion (Janssen, 2001).

Histological analyses showed no significant differences in gut damage scores across the rumen, abomasum, duodenum, jejunum, ileum and colon (P>0,05), supporting GM feed safety (Trabalza-Marinucci *et al*., 2008; Organisms [GMO] *et al*., 2024). Minor variations were biological noise (Einspanier *et al*., 2001).

VFA profiles in rumen and duodenum were comparable (P>0,05), with high variability (CV 38,5 to 185,45%), echoing resilience of rumen ecosystems to GM compositional shifts (Aulrich *et al*., 2001; Steinke *et al*., 2010; Van Soest, 1994). Numerical trends (e.g., higher acetate in GM) were insignificant, indicating preserved fermentation (Russell, 1998; Dijkstra *et al*., 2012).

Microbial sequencing yielded ~86,040 raw reads per sample, retaining ~45,979 post-processing (Linheiro and Archer, 2021). Rarefaction curves plateaued, confirming adequate sampling (Caporaso *et al*., 2010). GM-fed lambs showed higher alpha diversity (Observed: 461,25; Chao1: 467,50; ACE: similar; Shannon: 4,96) versus non-GM (P<0,05), suggesting enhanced richness and evenness (Wiedemann *et al*., 2007; De Vos and Swanenburg, 2018).

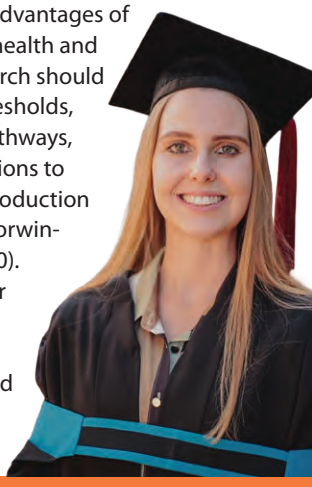
PCoA and PERMANOVA (F=1,25, R^2=0,08, P=0,042) indicated subtle shifts, with GM enriching *Prevotellaceae* and *Monoglobus* for polysaccharide degradation, and non-GM favouring *Mitsuokella* and *Olsenella* for lactate utilisation (Shinkai *et al*., 2024; Phimister *et al*., 2024). Dominant phyla (Bacteroidota, Firmicutes) were unchanged, but minor phyla like Planctomycetota increased in GM (P<0,05) (Ge *et al*., 2023; Jize *et al*., 2022). This contrasts neutral findings in ruminants (Einspanier *et al*., 2004; Koch *et al*., 2006) but may reflect diet interactions (Wang *et al*., 2020; Marie-Etancelin *et al*., 2021). Higher diversity in GM could boost resilience without impairing function (Abdullah *et al*., 2025; Zhang *et al*., 2019).

These outcomes partially support Ha, indicating GM maize influences behaviour and microbiota, potentially via glyphosate or compositional nuances, while affirming safety.

Conclusion

This study demonstrates that GM maize grain in lamb finishing diets influences feeding behaviour and rumen microbiota, with non-GM variants promoting larger meals, higher efficiency, and balanced communities, likely due to lower glyphosate residues and enhanced palatability (Baumont, 1996; Bøhn *et al*., 2014). No adverse effects on gut histology or VFA profiles were observed, confirming nutritional equivalence and safety (Trabalza-Marinucci *et al*., 2008; De Vos and Swanenburg, 2018). However, elevated microbial diversity and subtle shifts in GM-fed lambs suggest potential benefits for fermentation resilience, warranting further metagenomic analyses (Einspanier *et al*., 2004).

The alternative hypothesis is supported, highlighting nuanced advantages of non-GM maize for gut health and behaviour. Future research should explore glyphosate thresholds, functional microbial pathways, and mycotoxin interactions to optimise sustainable production (Wadhwa *et al*., 2016; Korwin-Kossakowska *et al*., 2020). Amid shifting consumer preferences towards ethical foods, these insights inform balanced GM adoption in South African agriculture.



For enquiries, contact Elzane Liebenberg at 072 076 0208 or elzane.liebenberg2000@gmail.com

Groundbreaking research on FMD in the fifth quarter

By Susan Marais, Plaas Media

One of the major economic challenges of South Africa's ongoing foot-and-mouth disease (FMD) crisis is the loss of the fifth quarter. Currently, entire fifth quarters are being disposed of after slaughter in compliance with international protocol.

Thanks to funding from Zoetis and Red Meat Industry Services (RMIS), Prof Armanda Bastos of the Department of Veterinary Tropical Diseases at the University of Pretoria and director of the Hans Hoheisen Research Centre in Kruger National Park, is leading a study that could transform this situation.

The project focusses on evidence-based strategies to reduce the persistence of FMD virus during slaughter, specifically the SAT1, SAT2, and SAT3 serotypes prevalent in Southern Africa. The findings aim to provide a better framework, through science, for aligning local slaughter regulations with practical realities on the ground.

Disposal of the fifth quarter

Currently, the entire fifth quarter, including the head, feet and all offal of animals that have recovered from FMD is destroyed. According to Prof Bastos, this precaution is necessary because evidence indicates that some of these animals may remain FMD carriers, with the virus persisting at low levels.

Since there is no test to identify carrier animals, and carrier prevalence can range from 20 to 80%, authorities have mandated that the fifth quarter of all animals from day 15 to day 41 after day zero must be destroyed. This represents a significant economic loss. From a food security perspective, it renders a substantial portion of more affordable beef cuts inaccessible, directly affecting vulnerable South Africans.

In addition, the disposal process has considerable environmental implications, as all fifth-quarter material must be destroyed through incineration or chemical treatment before final disposal.

Local research data needed

Even after an animal has contracted FMD and recovered, the virus may still be present. Interestingly, it is not found in the organs but is concentrated in the head. Although extensive research has been conducted into various serotypes worldwide, no studies have examined whether the South African serotypes remain present in animals after recovery.

As a result, the fifth quarter is routinely destroyed, as it is considered a risk to human health. However, current regulations are based on research that does not account for local serotypes. Prof Bastos explains that only the three SAT serotypes occur in South Africa, and these differ clinically from other strains; consequently, mortality rates associated with local strains are much lower.

The issue is the absence of locally generated scientific research to inform national policy. In the absence of such data, policymakers rely on international studies as guidelines. Local research could therefore provide a stronger scientific foundation for more effective policymaking.

Research timeline

The research commenced in November last year and is being conducted in three phases. The first phase begins by determining whether deboning is required 15 days after day zero, as well as quantifying carrier prevalence.

Day zero is defined as either the last day on which the last animal in the herd presented with clinical signs of FMD, or the day on which the last animal received an FMD vaccination. The second part of the first phase focusses on identifying the persistence of the virus in heads, glands and offal, the aim being to convey safe trade practices and support policy review.

During the second phase, a serological test will be developed to differentiate FMD carriers from recovered animals.

This represents a vital first step towards creating a screening test that can be applied at the kraal. The third phase will assess the effectiveness of different types of FMD vaccines in eliminating the virus from infected animals.

Prof Bastos says the research is progressing well. The research team was able to collect samples from a feedlot where the virus was detected at a very early stage. These animals were vaccinated within seven days of the onset of clinical signs.

Different approaches are being evaluated based on the interval between infection and slaughter. In cases of early slaughter, animals must be eviscerated and deboned, a process that already places a high financial burden on the industry.

Prof Bastos noted that reaching the feedlot at such a critical stage of infection was a major advantage, as it allowed for sampling to be done on the earliest possible day. As a result, the findings will be valuable regardless of whether the virus is detected or not. The outcomes are expected to have a major impact on policy, particularly policies related to local serotypes. She added that this research is novel and unique, with the potential to influence international protocols as well.

Part of a bigger picture

This project, together with eight others, forms part of RMIS's Field to Future framework, an industry-led initiative designed to identify real-time challenges facing producers, feedlots, abattoirs and other stakeholders across the red meat value chain.

According to Dewald Olivier, CEO of RMIS, the research represents one of the most important investments the organisation has made. "As a result of FMD, the red meat industry is losing millions of rands each year because outdated regulations fail to reflect modern science. This research aims to address that gap, helping to protect the sustainability of every stakeholder in the red meat industry."

Dr Ralf Patzelt, business unit director for livestock at Zoetis, says as a global leader in animal health, the company recognises the importance of supporting the long-term sustainability of South Africa's red meat industry.

"FMD poses serious challenges, including substantial financial losses and threats to livelihoods," he says. "Our support for this study reflects our commitment to advancing science-based solutions that reduce waste, strengthen regulatory confidence, and protect trade credibility. Investing in evidence-based FMD risk management is essential to the future resilience and growth of the South African livestock sector."

Dr Patzelt adds that the sponsorship reaffirms Zoetis's commitment to partnership, innovation, and animal health. "By working together, we aim to reduce unnecessary losses caused by FMD and contribute to a more sustainable and prosperous future for all red meat value chain stakeholders."

Contact Sara-Lea van Eeden at sara-lea@s-ellepr.com or 083 446 6109 for more information.

Yeast-based additives in ruminant nutrition: Modes of action and practical relevance

By Zané Orffer, Nu3enta

In the demanding production environments of Southern African feedlots and dairy farms, where high ambient temperatures, rapid dietary transitions, and energy-dense rations are common, maintaining optimal rumen function is critical for animal performance. Yeast-based additives have long been used as nutritional tools to support rumen health, yet inconsistent responses are still frequently reported under commercial conditions. A major contributor to this variability is the assumption that all 'yeast' products function in the same way.

Yeast-based additives represent a broad group of products with distinct compositions, processing methods, and biological roles. From live yeast that actively modifies the rumen environment to inactive forms that support immunity and gut integrity, understanding these differences is essential for effective application. This article reviews the main categories of yeast products used in ruminant nutrition, focussing on their definitions, modes of action, and practical relevance in ruminant systems.

Spectrum of yeast products

Yeast-based additives are primarily derived from strains such as *Saccharomyces cerevisiae*, yet they differ markedly in viability, structure, and function due to differences in processing (Fonty *et al*., 2006; Sun *et al*., 2021). Commercial products include live yeast, active dry yeast, yeast culture, inactive yeast, hydrolysed yeast, and purified yeast cell wall fractions.

These products may act as probiotics, prebiotics or postbiotics, depending on their form and composition (Newbold *et al*., 1996). Treating them as interchangeable often explains the mixed results observed in commercial trials, particularly under challenging feeding conditions where diet composition, feed processing, and management practices place additional pressure on rumen stability.

In Southern African production systems, prolonged feed storage, mechanical handling, and high dietary fermentability further highlight the importance of selecting yeast products that are appropriate for the intended nutritional role (Jiao *et al*., 2018).

Rumen ecosystem modifiers

Live yeast products supply viable *S. cerevisiae* cells designed to remain metabolically active in the rumen and are classified as direct-fed microbials (Fonty *et al*., 2006). Their value lies in their ability to interact directly with the rumen microbial ecosystem.

A key mode of action of live yeast is oxygen scavenging. Although the rumen is predominantly anaerobic, oxygen enters through feed, water, and rumination. Live yeast rapidly consumes this residual oxygen, creating conditions more favourable for obligate anaerobic microorganisms, particularly fibre-degrading bacteria such as *Fibrobacter succinogenes* and *Ruminococcus flavefaciens* (Chaucheyras-Durand and Fonty, 2002; Ghazanfar *et al*., 2017). This supports cellulolytic activity and improves fibre digestion.

Live yeast also contributes to rumen pH stabilisation by influencing microbial populations and fermentation pathways, reducing lactate accumulation and promoting more stable volatile fatty acid production (Chaucheyras-Durand *et al*., 2008). These effects are especially relevant in high-concentrate feedlot diets and during early lactation in dairy cows, where the risk of subacute ruminal acidosis is elevated (Amin *et al*., 2021).

Additional reported effects include improved rumen development in young animals, enhanced feed efficiency, and support of beneficial microbial populations through the provision of growth factors and enzymatic activity (Newbold *et al*., 1996).

Metabolite-driven support

Yeast culture products are produced through controlled fermentation of *S. cerevisiae* on a substrate, followed by drying. These products contain predominantly non-viable yeast cells together with fermentation metabolites such as organic acids, peptides, vitamins, and other bioactive compounds (Sun *et al*., 2021). Their mode of action is postbiotic, driven by fermentation metabolites rather than live microbial activity. These compounds stimulate rumen microbial growth, enhance fermentation efficiency, and support rumen function during nutritional challenges (Guo *et al*., 2024; Ghazanfar *et al*., 2017).

Reported effects include improved nutrient utilisation, greater rumen resilience under dietary stress, and, in some cases, improved milk yield in dairy cattle. However, yeast culture products do not provide the oxygen-scavenging or direct microbial interactions associated with live yeast (Fonty *et al*., 2006).

