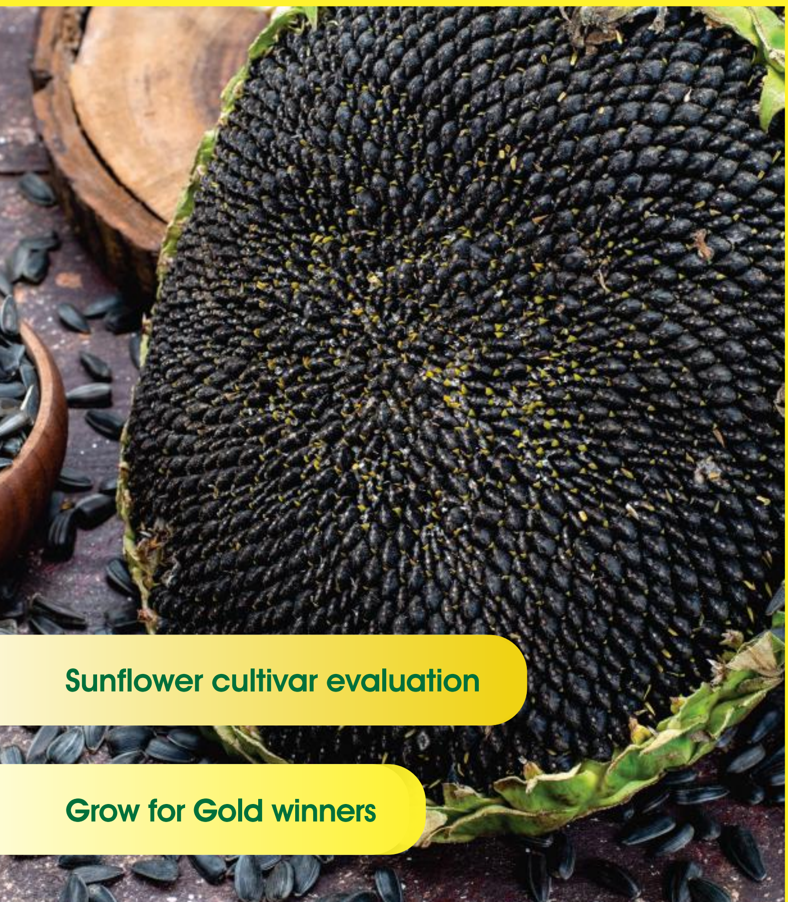
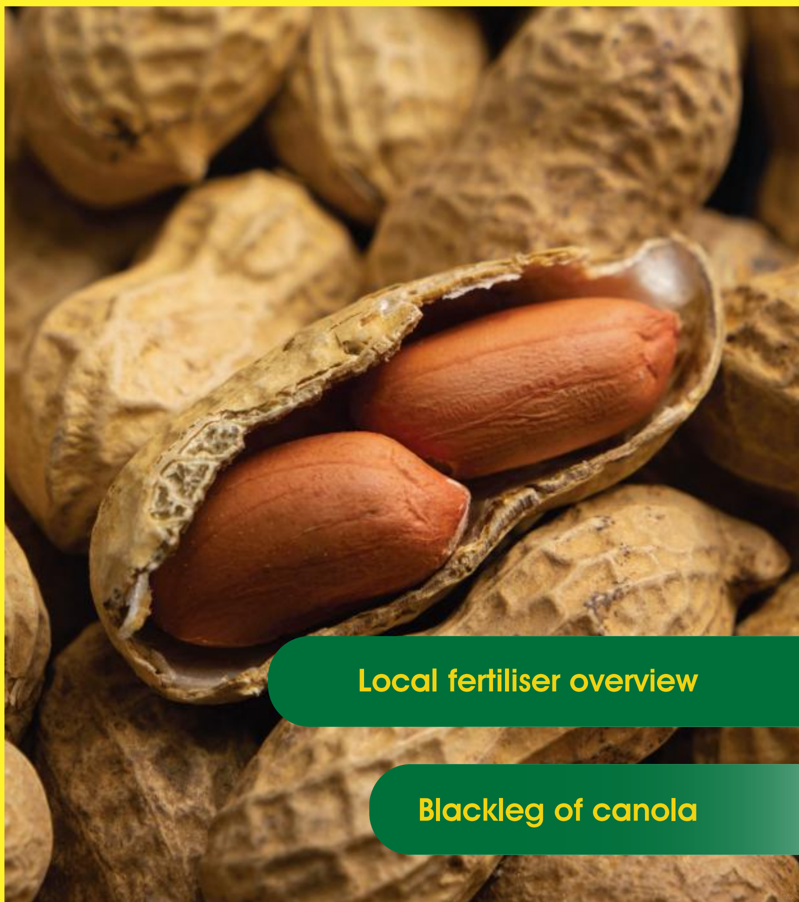
Vol 11 No 4 • December 2025
ISSN 2410-1206

OILSEEDS focus

Protein Research Foundation • Oil & Protein Seeds Development Trust • Oilseeds Advisory Committee





Sunflower cultivar evaluation

Grow for Gold winners

Local fertiliser overview

Blackleg of canola

Oilcake:
A key protein source for animal feed

By Liesl Breytenbach, executive director, AFMA

Oilcake has become the heartbeat of South Africa's feed industry. It is a vital link between oilseed producers, crushers, and feed manufacturers, and a quiet force behind affordable animal protein on South African tables.

Oilcake, particularly from soya beans and sunflower, remains the main source of protein in livestock and poultry feed across South Africa's feed mills. Animal Feed Manufacturers Association (AFMA) data indicates that oilcake accounts for approximately 19% of all raw materials used in compound feed manufacturing. Of this, soya oilcake contributes 78%, followed by sunflower oilcake at 16%, with smaller shares from canola and cottonseed oilcake. AFMA members, who collectively represent around 60% of South Africa's total feed production, provide a reliable reflection of national feed trends and ingredient usage.

Soya oilcake market growth

Over the past two decades, oilcake usage within AFMA member feed mills has more than doubled, increasing from just over 514 000 tonnes in 2001 to more than 1,3 million tonnes in 2024. In the early 2000s, AFMA members imported a significant portion of oilcake, particularly soya oilcake, with annual volumes often exceeding 600 000 tonnes. Today, AFMA members source most of their oilcake requirements locally; this trend is expected to continue, with imports to account for less than 10% of total consumption within ten years.

Liesl Breytenbach.

Soya oilcake is the preferred protein source in most feed formulations, as it provides a consistent supply of nutrient-dense, digestible protein suited to a wide range of species. However, proper processing of soya oilcake is essential to unlock its nutritional potential. Underprocessing allows harmful anti-nutritional factors to remain active, while overprocessing destroys valuable amino acids. Both extremes impair poultry performance and feed efficiency. Achieving the right processing balance ensures that chickens receive safe, digestible, and nutritionally effective protein, leading to better growth, welfare, and economic returns.

Over the last decade, quality improvements in South African soya oilcake were achieved due to better seed genetics, improved agronomic practices and post-harvest management, as well as more refined crushing and processing technologies. It is a testament to the soya value chain partners working together to deliver a local product that is on par with international soya bean meal.

Industry transformation

The rapid growth of South Africa's soya bean industry over the past two decades, both in terms of production and processing capacity, has transformed the country from a net importer into a largely self-sufficient producer of soya beans and oilcake. National soya bean production increased from 220 000 tonnes in 2000 to more than 2,7 million tonnes in the current production year, supported by a domestic crushing capacity of approximately 2,9 million tonnes.

In contrast, the production of other oilcakes has followed a more modest path. Sunflower oilcake has remained relatively stable and, due to its lower protein and higher fibre levels, continues to play an important role in ruminant diets and maintenance rations.

Canola oilcake, though small in total tonnage, has gained importance alongside the rapid expansion of local canola production, from less than 30 000 tonnes in the early 2000s to the current estimate of more than 300 000 tonnes for the 2025/26 production season. Produced mainly in the Western Cape, it provides a locally available, high-protein by-product that has become a popular product for inclusion in dairy and pig rations thanks to its favourable amino acid profile and consistent regional supply.

Outlook and sustainability

Growing the demand for local oilcake in feed for livestock and poultry production will rely not only on increasing the consumption of animal proteins in South Africa, but also on expanding export opportunities for animal-sourced protein foods. Increasing export potential will place a bigger focus on ensuring that agricultural commodities used in animal feed are sustainably sourced and traceable.

Progress will depend on continued collaboration across the value chain, from oilseed, livestock and poultry producers to crushers and feed manufacturers. Strengthening coordination, data sharing and competitiveness will be essential to ensure reliable protein supply and long-term feed and food security.

Send an email to the author at
liesl@afma.co.za
for more information.

Soya and poultry: Growth amid challenges

The growth in oilseed production is commendable and has strengthened the supply chain. However, demand remains sluggish despite prices being below import parity, placing the feed and animal production industry in an excellent position regarding feed raw material costs. Weak buying power is driven by low economic growth and limited disposable income, leading to stagnation in consumer spending.

Last year, the domestic requirement for oilcake was estimated at two million tonnes, while production reached 1,84 million tonnes and 92% self-sufficiency. Projections indicate that South Africa is expected to maintain a protein self-sufficiency position in the foreseeable future.

Prospects and risks in the poultry industry

Dr Tracy Davids of the Bureau for Food and Agricultural Policy (BFAP) noted in the September edition of *Oilseeds Focus* that the outlook for the poultry industry, the largest consumer of oilseed proteins, is positive. However, increasing disease outbreaks pose a major risk to the industry, alongside challenges related to failing infrastructure and services, which are critical to the industry's prosperity.

Industry efforts and government support are aimed at improving competitiveness and access to new exports markets for poultry products, such as the European Union and the Middle East. Growth in export demand for poultry meat could become the main driver of increased soya bean meal demand if this initiative is successful.

Soya bean supply, demand, and exports

Soya bean production in South Africa has grown significantly, driven primarily by economics and demand, and plays a critical role in crop rotation, benefiting soil health and producer viability. Production has increased from one million tonnes in 2015 to an estimated 2,7 million tonnes today.

According to the National Agricultural Marketing Council's September 2025 supply and demand estimate, carryover stock is projected at 442 000 tonnes (approximately three months) if exports of 300 000 tonnes can be achieved. With the new season outlook appearing very positive due to favourable rainfall, Safex soya bean prices will need to decline by around R200/t to enable deep-water exports. Should these exports not occur in 2025 before the new season Brazilian crop enters the market, South Africa risks accumulating excessive soya bean stock.

Currently, China's preference for Brazilian soya beans has discounted United States soya beans in our traditional Southeast Asian markets. Ideally, South Africa should export both soya beans and soya bean meal to maintain a balance between supply and demand. However, exporting substantial quantities of soya bean meal remains a logistical challenge, as there are no existing facilities equipped to handle this movement.

Dr Erhard Briedenhann

Send us your contributions and suggestions to make *Oilseeds Focus* an enjoyable and valuable publication for the oilseeds industry. Contact Dr Briedenhann at erhardb@netactive.co.za for more information.

Editor: Dr Erhard Briedenhann
+27 82 551 1634
erhardb@netactive.co.za

Associate editor: Gerhard Keun
+27 11 803 2579
oliesade@opot.co.za

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*

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

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

Sub-editor: Roné Kruger
rone@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

Illa Hugo
+27 82 898 3868 • illa@plaasmedia.co.za

Accounts: Marné Anderson
+27 72 639 1805
marne@plaasmedia.co.za

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

Published on behalf of:
Protein Research Foundation
PO Box 1564, Rivonia, 2128
Tel: 011 803 2579
Fax 011 803 2287 / 086 634 8067
Enquiries: gkeun@proteinresearch.net

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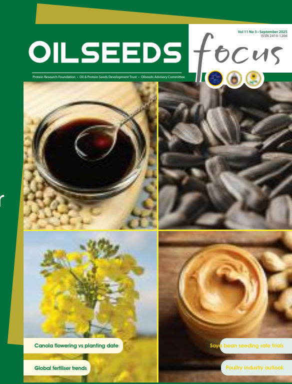


CONTENTS

NEWS

Jozeph du Plessis (left) receives his Grain SA Inspiration Award from Danie Minnaar, vice chairperson of Grain SA. (Photograph: Grain SA)

Grain SA pays tribute to farming pioneers

Jozeph du Plessis received this year's Grain SA Inspiration Award, recognised for 22 years of service on the Grain SA board and his pivotal role in establishing South Africa's commercial soya bean and cotton industries. A fifth-generation farmer from Schweizer-Reneke, Du Plessis is described as a man 'whose faith, humility and vision continue to inspire the next generation of producers'. The award was presented during the annual Grain SA Gala Awards at the Birchwood Hotel in Gauteng.

Hansie Viljoen, a soya bean producer from Leeudoringstad in North West, was honoured as the 2025 Grain SA/Syngenta Grain Producer of the Year. Viljoen was recognised for his innovative, disciplined, and data-driven approach to grain farming, combining precision technology, soil-health management, and strong business acumen.

Two former Grain SA chairpersons, Jaco Minnaar and Derek Mathews, were also honoured during the evening. Both received the Golden Grain Award for outstanding leadership. – *Grain SA press release*

Abandoning manual applications

The National Department of Agriculture (NDA) has cautioned that, from 1 April 2026, it will no longer accept manual applications for pesticides. The NDA's key regulatory activities include assessing and registering pesticides, issuing and managing permits, monitoring compliance with registrations, and investigating suspected cases of non-compliance, all of which have traditionally been implemented through a lengthy paper-based process.

In December 2023, the department launched an online application system for the pesticides component of agricultural inputs, allowing applicants to submit applications electronically.

The minister of agriculture, John Steenhuisen, welcomed the system's rollout saying it is a milestone in modernising agricultural governance. He highlighted that automating the Agricultural Inputs Control System is a crucial step towards efficiency, accountability, and transparency. "This system will not only improve service delivery but also ensure that compliant applications are processed quickly while non-compliant ones are identified upfront," the minister said.

Applicants will now have real-time information on the status of their application. The online system is already live, and applicants are strongly encouraged to start using it. The department is confident that the new system will significantly improve turnaround times, strengthen compliance, and build greater trust between industry and government. – *NDA press release*

Sunflower flour for vegan meat

A peer-reviewed study published in *Food Research International* found that textured sunflower protein patties delivered around 20% protein, healthy monounsaturated fats, and a rich mineral content, including iron, zinc, magnesium and manganese. With food systems under pressure and demand for sustainable protein rising, this sunflower-derived alternative could mark a major shift in plant-based meat products.

Traditional plant-based proteins often rely on soya or pea, but sunflower flour offers unique advantages. The raw material, i.e. the leftover meal after oil extraction, provides a circular economy benefit. Researchers developed two formulations: one from roasted sunflower flour and the other from textured sunflower protein. The textured version outperformed in taste tests, texture and nutrient density. Sensory panels found that sunflower-based patties had a texture and mouthfeel comparable to meat alternatives.

Nutrition-wise, the textured sunflower protein variant offered high protein at around 20% healthy fats, 49% of the RDA for iron, 68% for zinc, 95% for magnesium and 89% for manganese. – *Times of India*

Pakistan opens GM canola trade

The Australian government has announced that Pakistan has approved market access for genetically modified (GM) canola from Australia. Australia is a trusted supplier of canola to Pakistan, with non-GM canola exports valued at AU$506 million in the last financial year, making Pakistan one of Australia's key markets.

Around 46% of Australia's canola production is genetically modified, and all commercially approved GM varieties are now cleared for import into Pakistan. This new access opens further opportunities for food, feed and processing supply chains. – *FoodMag*

New grant funds oil production study

Washington State University researchers are taking a discovery that upended assumptions about how plants produce oil and applying it to major crops such as canola through a new grant from the USDA National Institute of Food and Agriculture.

Last year, the team revealed that certain plants can remodel the chemical composition of their seed oils after the oil has already been produced. This process was identified in *Physaria fendleri*, a plant related to canola but not commercially grown. With new federal support, the scientists will test whether canola and other widely grown oilseed crops share the same genetic mechanism, and whether it can be harnessed to make oil production more efficient for food, fuels, and chemical feedstocks.