Nutritional and immune support

Inactive yeast consists of *S. cerevisiae* cells that have been heat-treated or otherwise deactivated. While no longer viable, these products retain high-quality protein, B vitamins, and intact yeast cell wall components (Cunha *et al*., 2019). The primary mode of action of inactive yeast is

nutritional and immunological rather than probiotic. Mannans and β-glucans in the yeast cell wall interact with gut microbes and immune receptors, supporting epithelial integrity and modulating immune responses (Pukrop *et al*., 2018; Yang *et al*., 2025).

These effects contribute to improved animal robustness, gut health, and stress tolerance. Inactive yeast does not directly modify rumen fermentation but may indirectly support rumen function through improved overall animal health.

Autolysed and hydrolysed yeast

Autolysed and hydrolysed yeast products undergo controlled enzymatic breakdown of yeast cells. Autolysis relies on endogenous yeast enzymes, while hydrolysis uses external enzymes to achieve more consistent release of intracellular components (Perricone *et al*., 2022).

These products supply highly bioavailable peptides, free amino acids, nucleotides, and exposed cell wall fractions. Their mode of action is primarily nutritional and metabolic, supporting digestive efficiency and immune function rather than direct rumen modulation (Gunun *et al*., 2022). Reported effects include improved nutrient digestibility, metabolic efficiency, and performance under stress conditions, particularly in feedlot cattle.

Yeast cell wall fractions

Yeast cell wall products are purified fractions rich in β-glucans and mannan-oligosaccharides (MOS) derived from the outer layers of *S. cerevisiae* cells (Pukrop *et al*., 2018). MOS can bind specific pathogens, reducing their attachment to the gut epithelium, while β-glucans activate immune receptors involved in innate immunity. Additional effects include support of beneficial microbiota and adsorption of certain mycotoxins (Yang *et al*., 2025). These actions occur primarily post-rumen and are most relevant during periods of stress, disease pressure, or dietary transition.

Practical relevance

Southern African feedlot and dairy systems operate under persistent nutritional and environmental pressure. In feedlots, live yeast is commonly used during adaptation to high-starch diets, while hydrolysed yeast and cell wall fractions support digestion and health during periods of stress. In dairy systems, yeast culture or live yeast supplementation during transition and early lactation can help stabilise rumen function and support metabolic health (Amin *et al*., 2021).

Choosing the right yeast strategy

Yeast-based additives differ fundamentally in composition and biological function and should not be considered interchangeable. Their effectiveness depends on selecting the appropriate yeast category for the specific nutritional objective. Strategic use of yeast products – matched to diet, production system, and management conditions – can improve consistency in rumen function, animal health, and performance in ruminant systems.

Referenced available upon request. Send an email to Zané Orffer at zane@nu3enta.co.za or visit *www.nu3enta.co.za*

CHEM NUTRI ANALYTICAL

FAST ACCURATE ESSENTIAL

Chem Nutri Analytical is an independent, SANAS-accredited laboratory serving the food and agricultural sectors. Proudly South African, we've delivered reliable, science-driven testing since 2014. Bringing global benchmarking standards to local industries.

- Minerals & Harmful Elements
- SoyaGuard Calibration
- Medication
- Vitamins
- Phytase
- Nutrition
- Soya Quality
- Oil Quality
- NIR Calibration
- Mycotoxins

When precision and accuracy matters, contact us!

sanas Testing Laboratory T0713

+27 (11) 316 8800
info@chemnutri.co.za
www.chemnutri.co.za

Effects of feeding agroindustrial by-products on rumen fermentation and microbiome of sheep

By Carlos Navarro Marcos, Trinidad de Evan, Óscar Gonzalez Recio, Mónica Gutiérrez Rivas, and María Dolores Carro

The use of agroindustrial by-products (ABY) in ruminant animals is increasing globally due to cost reduction potential, non-competition with human food, environmental benefits, and positive effects on animal health and product quality (Romero-Huelva *et al*., 2017; Marcos *et al*., 2020).

Utilisation of ABY in diets for ruminants is of especial interest because they are often fibrous feeds that are more suitable for ruminants than for monogastric animals. Moreover, ABY frequently contain bioactive compounds that can modulate ruminal function, increasing nutrient digestibility, reducing acidosis incidence and methane production, and modulating fatty acid biohydrogenation leading to beneficial changes in milk quality (Bryszak *et al*., 2019).

In fact, multiple studies have demonstrated the positive effects of including ABY in diets for dairy ruminants (Karlsson *et al*., 2018; Carta *et al*., 2025). In a previous study (Marcos *et al*., 2020), replacing conventional feeds in the concentrate fed to dairy goats with a mixture of maize dried distiller grains with solubles, dry citrus pulp, and exhausted olive cake resulted in significant increases in the daily production of milk and milk concentrations of crude protein (CP), fat, whey protein, total solids (TS) and polyunsaturated fatty acids (PUFA).

However, the effects of including ABY in the diet of dairy ruminants are variable (Castellani *et al*., 2017; Romero-Huelva *et al*., 2017), which may be attributed to ABY heterogeneity, differences in ABY inclusion levels, or even to the animal species used in the different studies. Moreover, the bioactive compounds present in ABY can influence ruminal function, potentially leading to variable productive responses.

Therefore, a better understanding of how ABY affect ruminal fermentation and ruminal microbiome during the postprandial period could help to explain the observed effects. Therefore, the objective of this study was to evaluate the effect of replacing conventional ingredients in a concentrate for sheep with a mixture of ABY on ruminal microbiome and fermentation at different postprandial times.

Experimental design and diet

Four rumen fistulated Lacaune sheep (64,3 ± 2,11kg bodyweight [BW]) were used in a crossover design with two experimental periods and two mixed diets. Sheep were housed individually in floor pens with continuous access to fresh water and a mineral and vitamin block over the trial.

The two experimental diets consisted of a 50:50 mixture of lucerne hay and either a control (CON) or an ABY-containing (BYP) concentrate. The CON concentrate consisted of (all values as fed) 33% maize, 20% barley, 10% wheat, 12,2% soya bean meal, 8,8% palm meal, 2,5% colza meal, and 10% wheat bran. The BYP concentrate included 18% maize dried distiller grains with solubles, 18% dry citrus pulp and 8% exhausted olive cake, which replaced

fully the barley and palm meal in the CON concentrate and partially replaced maize, soya bean meal and wheat bran, which were reduced to 26,8, 10,2 and 3% in the BYP concentrate. The ABY used in this study were selected because they are produced in high amounts in the Mediterranean area and are available throughout the year.

The chemical composition (DM basis) of the CON and BYP concentrates was as follows: CP 18,1 and 19,8%, NDF 21,5 and 22,1%, ether extract 4,19 and 7,29%, and total starch 45,3 and 29,8%, respectively. The CP, NDF and ether extract (DM basis) of the lucerne hay were 15,2, 51,9 and 4,06%, respectively. The estimated metabolisable energy contents, calculated according to INRA (2018) were 2,57, 2,59, and 1,94 Mcal/kg for the CON and BYP concentrates and lucerne hay, respectively. Sheep were fed twice daily (09:00 and 18:00h) at an intake level of 45g dry matter (DM)/kg BW0,75 to prevent feed selection (NRC, 2007).

Sampling and analysis

Each of the two experimental periods lasted for six weeks; the first five weeks were for diet adaptation. In the last week of each period, ruminal content was collected through the cannula of each sheep at zero, three, and six hours after the morning feeding. In each period, sampling was conducted on two non-consecutive days. Ruminal contents (about 100g) were collected in sterile containers, homogenised and about 60g were freeze-dried to analyse the ruminal microbiome.

Samples of the fluid (2ml) were mixed with 2ml HCl (0,5 N) and frozen (-20°C) until analysis of volatile fatty acids (VFA) and ammonia concentrations. Chemical composition of lucerne hay and concentrates was determined by AOAC International (2005) and Van Soest *et al*. (1991) methods as described by Marcos *et al*. (2020). Total starch (ID 996.11) was determined according to the AOAC procedures (AOAC 2005). Concentrations of VFA in ruminal fluid were determined by gas chromatography as detailed by De Evan *et al*. (2020) using a Shimadzu GC 2010 chromatography (Shimadzu Europa GmbH, Duisburg, Germany). Ammonia concentrations were analysed by the phenol-hypochlorite method with an Epoch spectrophotometer (Biotek Instruments, Swindon, UK) as described by De Evan *et al*. (2020).

Within each period, the ruminal content samples obtained in the two sampling days were pooled by sheep and sampling time and were homogenised using a MM 200 mill (Retsch, GmbH, Haan, Germany). Sample processing, genomic DNA extraction, sequencing, basecalling and bioinformatic analysis were conducted as described in Marcos *et al*. (2024). One sample was excluded as all its reads were mapped as unclassified (period 1, six-hour sampling time). Reads mapped as *Annelida*, *Arthropoda*, *Bacillariophyta*, *Brachiopoda*, *Chlorophyta*, *Chordata*, *Cnidaria*, *Cryptophyta*, *Echinodermata*, *Mollusca*, *Nematoda*, *Phaeophyceae*, *Platyhelminthes*, *Porifera*, *Rhodophyta*, *Rotifera* or *Streptophyta* within phylum level were filtered out, as well as those mapped as unclassified or unclassified Eukaryote.

For each assessed level (genus, phylum, and superkingdom), taxonomic features (TF) with a relative abundance (RA) below 0,01% in all samples were filtered out. Taxonomical features included microorganisms that could not be identified up to the genus level, which were labelled as 'unclassified' alongside the taxonomical feature at the latest identified level.

Rumen microbiome composition

A total of 1 101 240 out of 3 271 199 reads were mapped as unclassified. A large number of unclassified reads and TF have been previously reported in rumen samples when using Oxford Nanopore Technologies (ONT) (Marcos *et al*., 2024). The final taxonomy compositions included 1 906 930, 1 926 844, and 2 169 959 reads from 23 rumen content samples, classified into 279, 39 and 4 TF at the genus, phylum and superkingdom level, respectively.

Bacteria, mainly from the *Firmicutes*, *Bacteroidetes*, and *Proteobacteria* phyla, were the most abundant microorganisms, accounting for up to 83,3% of total reads within the final taxonomy composition. The RA of eukaryotes, archaea and viruses were 12,8, 3,89 and 0,018% of total reads within the final taxonomy composition. Ruminal microbiome composition agrees with previous studies on sheep, though some differences were observed, likely due to variations in the sequencing technologies used or diet, among other factors (Belanche *et al*., 2019; Greenwood *et al*., 2022).

Differences in the Chao1 index and β-diversity at the phylum and genus levels were observed between sheep fed the CON and BYP diets (P = 0,037, 0,003 and 0,002, respectively). Variations in the composition of fermentable substrates of the two experimental diets may explain these differences. Belanche *et al*. (2012) suggested that a higher complexity of microbial populations is necessary for the efficient utilisation of fibrous substrates, such as those present in the BYP concentrate. The greater ether extract content of the BYP concentrate could have influenced the ruminal microbiome as well. The BYP concentrate contained more polyphenols than the control concentrate (9,91 and 5,81mg/kg, respectively; Marcos *et al*., 2020) due to citrus pulp and olive cake inclusion, which may influence the ruminal microbiome (Scicutella *et al*., 2023).

No differences in α-diversity indexes were observed between sampling times (P ≥ 0,100) but differences were observed in β-diversity at phylum and genus level (P = 0,040 and <0,001, respectively). Variations in β-diversity across sampling times are expected due to changes in microbial abundance during the feed degradation process (Gruninger *et al*., 2019).

Similarly, Belanche *et al*. (2012) reported differences in the abundance of certain microorganisms in the rumen of cattle at different postprandial times, attributing these variations to differences in microbial growth rates and feed colonisation. Differences in Shannon index was observed between sheep (P ≤ 0,008), and the effect of sheep on β-diversity accounted for an average of 24,5% of the total variance. Host genetics have been recognised as an important factor influencing the ruminal microbiome (Weimer *et al*., 2010). The individual variation among sheep on α- and β-diversity was more important than the effect of the diet, likely attributable to the similar forage-to-concentrate ratio of both diets.

Dietary effects on microorganisms

The abundance of the *Succinimonas* genus after three hours of feeding was greater in sheep fed the BYP diet than in CON-fed sheep (logFC = -2,55; P_{adj}-value = 0,021), although this genus is known as

starch degrading (Belanche *et al*., 2019). Nevertheless, *Succinimonas* can utilise glucose (Bryant *et al*., 1958). Dried citrus pulp has been reported to contain a significant content of sucrose and some glucose (Pacheco *et al*., 2017). Sucrose can be rapidly hydrolysed in the rumen (Weisbjerg *et al*., 1998) and provide further glucose that can be utilised by the genus *Succinimonas*.

The genera *Bradyrhizobium*, *Klebsiella*, *Pantoea* and *Puccinia* were overabundant at three hours post-feeding compared with zero hours (immediately before feeding) in both sheep fed the CON and BYP diets. Although commonly found in the rumen, *Klebsiella* is considered pathogenic bacteria in dairy ruminant farms (Zadoks *et al*., 2011). Other overabundant microorganisms may be plant-pathogenic or plant-associated microorganisms (Auffret *et al*., 2017) that are concomitantly ingested with the diet. It is probable that these microorganisms are transient and non-functional, which could explain why differences were only observed after three hours of feeding. However, these microorganisms must be displaced by primary colonising ruminal microorganisms (Gruninger *et al*., 2019), and thus their presence might hinder feed degradation.