The team will take a gene-editing approach to modify canola to learn if they can better control the oil composition by reducing the oil remodelling. This work is a big step toward producing a higher value oil product and potentially increasing total yield.
– *Washington State University*

Groundnut smugglers convicted

A Mutare magistrate has convicted two men for attempting to smuggle nearly 460 sacks of groundnuts into Zimbabwe. The National Prosecuting Authority (NPA) said Willard Obete Luis from Mozambique and Oscar Makawi from Zimbabwe were fined US$1 000 each or face 12 months in prison if they fail to pay.

Police intercepted a truck on 23 August along Beira Road in Mutare which was driven by Luis. The vehicle was found to be carrying groundnuts owned by Makawi. "The driver failed to produce any declaration forms for the consignment. The truck and goods were escorted to ZRP Mutare Central and later handed over to the Zimbabwe Revenue Authority (ZIMRA), which confirmed the consignment had been smuggled," the NPA said in a statement. Officials estimate the state was at risk of losing US$2 500 in duty. The groundnuts were confiscated and forfeited to ZIMRA. – *263 Chat*

Australia resumes canola exports to China

After a five-year ban, the first shipment of Australian canola to China set sail from a regional West Australian port in November. Analysts say the 65 000t trial shipment is a sign Australia's AU$4 billion canola export industry could reinstate trade with what was once one of its most valuable customers. Five years ago, Chinese authorities said the fungal disease blackleg was detected in a shipment of Australian canola and closed the trade.

Since then, China, which is a significant canola producer, has relied significantly on imports of canola from Canada to top up its needs. However, earlier this year it blocked Canadian canola seed imports by imposing a massive tariff in a move thought to be related to a dispute over Canadian tariffs on electric vehicles. – *Australian Broadcasting Corporation*

Anina Hunter, chairperson of AFMA (left), and Liesl Breytenbach, executive director of AFMA (right), with AFMA person of the year, Wiana Louw.

Louw named AFMA person of the year

The Animal Feed Manufacturers Association's (AFMA) person of the year award is presented annually to recognise a South African who has made an outstanding and impactful contribution to the animal feed or feed-related industry. Wiana Louw, general manager of The Southern Africa Grain Laboratory (SAGL), received the award. She was nominated by Dr Erhard Briedenhann, SAGL chairperson, who highlighted in his motivation that Louw has made transformative contributions to the animal feed and grain sectors through her leadership at SAGL and active involvement across multiple industry platforms.

She established and expanded the National Mycotoxin Monitoring Programme, providing essential data that informs regulatory standards and promotes feed safety. Her pioneering work in analytical method development, laboratory accreditation, and technology adoption has elevated South Africa's capability to meet international compliance benchmarks.

She is a driving force in capacity building, mentoring young scientists, fostering internships, and aligning academic training with industry needs. Through her efforts, she has cultivated collaborative partnerships between government, research institutions, and industry stakeholders, creating a lasting impact on both regulatory frameworks and the sustainability of the feed value chain. Louw's visionary leadership continues to shape how the industry responds to emerging challenges, ensuring long-term growth and innovation. – *Izak Hofmeyr, AgriOrbit*

Analysis of pathogen populations causing blackleg of canola in the Western Cape

By Huibre Schreuder, Beatrix Coetzee, Gert van Coller, and Diane Mostert

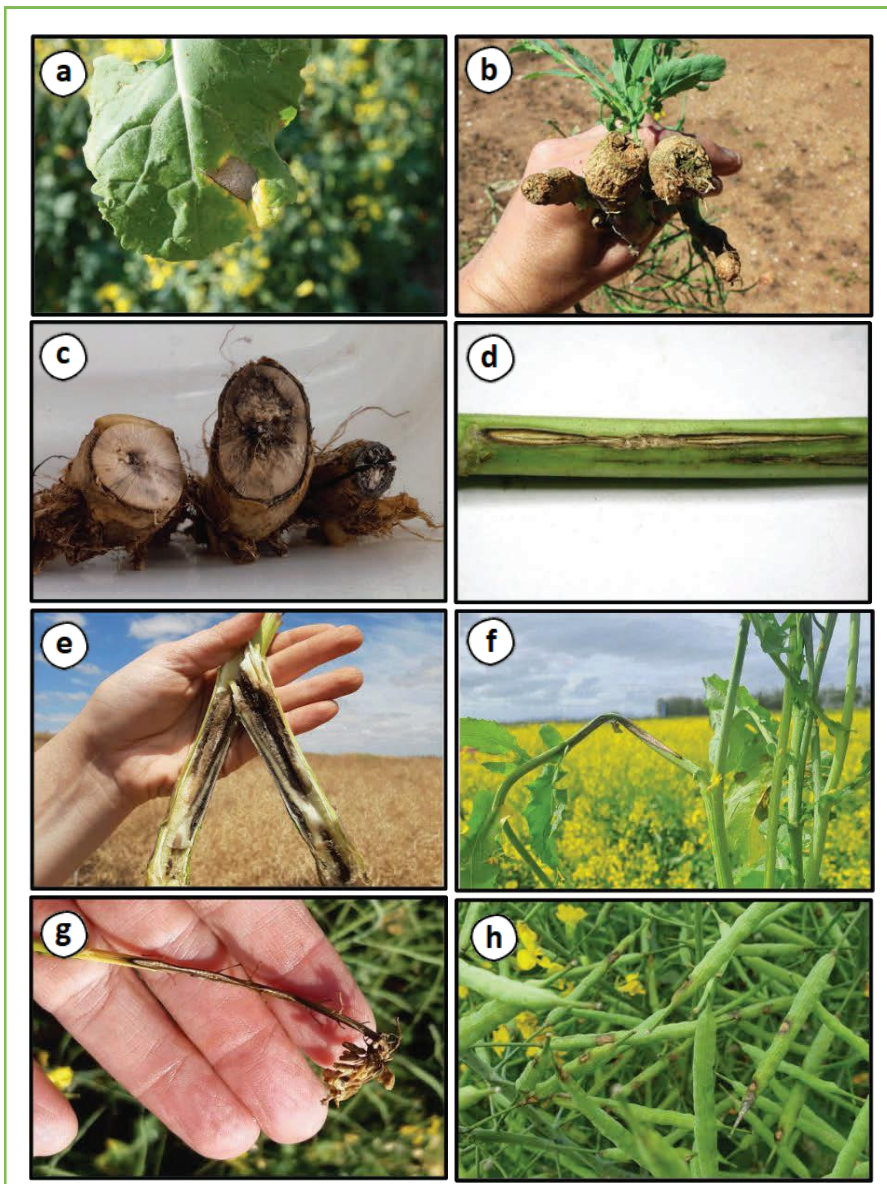
Blackleg of canola is a disease of global importance and is also a major constraint on canola production in the Western Cape. The disease is caused by two fungal species, *Leptosphaeria maculans* and *L. biglobosa*, of which the former is the more virulent pathogen. Yield losses due to blackleg have been estimated at between 10 and 20% annually, but where severe epidemics occur, it can result in complete crop failure.

The disease can affect all plant parts, and symptoms include lesions on stems, leaves, inflorescences and pods as well as root, crown, and stem cankers. Crown cankers are responsible for the most severe yield losses, as it can girdle the stem and cause plant death. However, upper canopy infections, which refer to all symptoms above 5cm from the plant base, can also lead to significant yield losses. Blackleg is best managed with an integrated strategy that incorporates inoculum avoidance, cultivar resistance, and fungicides.

Despite the importance of blackleg in the Western Cape, very little information is available on the disease and its management under local conditions. To address this lack of knowledge, a study, funded by the Oil and Protein Seeds Development Trust (OPDT), was launched in 2021. The aim of the study was to establish a foundation that can be used to develop an effective integrated management strategy for blackleg under local conditions.

The study consisted of three parts: a genetic study of *L. maculans* populations, the effective utilisation of cultivar resistance, and the effective utilisation of fungicides for blackleg management. This article will focus on the first two parts,

Figure 1: Blackleg disease symptoms: a) typical leaf lesion; b) severe crown cankers with corky, brittle tissue; c) cross-section through crowns showing infected black tissue; d) upper stem lesion; e) cross-section through upper stem showing internal infection; f) branch lesion; g) infection spreading from flowerhead down the peduncle; h) pod lesions.



while the third will be covered in a subsequent article.

Population genomics study

L. maculans is a sexually reproducing fungus that produces vast amounts of airborne ascospores (spores produced following sexual reproduction) that can easily be transported over several kilometres by wind. It can also infect all plant parts at all growth stages. These characteristics give *L. maculans* a high evolutionary potential. This also means it can rapidly adapt to changing conditions and therefore has a high potential to overcome host resistance and develop resistance to fungicides. Studying the genetic composition of *L. maculans* populations provides information on genetic diversity, evolutionary potential, and race and population structures that can be used to inform the development of effective management strategies.

To study the genetic composition of the local pathogen populations, *L. maculans* isolates were obtained from canola stubble samples collected at six locations across the canola production regions of the Western Cape between 2020 and 2022. This included three locations in the Southern Cape production region (Uitkyk farm near Riversdale, Tygerhoek research farm near Riviersonderend, and Syngenta® research farm near Napier) and three in the Swartland production region (Langgewens research farm near Moorreesburg, Waterboerskraal farm near Hopefield, and Baviaanskloof farm near Eendekuil). Whole-genome sequences of 264 of these isolates were generated and used to study the genetic composition and structure of the local *L. maculans* populations.

The data showed *L. maculans* to be sexually reproducing populations with high genetic diversity. The population structure analysis showed that *L. maculans* isolates are genetically separated into two groups: one representing isolates from the Southern Cape and one representing isolates from the Swartland. There are several differences between canola production in the Swartland and Southern Cape that could have driven the genetic differentiation between these two regions. For example, canola production in the Southern Cape is more intensive than in the Swartland. The Southern Cape has a longer wet season, with areas in the Southern Cape receiving between 50 and 70% of their rainfall from late autumn to mid-spring, and areas in the Swartland receiving 80% of their rainfall in the winter.

The longer wet season in the Southern Cape allows producers to plant crops over the summer months. Rotation systems in the Swartland consist of wheat, medics, cover crops, oats and lupins, while in the Southern Cape, pastures are grown for five years followed by a five-year period of cereal crops such as wheat, barley, and canola. These factors could have shaped the agroecosystems within the regions and contributed to the genetic differentiation between regions.

To investigate the position of South African isolates in a global context, genome data for *L. maculans* isolates sampled in Argentina, Australia, Canada, Czechia, France, Germany, Iran, New Zealand, and the United States were obtained and used in analyses, which indicated that South African isolates have a high genetic similarity to Australian isolates. Interestingly, the isolates sampled at the Swartland locations were genetically closer to Australian isolates than they were to isolates from the Southern Cape, which formed a unique genetic cluster. It is therefore likely that *L. maculans* was introduced into South Africa from Australia, followed by the genetic differentiation of the two regions.

The uniqueness of the Southern Cape population suggests rapid genetic differentiation in this area. The higher intensity of canola cultivation in the Southern Cape would sustain a larger pathogen population size which provides higher pathogen genetic diversity.

Managing blackleg via resistance

Host resistance is the most effective and sustainable way to manage blackleg. There are two types of blackleg resistance in canola cultivars: minor gene and major gene resistance. Minor gene resistance refers to the presence of several genes in a cultivar that each contribute towards a more resistant cultivar. This type of resistance is not complete, which means a cultivar with good minor gene resistance can still be infected by *L. maculans*, but the severity of the disease will be limited because of the minor genes. Because it is difficult for a pathogen to overcome the resistance of several different genes at once, this type of resistance is durable and not easily broken down.

In contrast, major gene resistance is conferred by a single gene. Major gene resistance is governed by gene-for-gene interactions, whereby a resistance gene (*R*-gene) in a host corresponds to an avirulence gene (*Avr*-gene) in the pathogen. The combination of *Avr*-genes present in the pathogen determines its race. For example, when a germinating *L. maculans* spore with the *Avr*-gene, *AvrLm1*, tries to infect a canola plant with the corresponding *R*-gene, *Rlm1*, the host can recognise the pathogen and stop infection and the subsequent development of symptoms. If the canola plant does not have *Rlm1*, the spore will be able to infect the plant.

Major gene resistance therefore confers resistance to specific races of the pathogen, and the efficacy of major *R*-genes in the field depends on the race structure of *L. maculans* populations. If the race structure of the local *L. maculans* populations is known, blackleg can be managed by planting cultivars with corresponding *R*-genes. Major gene resistance is, however, less durable, as the pathogen must overcome only one gene to break down this type of resistance. If cultivars with the same *R*-genes are continuously planted over seasons, the race structure of *L. maculans* populations will change to adapt to this selection pressure, and the *R*-genes will become ineffective over time.

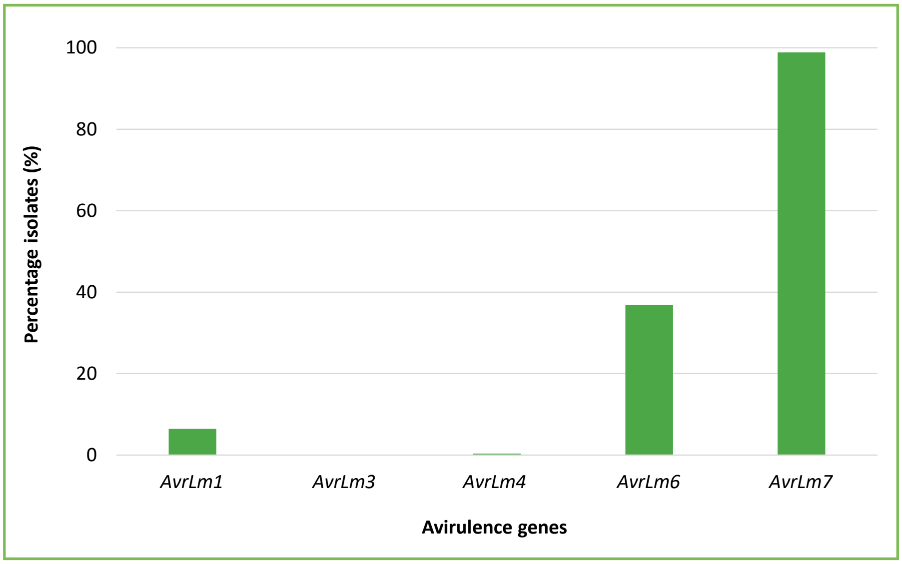
The breakdown of *R*-genes in the field can happen within three years, as was the case in Australia and France in the early 2000s. To prevent the breakdown of major gene resistance, cultivars with different *R*-genes should be rotated over seasons.

Table 1: Resistance genes present in cultivars planted in the Western Cape and the avirulence genes it corresponds to in the blackleg pathogen, *L. maculans*.

R-gene[a]	Corresponding Avr-gene[b]
Rlm1 (A)[c]	*AvrLm1*
Rlm3 (C)	*AvrLm3*
Rlm4 (B)	*AvrLm4*
Rlm6 (F)	*AvrLm6*
Rlm7 (H)	*AvrLm7*
LepR1 (D)	*AvrLepR1*

[a] Resistance gene; [b] avirulence gene; [c] letters in parentheses refer to the resistance group of the cultivar if it contains the specific R-gene.

Figure 2: Presence of different avirulence genes in 264 *L. maculans* isolates collected across the canola production regions of the Western Cape.



To simplify the concept of sets of resistance genes present in cultivars, a single letter is used to represent each gene present in a cultivar. *Table 1* shows the *R*-genes currently present in cultivars available in South Africa, with the letter assigned to each, as well as the corresponding *Avr*-gene. To utilise these resistance genes, updated information on the presence of the corresponding *Avr*-genes in the local pathogen populations is essential.

Local *L. maculans* race structure

The whole-genome data generated in the genetic populations study was used to determine the presence of different *Avr*-genes in the *L. maculans* isolates collected at the six locations across the Western Cape. The prevalence of the different *Avr*-genes in isolates is shown in *Figure 2*. The results show that the local *L. maculans* populations have completely overcome group A and group B cultivar resistance, while group F resistance is almost completely overcome. The only resistance that is still intact is group H.