The abundance of *Pantoea* in sheep fed the CON diet was also greater at six than at zero hours, which might suggest that it is not just a transient microorganism. Auffret *et al*. (2017) observed that this bacterium was more abundant in beef cattle fed mixed diets than in cattle fed fibrous diets and was highly correlated with the *Proteobacteria* (*Firmicutes* + *Bacteroidetes*) ratio, an indicator for rumen dysbiosis, suggesting that epiphytic microorganisms ingested with the feed might indeed play a role in the rumen.

An unclassified *Microbacteriaceae* from the *Micrococcales* order was overabundant after three hours of feeding compared with zero hours in BYP-fed sheep. This microorganism is probably another plant-associated microorganism. On the contrary, an unclassified *Saccharomycetes* was overabundant in CON-fed sheep at zero hours compared with three hours. *Saccharomyces cerevisiae* is one of the few yeasts capable of growing under anaerobiosis (Snoek and Steensma, 2007) and thus could be functional within the rumen.

The higher starch content in the CON diet and its fermentation could explain the greater abundance of the amylolytic bacteria *Lactobacillus* after three hours in CON-fed sheep compared with those fed BYP diet, as well as the greater abundance of *Stenotrophomonas*, which has been associated with subacute ruminal acidosis in dairy cattle (Hu *et al*., 2022). In any case, the higher logFC observed in sheep fed the CON diet, along with the lower number of DA microorganisms in sheep fed the BYP diet, suggest that the ruminal microbiome was less resilient and more susceptible to postprandial changes with the CON diet.

Impacts of ruminal fermentation

Ruminal fermentation parameters before feeding (zero hours) were similar to those reported by Marcos *et al*. (2020) in dairy goats given mixed diets including the same concentrates (CON and BYP), and the average values across sampling times were comparable to those reported by others for sheep fed mixed diets including AH and concentrate (Ramos *et al*., 2009). No significant differences were observed between CON and BYP diets in any ruminal fermentation parameter, excepting a trend ($P = 0,051$) to lower acetate proportions with the BYP diet. These results indicate that inclusion of ABY in the concentrate did not impair ruminal fermentation although it modulated the ruminal microbiome.

On the contrary, differences between sampling times were observed in all ruminal parameters ($P \leq 0,020$), as well as significant interactions between diet and sampling time in both ammonia and total VFA concentrations ($P \leq 0,042$). In CON-fed sheep, concentrations of ammonia and total VFA, and propionate proportions were greatest at three hours, whereas acetate proportions, and acetate to propionate ratio were lowest. In contrast, no significant postprandial changes in these parameters were observed in sheep fed the BYP diet.

The BYP diet consisted of a wider range of substrates with different fermentation rates due to the more diverse array of carbohydrates in the ABY (i.e., sugars, pectin and other non-starch polysaccharides), which may have promoted a more stable, complex, and active microbial consortium (Belanche *et al*., 2012; 2019), leading to a more sustained and efficient fermentation process that might result in better synchronisation and utilisation of available energy and nitrogen by ruminal microorganisms. The steady concentrations of both total VFA and ammonia over the postprandial period observed for the BYP diet would support this hypothesis.

The lower proportions of minor VFA (calculated as the sum of isobutyrate, valerate and isovalerate) observed at three hours after feeding in the BYP-fed sheep could be related to protein degradation as some minor VFA (isovalerate and isobutyrate) are produced by the microbial deamination of some AA (Stewart *et al*., 1997). Nonetheless, the lower proportions of minor VFA in the BYP diet might also indicate a greater uptake of these VFA by cellulolytic bacteria (Roman-Garcia *et al*., 2021). The pH decreased after feeding for both diets, which agrees with previous observations (Ramos *et al*., 2009).

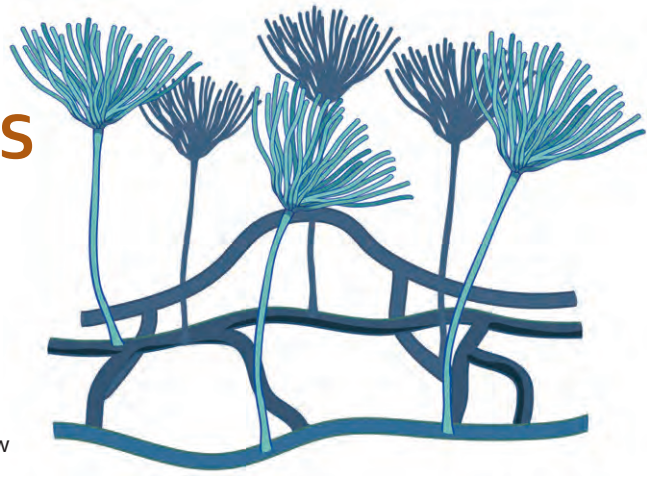
Summary

Replacing conventional feedstuffs with a mixture of agroindustrial by-products induced changes in the ruminal microbiome of sheep. Although no significant changes in ruminal fermentation parameters were observed, the inclusion of by-products appeared to balance ruminal fermentation, preventing large fluctuations in total VFA and ammonia concentrations in the postprandial period. This was likely due to the more diverse substrates (i.e., sugars, pectins and other non-starch polysaccharides) and compounds (i.e., polyphenols) present in the by-products, their variable fermentation rates, and associated shifts in the ruminal microbiome.

A more stable rumen environment could potentially enhance dairy ruminant performance. However, further studies are needed to confirm these results. ❖

Article shortened for publication in *AFMA Matrix*. Visit *doi.org/10.3168/jdsc.2025-0914* for the full article or email carlon05@ucm.es

Mycotoxin risk demands adaptive management



Summarised and edited by Izak Hofmeyr, Plaas Media

Elevated levels of the mycotoxins deoxynivalenol (DON) and T-2/HT-2 are being detected with increasing frequency in animal feed across the United States (US), while DON has been identified in more than 40% of Canadian grain samples.

This was among the key findings presented in January during Alltech's 2025 Global Harvest Broadcast, titled *From Field to Feed: 2025 Crop and Mycotoxin Analysis*, hosted from Alltech's headquarters in Lexington, Kentucky. For feed and livestock stakeholders, the message from the webcast was clear: proactive monitoring, data-driven decision-making, and adaptive management strategies are essential to maintaining feed safety and animal performance amid evolving environmental pressures.

The participating experts in the webcast were meteorologist Dr Jan Dutton, CEO of CropProphet; Dr Alexandros Yiannikouris, research group director at Alltech; and Dr Max Hawkins, global technical support at Alltech. The panel shared insights into this year's harvest conditions and emerging mycotoxin risks.

Key highlights

Changing climate patterns are no longer anecdotal. Weather data clearly shows their direct impact on crop production. According to Dr Dutton, warming temperatures have extended growing seasons across much of the US Midwest by as much as two weeks over the past 40 years, while precipitation patterns are moving towards fewer but more intense rainfall events. These changes are increasing the frequency of excess-moisture conditions, turning what were once 'rare' events into situations producers must now anticipate. "Those conditions increase excess moisture and create an environment where mycotoxins thrive," Dr Dutton said.

Elevated mycotoxin levels are now being reported across key regions, including significantly higher levels of DON and T-2/HT-2 toxins in feed across all species. The frequency of DON detection has risen across the US and is present in more than 40% of Canadian grain samples.

Predictive modelling for mycotoxin risk has advanced rapidly, and as the utilisation of growing datasets and more advanced artificial intelligence (AI) tools continue, expedited results can be expected in the coming years. "What we're seeing is a convergence of factors, such as changing weather patterns, increased variability in crop quality, and the presence of known and emerging mycotoxins, which is making risk more complex and more frequent," said Dr Yiannikouris. "This reinforces the importance of using data, advanced analytics, and predictive tools to better anticipate challenges and support informed decision-making across the feed supply chain."

A concerning picture

The *Alltech 2025 Harvest Analysis* has uncovered a concerning picture across global feed ingredients, indicating elevated mycotoxin threats in several key regions. Mycotoxin analysis data from Europe, North America, and Canada shows a rising prevalence of multiple mycotoxin groups, influenced by volatile weather, crop stress, and regional disease pressure.

Europe

Across more than 400 European samples analysed by Alltech® 37+ and SGS, moderate to high mycotoxin risk levels have emerged in maize grain, wheat, barley, and forages.

More than 45% of maize grain samples tested positive for aflatoxin B1, averaging 23 ppb, with some samples, including one from Romania, reaching as high as 733 ppb, well above European Union feed safety limits. Wheat and barley samples continue to show widespread multi-mycotoxin contamination, averaging nearly six mycotoxins per sample, dominated by fumonisins and type B trichothecenes. Forage samples showed contamination in 88% of cases, with *Penicillium* mycotoxins emerging as a major risk for dairy producers.

Comparing this to 2024, the European dataset shows a notable increase in mycotoxin diversity and frequency. Last year's report recorded widespread type B trichothecene contamination in barley samples, a pattern that has intensified into 2025, with aflatoxin pressure returning in Southern and Eastern Europe.

United States

In the US, more than 300 samples of maize silage and maize grain revealed moderate to high risk levels, driven by *Fusarium*-related mycotoxins. Maize silage samples showed a 95% occurrence of fusaric acid and 86% occurrence of type B trichothecenes, posing risks to feed intake, milk yield, fertility, and immune function (estimated milk loss -0,32kg/cow/day; somatic cell count [SCC] +45,65%).

Maize grain intended for swine showed combined risks from type B trichothecenes and zearalenone (ZEA), with fusaric acid and fumonisins also posing challenges at maximum levels (estimated average daily gain [ADG] -62g/day; feed conversion ration [FCR] +0,09). In poultry grain samples, type B trichothecenes were the primary concern, with ZEA and fusaric acid increasing risk in wetter regions. Many of these toxins are linked to gut health, reproductive performance, and immune stress.

Weather conditions varied notably between 2024 and 2025, with the eastern

US experiencing much drier, drought-like conditions and the Western Corn Belt experiencing near-record rainfall in June and July. This contrast contributed to lower risk equivalent quantity (REQ) values for eastern maize silage – down from 237 in 2024 to 130 in 2025 – while the western region remained steady at 135 compared to 156 last year.

Across the US, *Fusarium*-related mycotoxins remain dominant, led by fusaric acid, type B trichothecenes, emerging mycotoxins and fumonisins. This is consistent with 2024 trends.

Canada

Canadian data showed divergent regional risk profiles, influenced by weather extremes from Manitoba to Ontario. Barley samples from Western Canada showed a high occurrence of DON (74%), with T2-HT2 toxins detected in 50%, and ZEA in 25%. Maximum DON concentrations have reached 8 500 ppb, suggesting heightened risk in Manitoba compared with Saskatchewan (swine: ADG -58g/day; FCR +0,09).

Wheat samples show elevated DON in 23% of cases, peaking at 3 200 ppb, with Manitoba again showing the highest risk and DON averaging 820 ppb (swine: ADG -7g/day; FCR +0,01). In eastern Canada, maize silage results indicated DON in 73% of samples, followed by ZEA (43%) and T2-HT2 (14%), reaching up to 11 500 ppb. Haylage risk is rising westward across Quebec and Ontario, led by ZEA (87%).

Together, these results suggest that Canadian feed ingredients are trending towards higher DON levels – DON was present in 31% of barley samples in 2024 compared with 74% in 2025 – and greater ZEA prevalence than in 2024, when risk was more localised to eastern provinces.

Intensifying mycotoxin pressure

Despite regional differences, the preliminary 2025 data reveal several global trends:

- *Fusarium*-derived mycotoxins, especially DON, ZEA and T2-HT2, remain dominant across continents.
- Aflatoxin is resurging as a major threat in southern Europe.
- Weather extremes, from rainfall and humidity to late-season disease outbreaks, have been a major driver of toxin proliferation across maize, grains, and forages.
- Producers in all regions are encouraged to intensify testing and management strategies through the remainder of the season and into 2026.
- Changing climate patterns, coupled with changing crop quality and broader mycotoxin profiles, are increasing the complexity and prevalence of contamination risks throughout the feed supply chain.

Dr Yiannikouris noted the convergence of climate-driven weather volatility, variable crop quality, and the emergence of complex mycotoxin profiles as drivers of the elevated risk. "This reinforces the importance of using data, advanced analytics, and predictive tools to anticipate challenges and support informed decision-making across the feed supply chain," he said.

Rising occurrence and risk factors

Preliminary regional data point to a notable rise in *Fusarium*-related mycotoxins across feed crops. DON, also known as vomitoxin, is produced by *Fusarium* species and is associated with reduced feed intake, lower weight gains, and reproductive impacts in livestock when present at elevated levels.