This could be expected for group A and B, as cultivars from these groups were continuously planted locally since the beginning of canola production in the Western Cape in the early 1990s. The pathogen therefore has had enough time to adapt to the selection pressure to overcome these resistance genes. Group F resistance was introduced in South Africa in 2011, also allowing ample time for the pathogen to adapt to this resistance gene.

The low frequency of *AvrLm6* means that the majority of isolates can infect cultivars with group F resistance, likely rendering this *R*-group completely ineffective. In contrast, cultivars with group H resistance only became commercially available in South Africa in 2023. The pathogen has thus not had sufficient time to adapt to this resistance group. Apart from the short time that group H resistance has been available in South Africa, only one cultivar with group H resistance (Hyola® Solstice CL) is commercially available, which could further reduce the likelihood of breakdown of this resistance group.

Cultivar trials

To evaluate blackleg resistance of cultivars commercially available in South Africa, field trials were conducted at four different locations across the canola production regions of the Western Cape. From 2021 to 2023, trials were conducted at Langgewens as well as Uitkyk. In 2022 and 2023, trials were also conducted at Tygerhoek, while a fourth trial was conducted in 2022 at Waterboerskraal near Hopefield. In each year, all the cultivars commercially available were included in the trials, as well as some non-commercial lines. Information on these cultivars is provided in *Table 2*.

The trials were maintained as per industry standards, and near the end of the season when seed in pods started to colour from green to brown, disease ratings were done to determine the disease severity index (DSI) of each cultivar.

The performance of the different cultivars varied substantially between locations and years. However, the best and worst performing cultivars within and between years remained relatively consistent. For example, 45Y95 CL, 45Y93 CL, 44Y94 CL, CC90014, HyTTec® Trifecta, HyTTec® Trophy, Hyola® Solstice CL, and PY520 TC were frequently among the best performing cultivars in the locations and years where they were included, while Diamond, SF Dynatron™ TT, Hyola® 559TT, 44Y90,

Table 2: Information on cultivars planted in blackleg cultivar trials conducted in the Western Cape from 2021 to 2023.

Year	Cultivar (R-group[a])	Supplier	Seed treatment
2021	Nuseed® Quartz (ABD)	Agricol	Saltro Duo
	Pioneer® 43Y92 CL (B)	Pioneer	Helix Vibrance
	Pioneer® 45Y95 CL (C)	Pioneer	Jockey Stayer
	Nuseed® Diamond (ABF)	Agricol	Saltro Duo
	Alpha TT (BF)	Agricol	Saltro Duo
	Hyola® Blazer TT (ADF)	Limagrain	None
	Pioneer® 44Y94 CL (BC)	Pioneer	Jockey Stayer
	Hyola® 350TT (ABDF)	Limagrain	None
	Pioneer® 45Y93 CL (BC)	Pioneer	Jockey Stayer
	Pioneer® 44Y90 CL (B)	Pioneer	Helix Vibrance
	Hyola® 559TT (ABD)	Barenbrug	Thiram
	Hyola® 650TT (ABD)	Barenbrug	Maxim XL
2022	Nuseed® Quartz (ABD)	Agricol	Saltro Duo
	Pioneer® 43Y92 CL (B)	Pioneer	Helix Vibrance
	Pioneer® 45Y95 CL (C)	Pioneer	Saltro Duo
	Nuseed® Diamond (ABF)	Agricol	Saltro Duo
	Alpha TT (BF)	Agricol	Saltro Duo
	Hyola® Blazer TT (ADF)	Limagrain	None
	Pioneer® 44Y94 CL (BC)	Pioneer	Saltro Duo
	Hyola® 350TT (ABDF)	Limagrain	None
	Pioneer® 45Y93 CL (BC)	Pioneer	Saltro Duo
	Hyola® Enforcer CT (ADF)	Barenbrug	Thiram
	CC90014 (ADFH)	Barenbrug	Thiram
	CC91117 (ABD)	Limagrain	None
	HyTTec® Trophy (AD)	Agricol	None
	HyTTec® Trifecta (ABD)	Agricol	None
	Hyola 90013 (ADF)	Limagrain	None
	InVigor® T 4511 (Unknown)	Agricol	None
	SF Dynatron™ TT (BC)	Agricol	None
2023	Nuseed® Quartz (ABD)	Agricol	Tenacius SX
	Pioneer® 43Y92 CL (B)	Pioneer	Saltro Duo
	Pioneer® 45Y95 CL (C)	Pioneer	Saltro Duo
	Nuseed® Diamond (ABF)	Agricol	Tenacius SX
	Alpha TT (BF)	Agricol	Saltro Duo
	Hyola® Blazer TT (ADF)	Advanta	None
	Pioneer® 44Y94 CL (BC)	Pioneer	Saltro Duo
	Hyola® Enforcer CT (ADF)	Advanta	None
	CC90014 (ADFH)	Advanta	None
	CC91117 (ABD)	Advanta	None
	HyTTec® Trophy (AD)	Agricol	Saltro, Maxim XL
	HyTTec® Trifecta (ABD)	Agricol	Saltro, Maxim XL
	Hyola® Defender CT (ADF)	Advanta	None
	Pioneer® PY421C (A)	Pioneer	Saltro Duo
	Pioneer® PY520 TC (BC)	Pioneer	Saltro Duo
	Hyola Solstice CL (ADFH)	Advanta	None
	AGAstraTT (Unknown)	Agricol	None
	Nuseed® Ceres IMI (AD)	Agricol	Tenacius SX

[a] Australian blackleg resistance groups: A = Rlm1/LepR3, B = Rlm4, C = Rlm3, D = LepR1, F = Rlm6, and H = Rlm7.

Quartz, Hyola® 90013, PY421 C, and Ceres IMI were frequently among the cultivars with the highest DSIs at all locations and throughout all the years.

Two cultivars with group H resistance were included in the trials: CC90014 in 2022 and 2023, and Hyola® Solstice in 2023. These cultivars were among the best performing cultivars across all locations, which supports the pathogen race structure data that showed that group H resistance is still effective.

Group C cultivars performed well across all years and locations. The race structure data show that group C resistance is not currently effective under local conditions. The good performance of these cultivars can be explained by good minor gene resistance. Except for SF Dynatron™ TT, the only group C cultivar that did not perform well, the cultivars with group C resistance are all Pioneer® cultivars, which suggests that the breeding lines used by Pioneer® have excellent minor gene resistance.

In conclusion

This is the first genetic study of South African *L. maculans* populations. The population genetic study showed the high evolutionary potential of local *L. maculans* populations, which can allow the pathogen to adapt in response to selection pressures. It is therefore essential that genetic changes in the South African *L. maculans* population are monitored to allow for the prediction and subsequent prevention of future breakdowns of host resistance and fungicide efficacy.

The local pathogen population has overcome all resistance genes currently deployed, except for group H resistance. It is therefore important that an *R*-gene rotation strategy be considered to prevent further breakdown of group H resistance and to potentially restore the efficacy of other resistance groups. This study provides the basis for blackleg research in South Africa and enhances understanding of the pathogen, which will assist in developing improved blackleg management strategies.

For more information, send an email to Huibre Schreuder at huibreschreuder@hotmail.com

Understanding the pathogenesis of *Sclerotinia sclerotiorum* in sunflower head rot

By Lisa Rothmann and Dumolwenkosi Maposa, Department of Plant Sciences, University of the Free State

During a ten-year survey conducted between 2006 and 2015 by the Crop Estimates Committee, most sunflower head rot observations (approximately 75% of reports) were classified as trace infections with less than 1% incidence per field. Only a few fields showed severe cases in which disease incidence exceeded 80% on-farm (*Figure 1*). In recent seasons, however, sunflower producers across South Africa have noted an increase in head rot intensity. Consequently, *Sclerotinia* head rot, caused by *Sclerotinia sclerotiorum*, may be considered the most yield-limiting fungal disease of sunflower in South Africa.

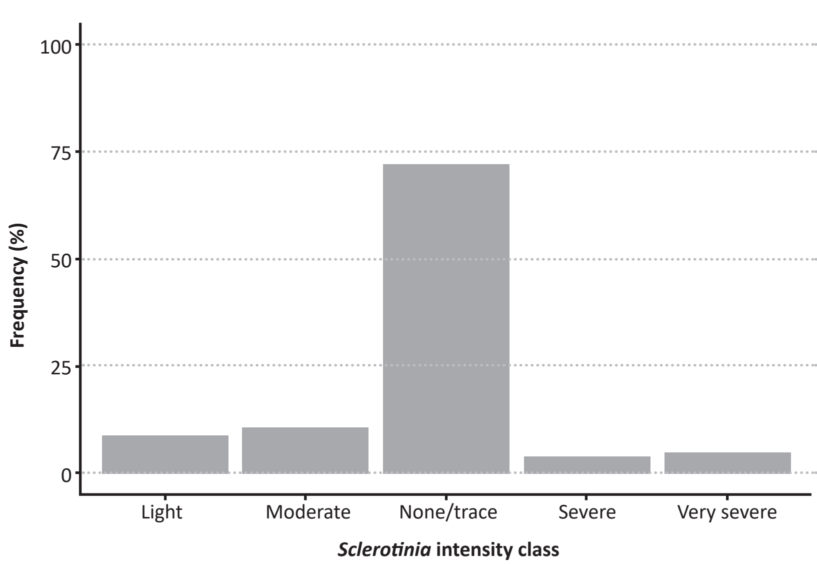
Epidemics of sunflower head rot pose a significant threat to production, as recurring outbreaks not only reduce yield but may also cause producers to reconsider or reduce the area planted to sunflower.

This soilborne fungus has a remarkable life above ground, producing airborne spores that travel through the atmosphere before reaching the sunflower head.

Yet, the pathogenesis of *S. sclerotiorum* – the sequence of events through which the pathogen establishes itself and ultimately causes disease – remains poorly understood. The pathway and interaction between airborne ascospores and the sunflower head continue to challenge efforts to develop effective and sustainable management strategies. Understanding the journey from sclerotia in the soil to ascospore deposition on the head is key to predicting outbreaks and designing timely interventions.

This article explores how *S. sclerotiorum* progresses from apothecia that release spores into the air to the developing florets within the sunflower head, where infection begins – a process that ultimately leads to the familiar symptoms of sunflower head rot seen across South African fields.

Figure 1: *Sclerotinia* head rot intensity distribution classes across South African sunflower production regions between 2006 and 2015: none or trace (<1%), light (1 to 10%), moderate (11 to 40%), severe (41 to 80%) and very severe (>80%). (Source: Rothmann, 2025, under preparation)



The release of ascospores

Apothecia, described as 'saucer-shaped fruiting bodies up to 1cm in diameter', arise from the survival structures known as sclerotia, embedded in the soil (Zimmer and Hoes, 1978). These fruiting bodies typically protrude slightly above the soil surface and are most often found within the top 3 to 5cm, where soil moisture and temperature conditions favour their formation (*Figure 2*). Under favourable conditions, a single sclerotium may produce dozens to more than 100 apothecia in the field, sometimes across multiple germination events. This process is known as carpogenic germination, the stage that bridges soil survival to airborne infection.

Apothecia can survive for eight to 20 days, with greater longevity observed under closed canopies than in open fields. Mature ascospores are produced within apothecia and are forcibly ejected into the atmosphere through a process known as puffing (*Figure 3*). The most active discharge occurs between four and nine days after development, during which a single apothecium can release up to one million ascospores. Ascospore release is strongly influenced by atmospheric dynamics, with discharge events often triggered by rapid humidity changes. Although the broader environmental conditions that favour puffing are well recognised, the exact conditions that trigger a puffing event, the split second when ascospores are ejected, remain underexplored.

Laboratory studies have shown that ascospore puffing occurs in saturated air (90 to 95% relative humidity) at around 15°C. Once airborne, ascospores can remain viable for approximately 21 days, with survival depending on temperature and humidity. Spores can persist for

Figure 2. Saucer-shaped fruiting bodies protruding from the soil surface.

Figure 3: Puffing of apothecia, dispersing ascospores into the atmosphere.

two to three weeks at 30°C, and for 16 to 21 weeks at 5 to 10°C when relative humidity exceeds 80%. During this time, they may encounter several fates, including landing on non-host crops, landing on a susceptible host where conditions are not favourable for germination, or desiccating in the atmosphere. Most critically, they may be deposited on sunflower plants, where they serve as primary inoculum for infection and onset of head rot.

Researchers in the United Kingdom have reported that ascospores can travel distances of approximately 150m from the nearest apothecia. However, more recent findings have revealed that ascospores can travel even greater distances of about ~3,5km through atmospheric air currents before being deposited in new habitats.

Upon landing on the sunflower head, ascospores require free moisture and an external nutrient source to initiate germination. The most common nutrient sources are senescent or damaged tissues, which are usually associated with disk and ray florets, serving as infection sites. For infection to occur, deposited spores must be viable (still able to cause disease) and able to adhere to the host surface. Excessive rainfall can wash ascospores from the plant surface, hindering their adhesion, while exposure to ultraviolet radiation has also been shown to significantly reduce their ability to initiate disease.

The infection process

After deposition, ascospores begin their infection process by germinating on the moist surface of the sunflower head. A fine germ tube from the ascospore extends along the plant surface, and a specialised structure known as an appressorium is formed to facilitate adhesion and host penetration. Once *S. sclerotiorum* penetrates host tissue, it enters a biotrophic-like phase during which hyphae grow between living host cells without causing immediate cell death. This early stage enables the fungus to establish itself and suppress host defence responses, creating a favourable environment for further colonisation.

As infection progresses, the pathogen transitions into a necrotrophic phase, invading cells directly and killing them through the secretion of cell wall-degrading enzymes. The collapse of host tissues during this stage leads to the characteristic necrotic lesions associated with head rot in sunflower. The initial invasion is encouraged by humid conditions (around 85% relative humidity) and moderate temperatures (5 to 25°C). During colonisation, the pathogen secretes oxalic acid along with a suite of cell wall-degrading enzymes that disintegrate plant tissues and promote rapid colonisation of the floral tissues. About ten to 24 days after infection, the first visible symptoms, bleached tissues and white mycelium, become evident.

As the disease progresses, lesions expand across the back of the sunflower head and may also extend into the upper stalk. Within the necrotic areas, sclerotia begin to form as the mycelial masses melanise. In advanced stages, fibrous strands are often all that remain after a severe infection, and in some cases, the head may detach entirely, taking infected seed with it and replenishing sclerotia back into the soil (*Figure 4*).

Beyond these visible symptoms, the damage directly affects seed fill and quality, often leading to substantial yield losses. Understanding the biology, dispersal,

Figure 4: Advanced head rot symptoms where all that remains is an empty sunflower head, and sclerotia are replenished into the soil.

and infection dynamics of *S. sclerotiorum* is therefore critical not only for recognising the disease in the field but also for developing effective management strategies.

Managing *Sclerotinia* head rot

Several strategies have been proposed for managing sunflower head rot, the most effective of which rely on sound agronomic practices that promote optimal sunflower crop production. Internationally and locally, no host crop resistance in sunflower is available, and all cultivars exhibit some level of susceptibility. Crop rotation with non-host species is an important management tool; however, it must be implemented over multiple seasons due to the persistence of sclerotia in the soil.

Additionally, the use of certified seed, which is permitted to contain no more than 0,2% sclerotia of limited size, as regulated by the South African National Seed Organisation (SANSOR), helps reduce the introduction of new inoculum into fields.

Deep tillage has also been recommended to bury existing sclerotia and prevent apothecial formation, although this practice carries the risk of bringing previously buried sclerotia back to the surface in subsequent seasons.

Early planting has proven to be a particularly effective intervention, as it shortens the window of susceptibility of flowering and senescent floral tissues to infection under cool, moist, and humid conditions (Mapfumo *et al*., 2024). Although no fungicide products are currently registered for managing *Sclerotinia* head rot in sunflower, our research group at the University of the Free State (UFS) is collaborating with chemical companies in a second season of field trials to evaluate promising products for potential registration.