The presence of multiple mycotoxins in the same sample complicates risk management strategies, as co-occurring toxins can have additive or synergistic effects on animal health and performance. Across the US, earlier *2024 Harvest Analysis* data showed that nearly all maize silage samples contained two or more mycotoxins, with type B trichothecenes, fumonisins and other *Fusarium*-related toxins widespread in maize and forage.

While the 2025 broadcast offered preliminary results, these historical patterns highlight ongoing multifactorial contamination concerns that extend beyond a single growing season.

Industry response

Dr Yiannikouris highlighted progress in predictive modelling and AI applications that leverage expanded datasets to better forecast mycotoxin risks. These tools are intended to support feed producers and livestock operations in adjusting harvest, storage, and feed formulation decisions proactively, rather than reacting to contamination events after they occur.

Market dynamics within the feed additive sector reflect this heightened focus on risk mitigation.

Demand for mycotoxin binders and modifiers, including inorganic clays, yeast-derived products and enzyme-based solutions, is expected to grow as producers seek broader-spectrum protection against diverse toxin classes and as regulatory scrutiny on residue accumulation intensifies.

Mycotoxin risk is becoming more complex and frequent, with climate-induced variability having an impact on harvest outcomes and emerging fungal threats underscoring the need for vigilance. Producers can no longer rely on long-standing seasonal assumptions; the broadcast underscores the need for proactive risk management, adaptive crop planning, and continuous monitoring of evolving climate patterns.

The panel emphasised that this escalation is not simply due to known fungal patterns. Instead, a combination of changing weather conditions, moisture variability, and emerging fungal strains is producing more unpredictable contamination profiles. Feed producers must therefore prepare for greater variability, increased testing demands, and more stringent quality control throughout the supply chain.

Predictive tools promote safety

One of the more encouraging insights presented during the broadcast relates to technology. The panel noted that accelerated progress has been made in predictive mycotoxin modelling, driven by expanding datasets and more advanced AI tools. As these tools continue to integrate global weather information, historical contamination patterns, and real-time sampling data, producers can anticipate faster, more accurate risk forecasts in the coming years.

Dr Yiannikouris highlighted the importance of leveraging data-driven insights to support better decision-making throughout the feed supply chain – from field sampling strategies to storage management and ration formulation. ❖

Competitiveness of the South African broiler industry

By Tracy Davids, BFAP, and Peter van Horne, Wageningen University and Research

The poultry sector's importance within South African agriculture is multifaceted. Firstly, it is the most widely consumed animal protein in South Africa and provides the most affordable source of animal protein to consumers. Secondly, it is the single largest contributor to the gross production value (GPV) of agriculture, contributing more than R68 billion in revenue in 2024. Thirdly, it is the biggest offtake of animal feed, with broiler production accounting for around 50% of total feed produced by members of the Animal Feed Manufacturers Association in South Africa.

The industry is highly integrated, comprising animal feed production, breeder facilities, broiler production, and processing. This implies that its footprint stretches well beyond just chicken production. It employs more than 50 000 people directly and many more across its integrated value chain.

Master plan yields results

In 2019, the industry signed the *Poultry Industry Masterplan*, which was developed jointly by multiple stakeholders across the value chain. Substantial investment occurred to expand production, but this was followed by a very challenging period. Global disruptions such as the Covid-19 pandemic and widespread economic restrictions imposed to control its spread induced multiple supply chain disruptions, and sharp increases in shipping rates owing to intermittent and widespread container shortages. As global supply chains started to recover, Russia's invasion of Ukraine induced a new shock for global commodity markets. This triggered a host of sanctions against Russia, as well as sharp increases in energy, fertiliser and agricultural commodity prices.

Despite all the challenges since 2020, the investments made following the signing of the *Poultry Industry Masterplan* have yielded production growth. After a sustained period of rising imports, which peaked in 2018 and were central to the industry being declared in distress, imports of bone-in portions in particular have declined substantially, from 287 000 tonnes in 2018 to less than 40 000 tonnes by 2024. While a success, this suggests that opportunities for further import replacement are more limited going forward relative to the past.

In total, South Africa imported more than 500 000 tonnes of chicken in 2018 but following changes in the tariff structure and intermittent highly pathogenic avian influenza (HPAI) outbreaks in several countries, total imports were less than 400 000 tonnes by 2024. By 2024, more than half of total imports comprised mechanically deboned meat, which is not produced at large scale in South Africa, and while some opportunities for import replacement remain in the offal and whole chicken categories, these are small relative to the volumes that were replaced in the past.

The reduction in import volumes is also evident considering the evolution of the share of imports in total consumption in recent years. From a peak of 24% in 2018, the share of net imports in total domestic consumption has declined to 16% by 2024. While growth in production has been central to this trend, a greater concern for the industry will be the decline in total use from 2018 to 2024. Limitations in consumer spending power was a key contributor, while the sharp price increases of 7,6% per annum from 2019 to 2024 also contributed.

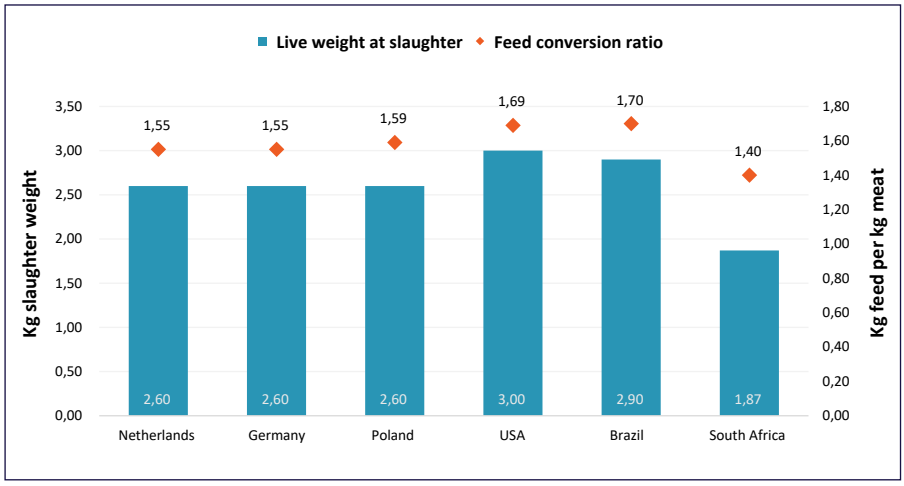
While much of the industry's struggles in the past were underpinned by struggles to compete with imported products, it is now entering a new phase in its growth trajectory. Domestic income growth prospects, while improved from the recent past, remain slow (BFAP, 2025), suggesting that production growth of similar rates to the past decade will continue to outpace that of consumption. At the same time, the runway for further import replacement is limited, suggesting that the industry will soon need to enter a new phase, where exports become core to accelerated growth strategies.

The ability to compete with leading global exporters in this environment becomes paramount. Within this context, this report provides a benchmark of the industry's technical and economic competitiveness against core global competitors.

Competitiveness benchmark

The competitiveness benchmark is focussed on quantifying the cost of producing chicken in South Africa,

Figure 1: Feed conversion and slaughter weights in different countries in 2024.



relative to other leading global producers. This has multiple facets, and so competitiveness is considered both from a technical and economic efficiency point of view.

Technical efficiency

Figure 1 presents the average slaughter weight (left axis) in the countries included in the study, as well as the feed conversion ratio (FCR) achieved (right axis). The feed conversion serves as an indicator for technical efficiency but must be interpreted in combination with the slaughter weight, as feed conversion declines as birds get older, and hence a longer growing period would be accompanied by a higher feed conversion ratio.

Figure 1 suggests that South Africa is a highly efficient producer, given that its feed conversion ratio is the lowest of those presented in the sample. This is expected, as South Africa's production cycle is the shortest among the countries included in the sample and typical slaughter weights are the lowest by some distance.

From 2023 to 2024, feed conversion improved by 2,1% despite a 0,8% increase in carcass weight. Considering the past decade, feed conversion improved by 14,1%, while carcass weights increased by 4,5% and the growing cycle accelerated from an average of 34 days in 2015 to 31,5 days on average in 2025. This is testament to production practices, investment in top production technologies, as well as the rate of improvement in genetics.

Given that South Africa has access to the best genetics globally, the breeding improvements achieved also benefit domestic producers. The combination of indicators points to significant efficiency gains over time.

Economic efficiency

South Africa's technical efficiency is strong, due in part to strategies employed in South Africa relative to other countries, and these can come at a cost. Consequently, it is critical to consider economic efficiency, measured as relative production costs, among the various leading producers globally.

Feed costs

Feed costs comprise the bulk of total primary production costs on a farm and so are a core component of competitiveness. Many factors can influence the competitiveness of feed costs, including raw material production, feed mill operations, ration composition strategies, and the length of the production cycle. On a cost per tonne basis, South African feed costs are above the sample average. On a cost per kg produced basis, South Africa's position improves relative to the rest of the sample, owing to the short production cycle and good FCR.

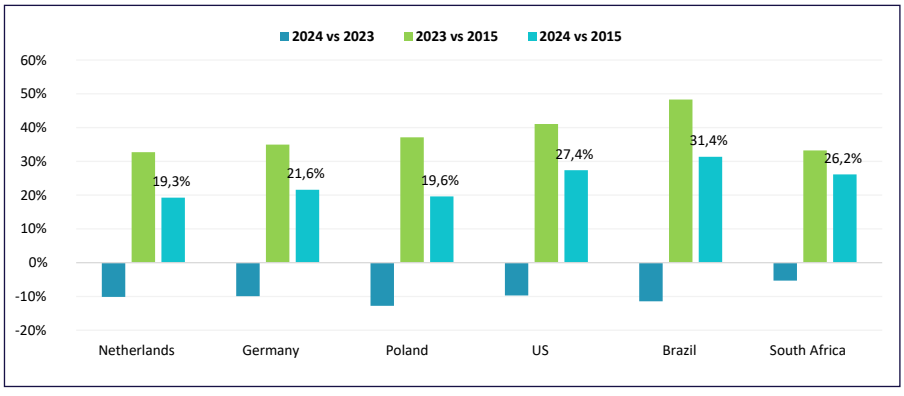
The most important factor underlying the cost of feed is relative prices of raw materials, such as maize, soya beans and soya bean meal. Maize is typically the primary energy source in South Africa, and in most years surplus production is such that prices tend to trade close to export parity levels. The initial spike in feed costs was a result of global factors, such as the war in Ukraine, and affected most producers globally, including South Africa, which had in fact harvested bumper crops in 2021 and 2022.

The effect is evident in *Figure 2*, which shows that the cost of an average feed ration in 2023 was well above 2015 levels across all countries in the sample – in South Africa, this increase was less than in most other countries, owing to South Africa's bumper harvest which pushed prices right down to export parity levels for maize.

At the same time, the development of the soya bean industry, which had also reached surplus production by 2023, having been in a deficit in 2015, also resulted in more affordable soya beans. The subsequent expansion in processing facilities implies that domestically produced soya bean meal has become more affordable relative to imported products. Given that soya beans are the primary source of protein in the ration, this development in recent years has aided the affordability of animal feed.

Soya bean and soya bean meal prices in South Africa declined in 2024 relative to 2023, whereas maize prices still increased.

Figure 2: Change in price of an average feed ration from 2015 to 2024.



In 2024, ration costs across the entire sample came down, with the cost in 2024 being much closer to 2015 levels relative to 2023. This reflects the continuous decline in raw material prices globally, but the decline in South Africa was much smaller, owing to the drought, which resulted in yellow maize prices breaking away from export parity levels.

The decline in the monthly cost of an average broiler feed ration in South Africa in 2024 relative to 2023 was minor and in the first quarter of 2025, feed prices were higher than in 2024, again showing the effect of the reduced 2024 crop. Consequently, in 2024, South Africa's feed ration prices were still 26% higher than in 2015, which was a drought year, whereas prices in Europe were on average only 20% higher. European rations are more wheat based, whereas South Africa's relies on maize as energy source.

Further to international market dynamics and the size of South Africa's crop, which are the major factors influencing euro denominated feed prices, exchange rate dynamics are also important drivers of price fluctuations. Amid escalating uncertainty related to both international and domestic factors, the value of the South African rand has depreciated substantially since 2019, which means that in rand terms, the escalations in feed material costs were even higher. The exchange rate does however also influence chicken prices and so feed costs in this report are generally denominated in euro terms for comparability with international competitors.

Feed raw material costs

Consideration of relative feed costs should also be cognisant of structural differences in feed material production. The previous section illustrated the extent to which reduced soya bean meal costs in South Africa in 2023 and 2024 aided relative competitiveness of feed rations. The shift is associated with growth in South Africa's soya bean sector, and subsequent processing volumes to replace previously imported soya bean meal.

Soya bean meal imports into South Africa have declined from 503 000 tonnes in 2015, to merely 158 000 tonnes in 2024, despite the severe drought that curtailed production prospects. In 2025, South Africa was expected to be a net exporter of soya bean meal. This suggests that the relative competitiveness of its animal feed sector may improve further in future.

Figure 3: Soya bean meal prices in different countries: 2015 to 2024.