Additionally, the use of desiccants (herbicides such as diquat) is being explored as an intervention in at-risk sunflower crops where head rot has already taken hold.

At the UFS, our group is also investigating the application timing of diquat that preserves yield and quality while limiting lesion expansion and reducing the risk of replenishing sclerotia in the soil.

In closing

Head rot has emerged as a major concern across sunflower-growing regions, with serious implications for yield and economic stability. The disease is driven by airborne ascospores released from the apothecia, dispersed by wind to sunflower heads, where they germinate, establish infection, and colonise. Although several management strategies have been proposed, many remain under-investigated, particularly within sunflower production systems.

Planning early can lower risk by optimising planting dates to shorten the vulnerable flowering window. Keep scouting throughout the season, especially after cool, wet spells, and look for apothecia near the soil surface.

For more information or if you are uncertain about what you are observing, you are welcome to send images to Dr Lisa Rothmann at 079 270 9691 to confirm whether apothecia are present.

Grow for Gold 2025: New national records abound!

By Susan Marais, Plaas Media

South Africa's leading grain producers set a series of new national yield records in maize, wheat, and soya bean at the 2025 Grow for Gold Awards, held in Johannesburg. Despite a season marked by variable weather conditions, the results represent one of the strongest performances in the competition's six-year history.

Record yields were achieved in six maize categories, three in soya bean, and two in irrigated wheat. According to Grain SA, these outstanding results were driven by a wet second half of the season, improved soil health management, and the rapid adoption of new cultivars and hybrids. The previous year's drought also contributed by leaving sufficient nutrients in the soil, boosting crop response.

While maize and soya bean yields excelled, sunflower yields lagged as the wetter conditions encouraged disease outbreaks such as *Sclerotinia sclerotiorum*, a reminder of the uneven effects of climate variability.

Innovation and adaptability

Producers from KwaZulu-Natal, the Eastern Highveld, Free State, North West, and several irrigation regions took top honours, reflecting the competition's broad geographic reach. Corné Louw, head of applied economics and member services at Grain SA, said the results underscored both scientific progress and producer resilience. "These awards are more than numbers on a yield sheet. They reflect determination, cultivar innovation, and the strength of South Africa's agricultural value chain."

Launched in 2020, the Grow for Gold Awards aim to benchmark yield performance while recognising innovation and adaptability among producers. Organisers said the 2025 results showcase the sector's ability to remain globally competitive while reinforcing national food security.

The top soya bean performers for 2025 are:

KwaZulu-Natal region

- *First*: Louw Broers, Paulpietersburg, Agricol DM 61i63, 5,74t/ha.

Grow for Gold 2025 category winners. (Photograph: Grain SA)

- *Second*: Bertie Pretorius, Newcastle, Pioneer P51T42R, 5,2t/ha.
- *Third*: AL-DI Agri, Dundee, Agricol DM 59i60 RSF IPRO, 4,82t/ha.

Eastern Highveld region

- *First*: Dawie Brits, Modderbult Boerdery, Balfour, Agricol DM 53i54 RSF IPRO, 7,12t/ha (new record).
- *Second*: Danie Bester, Deepwater Trading, Balfour, direct entry DM 5351 RSF, 7,06t/ha.
- *Third*: Rian Maree, Piet Retief, Agricol DM 61i63 RSF IPRO, 6,72t/ha.

Eastern Free State region

- *First*: Daniel Slabbert, Sanctuary Boerdery, Harrismith, Pioneer P64T39R, 5,55t/ha.
- *Second*: Wessel Heymans, Blydskap Boerdery, Reitz, Pioneer P64T39R, 5,42t/ha.
- *Third*: Wessel Heymans, Blydskap Boerdery, Reitz, Agricol DM 59I60 RSF IPRO, 5,139t/ha.

Central region

- *First*: Johann Pistorius, Nigel, Pioneer P52T52R, 6,46t/ha (new record).
- *Second*: Mike van Niekerk, Derby, Agricol DM 61i63 RSF IPRO, 6,02t/ha.
- *Third*: Mike van Niekerk, Derby, Pioneer P64T39R, 4t/ha.

North West region

- *First*: Theodor van Rensburg, Delareyville, Agricol DM 61i63 RSF IPRO, 5,37t/ha.
- *Second*: Henro Pieterse, Biesiesvlei, Agricol DM 61i63 RSF IPRO, 4,83t/ha.
- *Third*: Hector van Wyk, Gerdau, Agricol DM 61i63 RSF IPRO, 4,71t/ha.

Water Table region

- *First*: Greyling van Niekerk, Makwassie, Agricol DM 6,8i RR, 6,06t/ha.
- *Second*: Warie Cilliers, Bultfontein, Agricol DM 61i63 RSF IPRO, 5,21t/ha.
- *Third*: Arno Wessels, Arcowes Boerdery, Wesselsbron, Agricol DM 61i63 RSF IPRO, 4,93t/ha.

Irrigation

- *First*: Roubel Thomas, Sitrusrand Boerdery, Cookhouse, Agricol DM 53i54 RSP IPRO, 7,7t/ha (new record).
- *Second*: Pieter Becker, Warden, Agricol DM 53i54 RSF IPRO, 6,52t/ha.
- *Third*: Ross Braithwaite, SB Farms, Bergville, Pioneer P55T86R, 6,3t/ha.

The top sunflower performers for 2025 are:

Grain yield/ha

- *First*: Ernst Jonker, Makwassie, Agricol AGSUN 5106CLP, 3,33t/ha.
- *Second*: PE Kotze, Delareyville, Agricol AGSUN 5106CLP, 2,75t/ha.
- *Third*: PE Kotze, Delareyville, Agricol AGSUN 5111CLP, 2,67t/ha.

Oil yield/ha

- *First*: Ernst Jonker, Makwassie, Agricol AGSUN 5106CLP, 1,38 oil yield/ha.
- *Second*: PE Kotze, Delareyville, Agricol AGSUN 5106CLP, 1,07 oil yield/ha
- *Third*: PE Kotze, Delareyville, Agricol AGSUN 5111CLP, 1,03 oil yield/ha.

For more information, visit *www.groeivirgoud.co.za* or send an email to luzelle@grainsa.co.za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Engineered for multi-function efficiency: Beyond the engine

Petromin Tractor Oil 10W-30 is a premium universal tractor transmission oil.

Oilseed farming equipment such as tractors, precision planters, sprayers, and combine harvesters have to endure unique, punishing demands. These machines are subjected to high ambient temperatures, relentless dust infiltration, and heavy shock loads, particularly in their transmission and hydraulic systems. Simply using a generic oil poses a significant risk.

Petromin's high-performance range, supplied directly by Western Cape Lubricants, is specifically engineered to counteract these agricultural stressors. The strategic use of these specialised fluids ensures maximum system integrity.

The powerhouse engine protector

For the heavy-duty diesel engines that power modern oilseed machinery, maximum protection under extreme conditions is non-negotiable. **Petromin Turbomaster XD** is an advanced engine oil formulated to handle the sustained high loads and continuous operation typical of planting and harvesting seasons.

- **Superior thermal stability:** Essential for heavy-duty diesel engines running non-stop during the hot summer harvest, resisting degradation and maintaining film strength.
- **Excellent detergency and dispersancy:** Crucial for keeping soot and contaminants suspended and away from sensitive engine parts, making it indispensable in dusty environments.
- **Maximum anti-wear protection:** Minimises component wear and extends the operational life of the most critical, expensive part of the machinery.

The total operational defence

The demands on transmissions, hydraulics, and wet brakes in agricultural machinery are immense. They require a versatile fluid that can withstand high pressure, protect gear sets from shock loading, and ensure smooth operation of sophisticated hydraulic systems.

Petromin Tractor Oil 10W-30 is a premium universal tractor transmission oil (UTTO) designed to be the single high-specification solution for:

- **Hydraulic systems:** Crucial for steering, braking, and implement control. Ensures rapid, responsive performance and protects seals from premature wear, preventing sluggish operation.
- **Transmissions and final drives:** Its formulation provides outstanding load-carrying capacity and maximum anti-wear protection for heavily loaded gearboxes subject to tremendous torque.
- **Wet brakes:** Eliminates chatter and ensures effective, consistent braking performance under heavy loads.

Using a specialised UTTO such as Petromin Tractor Oil 10W-30 simplifies inventory management and mitigates the risk of cross-contamination by using the correct fluid tailored to these demanding systems.

The Western Cape Lubricants team during their Petromin product launch at Nampo Cape 2025. From the left are Khalid Moosa, Ryan Tate, Amber Sevekar, Clint Nickall, Hannetjie Loots, Alphonso Loots, and JJ van Reenen.

The wear factor

The true financial burden of sub-par lubricants is only quantified when a major component suffers catastrophic failure. For the oilseed producer, protecting capital assets is paramount. By choosing the advanced protection of Petromin Turbomaster XD and Petromin Tractor Oil 10W-30, producers benefit in multiple ways. By extending the operational life of components and enabling longer, more consistent drain intervals, the performance of these Petromin products allows producers to shift their focus from reactive maintenance to preventative scheduling, which is a cornerstone of modern, efficient farming.

Local service, global standard

Western Cape Lubricants understands the local nuances, such as the distances, seasonal peaks, and immediate need for service. The value proposition is not just the internationally accredited Petromin product itself but the assurance of reliable, timely supply, and local technical expertise.

In the competitive world of oilseeds, every percentage point of efficiency gained is a victory. By choosing a lubrication partner that combines global quality with local reliability, Western Cape oilseed producers are not just maintaining their equipment – they are actively protecting their profitability and securing their maximum potential yield.

For enquiries, phone 021 854 4808 or visit *www.westerncapelubricants.com*

Choosing the right sunflower cultivar: A key to higher yields and stability

By Dr Safiah Maali and Nicolene Cochrane

Maintaining high efficiency in sunflower production is essential for profitability, and selecting the right cultivar is one of the easiest and most effective strategies to achieve this. Thanks to ongoing research and cultivar trials conducted by the Agricultural Research Council-Grain Crops (ARC-Grain Crops) in partnership with seed companies and supported by the Oil and Protein Seeds Development Trust (OPDT), growers now have access to valuable data to assist in selecting a cultivar.

Producers should start by assessing the sunflower yield potential of their fields using long-term average yields as a benchmark. Yield probability tables can then be used to identify cultivars with the highest chance of performing well under specific local conditions. Selecting cultivars with above-average yield probability and stability increases the likelihood of consistent and profitable sunflower harvests.

Yield and cultivar suitability

A cultivar's yield probability indicates the likelihood of achieving an above-average yield at a given yield potential.

Table 1: Days to flowering, seed yield and oil content of sunflower cultivars evaluated in the 2022/23 to 2024/25 growing season.

Cultivar	Days to 50% flowering	Seed yield (t/ha)				
	Mean	2022/23	2023/24	2024/25	Mean	Oil content (%)*
AGSUN 5103CLP	70	2,17	2,2	2,02	2,13	39,30
AGSUN 5106CLP	70	2,26	2,29	2,02	2,19	39,68
AGSUN 5111CLP	71	2,27	2,3	2,24	2,27	39,26
AGSUN 5270	68	2,35	2,26	2,03	2,21	42,99
LG 50745	66	2,17	2,09	2,08	2,11	43,44
P 65 LP54	69	2,28	2,24	1,88	2,13	39,30
P 65 LP65	70	2,32	2,26	2,14	2,24	41,46
PAN 7090	70	2,30	2,24	2,18	2,24	42,31
PAN 7102CLP	68	2,28	2,29	2,02	2,20	39,67
PAN 7160CLP	70	2,25	2,28	2,03	2,19	41,56
PAN 7180CLP	70	2,37	2,27	2,29	2,31	39,89
SY 3970CL	70	2,12	2,08	1,86	2,02	49,39
Mean	69	2,26	2,23	2,07	2,19	41,52

**Oil content for the 2022/23 and 2023/24 growing season.*

Photograph: freepik.com

Table 2: The yield probability (%) of cultivars evaluated in 2022/23 to 2024/25 at different yield potentials.

	Yield potential (t/ha)						Regression line			
Cultivar	1	1,5	2	2,5	3	3,5	F prob	R2	Mean seed yield (t/ha)	Oil content (%)*
AGSUN 5103CLP	29	33	37	42	47	52	<0,001	0,88	2,13	39,30
AGSUN 5106CLP	39	43	48	53	58	63	<0,001	0,89	2,19	39,68
AGSUN 5111CLP	55	57	60	62	64	67	<0,001	0,81	2,27	39,26
AGSUN 5270	68	64	58	53	47	42	<0,001	0,86	2,21	42,99
LG 50745	51	46	40	35	30	26	<0,001	0,82	2,11	43,44
P 65 LP54	44	44	43	43	41	41	<0,001	0,86	2,13	39,30
P 65 LP65	65	63	60	58	55	53	<0,001	0,88	2,24	41,46
PAN 7090	59	59	59	59	59	59	<0,001	0,90	2,24	42,31
PAN 7102CLP	38	43	49	54	59	64	<0,001	0,85	2,20	39,67
PAN 7160CLP	54	55	55	57	57	59	<0,001	0,90	2,19	41,56
PAN 7180CLP	67	66	65	64	62	61	<0,001	0,85	2,31	39,89
SY 3970CL	35	32	28	26	23	16	<0,001	0,81	2,02	49,39

**Oil content for the 2022/23 and 2023/24 growing season.*

Table 3: Yield probability for planting in November.

	Yield Potential (t/ha)						Regression line			
Cultivar	1	1,5	2	2,5	3	3,5	F prob	R2	Mean seed yield (t/ha)	Oil content (%)*
AGSUN 5103CLP	16	21	29	39	51	63	<0,001	0,83	2,54	39,49
AGSUN 5106CLP	15	20	26	38	50	63	<0,001	0,90	2,57	38,93
AGSUN 5111CLP	18	25	35	49	63	74	<0,001	0,78	2,65	37,85
AGSUN 5270	64	59	52	45	37	31	<0,001	0,69	2,58	44,00
LG 50745	20	25	32	42	53	63	<0,001	0,81	2,58	43,70
P 65 LP54	71	66	59	52	42	36	<0,001	0,78	2,61	38,59
P 65 LP65	72	66	58	49	39	30	<0,001	0,75	2,59	42,02
PAN 7090	55	55	56	56	56	55	<0,001	0,79	2,66	43,74
PAN 7102CLP	53	56	58	61	62	64	<0,001	0,62	2,75	40,26
PAN 7160CLP	58	56	52	49	45	42	<0,001	0,73	2,60	41,63
PAN 7180CLP	88	86	81	74	64	54	<0,001	0,73	2,78	40,63
SY 3970CL	72	63	50	36	24	16	<0,001	0,66	2,48	50,60
Mean									2,62	41,79

**Oil content for the 2022/23 and 2023/24 growing season.*

For example, if a cultivar has a 60% yield probability at a certain yield potential, there is a 60% chance of obtaining a yield above the mean and a 40% chance of obtaining a yield below the mean. This understanding enables producers to make informed decisions that reduce risk.

Selecting the most suitable sunflower cultivar directly affects yield, reliability and profitability, often without incurring additional costs. Factors to consider include compatibility with local climate and soil conditions, days to flowering and maturity, resistance to diseases and pests, and oil content to meet market demands.

Aligning the cultivar's maturity period with local weather patterns is essential to prevent crop losses due to extreme weather conditions.

Trials and future perspectives

Over the past three growing seasons, 12 sunflower hybrids have been evaluated through 73 field trials across various regions of the Free State and North West. These trials help identify top-performing cultivars suited to specific environmental conditions, ultimately assisting producers in making better planting decisions.

Table 1 shows the flowering date of the cultivars, as well as their mean seed yield and oil content for the 2022/23 to 2024/25 growing season. PAN 7180CLP produced the highest seed yield with moderate oil content, while SY 3970CL had the highest oil content. Earlier flowering cultivars such as LG 50745 may be preferred for shorter growing seasons without compromising oil quality.

Cultivar selection

Determine the yield potential for a particular field and set a yield target. The long-term mean yield of a particular field is usually a good indicator of its yield potential and can therefore serve as yield target. Consult the yield probability tables next. Cultivars with the highest yield probability values, at a particular yield potential, are those with the best chance to perform well under relevant conditions.