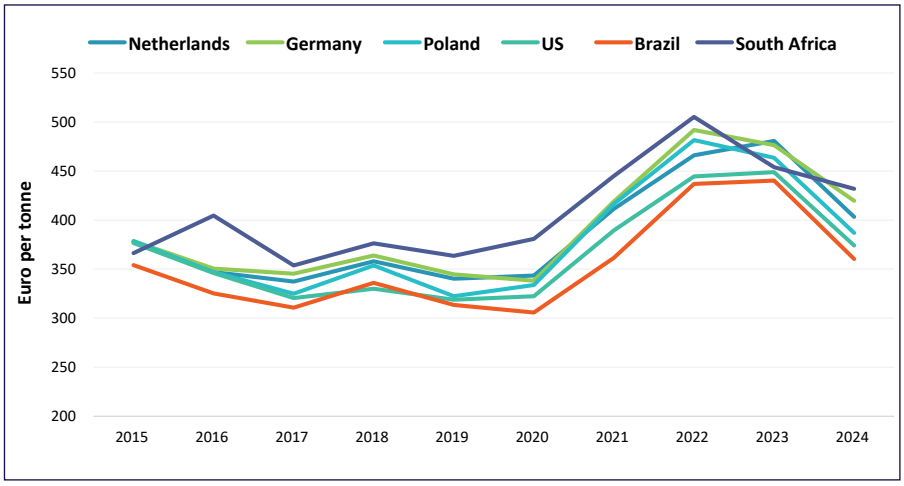


Figure 3 presents the cost of soya bean meal in all the countries included in the sample. This clearly illustrates the relative disadvantage that South Africa had for many years as a net importer of soya bean meal. It also shows the relative improvement in 2023, that again deteriorated in 2024 due to the drought. In 2025, these relative levels were expected to improve again, more in line with 2023. This structural shift should serve South Africa's competitiveness in animal feed well going forward.

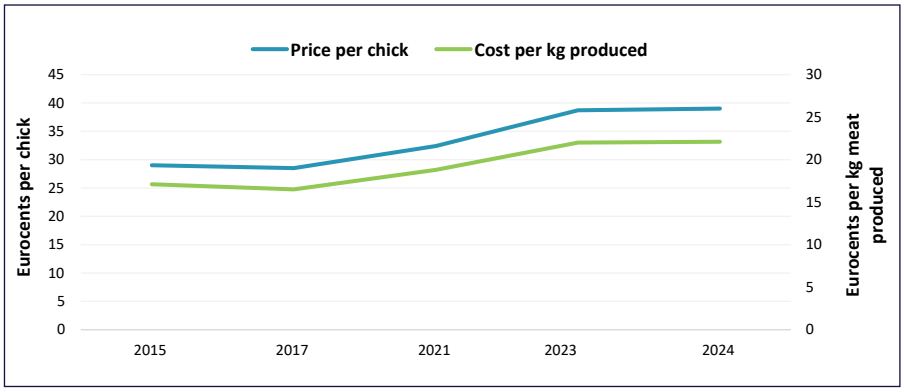
Day-old chick costs

Further to feed, day-old chicks are the second-largest cost component for chicken producers. On a cost per chick basis, South Africa's producers are generally reasonably competitive, despite genetics being imported. This relative position has improved over time, as South Africa's costs per chick were well above the sample average in 2021.

The improvement comes despite, in 2024, chick costs also having included the effects of the 2023 outbreak of highly pathogenic avian influenza (HPAI), which resulted in the culling of 3,5 million broiler breeder birds – around 45% of the national flock, towards the end of 2023. Consequently, to ensure a consistent supply of chicken, South Africa enabled imports of fertile eggs for commercial day-old chick production, which was not previously possible, with imports needing to occur at grandparent level. While imports did mitigate the crisis, day-old chick prices increased sharply in late 2023 and early 2024 (*Figure 4*).

Considered in terms of cost per kg meat produced, South Africa's competitive position is less favourable (costs well above sample average). This shows production strategies – South Africa produces a lighter bird, in a shorter production cycle.

Figure 4: Day-old chick costs in South Africa: 2015 to 2024.



‘COST EFFECTIVE PRODUCTION OPTIMIZATION’

- *New generation growth promotion*
- *Gut health enhancement*
- *Metabolic and skeletal support*
- *Correcting nutritional deficiencies*
- *House and site sanitation*
- *Air quality improvement*

IN FEED PRODUCTS

CARDIO OS™
Reg No.: V34299 Act 36 of 1947

Promotes optimal metabolic function

BAMBERMYCIN 4%
Reg No.: G2473 Act 36 of 1947

Growth promotor

TAUROS
Reg No.: V32601 Act 36 of 1947

Taurine supplement
Improved energy production

SUPER OS
Reg No.: V32383 Act 36 of 1947

Betaine supplement
Heat stress prevention

KITASAMYCIN 10%
Reg No.: G1905 Act 36 of 1947

Mycoplasma and Pneumonia control

TYLOSIN 10%
Reg No.: G2768 Act 36 of 1947

Mycoplasma control

SUPER NOURISH™
Reg No.: V31997 Act 36 of 1947

Pellet binder and nutrient protector

OXYTETRACYCLINE 20%
Reg No.: G2499 Act 36 of 1947

Broad spectrum antibiotic

ZINC BACITRACIN 15% GRANULAR
Reg No.: G1766 Act 36 of 1947

Gut health support
Improved feed efficiency

ON FARM PRODUCTS

ULTIGRO®
Reg No.: V31443 Act 36 of 1947

Buffered organic acids

SUPER SAL STOP®
Reg No.: V29004 Act 36 of 1947

Prevention of pathogenic enterobacteriaceae

GUTPRO®
Reg No.: V26234 Act 36 of 1947

Organic acid solution

SUPER TONIC
Reg No.: V28454 Act 36 of 1947

Water soluble nutritional supplement

SUPERBONE®
Reg No.: V33906 Act 36 of 1947

High phosphorous mineral emulsion

SUPER AIR®
Reg No.: V29002 Act 36 of 1947

Aromatic oils

SUPERZYME®
Reg No.: V34678 Act 36 of 1947

Water soluble enzymes

HEAT STRESS HYDRATION
Reg No.: V29003 Act 36 of 1947

Prevents dehydration

ELIMINATOR

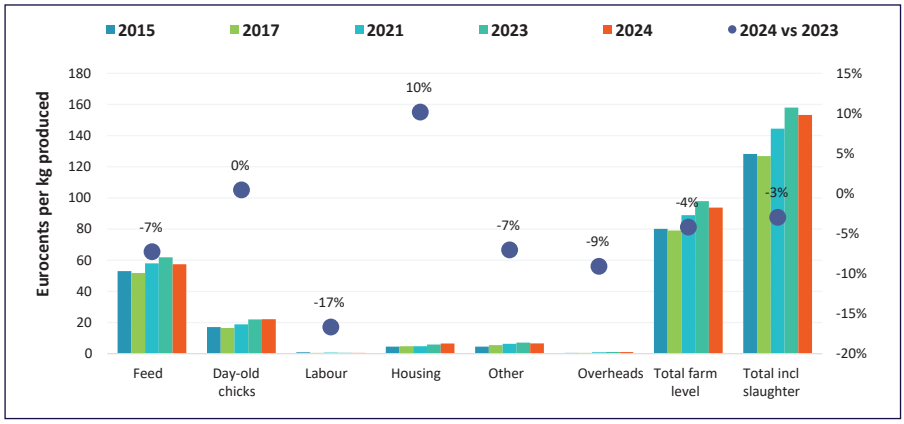
Site powder disinfectant

SUPER AGRI SCIENCE®
LEADERS IN TOTAL PRODUCTION IMPROVEMENT

Corné Prinsloo @ (+27) 81 552 8491 corne@sasorp.co.za
George Miller @ (+27) 61 475 4373 george@sasorp.co.za

www.superagriscience.co.za

Figure 5: Changes in individual cost components in South Africa from 2015 to 2024.



This meets market demand, while also optimising feed conversion ratios. While it benefits South Africa in terms of feed costs, it does inflate the cost of the chick, as fewer kg are produced for every chick placed than is the case among competing countries.

Figure 4 presents the movement in day-old chick costs over time in South Africa, both in terms of costs per chick and costs per kg meat produced. Other than the impact of the HPAI outbreak, chick cost dynamics largely mirror that of feed costs over time, with feed being a major cost driver in the production of day-old chicks. At hatchery level, electricity is also important, suggesting that severe loadshedding throughout 2023 would also have affected competitiveness.

Total production costs

The cost of producing a kg of chicken in South Africa is comparable to the sample average – lower than in the three European countries, but marginally higher than in the United States and well above the cost of production in Brazil, the world's leading exporter. The largest contributing factors to the primary cost of production are feed and day-old chicks, which together constituted an average of just over 80% of the total cost. This share is higher in Europe, owing to increased labour costs compared to others.

When combining primary production costs with the cost of slaughter, South Africa's total cost structure relative to others is improved by a slightly higher carcass yield, as well as lower labour costs. Labour is the major driver of differences in slaughter costs between countries. For this total consideration, South Africa's costs drop marginally below the United States, but remain almost 16% higher than Brazil.

To summarise movements over time, *Figure 5* presents the level of major cost drivers in South Africa from 2015 to 2024, along with the percentage change in each one from 2023 to 2024. Percentage wise, the biggest increase was in housing costs, which rely on imported technology and also reflect finance costs. In this regard, South Africa's prime interest rate peaked in 2024.

Conclusions

Chicken production in South Africa increased by 11,8% over the past decade. This was substantially slower to the preceding ten-year period, but faster than consumption, which increased by only 8,8%. Production growth reflects substantial investment following the signing of the *Poultry Industry Masterplan*, at a time when the industry was not performing well and struggling to compete with imports.

Production growth in the past decade came despite significant challenges associated with global disruptions, widespread loadshedding in South Africa and severe drought conditions that hampered profitability. With feed prices finally starting to decline, the industry is poised for growth, but it stands at a crossroad in terms of growth strategies.

Consumer spending power in South Africa has been under pressure for some time, and over the past decade real (inflation adjusted) household disposable income expressed in per capita terms increased by less than 1%. Meat sectors have felt the brunt of this impact, being among the more expensive products in typical food consumption baskets. BFAP (2025) notes that since 2018, per capita meat consumption in South Africa has declined as a result and while some improvement is expected over the coming decade, demand growth is expected to remain slow and predominantly driven by population growth. This suggests that, if production growth targets are met, it would likely still require production to grow faster than consumption.

While the industry has replaced a substantial number of imports since 2018, due to production growth outpacing consumption, further opportunities for import replacement are more limited than in the past. While some can undoubtedly be unlocked, further acceleration of growth prospects over the coming decade will require it to penetrate the export market. In this regard, competitiveness benchmarks such as that presented in this study become invaluable to consider competitiveness against key competitors, identify relative improvements that can be made, and identify potential markets where South Africa may have favourable access or better transport differentials relative to these competitors.

South African producers have made great progress in improving their competitive position and while production costs have fallen below that of the United States over the past two years, they remain well above Brazil, the world leading exporter. While further improvements are possible given that the soya bean sector is expected to move to a net surplus position for both soya beans and soya bean meal in the coming decade, growth strategies would still need to consider any opportunities to improve further, as well as markets where South Africa could benefit from favourable transport differentials or differentiate its product from that of Brazil.

This report by the Bureau for Food and Agricultural Policy (BFAP) was commissioned by the South African Poultry Association. For enquiries, visit *www.sapoultry.co.za* and *www.bfap.co.za*

ENVARTO
INNOVATIVE • SCIENTIFIC • SOLUTIONS

Biomonitoring+

Mycotoxin Management

Escent® S

Helps eliminate toxins so your animals can focus on performance.

An advanced mycotoxin risk management solution.

Myco-Marker®

Measure the risk and true impact of mycotoxins in animals.

Your 5-in-1 toxin mitigation solution:
Blood & Impact Analysis + Feed Risk Assessment.

STOP ASSUMING.

START BIOMONITORING TODAY.

ENVARTO is the official representative of Innovad® in South Africa
Judi Rosenstrauch • 082 667 9052 • judi@envarto.co.za
Vaudette van der Merwe • 074 869 4510 • vaudette@envarto.co.za
www.envarto.co.za

innovad
Creating Trust & Care

innovad.group

Poultry production in perspective

By Dr Tiaan Cilliers, Poultry Group chairperson, South African Veterinary Association

The poultry industry has emerged from a fairly successful and economically positive 2025, with strong sales in both broiler and table egg sectors over the past two quarters. This momentum is expected to continue for broiler producers but may waiver slightly for layer producers. Based on current population figures, the layer sector is moving into a period of marginal to moderate oversupply, which could place pressure on egg prices.

One factor that has had a positive impact on the poultry industry is the unfortunate outbreak of foot-and-mouth disease (FMD) which caused a slowdown in supply and throughput in feedlots and abattoirs. This will lead to a scarcity of red meat in the market and higher meat prices, which means consumers will likely shift to poultry as a more affordable protein source, indirectly supporting poultry demand.

Rising HPAI concerns

However, a familiar threat looms in the poultry industry. Although we may see higher sales volumes and stronger prices for poultry products, current surveillance trends for highly pathogenic avian influenza (HPAI) in the European Union (EU) are raising concerns for the short- to medium-term outlook.

Table 1 was taken from the latest HPAI report of the World Organisation for Animal Health (WOAH). It shows a significant increase in the number of HPAI cases in wild birds for the period October to December 2025. This is concerning, as previous outbreaks that reached our borders were preceded by a significant spike in wild bird cases in the EU.

Based on the upward trend in wild bird cases of HPAI in the EU, it is likely that a substantial amount of the virus circulates within migratory bird populations from the end of the European summer onwards. Some of these birds migrate into Africa, transmitting the virus to local bird populations. Once established, the virus can continue spreading southward through local migratory birds that become infected.

Focus on biosecurity

Given these risks, strict attention should be paid to biosecurity. Specific areas to focus on will be vehicle entry control, vehicle disinfection, personal protective equipment (PPE), shower facilities, movement of equipment between houses and/or sites, and adequate bird-proofing to prevent exposure to wild birds. Vehicles and equipment moving between sites and farms have been linked to the spread of HPAI in previous outbreaks. Ensuring that sound disinfection protocols are in place is therefore important to prevent the virus from being carried in by way of vehicles and equipment.

Many employees who work on poultry farms live in rural areas where frequent contact with wild birds and village poultry is common. This exposure becomes a risk if employees enter a farm without undergoing proper disinfection procedures, such as showering and changing into new clothes.

Since the HPAI virus is primarily introduced through wild birds, it is important to bird-proof farms, poultry houses, and other poultry facilities. Spilt feed attracts wild birds, so clean up spillages as soon as possible. Inspect your poultry houses and make sure there are no access points where wild birds can enter the facilities.

Vaccination plans for HPAI

By focussing on biosecurity, producers can mitigate the risk of their farms becoming infected with HPAI. Government legislation does exist that enables the implementation of vaccination strategies for controlled diseases. This is a process that the poultry sector, through the South African Poultry Association (SAPA), has been engaged in for many years. Our hope is to establish a more practical and widely implementable vaccination protocol for HPAI. However, as with many government-driven processes, this will take time to finalise and implement.

Meanwhile, poultry producers are left to fend off the disease on their own. Ensure that your farm is operating at the highest level of biosecurity to give yourself a fighting chance.❖

Table 1: Key figures for the current seasonal HPAI wave and the two previous waves.

Indicator	1 Oct 2023 to 30 Sep 2024	1 Oct 2024 to 30 Sep 2025	1 Oct 2025 to 31 Dec 2025
Countries and territories reporting HPAI in poultry	39	50	30
Number of HPAI outbreaks in poultry	851	1 410	781
Countries and territories reporting HPAI in wild birds	55	55	37
Number of HPAI outbreaks in wild birds	1 076	1 912	3 855

For more information, contact Dr Tiaan Cilliers at tcilliers@protectachik.co.za

Potato Meal **Tuna Meal**

Poultry Meal Palatability Enhancers

Milk Powders

Lamb Meal Duck Meal Lysine

Methionine Hemoglobine Soya Oilcake Valine

Plasma Powder Sugarbeet Ostrich Meal

Cotton seed Tryptophane **Venison Meal**

Gluten 60 **Poultry Blood Meal**

Beef Meat & Bone Meal Vegetable Meal

Turkey Meal Organic Poultry Meal Chicken MDM

Cotton Oilcake **Hydrolized Feather Meal**

Threonine

Poultry Fats & Oils Kangaroo Meal

Pork Meat & Bone Meal

Rumen Bypass Products Fish Meal Vegetable Fats & Oils

Pork Livers Egg Powder

Salmon Meal **Insect Meal** Pork Hearts

TICSA The Ingredient Company South Africa (Pty) Ltd

AFMA SAFE FEED FOR SAFE FOOD ★★★★★ CODE OF CONDUCT COMPLIANCE

AFRI COMPLIANCE

Tel: (021) 863 1941 | Cell: 083 460 2112 | info@tic-sa.com | www.tic-sa.com

PROUD MEMBER OF THE PET FOOD INDUSTRY ASSOCIATION OF SOUTHERN AFRICA

Biosecurity is a shared responsibility

By Karla Zietsman, general manager, Sappo

South Africa's livestock industry is operating in a complex disease environment. While African swine fever is the most significant threat to the pork sector, wider biosecurity vulnerabilities across the agricultural landscape reinforce one simple truth: biosecurity cannot be compartmentalised.

For pork producers, biosecurity has traditionally focussed on farm-level controls such as access management, sanitation protocols, animal movement, and employee training. However, in today's risk climate, the conversation must extend further along the value chain. Feed supply chains form a critical interface between multiple production systems, raw material sources, transport networks, and on-farm operations.

Feed represents the single largest input cost in pork production, but it is also a potential vector risk if stringent controls are not maintained. Ingredient sourcing, transport hygiene, storage practices, mill biosecurity protocols, and traceability systems all play a role in protecting herd health. As production systems become more integrated and efficiency-driven, these links become even more important.

The feed manufacturing sector and pig industry share a few objectives: maintaining animal health, ensuring food safety, and protecting consumer confidence. Risk mitigation is most effective when it is proactive and coordinated. Transparent communication, compliance with regulatory standards, rigorous quality assurance programmes, and continuous vigilance across the supply chain are not optional – they are strategic imperatives.

Collective action for resilience

The resilience of South Africa's pork industry depends on collective discipline. Every controlled access point, sanitised vehicle, and audited supplier contributes to a larger defence system. Biosecurity has become an industry-wide commitment.

As the national representative body for pork producers, the South African Pork Producers' Organisation (Sappo) remains committed to strengthening partnerships across the value chain to promote biosecurity resilience. Through ongoing engagement with feed manufacturers and industry stakeholders, Sappo promotes practical, science-based biosecurity – from controlled farm access and sanitation protocols to responsible feed sourcing, clean transport, and full traceability. These actions protect herd health and the sustainability of production, and position biosecurity as a strategic asset across the entire value chain.

Contact Sappo at 012 100 3035 or send an email to info@sappo.co.za for more information.

Strategic technologies to improve phytogenic feed additive efficacy in pigs and poultry

By Carlos Nantapo and Upenyu Marume

In recent times, the high growth rates and efficient feed conversion required for the economic viability of pig and poultry enterprises have been sustained through the use of antibiotic growth promoters (AGP) at subtherapeutic levels. However, the rise in antibiotic resistance has led to public and consumer pressure due to fears of a rise in diseases. This has resulted in severe restrictions and bans regarding the use of AGP in many economic zones, including the European Union.

Specific to the animal, the use of higher doses of AGP leads to disruption of intestinal microflora homeostasis. This predisposes the animal to excessive proliferation of potentially pathogenic drug-resistant microbes, along with a reduction in beneficial microbes and overall bacterial diversity (DeGruttola *et al*., 2016), commonly termed dysbiosis (Kalia *et al*., 2022). In addition, gut barrier disruption and an imbalance of the host immune and metabolic systems have also been recorded (Hrncir, 2022).

As such, phytogenic feed additives (PFAs) have become of interest as alternatives to AGP. Currently, there have been no proven carcinogenic effects, acute toxicity, or environmental hazard potential. When delivered under the same feeding conditions as AGP, PFA use has led to improved growth performance and gut health in a marginal, equivalent and/or better capacity (Erinle *et al*., 2022).

Role of essential oils

PFAs encompass a heterogenous group of plant-derived materials with secondary metabolites. PFAs have a broad range of functional properties that exert positive effects on animal growth performance, health and product quantity and quality (Tolve *et al*., 2021). This group includes essential oils (EOs) (volatile plant compounds hydro-distilled extracts composed of tertiary terpene alcohols and related esters, aliphatic terpene ethers, aliphatic and aromatic terpene hydrocarbons, contributing the characteristic heavy odour) (Veiga *et al*., 2019), herbs (flowering, non-woody, and non-persistent plant products), botanicals (whole plants or part, e. g., roots, leaves, and bark), and oleoresins (non-aqueous, solvent-derived extracts) (Ahsan *et al*., 2018; Diaz-Sanchez *et al*., 2015).

EOs represent the most common phytogenic additives added to pig and poultry feed (Gheisar *et al*., 2015a; Mohammadi Gheisar and Kim, 2018; Mohammadi Gheisar *et al*., 2018). *In vitro* studies conducted show characteristic functional properties including biocidal (bactericides, viricides, and fungicides) and medicinal activities. The properties are due to the presence of high amounts of bioactive compounds, phytochemicals/phytobiotics or active ingredients that are beneficial when supplied at dose recommended levels (Sousa *et al*., 2022).

The mechanisms of action of phytochemicals are yet to be clearly understood but are thought to be correlated with the occurrence and composition of these active ingredients in the product (Le Coz *et al*., 2021). These active ingredients include flavonoids, glycosides, alkaloids (available as ethers, aldehydes, alcohols, ketones, esters, and lactones), terpenoids (mono, sesquiterpenes, and steroids), phenolics (tannins), and glucosinolate (Wenk, 2006).

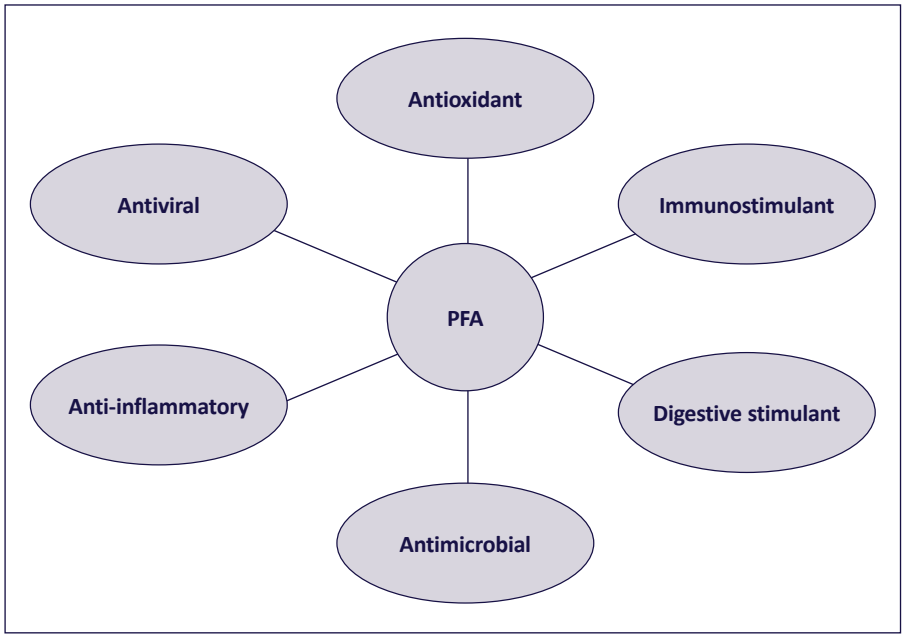
Specific constituents such as carvacrol, eugenol, thymol, cinnamaldehyde, and p-cymene have demonstrated, *in vitro*, antiviral, antimicrobial, antioxidant, and immunomodulatory activities (Rivera-Gomis *et al*., 2020; Serrano-Jara *et al*., 2023). These components are directly related to improved growth performance, feed conversion, gut health, and immune responses of monogastric animals (Upadhaya and Kim, 2017).

Despite these beneficial effects, there are still challenges with use, upscaling and commercialisation of PFAs in the poultry and swine industry. Several limitations have been investigated, including high susceptibility to light, temperature, oxygen, and humidity (Sousa *et al*., 2022), low bio-accessibility and bioavailability, and low palatability (Nantapo and Marume, 2022). Therefore, it is imperative to engineer PFAs into materials that maximise the benefits of all available active ingredients without losses, are easy to handle and process, are palatable, and are efficiently used by the animal.

Improving use and bioavailability

Fabrication techniques which help reduce bulk, breakdown indigestible material, increase accessibility and bioavailability of the simplest compounds or forms are necessary. Subsequently, a decrease in molecular weight of a substrate increases its affinity for reaction with active free radicals for absorption. These small secondary metabolites exert more powerful and direct antioxidant activity by removing free radicals, inhibiting production pathways for pro-inflammatory cytokines, and enhancing elimination of oxidants from intracellular spaces,

Figure 1: Biological properties of phytogenic feed additives (PFAs) in pigs and poultry.



thus relieving oxidative stress more effectively than larger complex units.

Several ways have been developed to improve the use and bioavailability of phytogenic additives in monogastric nutrition, including extraction, fermentation, encapsulation, and enzyme technology (Sugiharto and Ayasan, 2023). These methods help break down large complexes, to release the bioactive compounds, and effectively protect and deliver them to gastrointestinal tract (GIT) sites where they are efficiently utilised by the animal.