PAN 7180CLP performed well under all yield potentials and had the highest seed yield – this cultivar is a good all-rounder and is therefore recommended. However, AGSUN 5106CLP, AGSUN 5111CLP, and PAN 7102CLP, performed best under high yield potential, while AGSUN 5270 and

Table 4: Yield probability for planting in December.

Cultivar	Yield Potential (t/ha)						Regression line		Mean seed yield (t/ha)	Oil content (%)*
	1	1,5	2	2,5	3	3,5	F prob	R2		
AGSUN 5103CLP	22	29	34	43	50	58	<0,001	0,90	2,05	39,76
AGSUN 5106CLP	40	43	47	50	53	56	<0,001	0,89	2,12	40,60
AGSUN 5111CLP	38	45	51	59	64	70	<0,001	0,82	2,15	41,28
AGSUN 5270	59	58	55	53	50	48	<0,001	0,86	2,15	42,71
LG 50745	42	38	35	32	29	28	<0,001	0,88	2,03	43,43
P 65 LP54	63	55	45	36	28	22	<0,001	0,84	2,08	39,95
P 65 LP65	66	64	61	59	55	53	<0,001	0,89	2,17	42,36
PAN 7090	38	45	50	57	62	68	<0,001	0,91	2,14	42,64
PAN 7102CLP	59	57	55	52	50	48	<0,001	0,93	2,15	39,86
PAN 7160CLP	72	71	68	65	61	58	<0,001	0,93	2,19	42,16
PAN 7180CLP	77	77	75	74	71	69	<0,001	0,85	2,30	40,48
SY 3970CL	31	31	29	29	29	30	<0,001	0,82	1,95	49,99
Mean									2,13	42,10

**Oil content for the 2022/23 and 2023/24 growing season.*

Table 5: Yield probability for planting in January.

Cultivar	Yield Potential (t/ha)						Regression line		Mean seed yield (t/ha)	Oil content (%)*
	1	1,5	2	2,5	3	3,5	F prob	R2		
AGSUN 5103CLP	54	53	50	49	46	45	<0,001	0,86	1,95	38,15
AGSUN 5106CLP	31	42	53	65	74	82	<0,001	0,91	2,02	38,38
AGSUN 5111CLP	64	67	70	72	74	75	<0,001	0,87	2,15	36,84
AGSUN 5270	73	69	62	56	48	43	<0,001	0,91	2,06	42,71
LG 50745	72	56	37	22	11	6	<0,001	0,82	1,91	43,09
P 65 LP54	37	38	39	41	42	44	<0,001	0,85	1,90	38,72
P 65 LP65	47	54	59	66	70	75	<0,001	0,92	2,09	39,62
PAN 7090	62	63	63	63	62	62	<0,001	0,93	2,08	40,58
PAN 7102CLP	32	39	47	56	63	70	<0,001	0,90	1,96	38,91
PAN 7160CLP	40	47	53	60	65	71	<0,001	0,96	1,99	40,46
PAN 7180CLP	55	56	58	59	60	60	<0,001	0,84	2,04	38,42
SY 3970CL	38	31	24	18	14	11	<0,001	0,82	1,76	47,73
Mean									1,99	40,30

**Oil content for the 2022/23 and 2023/24 growing season.*

P 65 LP65 preformed best under low yield potential (*Table 2*).

Planting date also plays a key role in cultivar recommendations. The optimal planting window is from November to mid-December, with yields and oil content declining when planting is delayed beyond mid-January. Certain hybrids perform better under later planting due to earlier flowering or drought tolerance, but the general recommendation is to avoid late planting. *Tables 3*, *4*, and *5* present the yield probability tables for planting in November, December, and January, respectively.

Sunflower cultivar performance, based on yield potential and planting month, can thus be summarised as follows:

Cultivars yielding < 2,5t/ha: AGSUN 5270, P 65 LP 54, P 65 LP65 and SY 3970CL (November); P 65 LP54 and P 65 LP65 (December); AGSUN 5270 and LG 50745 (January).

Cultivars yielding > 2,5t/ha: AGSUN 5103CLP, AGSUN 5106CLP, AGSUN 5111CLP, LG 50745 and PAN 7102CLP (November); AGSUN 5111CLP and PAN 7090 (December); AGSUN 5106CLP, P 65 LP65, PAN 7102CLP, PAN 7160CLP and PAN 7180CLP (January).

All-rounder: PAN 7180CLP (November); PAN 7160CLP and PAN 7180CLP (December); AGSUN 5111CLP and PAN 7090 (January).

In short, aligning cultivar choice with local conditions and planting dates, supported by trial data and yield probability tables, helps producers increase sunflower yield, improve oil content, and achieve greater profitability, even in the face of climate variability. This approach is a cornerstone for profitable and sustainable sunflower production in South Africa.

The authors thank the OPDT and the ARC for funding this project, and the sunflower team at ARC-Grain Crops for their technical assistance. For enquiries, email Safiah Maali at maalis@arc.agric.za

Innovation, growth and collaboration in the spotlight at SACTA meeting

By Andrew Bennett, chief executive officer, SACTA

The South African Cultivar and Technology Agency (SACTA) hosted its annual stakeholder engagement meeting (ASEM) on 19 and 20 August in Pretoria. The event once again proved to be a key fixture on the agricultural calendar, drawing together seed companies, grain producers, storage operators, transformation service providers, and the agricultural media.

The two-day programme was designed to strike a balance between networking and substance, with an opening evening meet and greet followed by a full day of presentations, discussions, and reflections on the organisation's work during the 2024/25 financial year.

Agriculture as growth driver

The opening session was deliberately informal, creating space for frank conversation and strengthening connections between the sector's varied stakeholders. In his welcome speech, SACTA chairperson Ryk Pretorius stressed the importance of open dialogue, noting that collaboration between industry stakeholders enables innovation to filter down to the farm level.

SACTA chairperson Ryk Pretorius spoke about the value of collaboration with a view to farm-level innovation.

The highlight of the evening was an address by well-known economist Dr Roelof Botha, who spoke about 'prospects for higher economic growth, with reference to the strategic role of agriculture'. Dr Botha guided attendees through long-term economic trends, focusing on capital formation, the cost of restrictive monetary policy, and the need for investment confidence. His overall message was encouraging: While the broader economy faces headwinds, the macroeconomic fundamentals remain intact, and agriculture continues to be a growth driver.

Commitments and levy system

The formal session on the Wednesday attracted around 200 participants across both in-person and virtual platforms. Setting the tone, Pretorius reaffirmed SACTA's mandate to ensure South African producers have ongoing access to global technologies and germplasm while managing levies that fund research, innovation, enterprise development, producer development, and skills training.

During my presentation, I provided a detailed report on the organisation's activities during 2024/25, highlighting the continued expansion in registered cultivars across soya beans, wheat, barley, oats, and lupins. This is an important step in ensuring that South African producers remain globally competitive. More cultivars provide more choice, better adaptation to local conditions, and ultimately, greater resilience for producers.

Adding an international perspective, Agustin Herrera Vegas, global IP executive manager at GDM in Argentina, presented an analysis of how intellectual property regimes affect agricultural performance. He pointed out that markets with weak IP systems typically experience reduced yields and slower adoption of new technologies. In contrast, the SACTA levy system ensures continuous funding for plant breeding,

Wandile Sihlobo, chief economist at Agbiz, warned that crime, weak infrastructure, and biosecurity could threaten South Africa's agricultural growth.

even where certified seed usage is low. He commended the system for its low transaction costs and equitable sharing of risk between seed companies and producers, which is a balance not often achieved elsewhere.

Domestic risks and constraints

Wandile Sihlobo, chief economist at Agbiz, followed with a wide-ranging assessment of the current agricultural environment under the theme "Realities, risks and reforms". He reminded delegates that since 1994, the value of South Africa's agricultural output has more than doubled – a performance driven by the adoption of high-yielding seed varieties, advances in animal genetics, and the opening of new markets.

However, he also delivered a sobering warning. Persistent risks, including high levels of rural crime damaging farm infrastructure, inefficiencies at the country's ports and rail systems, and weak biosecurity measures, continue to constrain growth. These challenges weigh most heavily on new-entrant black producers, who face higher barriers to scaling their operations. Sihlobo's call to action was clear: Structural reforms and stronger coordination are required to safeguard the gains made by the sector over the past three decades.

Producer development

Transformation remains a cornerstone of SACTA's work. Sandile Mahlangu, transformation manager at SACTA, shared encouraging results from the organisation's development initiatives. Through SACTA's producer performance tracking platform, new-era producers are showing steady improvements in yield, profitability, and loan repayments. This is evidence that targeted support can deliver real, measurable progress.

Henry Davies of the Eden Foundation added further weight to this discussion, emphasising the often-overlooked contribution of smallholder producers to food security in rural areas. His presentation reminded delegates that strengthening smallholder capacity is not only about equity, but also about national resilience.

A panel discussion expanded on these themes, examining the barriers smallholders face as they transition to commercial production. Panellists emphasised the need for collective action, with seed companies, government, financiers, and service providers all having a role to play if transformation is to move beyond rhetoric.

A final word

The ASEM of 2025 was more than a report-back – it was a demonstration of how constructive dialogue and collaboration can position agriculture for the future. With a programme that combined economic analysis, international benchmarking, and a strong focus on producer development, the event once again reaffirmed SACTA's role as a central driver of innovation and transformation.

Closing the meeting, Pretorius thanked First National Bank, the sponsor, as well as all stakeholders for their participation and emphasised that the goodwill evident

Agustin Herrera Vegas (left), global IP executive manager at GDM, and Andrew Bennett, chief executive officer of SACTA.

at ASEM must be carried forward into practical action. The positive energy in Pretoria confirmed that, despite challenges, the South African agricultural sector has the tools and commitment to remain globally competitive and locally inclusive.

Send an email to the author at andrew@sactalevy.co.za or visit *www.sactalevy.co.za* for more information.

Factors affecting oil content in sunflowers

By Emile van den Berg, agronomy manager, Pioneer

Sunflowers grown under optimal conditions maximise seed and oil yield per hectare.

Sunflower (*Helianthus annuus* L) is currently the fourth-largest oilseed crop in the world, with production of more than 50 million tonnes in 2024, according to *www.mordorintelligence.com*. Sunflower seeds are processed for both industrial and food purposes, making both oil content and seed yield critical factors. Therefore, the economic value must be carefully calculated to find an optimal balance between a higher yield with lower oil content and a lower yield with higher oil content. It is important to note that oil content has nothing to do with seed coat colour.

For successful edible oil production, sunflower hybrids should be selected for high grain output per hectare, as the goal is to maximise oil yield per unit area, which is the ultimate objective in the cultivation of sunflower genotypes.

Effective management of sunflower for oil production and quality requires an understanding of the plant traits, agronomic factors, and farming practices that influence oil yield. While sunflower seed oil is generally of high quality, its composition can vary when cultivated in different climates, often more so than with the genotype used.

Several factors influence the oil content in sunflower seeds, ultimately determining the quantity and quality of the oil produced.

Genetic factors

Different sunflower varieties vary in their ability to produce oil. Some are specifically bred for high oil content (such as oilseed sunflower varieties), while others are intended for food or ornamental purposes. Genetic composition plays a major role in determining the percentage of oil the seed contains.

Planting date

Oil yield is strongly influenced by the planting date and year. According to De la Vega and Hall (2000), the planting date is the most important factor affecting oil yield. Earlier planting generally leads to higher oil yields. However, sunflower is often planted as a replacement crop – for instance, after hail damage to another crop or when delayed rainfall prevents timely planting of primary crops. Consequently, sunflowers are often planted later than optimal, which can reduce oil yield.

Environmental factors

***Temperature*:** Optimal temperatures during sunflower seed development play a key role in determining the balance between oleic acid (a monounsaturated fatty acid) and linoleic acid (a polyunsaturated fatty acid) in the oil. Higher temperatures (above 25°C) during this phase promote an increase in oleic acid concentration, contributing to the oil's stability and health benefits.

Conversely, linoleic acid levels tend to decrease as temperatures rise. Lower temperatures (below 25°C) result in higher linoleic acid concentrations, but excessively low temperatures can negatively affect total oil yield. Ideally, moderately warm conditions (around 25 to 30°C) during seed development promote a good balance between these two fatty acids, improving both oil quality and yield.

***Soil type and fertility*:** Nutrient-rich, well-drained soils with sufficient organic matter contribute to higher oil yields. Nitrogen, potassium, and phosphorus are critical for optimal plant growth and oil production.

***Water availability*:** Adequate but not excessive water is vital. Water shortages, particularly during seed development, can reduce oil content, while excessive moisture can negatively impact yield and oil quality.

Plant population

Sunflowers planted in well-spaced rows at optimal densities generally produce more oil. Overcrowding leads to competition for light, water, and nutrients, which can reduce oil production.

Exposure to sunlight

Sunflowers require full sunlight for effective photosynthesis and energy production, both of which are essential for seed development and oil accumulation. Insufficient sunlight limits energy supply, resulting in lower oil content.

Growth stage and harvest

Harvest timing is critical. Seeds harvested too early may not have reached their full oil potential, while harvesting too late can reduce oil quality, as overripe seeds begin to deteriorate.

Pests and diseases

Infestations and diseases can weaken sunflower plants, hindering seed development and reducing oil content. Healthy plants tend to produce more oil.

These factors are interrelated, and effective management of each is essential to maximise oil content in sunflower production. These factors also work together, and effective management of each is essential to maximise oil content in sunflower production.

For more information, contact Pioneer at info.rsa@pioneer.com or visit *www.pioneer.com/za*

Herbicide resistance poses a global threat

By Dr Charlie Reinhardt

Since the advent of the Green Revolution in the 1960s, global crop production has thrived while increasingly relying on 'chemical crutches' in the form of synthetic or human-made pesticides and fertilisers. Effective control of serious crop pests, including insects, weeds and plant pathogens, was essential to achieve substantially higher yields to feed a burgeoning world population. Herbicides account for approximately 60% of pesticide volumes sold and used globally. Their high potency (herbicidal activity) and relatively low cost per unit area make crop production both profitable and sustainable.

The intense selection pressure exerted by herbicides – particularly those with a single site of action at molecular level, such as a specific enzyme – has resulted in the widespread evolution of herbicide resistance in weeds. The fewer target sites a herbicide has in a weed, especially when the sole site of action is an enzyme, the greater the risk of resistance developing. Nature-driven mutations in the molecular structure of the targeted enzyme would render it impervious to the herbicide's effects. These mutations can be minute yet significant – for example, when two amino acids in a chain of 240 that make up the protein (target enzyme) simply change position.

The 'wicked weed' problem

Herbicide resistance has no physical boundaries and insufficient attention to resistance management strategies is a driving force behind the 'wicked problem' of herbicide resistance, a term coined by economists to describe a problem for which there is no clear or simple solution.

Herbicide resistance challenges all stakeholders in crop production:

- It involves a vast array of plant genes, anatomical traits, biochemicals, and physiological processes.
- Most of the 25 commercially important herbicide modes of action (Herbicide Resistance Action Committee [HRAC] groups) are linked to resistance in some or other weed species across diverse cropping systems.
- Producers have limited or no options for controlling particularly harmful weeds, as they are resistant to multiple herbicides with different molecular targets.
- Numerous compounds with known herbicidal activity are not commercialised due to prohibitive research and development costs, insufficient chemical stability, inadequate field efficacy, lack of a market niche, toxicity to non-target organisms, or complex legislation and product registration requirements.

Total glyphosate resistance in an Amaranthus hybridus *population from the Bergville district, KwaZulu-Natal. Dosages, from right to left: control (untreated), 0,5X, 1X (recommended dosage), 2X, and 4X. Zero efficacy was observed across all glyphosate dosages. The field from which weed seeds were collected for the bioassay has over ten years of zero-tillage history, with heavy reliance on glyphosate within a glyphosate-resistant crop rotation system.*

Prospects for novel herbicides

Bayer announced that the registration process is ongoing for the novel herbicide active ingredient, icafolin, which is to be released first in Brazil in 2028.

Why the delay of more than 30 years in commercialising a new herbicide with a novel mode of action? Partly because the incentives and funding for research and development of new herbicides have declined dramatically since 1996, when glyphosate-resistant crops were commercialised. That was the beginning of glyphosate's dominance in the global herbicide market.

The rapid evolution and spread of wicked weeds, especially the glyphosate-resistant ones, has rekindled agrochemical industries' interest in developing non-glyphosate herbicides. Before the decline in herbicide development (i.e. prior to 1996), new herbicides were introduced to the market every two or three years.

By 2021, it was reported that 1 400 different plant proteins presented opportunities for designing new herbicides with novel molecular target sites. Current commercial herbicides target only about 12 different proteins or enzymes across a wide range of weed species. As mentioned, several factors contribute to the slow uptake of opportunities to target additional proteins involved in key biological processes for the commercialisation of new herbicides.

Table 1: Documented cases of herbicide resistance in key oilseed crops worldwide. (Source: *The International Herbicide-Resistant Weed Database* [*www.weedscience.org*])

Crop	Number of unique cases[1] (species x site of action)	Prominent herbicides registered in South Africa and linked to resistance[2]
Canola	56	Clethodim, haloxyfop-methyl, quizalofop ethyl, and trifluralin
Groundnut	4	Imazethapyr, diclosulam, and clethodim
Soya bean[3]	370	Glyphosate, chlorimuron-ethyl, clethodim, imazethapyr, and fomesafen
Sunflower	12	Clethodim, imazethapyr, and imazamox

[1]The greater the area devoted to a crop, the higher the number of herbicide resistance cases, as a larger number of weeds and diverse weed species are exposed to high volumes of herbicide.
[2]Many other herbicides are involved, but only the most prominent and those registered in South Africa are listed.
[3]Glyphosate resistance in soya bean occurs due to the crop being glyphosate resistant. Consequently, there is strong selection pressure for resistance to evolve.

Herbicides designed from scratch around a unique molecular target site are inevitably expensive when they reach the market, given the costly and time-consuming hurdles on its way to registration. However, artificial intelligence (AI) and drone technology, enabling the precision delivery of smaller volumes per unit area, could warrant high product prices. This will improve company profitability and sustain reinvestment in research and development of novel herbicides.

Australia is regarded as the only country where herbicide resistance is successfully managed. It also happens to be the country where resistance cases were first reported, suggesting that they recognised the threat of wicked weeds early and acted effectively. The country remains a global leader in terms of research devoted to reducing herbicide resistance.

The United States (US) has arguably caught up with Australia regarding resistance research, largely because of its ongoing struggles with particularly damaging herbicide-resistant weeds, of which the foremost are Palmer amaranth (*Amaranthus palmeri*) and tall waterhemp (*Amaranthus tuberculatus*). As far is known, the latter has not been reported in South Africa yet, while the former was first recorded in the country in 2018.

Palmer amaranth is considered the 'number one' weed in the US and is likely to cause similar disruption to crop production profitability in South Africa over the coming decades. Unless, of course, we change our ways and apply appropriate accuracy in our local weed management practices.

Response of a glyphosate-susceptible Amaranthus hybridus population from the Hendrina district, Mpumalanga, where glyphosate did not dominate in the weed management programme. The glyphosate dosage range was identical to that used for the Bergville population.

Dr Charlie Reinhardt is a research leader at the South African Herbicide Resistance Initiative (SAHRI) at the University of Pretoria, and an independent consultant on weeds and herbicides. For references or more information, contact him at 083 442 3427 or dr.charlie.reinhardt@gmail.com


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1. Pour Liquinod Max into a clean bucket.
2. Add Extrasol into the bucket and Mix.
3. Add OsmoGUARD into the bucket and Mix.
4. Add Pseudomonas iinto the bucket and Mix.

UPL SoyFix Flo: Quantities per X kg seed		
Product	**Per 500 kg seed**	**Per 1 000 kg seed**
Liquinod Max	1 ℓ (1 Bag)	2 ℓ (2 Bags)
Extrasol	500 mℓ (½ Bottle)	1 ℓ (1 Bottle)
OsmoGUARD	500 mℓ (½ Bag)	1 ℓ (1 Bag)
Pseudomonas	200 g (1 Pack)	400 g (2 Packs)

- Then use 1 ℓ/250 kg seed or 200 mℓ/50 kg seed of the mixed volume.
- Do not let mixture stand. MIX above as required.
- Do not mix directly with other products.
- Keep in a cool place out of direct sunlight.

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ALWAYS READ THE LABEL BEFORE USE
Liquinod Max: Contains *Bradyrhizobium japonicum* WB74 for nitrogen fixation on soybeans | Reg. no. L9012 (Act 36 of 1947) | **Extrasol:** Contains two isolates of *Bacillus* spp. to improve root growth | Reg. no. M151 (Act 36 of 1947) | **Osmo GUARD:** Soybean Inoculant preserver | Reg. no. L 11024 (Act 36 of 1947) **Pseudomonas:** Contains two isolates of *Pseudomonas* spp. that assist with phosphate solubilizing. Reg. no. M46 (Act 36 of 1947) | **SIGNALWORD: NONE| HAZARD STATEMENTS: NONE**

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Local fertiliser overview and implications for the South African oilseeds industry

By Helga Ottermann, Karen Truter, Stephano Haarhoff, Divan van der Westhuizen, Ferdi Meyer, and Pieter Swanepoel

South Africa's agricultural industry continues to face increasing pressure. Challenges such as soil nutrient deficiencies, high production costs, and environmental concerns demand targeted solutions. Fertilisers remain essential for maintaining soil fertility and sustaining agricultural productivity. Key strategies include improving fertiliser use efficiency, exploring alternative sources, and developing resilience against uncertain global market trends.

To address these challenges effectively, it is important to understand local fertiliser consumption patterns. With this in mind, the Bureau for Food and Agricultural Policy (BFAP), in collaboration with Stellenbosch University, conducted a study to assess South Africa's total agricultural fertiliser use.

Consumption trends and key factors

Figure 1 shows historic fertiliser consumption across field crops, horticulture, and pastures. To estimate NPK use, nutrient application rates (kg/ha) were multiplied by both historic and projected crop areas. Because nitrogen (N) has a direct impact on yield, application rates were assumed to remain constant over time.

In contrast, phosphorus (P) and potassium (K) applications in field crops and pastures vary depending on location, production practices, soil characteristics, and farm profitability. Local P and K supply was therefore estimated by combining local production and imports, and subtracting exports. This supply was then proportionally allocated across the field crops and pastures included in the study, while application rates for horticultural crops were kept constant.

No fertiliser stocks were assumed to be carried over between seasons. As a result, local demand for P and K was adjusted downward in years with limited supply and upward when supply was more abundant.

Figure 1 indicates that N fertiliser consumption has remained relatively stable at around 600 000 tonnes over the past two decades. In contrast, P and K use increased, largely due to the expansion of oilseed production. Shifts in cropping patterns have also expanded South Africa's total crop production area from 5,76 million ha in 2001 to 6,48 million ha in 2024. While the area planted to major cereals declined by about 900 000ha, oilseeds – particularly soya bean and canola – expanded by 1,1 million ha.

Compared to maize, soya bean requires proportionally higher amounts of P and K per unit of grain produced. However, soya bean also reduces the demand for nitrogen fertiliser, both in the soya bean production year and in subsequent crops, through atmospheric nitrogen fixation.

Projections for the period were calculated by multiplying BFAP's projected crop area by the average NPK application rates from 2019 to 2023. The results suggest that total fertiliser consumption will rise only slightly, reaching 1,2 million tonnes of nutrients by 2034 (*Figure 1*). This modest growth reflects the relatively stable area under grains and oilseeds. Most production gains are instead expected to come from improved productivity, particularly improvements in nitrogen use efficiency, which will support higher yields and strengthen the sector's overall competitiveness.

It is important to note, however, that these projections are based on several macroeconomic, political, and climatic assumptions from the *BFAP Baseline*, which could influence actual outcomes shown in *Figure 1*.

Fertiliser use per sector

Nitrogen fertiliser remains the most important nutrient for producing field, horticultural, and pasture crops in

Figure 1: Historic and projected consumption of N, P, and K fertilisers in South Africa, 2001 to 2034, based on planted area (ha) for crop production. (Data: BFAP and industry stakeholders)

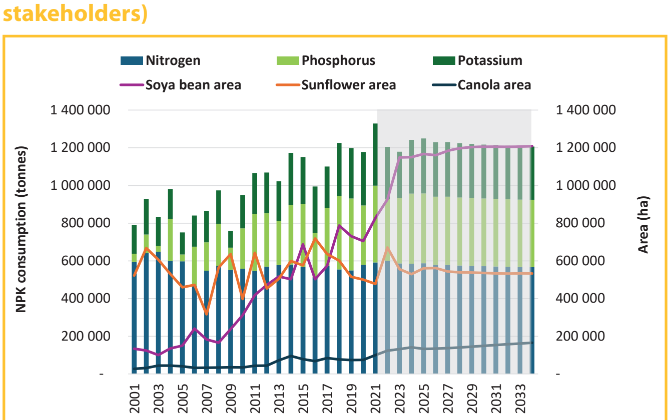


Figure 2: Corresponding nutrient use across various crop production sectors (field crops, horticulture, and pastures).

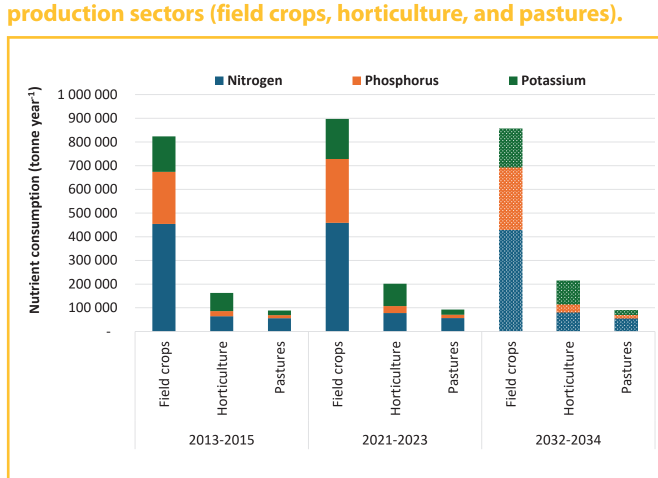
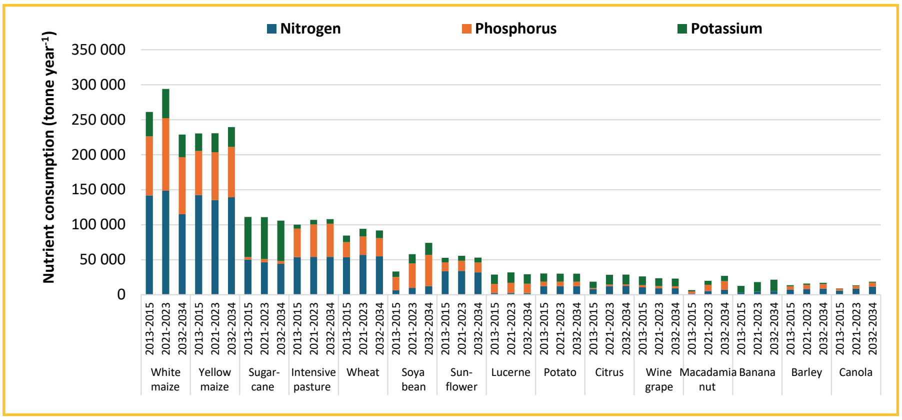


Figure 3: Historic, current, and projected N, P, and K fertiliser consumption across the major crop types in South Africa. (Data: BFAP and industry stakeholders)



South Africa across all periods (*Figure 2*). Between 2013 to 2015 and 2021 to 2023, total N use increased by 3,1%. Within this, N use in field crops increased by 1% and in horticulture by 20%, while pasture demand remained relatively low yet stable.

During this same period, total P use increased by 23%, reflecting more intensive fertilisation strategies, soil corrections, and nutrient management practices. Furthermore, growth in horticultural area, which has particularly high P and K requirements, also contributed to this trend.

The field crop sector has consistently dominated fertiliser use, accounting for 73% of total NPK fertiliser consumption over the past decade (*Figure* 2). The horticultural sector accounted for around 15% of NPK fertiliser consumption annually and showed a steady growth of 24% from 2013 to 2015 to 2021 to 2023, driven by the shift towards high-value crops. Pastures made up the remaining 12%, mainly to support high biomass yields and sustain profitable pasture-based dairy systems in the Western and Eastern Cape, and KwaZulu-Natal (Galloway *et al*., 2024).

Top fertiliser consumers

Figure 3 depicts the top fertiliser-consuming crops, including field crops, horticulture, and intensive pastures. The majority of the NPK fertilisers in South Africa are applied to maize, sugarcane, and intensive pastures for dairy production. Soya bean is the sixth largest fertiliser consumer, sunflower the seventh, and canola the 15th.

Among the different oilseeds, soya bean and sunflower are the largest consumers, with a combined use of approximately 114 000 tonnes per year between 2021 and 2023. Canola, by contrast, uses considerably less fertiliser due to a much smaller area under production. Overall, total oilseed fertiliser consumption for soya bean, sunflower, and canola combined was around 128 000 tonnes per year between 2021 and 2023.

The fastest growth in NPK fertiliser use among field crops over the past decade occurred in soya bean (75%) and canola (51%), reflecting a significant increase in their planted areas. Fertiliser use in these oilseeds is projected to rise further, with soya bean increasing by 28% and canola by 38% between the 2021 to 2023 average and the 2032 to 2034 average, driven primarily by continued area expansion.

Table 1: Summary of emerging fertiliser developments, their agronomic descriptions, implications for crop productivity and nutrient management, and associated limitations in the South African crop production context.

Development	Description	Agronomic implication	Limitations/trade-offs
Precision agriculture technologies	Integration of various technologies, digital tools, and sensors to apply fertilisers more precisely.	Optimises nutrient application, uptake efficiency and productivity.	High initial costs; limited adoption; requires producer training and data management resources.
Nutrient recovery technologies and practices	Technologies focussed on recycling nutrients from waste (sewage sludge and manure); cover crops as catch crops.	Reduce soil nutrient imbalances and promote nutrient cycling; changes in crop hectares.	Minimal infrastructure and adoption.
Alternative fertiliser sources	Slow-release products, organic-based biological products.	Reduced nutrient input costs; environmental losses.	High costs; uncertain nutrient release rates; low nutrient concentrations; crop yield penalties.
Increased fertiliser costs	Rising raw material costs (natural gas for ammonia production, phosphate rock).	Encourages efficient use; challenges affordability for producers in marginal regions.	May reduce overall fertiliser use and yields; nutrient mining of soils.
Regulatory changes (local and global)	National policies and international agreements on fertiliser use, imports, and environmental regulations.	Agronomic recommendations affected due to fertiliser availability and irregular prices; unpredictable nutrient uptake leading to crop yield penalties and environmental pollution.	Can limit access to affordable fertilisers; discontinuation of products or deregistration of products.

Future perspectives

The ongoing demand for NPK fertilisers in field crop production underscores the importance of tailored nutrient management strategies to improve both profitability and crop quality (Haarhoff *et al*., 2020). *Table 1* provides a summary of emerging developments in the fertiliser landscape.

Conclusion

Fertiliser use remains a critical component of South Africa's agricultural productivity, particularly for field crops and expanding oilseed production. While N use has remained relatively stable, the rising demand for P and K reflects changing cropping patterns, intensification, and improved nutrient management practices. The rapid growth in fertiliser consumption for soya bean and canola highlights the importance of tailored nutrient strategies to support yield and profitability.

Looking ahead, continued area expansion and improvements in nutrient use efficiency will be key to sustaining crop productivity, enhancing competitiveness, and meeting the country's evolving agricultural needs.