Economics, particle size, inner core, and wall physical and chemical properties, animal species and physiological stage, mechanism of controlled release, and other feed ingredients, as well as end product use, determine the choice of the technique to use (Veiga *et al*., 2019).

The objective of this review article is to describe some scientific work developed to improve the bio-accessibility and bioavailability of PFAs.

PFA accessibility and availability

Microencapsulation

Plant EOs and extracts are the major PFAs with several functional properties, in particular possessing antibacterial, antioxidant, anti-inflammatory, and appetite and digestion stimulating properties. This is due to the high availability of several secondary plant-derived metabolites or phytochemicals such as phenolic derivatives (Oh *et al*., 2018a).

However, these natural bioactive ingredients such as EOs, polyphenols, polyunsaturated fatty acids, and vitamins are highly heat labile, and prone to degradation during feed processing, transportation, and storage as well as in the animal gut environment (Thuekeaw *et al*., 2021). In general, the physicochemical characteristics of all bioactive ingredients are compromised by moisture, oxygen, temperature, light, and the presence of metals (Sutaphanit and Chitprasert, 2014). This allows effectively supply, controlled release and improved bioavailability in the later part of the GIT, in addition to improving handling properties and stability during storage (Bao *et al*., 2023).

Some obstacles and limitations towards the application of PFAs in strengthening animal health and performance can be addressed by microencapsulation technology. Microencapsulation is a recent technological process aiming to protect these plants' phytochemicals or phytobiotics from destruction and absorption in the upper GIT (gastro-resistant microparticles). Other advantages include masking the taste of unpalatable compounds and the prevention of interaction between incompatible ingredients (Tolve *et al*., 2021).

Encapsulation of bioactive compounds further elevates their presence and modulates physiological actions that benefit the host animal (Alagawany *et al*., 2021). In the process, digestive enzyme functions, animal intestinal microbiome and intestinal structure are improved, enhancing feed digestibility, nutrient availability and utilisation, minimising losses and allowing for better growth performance.

Mechanisms and characteristics

Microencapsulation involves careful coating of solid or liquid active particles (core material) like oils with an envelope of secondary coat materials (wall/shell), polymers, organic and inorganic compounds (Gheisar *et al*., 2015a). The whole process of encapsulation produces microcapsules, in micrometre to millimetre range classified as: macro (>5 000 µm), micro (0,2 to 5 000 µm), and nanoparticles (<0,2 µm) (Veiga *et al*., 2019).

Microencapsulated compounds are divided into microcapsules or microspheres depending on the materials and methods involved in their preparation. The encapsulating coating protects bioactive compounds from oxidative, degradation and volatilisation reactions, while maintaining their biological, functional, and physicochemical properties (Moharreri *et al*., 2022). The shell or wall material guarantees the efficiency and stability of the microparticles. Common shell materials compatible with feed ingredients and animal physiology include proteins, lipids, celluloses, carbohydrates and gums.

Spray drying, emulsion, coacervation, extrusion and molecular inclusion, and fluidised beds, are the most common microencapsulation techniques employed in the food and pharmacology industries and show great potential application in animal nutrition (Veiga *et al*., 2019).

Applications and effects

The encapsulation of PFAs with known pharmacological and nutritional properties provides a promising alternative to antibiotics in the pig and poultry industry (Moharreri *et al*., 2022; Silva *et al*., 2020; Sugiharto and Ayasan, 2023). The effect of microencapsulation to increase the efficacy of EOs was confirmed by Hafeez *et al*. (2016). The authors studied

the effect of dietary encapsulated PFAs on growth performance and nutrient digestibility in broiler chickens. In this study, inclusion of powdered menthol and anethole at 0,015% did not significantly improve performance and apparent ileal absorption (AIA) of phosphorus. However, encapsulated carvacrol, thymol, and limonene EOs at 0,01% improved performance as well as AIA of nutrients in broiler chickens. The authors postulated this to improved palatability characteristics and digestive enzyme secretion.

Bao *et al*. (2023) evaluated the effects of encapsulated EOs on the growth performance, antioxidant properties, gut microbiota, intestinal morphology, and barrier function of meat-type ducks. Dietary EOs supplementation significantly increased the duodenum and jejunum villus height and ratio of villus height to crypt depth. Furthermore, on day 42, the jejunal mucosa mRNA expressions of claudin 1 and occludin were observed to be higher in the groups supplemented with EOs at 0,05 and 0,1%. The α-diversity showed that the 0,1% EOs supplementation improved the classes within the bacterial population and their abundance. The results further showed that EOs supplementation increased the relative abundance of *Bacteroides*, *Desulfovibrio*, *Bacteroidetes*, *Phascolarctobacterium*, *Bacteroidaceae*, and *Butyricimonas* in the caecal microbiota of ducks.

Evidence also suggests high efficacy of encapsulated phytochemicals in modulating key transcription mechanisms encoding gut barrier function, digestive enzymes and antioxidant machinery (Meligy *et al*., 2023). In this study, the efficacy of liposomal encapsulation, used as a novel carrier for EOs, on growth, digestibility, intestinal microbiota, and bacterial metabolites of broiler chickens was explored. The results showed a significant upregulation of mRNA expression of genes encoding: barrier function-related protein (mucin-2 [MUC-2]), antioxidant stability-related factors (CAT, erythroid 2-related factor 2 [NRF2], and SOD-1), tight junction proteins (junctional adhesion molecule- 2 [JAM-2] and occluding), other antioxidant enzymes (GPx-1, NAD (P)H dehydrogenase quinone 1 [NQO1], and heme oxygenase-1 [HO-1]) in broilers fed diets with 0,04% liposomal encapsulation.

The effects of graded concentrations of purple garlic powder (PGP) and microencapsulated OEO in piglets during the post-weaning period was evaluated using biomarkers of stress, oxidative status, and inflammation, as well as ADG and FCR. The results showed low (0,4%) doses of OEO and garlic powder led to improved growth performance, and the meat did not exhibit stress, inflammation, or negative changes in oxidative biomarkers such as C-reactive protein (CRP), cortisol, or the antioxidant biomarker CUPRAC in the serum of piglets during the post-weaning period (Rivera-Gomis *et al*., 2020).

Limitations and future research

Several microencapsulation studies have confirmed significant improvement in key performance and health indicators in pigs and poultry, as well as their animal products. Despite the great promise shown by microencapsulation, these novel studies show variability in methodology, animal species as well as inconsistencies in findings. There is a need for standardisation of these methodologies as well as the complex feed ingredient matrix, to check and confirm the actual efficacy of microencapsulation.

Furthermore, it is important to investigate specific effects and target sites (either animal host or its microbiome) of individual compounds in the EOs-encapsulate complex to facilitate the application of microencapsulated EOs in pig and poultry production (Omonijo *et al*., 2018).

Feed enzyme technology

PFAs possess antinutritive substances (tannins and bitter compounds) which hinder the digestive system thus limiting their use in pig and poultry nutrition (Camargo *et al*., 2023). They also contain high levels of plant cell wall structural non-starch polysaccharides – compounds that bind encapsulated essential nutrients (mineral chelator). This process renders nutrients inaccessible for hydrolysis by monogastric enzymes (De Vries *et al*., 2012).

Phytate, NSP, protease inhibitors, and non-digestible protein reduce digestibility and bioavailability in pigs and poultry (Dafade *et al*., 2019; Torres-Pitarch *et al*., 2017). In addition, monogastrics are devoid of all the enzymes found in rumen microflora necessary to degrade such complexes in the feed (Khattak *et al*., 2006; Ravindran and Son, 2011). To mitigate the negative effects of these complexes, supplementation of autoenzymatic activity with alloenzymatic activity (i.e., exogenously produced digestive enzymes from non-host sources) is crucial to improve nutrient utilisation and animal performance (Munir and Maqsood, 2013).

Characteristics and sources

Feed enzymes are exogenous, administered from outside, and are sourced from carefully selected microorganisms grown under controlled conditions that are specific for a certain substrate. Feed enzymes are biological active proteins that accelerate the chemical breakdown of nutrients to smaller compounds for further digestion and absorption (Anadón *et al*., 2019).

Most commercially available feed enzymes are derived from optimised fermentation systems using production organisms such as *Pichia pastoris*, *Trichoderma reesei*, *A. niger*, *E. coli*, and *B. licheniformis* (Adeola and Cowieson, 2011). Enzymes lacking in monogastric animals include mannanases, cellulases, hemicellulases, and pectinases. They are of great interest for their ability to break down plant-origin fibrous cell wall matrices and improve of PFA efficacy.

Supplementation with exogenous feed enzymes has become standard for many decades in the field of monogastric nutrition. The most common feed enzymes used as additives in monogastric nutrition include lipases, proteases, cellulase, β-glucanases, xylanases, and associated phytases, and galactosidases (Ojha *et al*., 2019a).

The common goal of using exogenous feed enzymes is to increase digestion of feed material and complexes, during storage or after consumption within the GIT, enhancing accessibility of nutrients, and increasing the nutritional value of feed. In addition, exogenous enzymes help incorporate new or increase the range of feedstuffs than can be used by dropping or removing the inclusion limit of poorly utilised ingredients (Ojha *et al*., 2019b). Furthermore, these enzymes allow retention of expensive nutrients and thus save costs to the enterprise (Bedford, 2018) and contribute to profitability and

ONS SIT DIE **PLAAS** IN **MEDIA**

environmental sustainability (López-Gálvez *et al*., 2021).

Applications in nutrition

In free-range layers, exogenous enzymes have been used to reduce incidences of gut compaction due to uncontrolled fibre intake which leads to low nutrient availability (Iqbal *et al*., 2018). In piglets, weaning is characterised by intestinal disorders such as a significant decrease in the secretion of pancreatic enzymes. Dietary supplementation with exogenous enzymes has potential to reduce this negative impact of weaning and increase the digestibility of the non-milk components (Torres-Pitarch *et al*., 2017). This is corroborated by Wang *et al*. (2018) who notes reduced enzyme activity at weaning, when investigating the effects of supplementing a simple maize-soya bean meal diet with multi-enzyme complexes, EOs, and benzoic acid on growth performance, serum metabolite profile, serum cytokines, and intestinal microbiota in weaner pigs.

The positive effect on growth performance, nutrient digestibility, gut morphology and health makes the use of fatty acids an attractive alternative option to antibiotics in monogastric animals. In a meta-analysis including 90 studies, gain to feed ratio was improved in 55, remained unchanged in 28 and deteriorated in seven, in response to feed enzyme supplementation.

Recently there has been an increase in *in vitro* and *in vivo* studies describing the use of multi-enzyme complexes or cocktails in combination with EOs in pig and poultry diets, showing improved growth performance, nutrient digestibility and gut health. Several enzyme cocktail preparations are a feasible approach designed towards improving utilisation of the non-starch polysaccharide fraction and maximising the nutrient availability in various feed ingredients (Ravindran and Son, 2011).

The multi-enzyme complexes provide both cellulolytic and proteolytic activity for an increased efficiency in degrading structural polysaccharides and proteins. In addition, application and use of a group of enzymes offers additive, sub-additive, or synergistic effects in nutrient utilisation and livestock growth/production (Ojha *et al*., 2019a). Enzyme cocktails allow greater access to nutrients, otherwise bound in complexes matrices which are unable to be degraded by single enzymes.

Synergistic effects

The synergistic benefits of an orally administered capsicum/thymus EOs blend and a newly developed exogenous cellulase and pectinase enzyme cocktail on Farafra ewes were observed (Kholif *et al*., 2018). This was evidenced by enhanced feed digestion, ruminal fermentation, milk production, composition, and nutritive value. Bacterial inhibition, enhanced fibre digestion, elevation of non-fibrolytic and fibrolytic bacteria populations in the rumen fluid enhancing ruminal microbiota attachments changing nutrient digestibility sites, and synergistic actions with ruminal endogenous enzymes could be involved.

In a study to characterise responses to a specific mix of fibrolytic enzymes for commercial dairy herds in their pre-calving period, an increase in milk production (fat and protein), feed digestibility, and reduced time to first breeding were observed (Golder *et al*., 2019). In broiler chickens, supplementation with thymol and carvacrol, with xylanase, glucanase and mannanase complex supplementation showed improved growth performance, increased ileal villus height/crypt depth, decreased passive transcellular permeability and *E. coli* levels, demonstrating benefits to the gut health of *C. perfringens* challenged chicks (Sun *et al*., 2015). In this study, authors suggested exogenous enzymes helped mitigate the depression of bodyweight and increased the feed to gain ratio observed with EOs supplementation, although the underlying mode of action is still not well understood.

Dietary supplementation of a combination of an EO blend (thymol, eugenol, and piperine) and a commercial protease enzyme (Ronozyme ProAct™ CT, containing 75 000 protease units/g of product) improved total tract retention of nitrogen and excreta ammonia gas emissions in growing broiler chicks (Park and Kim, 2018). Similarly, diets supplemented with OEO along with multi-enzymes resulted in higher BWG, improved FCR and reduced mortality in broilers. This was explained as a synergistic effect with EO-exogenous enzymes.

Exogenous proteases compliment an animal's endogenous enzymes and perform many physiological roles including destruction of anti-nutrients, such as lectins and trypsin inhibitors. Speculatively, mixing EO-feed and exogenous enzymes during storage initiates the breakdown of carbohydrate and protein plant wall complex of EOs. This helps release a rich source of a variety of phytochemicals and bioactive components with functional properties that are immediately available for use by the monogastric animal. Furthermore, performance, amino acid digestibility, and nutrient retention are improved.

Conclusions and future perspectives

This work confirms that PFAs have a wide range of beneficial impacts on growth performance and health of pigs and poultry. Their limitations for use in dietary strategies can be overcome through use of some novel techniques allowing improved bio-accessibility and bioavailability in the GIT. Blending of PFAs adds diversity to available bioactive agents. Moreover, blending of PFAs with OAs improves and provides synergistic effects to antimicrobial action. The PFA-exogenous enzyme synergistic and complementary benefits include destruction of anti-nutritional factors and improved digestive enzyme secretion.

Microencapsulation offers protection and increased stability of the encapsulated materials against evaporation, oxidation or deactivation due to minimised reaction with the environment as well as controlled and targeted release. There is lack of consistency in the results due to variability in methodologies used. This poses ambiguity on the reproducibility and accuracy of data.

Therefore, further research should focus on exploring the molecular mechanisms of each PFA and related active agents and their individual chemical compounds as well as establishing standardisation of the experimental protocols to support the potential of the techniques to improve PFA efficacy in pig and poultry nutrition.❖

This article was condensed for publication in *AFMA Matrix*. Visit *doi.org/10.1016/j.aninu.2024.06.010* to read the full article or email Upenyu.Marume@nwu.ac.za

2026 ADVERTISING RATES

Matrix

FORMAT:	A4, full-colour, glossy, printed & digital/online
PRINT RUN:	Minimum 1 600
ONLINE MAGAZINE:	*www.afma.co.za; www.agriorbit.com; digimags.agriorbit.com*
PRINT DISTRIBUTION:	National & international postal database
INDEXED FOR RESEARCH:	*www.sabinet.co.za* (paid subscription)
READERSHIP:	Minimum 7 500
LSM:	8-10
FREQUENCY:	Quarterly
LANGUAGE:	English

ENQUIRIES

CHIEF EXECUTIVE OFFICER: LYNETTE LOUW
084 580 5120 I lynette@plaasmedia.co.za

EDITOR: LIESL BREYTENBACH, AFMA
071 191 9309 I liesl@afma.co.za

SALES MANAGER: MARNÉ ANDERSON
072 639 1805 I marne@plaasmedia.co.za

TARGET AUDIENCE: All members of feed industry bodies (AFMA and others) • Universities, agricultural colleges, technicons • Research institutions Relevant government departments • Producer and industry organisations • Co-operatives • Other media • Raw material suppliers • Clients of AFMA members

ADVERTISING

KARIN CHANGUION-DUFFY 082 376 6396 I karin@plaasmedia.co.za
SUSAN STEYN 082 657 1262 I susan@plaasmedia.co.za

PAYMENT TERMS:
Existing clients – strictly 30 days after invoice date.
New clients – 14 days prior to placement.
Rates exclude package discounts, VAT and agency commission.

ADVERTISING PACKAGES

- One-year pre-planned booking.
- Added value: Editorial and interviews.
- 12 easy monthly instalments.
- Guaranteed coverage in news pages.
- Advertisements in Plaas Media's other magazines.

As a supplier of animal feed and feed ingredients in South Africa, advertisers who book advertisements in *AFMA Matrix* automatically declare that their product advertisement complies with the provisions of *Act 36 of 1947* and have been approved by the Registrar in the format submitted. Further details included on booking sheets.

ADVERTISEMENTS

Double-page spread	R30 802	Right-hand full page	R19 980
Front cover (logo and photograph)	R26 639	Full page	R16 650
Outside back cover (OBC)	R24 974	Half page (landscape and portrait)	R8 949
Inside front cover (IFC)	R22 477	Third page	R5 967
Page 1	R22 477	Quarter page (portrait)	R4 474
Inside back cover (IBC)	R21 644	Banner/strip ad (fifth page landscape)	R3 580

2026 DEADLINES

Technical article submissions • Advertorials • Ready advertisements (PDF/Jpeg/TIFF)

JANUARY 2026	APRIL 2026	JULY 2026	SEPTEMBER 2026	JANUARY 2027
Feed industry • Processing • Milling • Mixing • Formulation • Science • Research • News				
10 November 2025	25 February 2026	22 May 2026	28 July 2026	13 November 2026
25 November 2025	10 March 2026	8 June 2026	12 August 2026	24 November 2026
8 December 2025	17 March 2026	15 June 2026	19 August 2026	8 December 2026

PLAAS MEDIA

Tel: 012 664 4793 / 0597 • **Fax:** 012 664 2750 • Private Bag X2010, Lyttelton 0140 • 217 Clifton Ave, Lyttelton, Centurion 0157

animal feed manufacturers association - afma
@afmasouthafrica
www.afma.co.za
www.agriorbit.com
digimags.agriorbit.com

Litigation: The value of class action

By Hans-Jurie Moolman, Moolman & Pienaar Incorporated

Events, decisions, and actions by individuals and/or the state often affect the rights of others. In many instances, more than one person, institution, or interest group may be impacted.

Our legislative and decision-making processes are designed to include public participation or consultation with individuals. This ensures that decisions are made with due recognition of competing interests and potential impacts on rights. Unfortunately, these processes are not always followed.

Unlawful decision-making

In some cases, even when processes are formally observed, underhanded tactics, such as fabricating evidence, can create the illusion that public and stakeholder rights have been considered. Often, affected parties only become aware of the consequences when the decision is already at an advanced stage of implementation.

Some of the key issues frequently involved in such cases are:

- Decisions by provincial governments regarding activities that require environmental approval.
- Applications for prospecting, mining, or exploration.
- Decisions by local authorities regarding land rezoning, township establishment, changes in land use, and water licence applications.
- Measures to control the outbreak and spread of animal diseases.
- Activities by individuals that, when exercised unreasonably, constitute a legally contestable nuisance to others.
- Land claims.

Contesting the case

When public participation fails to produce the desired impact and the relevant decision-makers do not recognise the rights of affected individuals or institutions, litigation or contesting the case in court becomes the final recourse.

> By joining forces, the costs of litigation are shared among many, rather than borne by a single person or institution, making the process more accessible.

However, litigation presents significant challenges. Court cases are often too expensive for most individuals. Even after a favourable ruling, there is the possibility of an appeal to a higher court which will typically suspend the original judgment until the appeal is resolved. This situation leaves people in an untenable position: their rights are infringed while they may lack the resources to defend themselves.

Class actions are increasingly emerging as a possible solution. They allow individuals whose rights have been violated to come together and collectively pursue legal action to defend their shared interests. By joining forces, the costs of litigation are shared among many, rather than borne by a single person or institution, making the process more accessible.

Working together in this way spreads the financial burden that would otherwise fall on a single party or institution, reducing each participant's individual cost. As a result, achieving a favourable court outcome and protecting one's rights becomes financially accessible to everyone who contributes.

Enforcement of rights

Section 38 of the *Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)*, explicitly recognises the right to group action where fundamental rights in Chapter 2 of the *Constitution* are affected. It provides as follows:

"Anyone listed in this section has the right to approach a competent court, alleging that a right in the *Bill of Rights* has been infringed or threatened, and the court may grant appropriate relief, including a declaration of rights. The persons who may approach a court are:

a) Anyone acting in their own interest.
b) Anyone acting on behalf of another person who cannot act in their own name.
c) Anyone acting as a member of, or in the interest of, a group or class of persons.
d) Anyone acting in the public interest.
e) An association acting in the interest of its members."

Addressing the complex challenges of our time requires more innovative approaches. As litigation becomes increasingly essential for protecting and enforcing rights, it is crucial that individuals and institutions join forces. Collaborative action strengthens the likelihood of success and ensures that cases can be pursued to their conclusion, securing final judgments where necessary.

For more information, contact the author at hj@mmlaw.co.za or 018 297 8799 (Potchefstroom) or 033 032 0241 (Pietermaritzburg).

Labour law:
Ensure that everything is in place

By Christiaan Swart, senior legal advisor, LWO Employers Organisation

The Department of Employment and Labour has increased workplace inspections over the past two years to assess employer compliance with applicable labour legislation. To assist employers in managing labour relations within their businesses, several measures must be in place.

Registration

Employers are required to register with the Compensation Commissioner. This ensures that all injuries on duty are reported, and that employers and employees are compensated accordingly. Employers must also register with the Unemployment Insurance Fund (UIF) and ensure that all employees who work more than 24 hours per month are registered. The required UIF contributions must also be deducted from their remuneration.

Documentation

Employers need to pay attention to several important administrative tasks.

- **Employment contract:** This forms the basis of the employer-employee relationship, and sets out the terms and conditions agreed upon.
- **Display of legislation in the workplace:** All employers are required to display the most recent versions of the *Basic Conditions of Employment Act, 1997 (Act 75 of 1997) (BCEA), Employment Equity Act, 1998 (Act 55 of 1998)*, and *Occupational Health and Safety Act, 1993 (Act 85 of 1993)* (if you have five or more employees).
- **Personnel file:** Such a file should include the employment contract, leave forms, payslips, disciplinary records (such as warnings for misconduct), copy of the employee's identity document/passport and valid work permit, and his/her personal information and contact details. In terms of the *BCEA*, employee records must be kept for three years after termination of employment, unless the employee was under the age of 18, in which case it must be kept until the employee turns 18, plus an additional three years.
- **Payslips:** Employers are required to issue employees with payslips each time wages are paid. A payslip must include the following information:
  - Employer's name and address.
  - Employee's name, job title, wage rate, and overtime rate.
  - Period of remuneration.
  - Amount payable to the employee, and details of any additional payments and deductions.
  - Actual amount paid to the employee.
  - Number of ordinary hours, overtime hours, and hours worked on public holidays and Sundays.
  - Employer's UIF registration number and the employee's contribution to the fund.
- **Leave entitlements:** Employees are entitled to annual, sick, family responsibility, parental, adoption, and commissioning parental leave. Employers must maintain accurate records of leave accrued, taken, and remaining for each employee.

Rules

Clear rules and guidelines in the workplace keep friction and misunderstandings to a minimum which, in turn, promote not only productivity but also a positive working environment. Workplace rules are implemented through the employment contract and policies.

A policy informs employees of the rule/s in respect of a certain topic to ensure the smooth and efficient running of business operations. Policies define the employer's own rules, which must be reasonable, for example smoking, leave, hygiene, the use of cell phones, and the like.

The disciplinary code serves as a guideline for employers of what the appropriate sanction is for certain offences. These sanctions may vary depending on the circumstances and merits of each case, as well as how progressive discipline should be applied. The disciplinary code also ensures that all employees are aware of the rules that apply in the workplace and the consequences, should these rules be broken.

Procedures

By implementing and following the correct procedures, the employer can promote fair labour practices and further minimise the risk of disputes. It is advisable for employers to adopt procedures to address the following: disciplinary hearings, appeal procedures, grievance procedures, termination of service, appointment of employees, and injuries on duty.

Labour risk is a major business risk. To maintain the sustainability and profitability of a business, labour risk needs to be managed in a proactive manner. South African labour law is based on principles of fairness and equitability.

BIOSECURITY IS OUR NUMBER ONE PRIORITY

meadowfeedssa

meadowfeedssa

meadowfeeds

MEADOW
More than just feed

AFMA
SAFE FEED FOR SAFE FOOD
Animal Feed Manufacturers Association

EMPOWERING THE FEED INDUSTRY

AFMA's Commitment to Sustainable Growth and Food Security

The Animal Feed Manufacturers Association (AFMA) is the official representative body for the South African feed industry, playing a vital role within the broader agricultural sector. Positioned in the food value chain, AFMA partners with government, regulatory bodies, parastatals, forums, academia, international agencies, and other related stakeholders in the value chain, to drive growth and innovation in the agricultural sector.

VISION

The dynamic animal feed thought leader influencing food security through partnerships with all stakeholders.

STRATEGIC PILLARS

AFMA's activities are guided by four strategic pillars:

Affordable feed supply

Ensuring the **consistent** supply of **sufficient** and **affordable** animal feed for the production of meat, milk, eggs and fish.

Innovative animal nutrition for sustainable animal production

Using innovative nutritional strategies to produce **nutritious** animal feed in a **responsible** and sustainable way.

Safe feed for safe food

Promoting **good manufacturing practices** in the provision of **safe** feed to enhance **consumer confidence**.

Training & Skills Development

Supporting **job creation**, **training opportunities** and **skills development** in the animal feed industry.

SCAN ME
for more info

Follow AFMA on social media and stay informed
Telephone +27 (0)12 663 9097 | **E-mail** admin@afma.co.za | **Website** www.afma.co.za