For more information and references, send an email to Pieter Swanepoel at pieterswanepoel@sun.ac.za or visit *www.bfap.co.za*

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Reflections and intentions:
The 2025/26 and 2026/27 production seasons

By Marguerite Pienaar, economist, Grain SA

Before we look to the new season, let's first reflect on the 2024/25 production season. It was regarded as a season of recovery for some of South Africa's field crops. After the weather-related setbacks of the previous year, most regions experienced improved growing conditions, supporting stronger yields and renewed optimism among producers. However, in several key areas excessive rainfall led to waterlogging and crop damage. Sunflower production, in particular, was affected by *Sclerotinia* outbreaks, especially in North West.

Soya beans continued their strong performance in 2024/25, surpassing 2,5 million tonnes in total production. This marked only the second time since the late 1990s that output reached this level, following the record 2022/23 season. Producers planted a record 1,15 million ha, achieving average yields of 2,39t/ha, the second highest on record. While many regions recorded excellent yields, some soya bean-producing areas in the Eastern Free State and Mpumalanga reported quality losses and lodging due to heavy rainfall during pod fill and harvest. Despite these challenges, the Free State, Mpumalanga, and North West remained the leading contributors to national output.

Sunflowers faced a more difficult 2024/25 season. Although the area planted increased to 531 100ha, total production was estimated at 708 300t. The combination of excessive rainfall in parts of the Free State and persistent disease pressures, particularly the *Sclerotinia* outbreaks in North West, weighed heavily on yields, which averaged just 1,27t/ha. Nonetheless, the crop remains an important rotational option for dryland producers in the Free State, North West, and Limpopo.

Canola benefited from generally favourable weather in the Western Cape, where moderate rainfall and well-timed moisture supported excellent yields. National production reached 290 400t from 165 750ha, with an average yield of 2,55t/ha. However, some regions in the Eastern Free State and Mpumalanga reported harvest delays due to excessive rain. The Western Cape remained the core producing region, supported by smaller but expanding production in the Free State and Mpumalanga. Snail damage was evident during the past season, especially in the Southern Cape production region.

Groundnuts showed resilience in 2024/25, producing around 61 389t. The area planted increased to 48 125ha from the previous season, with yields averaging 1,85t/ha. The main producing regions were Mpumalanga, Limpopo, and KwaZulu-Natal.

Intentions for the 2026/27 season

According to the preliminary planting intentions released by the Crop Estimates Committee (CEC), producers are expected to reduce the area planted to sunflowers in the 2026/27 season. The estimated hectares are set to decline from 555 700 to 531 100, likely due to the *Sclerotinia* outbreak experienced earlier this season especially in the North West, Free State and Mpumalanga regions, and the lower yields of 1,27t/ha recorded during the 2024/25 season.

In contrast, soya bean plantings are expected to increase by 2,45%, rising from 1,15 million to 1,18 million ha. This expansion reflects continued confidence in soya beans as a profitable and rotationally beneficial crop, supported by stable demand from the domestic processing sector, particularly for oil and oilcake production. Groundnut plantings, however, are projected to decline from 48 125 to 42 240ha in the upcoming season.

Soya bean

Table 1 contains a summary of the three possible scenarios for soya bean demand and supply in the 2026/27 season, together with the ninth estimate for the 2025/26 season. If the intended planting area materialises, it indicates that South Africa could expect a record planted area for soya beans in the coming season. Depending on the closing stock from the previous season, the country could have an available supply of between 2,2 and three million tonnes in the 2026/27 marketing year.

South Africa's capacity to process local soya beans for oil and oilcake has increased to such an extent over the past few seasons, that our dependence on exports has decreased. Although the majority of South Africa's soya beans can be processed locally, exports will still be necessary to prevent stock accumulation and to provide possible price relief.

In the 2025/26 season, South Africa will need to export 350 000t of soya beans to balance closing stocks. The export programme for the 2025/26 season progressed slightly slower than required, with only 110 325t exported by the end of September. This means the country will need to export around 239 675t over a

Table 1: Supply and demand scenario for soya beans in 2026/27. (Source: SAGIS, NOK, Grain SA)

	2025/26*	Scenario 1 low yield (1,6t/ha)	Scenario 2 average yield (2,2t/ha)	Scenario 3 high yield (2,4t/ha)
Opening stocks	276 063	336 288	336 288	336 288
Commercial deliveries	2 709 125	1 759 319	2 472 478	2 692 102
Imports	11 000	64 000	4 000	0
Total commercial supply	**8 615 599**	**7 858 512**	**10 087 715**	**10 978 901**
Food	21 273	21 749	21 749	21 749
Feed (full-fat soya)	128 500	132 336	132 336	132 336
Crushed for oil and oilcake	2 154 442	1 700 000	2 000 000	2 110 000
Other	13 946	11 431	11 431	11 431
Exports	350 000	70 000	386 000	478 000
Total commercial demand	**2 668 161**	**1 935 516**	**2 551 516**	**2 753 516**
Ending stocks	**336 288**	**232 582**	**269 741**	**283 365**

**Projections according to the ninth CEC estimates and SAGIS data.*

period of five months to avoid entering the next season with higher stock levels.

All three scenarios indicate that South Africa will need to export soya beans and will therefore likely trade closer to export parity in the 2026/27 season. Grain SA's export parity calculations for Randfontein for 2026 showed at the beginning of November that the March and May 2026 export parity for soya beans traded between R7 461 and R7 521/t.

Sunflower

Table 2 shows the supply and demand forecast for sunflower. The carryover stocks are slightly higher for the next season compared to the 2025/26 season. From the intentions to plant in the 2025/26 production season it is evident that there is a shift from sunflowers to alternative crops such as soya bean. Only in a low yield scenario are possible sunflower imports expected. In a medium and high yield scenario more than 2 600t will be available for export.

Sunflower prices for March 2026 were at R9 694 at the beginning of November, with May 2026 prices at R9 330. This is slightly higher than in October, but still lower than at the same time last year.

Table 2: Supply and demand scenario for sunflower in 2026/27. (Source: SAGIS, NOK, Grain SA)

	2025/26*	Scenario 1 low yield (1,2t/ha)	Scenario 2 average yield (1,3t/ha)	Scenario 3 high yield (1,5t/ha)
Opening stocks	72 857	77 863	77 863	77 863
Commercial deliveries	708 300	623 178	699 635	783 012
Imports	4 000	60 000	0	0
Total commercial supply	**789 157**	**765 041**	**781 498**	**864 875**
Food	1 735	1 762	1 762	1 762
Feed (full-fat soya)	6 000	5 807	5 807	5 807
Crushed for oil and oilcake	700 000	670 000	682 000	756 000
Other	220	200	2 642	2 642
Exports	711 294	681 330	695 772	769 772
Total commercial demand	**77 863**	**83 711**	**85 726**	**95 103**
Ending stocks	**336 288**	**232 582**	**269 741**	**283 365**

**Projections according to the ninth CEC estimates and SAGIS data.*

Trade environment

Looking beyond our borders into global markets, we consider the current trade environment and what it would take for South Africa to compete with major players such as Brazil and the United States. South Africa is a net exporter of soya beans and a net importer of soya oil and meal. According to South African Grain Information Service (SAGIS) data for the 2025/26 marketing season, a total of 80 834t of soya beans was exported, primarily to Zimbabwe (62 287t) and China (18 547t).

The South African soya bean market became more diversified in 2022 following the signing of a phytosanitary protocol with China. However, higher production levels are essential to enable greater participation in global markets. In the upcoming season, with a strong likelihood of record soya bean hectares being planted and an estimated 350 000t expected to be available for export, access to international markets will play a crucial role in ensuring the overall sustainability of the soya bean industry.

A final thought

As the new season approaches, the South African oilseeds industry faces a dynamic environment shaped by both opportunities and challenges. Strong planting intentions, improved yield potential, and expanding export prospects – particularly for soya bean – underscore the sector's growth trajectory. However, market sustainability will depend on producers' ability to manage input cost pressures, climatic uncertainty, and international price fluctuations.

Send an email to marguerite@grainsa.co.za or visit *www.grainsa.co.za* for more information.

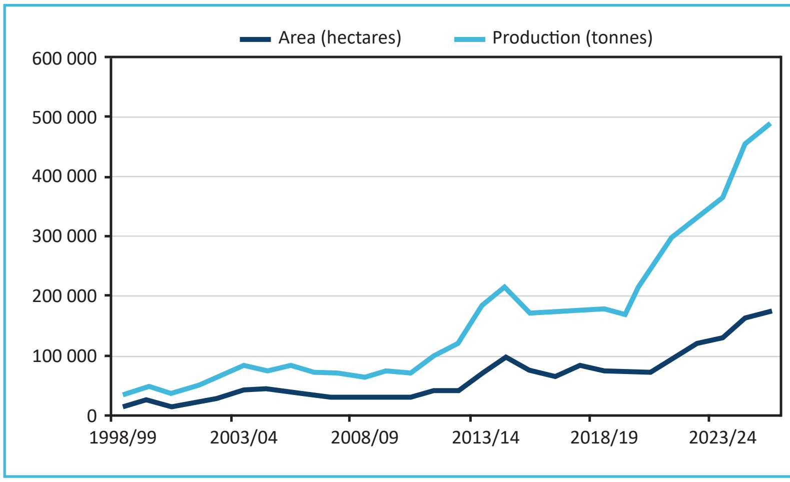
Record canola harvest expected for the 2025/26 season

By Wandile Sihlobo, chief economist, Agbiz

I recently considered the potential for a surge in South Africa's canola yield for the 2025/26 season. This outlook was based on favourable prospects for the area planted and weather conditions, which appear significantly better than those experienced in the 2024/25 season.

That said, many producers in the Western Cape – the country's main canola-growing region – would acknowledge that the start of the 2025/26 season has brought challenges in certain areas. Reports noted that snail infestations forced some producers to replant, a process that inevitably increases production costs.

Figure 1: South Africa's canola production and area planted for the 1998/99 to 2024/25 seasons. (Source: SAGIS, CEC and Agbiz research)



Canola harvest hits new high

By the end of September this year, the Crop Estimates Committee released its second production forecast for canola, projecting a harvest of 311 640 tonnes, which is a 3% decrease from the August estimate. Despite this adjustment, the figure remains 7% higher than the previous season, driven primarily by an expansion in planted area.

Interestingly, this aligns closely with our initial estimate of 311 661 tonnes, representing an 8% increase from the 2024/25 season. This was based on a five-year average yield of 1,89t/ha over 164 900ha.

The expected crop of 311 640 tonnes would mark a record harvest, further cementing South Africa's position as an emerging exporter of canola products. The country has become a net exporter, with shipments of canola reaching destinations such as Germany and Belgium.

Although canola is a relatively new crop in South Africa, it has become a success story. Commercial plantings began on 17 000ha in the 1998/99 season, expanding to an estimated 164 900ha for the 2025/26 season.

Over the years the growth in canola production has been driven by rising domestic demand for canola oil and oilcake, as well as a shift from traditional winter wheat and barley production areas due to strong market demand and competitive pricing. Canola is a winter crop, primarily planted in the Western Cape, which falls within South Africa's winter rainfall region.

While the season started with higher production costs and the latest harvest forecast is below earlier projections, South Africa is still set for a record canola harvest of 311 640 tonnes. This can still be considered a notable surge in production, even though profitability for producers may vary.

Send an email to the author at wandile@agbiz.co.za for more information.

World oilseeds market and trade, September 2025: China tariffs on Canadian canola prompt alternative imports

Issued by the United States Department of Agriculture's Foreign Agricultural Service

In August this year, China imposed preliminary anti-dumping duties on rapeseed imports from Canada. Coupled with previous duties (imposed in March 2025) on rapeseed meal and oil from Canada, China now has prohibitive tariffs on all Canadian canola products.

China depends on imports of rapeseed and rapeseed products. Rapeseed meal is a desirable feed for the aquaculture industry, as its amino acid profile is well suited for fish diets aside from fish meal, which is a costlier alternative. Canada supplied the majority of China's rapeseed meal imports until May 2025, when the impact of tariffs became noticeable. China's domestic rapeseed production has been insufficient to meet its feed demand, and to ensure ample supply for domestic industries, China is engaging with alternative trade partners to replace Canadian-sourced rapeseed products.

Since the rapeseed meal tariffs began in March, India has emerged as the largest supplier of rapeseed meal to China. This novel trade flow comes at a time when India's domestic consumption of rapeseed meal has declined due to increased use of dried distillers grains resulting from a higher ethanol blend rate. This trend continues to build, with the Solvent Extractors' Association of India reporting that July rapeseed meal exports to China totalled almost 100 000t. In 2025/26, China is expected to import 2,6 million tonnes of rapeseed meal, 400 000t higher than the previous estimate, but still a three-year low.

Tariffs on imports of rapeseed from Canada are expected to reduce China's total rapeseed imports due to limited eligible suppliers. Australia is in discussions with China to develop a phytosanitary framework after being shut out of the market since 2020 due to detections of blackleg. Access could be restored after a protocol is reached and successful trial shipments are implemented. Yet without Canada and Australia, China's 2025/26 rapeseed imports are forecast at 4,1 million tonnes, 700 000 lower than the previous estimate and a four-year low.

Figure 1: China's monthly imports of rapeseed meal.

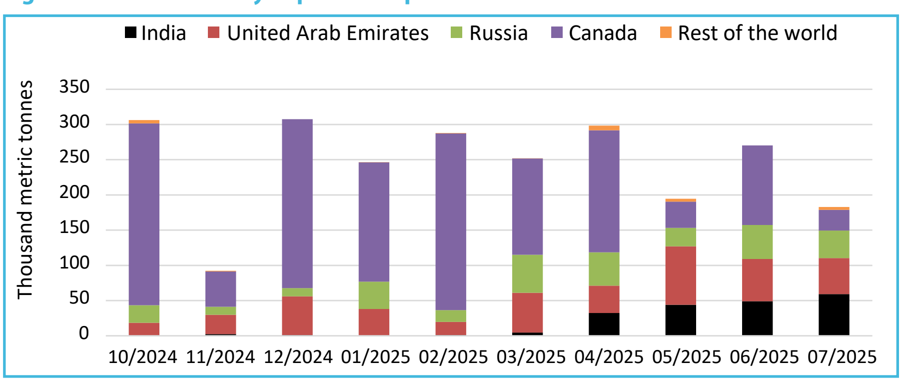
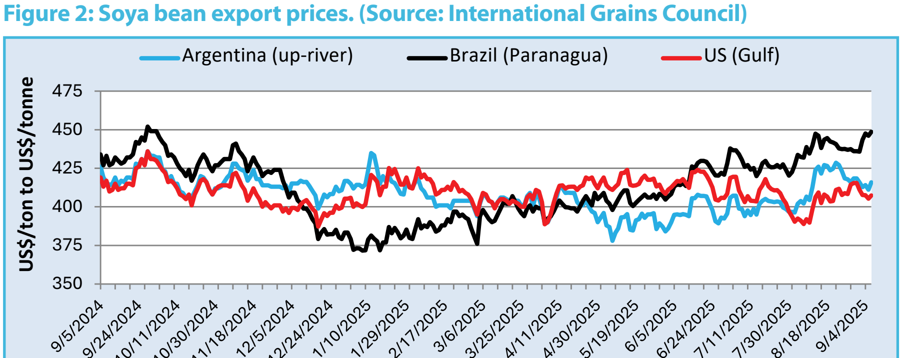


Figure 2: Soya bean export prices. (Source: International Grains Council)



All prices are free on board (FOB): US, Gulf, Argentina up-river, and Brazil Paranagua.

Overview 2025/26

The global oilseeds production forecast was raised in September on higher Canada rapeseed, Russia soya bean, and Russia and Kazakhstan sunflower seed, offsetting declines in India soya beans and Ukraine and European Union (EU) sunflower seed production. Global oilseeds trade is down as decreased Canada rapeseed and United States (US) soya bean exports are largely offset by increased exports of Russia and Canada soya beans.

Global oilseeds crush is down on decreased India and Argentina soya bean, China rapeseed, and Ukraine and EU sunflower seed crush, offsetting increased US soya bean, Canada rapeseed, and Russia and Kazakhstan sunflower seed crush. Global oilseeds ending stocks are forecast higher on increased Canada rapeseed, offsetting decreased Argentina soya bean stocks.

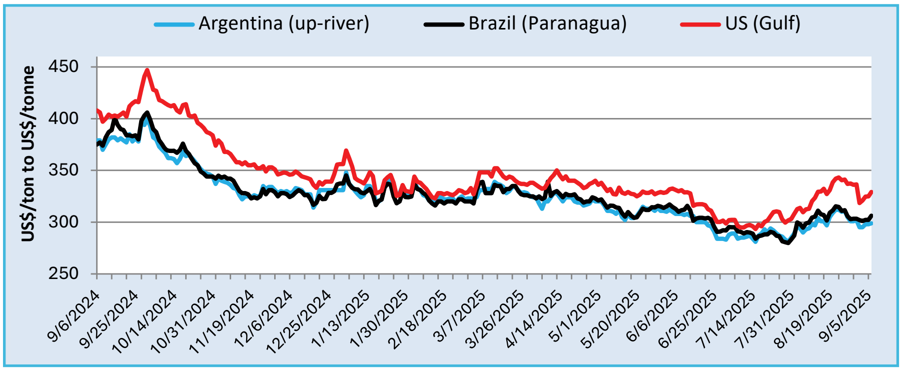
Global oilseed meal trade is raised on higher India rapeseed and US soya bean meal exports, offsetting a reduction in India soya bean meal exports. Global vegetable oil trade is lowered on decreased Ukraine sunflower seed, Guatemala and Côte d'Ivoire palm, and Argentina soya bean oil exports, offsetting increases in Russia and Kazakhstan sunflower seed oil exports.

The projected US season-average farm price for soya beans is decreased by ten cents to US$10 per bushel.

Overview 2024/25

Global oilseeds production was raised in September on higher soya bean production in Ukraine. Global oilseeds trade was raised on higher Argentina and

Figure 3: Soya bean meal export prices. (Source: International Grains Council)



Ukraine soya bean exports, offsetting minor decreases in Canada rapeseed and Brazil peanut exports. Global oilseeds crush is lowered on decreases in Russia sunflower seed and Bangladesh soya bean crush.

Global oilseeds ending stocks are lowered on decreased Argentina, Bolivia, and Canada soya bean stocks, largely countering increases in EU and Canada rapeseed. Global oilseed meal trade is unchanged on lower Argentina and Brazil soya bean meal, balancing increases in US soya bean meal, and India and Canada rapeseed meal exports. Global vegetable oil trade is increased, mostly on higher Indonesia palm oil exports.

The projected US season-average farm price for soya beans is unchanged at US$10 per bushel.

Export prices

Since the last World Agricultural Supply and Demand Estimates (WASDE) report, soya bean export prices have remained largely unchanged despite some midperiod fluctuations. US soya bean export prices increased to US$415/t in late August following reports of worsening crop conditions. This reversed in September as US soya bean prices retreated again, in part due to lack of demand from China. Brazil prices were relatively stable but traded at a US$40/t premium to US beans in September.

Soya bean meal prices remained higher than the July average but were largely unchanged on net since the last WASDE. US soya bean meal prices fell alongside soya beans in early September but maintained a premium over Brazil and Argentina meal.

US soya bean oil export prices remained elevated on strong domestic demand but declined slightly in early September, while Brazil and Argentina soya bean oil prices were comparatively flat. Ukraine sunflower oil prices increased on reduced production expectations in the Black Sea region, as old-crop exportable supplies continue to diminish seasonally. EU rapeseed oil export prices ticked up slightly, while Indonesia and Malaysia palm oil prices have risen on accelerating demand.

For more information and the full report, visit *www.fas.usda.gov*

The privatisation of Africa's railways boosts intra-Africa and global trade

Aerial view of railway sidings and tracks in Cape Town. (Photograph: Peter Titmus, dreamstime.com)

Rail lines are among African nations' most valuable assets, but many countries cannot afford their upkeep. Privatisation has been the preferred method of shifting the maintenance burden from the transportation sector to the investment sector, raising infrastructure standards that, in turn, spur trade-related revenue and employment.

Twenty years have passed since the first comprehensive study of the degree of improvement in Africa's rail transportation systems through the privatisation of state-owned railways. The privatisation had been accomplished primarily through concession agreements. At the time of the 2005 World Bank study, 20 state-owned rail lines were either undergoing privatisation or had concessions granted by governments.

The study found that progress varied: Some deals were cancelled, others were delayed by wars, and some suffered from weather-related disasters or other calamities. On the whole, the bank found, "The railways that have been privatised are performing better than if they had not been concessioned."

This World Bank study fuelled African governments' desire to privatise their rail systems. The trend continues in 2025, nearly a century after some of Africa's major rail lines were built, with other lines dating back to the 19th century.

Nearly all were financed by European colonial powers to transport African natural resources to ships destined for Europe. Once independent, African nations became responsible for maintaining their own rail systems, a task many countries failed to accomplish. Rail safety consultants indicate that train accidents are rare, but the decaying rail systems take their toll on the efficient movement of goods, resulting in long transit times for freight.

In theory, bulk cargo is more economically transported by rail than by road, which should provide enough incentive to keep rail systems in good condition. Swifter and more reliable trains mean increased cargo volumes carried and, ultimately, more intra-Africa trade. However, limited state resources spread thin have meant insufficient spending on rail rehabilitation.

Private firms recognise the value of rail lines, if they are made efficient and reliable, and are willing to invest in their improvement. While train operators must adhere to government regulations, they work on the rail lines they purchase from governments with the aim of making a profit.

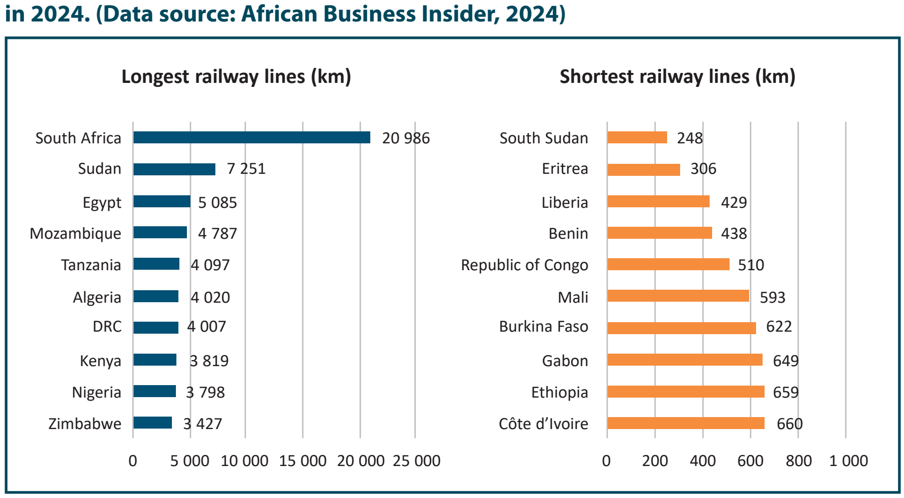
Disruption of rail concessions

Rail infrastructure is among the most vulnerable assets for both private or public companies but are subject to vandalism and theft. It is impossible to police every rail line that spans hundreds of kilometres, making security an expensive challenge for companies running privatised lines. In South Africa, for example, entire commuter trains have been set alight, seriously disrupting services on which tens of thousands rely.

Additionally, theft of equipment, electronic cables and various metal components that can be sold as scrap creates financial opportunities for thieves, leaving rail operators with the cost burden of replacement and repair.

Rail regulations mandate infrastructure maintenance, which privatised rail lines must comply with. This makes good

Figure 1: Top ten African countries with the longest and shortest railway lines (km) in 2024. (Data source: African Business Insider, 2024)



South Africa has the most extensive network, with 20 986km of railways. South Sudan has the least extensive network, with 248km of railways.


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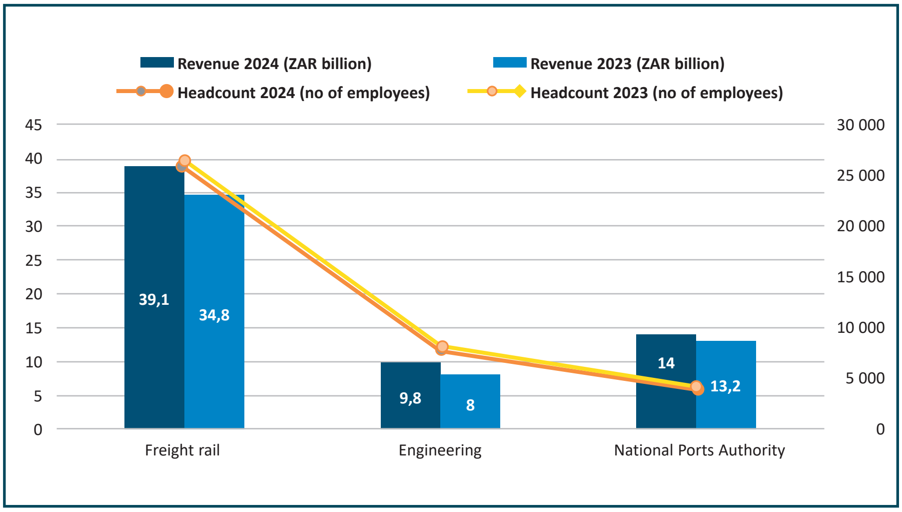
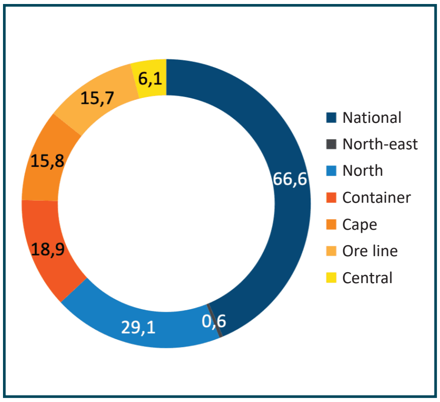
Figure 2: Transnet's key divisions – revenue and headcount for 2023 and 2024. (Data source: Transnet Annual Report, 2024)



With a primary role as the custodian of ports, rail, and pipeline infrastructure, Transnet's objective is to cultivate a world-class freight system that acts as a catalyst for sustained growth and economic diversification in South Africa.

Figure 3: Transnet's five-year capital investment by corridors (ZAR billions). (Data source: Transnet Annual Report, 2024)



A sizeable portion of the R152,8 billion Transnet plans to spend over the next five years (R86,2 billion) will be spent on Transnet's six corridors. The remainder (R66,6 billion) will be spent on national country-wide investments.

business sense because well-maintained infrastructure ensures smooth operations. Yet, the cost of sustaining railways is high, and for this reason, many rail lines have deteriorated to extremely low speeds or require entire lines to be rebuilt.

Malawi's rail system made a deal with Mozambique in April 2025 to facilitate the movement of goods from landlocked Malawi to Mozambique's port. However, to make this arrangement a reality, Malawi had to commit to refurbishing hundreds of kilometres of dilapidated Mozambican rail lines so that trains could safely make the journey.

SA's rail privatisation situation

South Africa is Africa's most industrialised country and is one of the foremost proponents of capitalism on the continent, citing the efficiencies that come with privatisation. Ironically, dozens of less-developed nations have privatised their state-owned railway systems before South Africa. One explanation is the complexity stemming from the magnitude of the country's rail network.

The South African government authority that manages rail transportation, Transnet, has three divisions. The first is Transnet Freight Rail, which operates the country's immense rail system. Next, Transnet Engineering maintains the transportation fleet. The third is Transnet National Ports Authority that oversees the country's rail ports and all rail-related infrastructure, such as lines, warehouses and loading mechanisms like cranes on the docks.

Transnet's rail network of 21 232km comprises 85% of all railways on the continent. Such extensive assets account for a privatisation effort that spans several years, making it the most complicated process of its kind in Africa, but one with immense financial benefits for any private rail management firm.

Another challenge for companies wishing to invest and operate state railway systems is governments' slow pace in implementing global transportation agreements that govern rail use. In January this year, private transport companies welcomed the news that South Africa had finally ratified and adopted the Luxembourg Rail Protocol, complementing the Cape Town Convention on International Interests in Mobile Equipment. This 2007 protocol specifically addresses railway rolling stock, such as carriages and locomotives, and aims to reform rail regulation.

With its adoption, South Africa's rail network is expected to be privatised. However, the nearly quarter-century-long wait since the Cape Town Convention is compounded by further delays while government looks for private companies to take over Transnet's operations. Additionally, legislation must be promulgated to create a regulatory agency to meet the requirements of the Luxembourg Rail Protocol. This could add many more years to the realisation of Transnet's privatisation.

Privatisation is a reality

The basic infrastructure and operating expenses incurred by rail transport investors are high compared to other transportation modes. Running an airline does not require building an airport, and ships dock at ports built by cities or, more commonly in Africa, national governments. Historically, state-owned rail companies used public funds, but such financing is not available to private firms, which must construct new lines and other infrastructure themselves.

Nonetheless, such private investment is crucial across the continent because railways provide the most economical means of transport. Consequently, investors have not lost their appetite for rail opportunities, with South Africa's being the largest prize.

The original article can be viewed at the *In On Africa* website at
www.inonafrica.com/2025/04/30/the-privatisation-of-africas-railways-boosts-intra-africa-and-global-trade

Latest information on the nutritional quality of soya bean oilcake meals

By Prof Rob Gous, Protein Research Foundation

The June edition of *Oilseeds Focus* featured the results of the first two soya bean evaluation trials conducted in the broiler research facility at Stellenbosch University. Two further trials have subsequently been conducted, and their results are presented here.

As a reminder, eight soya bean meals are tested simultaneously in four-week *in vivo* trials, while *in vitro* testing of the meals is conducted in independent analytical laboratories. Soya bean oilcake samples are sourced through feed companies that purchase meal from the major oil processers in South Africa, and these are blended with a basal feed that is mixed in a commercial feed mill (Profile Feeds, Klapmuts).

Each treatment contains 400g soya bean oilcake meal/kg in the starter phase (zero to two weeks) and 300g/kg in the finisher phase (three to four weeks of age). These feeds are pelleted on site after mixing and cooling and before being bagged. Each of the eight treatments is replicated eight times (64 pens) thereby ensuring an accurate evaluation of each soya bean meal sample.

Bodyweight and feed consumption is measured weekly, with final bodyweight, feed intake, and feed conversion efficiency (FCE, g gain/kg feed) for each soya sample being subjected to analysis of variance (ANOVA) to determine significant differences between treatments.

Results of trials 3 and 4

The results of trials 3 and 4 are shown in *Tables 1* to *4*. There is no relationship between the codes assigned to the soya bean meal samples in the two trials. In trial 3 the sexes were separated, and the means are reported for each sex together with the mean over both sexes. As there was no interaction between the soya bean sample and sex, only the mean over both sexes would normally be presented, but the mean for each sex is presented here for interest. In trial 4 the sexes were not separated, so only the mean for each variable is given in the table.

In trial 3, two soya bean samples (samples three and four) based on FCE, performed significantly worse than samples one and two. Treatment two originated from Argentina, which is interesting, as the samples previously evaluated from Argentina performed significantly worse than the South African samples. The *in vitro* values for samples three and four (*Table 2*) do not indicate that their quality was any worse than for any of the other samples tested.

Most of the soya bean meal used in trial 4 originated from the United States (US), with some samples apparently being a blend of US and South African meals. The live performance of the birds in this trial surpassed that of all other trials, which could be the result of the meal being mainly from the US, but it could equally be the result of improved broiler genetics, improved management conditions at the research facility, or because males and females enjoy being reared together. There were no differences in the growth or feed intakes between treatments, although FCE was higher in treatment six than in five of the other treatments.

Assessing processing quality

Once again, the *in vitro* results offer little or no insight into the live performance of the broilers in this trial. The closest

Table 1: Trial 3 – mean (± SEM) bodyweight at 28 days, feed intake to 28 days, feed conversion efficiency (g gain/kg feed) of female and male Ross 308 broilers fed soya bean oilcake meals from different sources.

Soya bean	Four-week bodyweight (g)				Zero to four-week feed intake (g)				FCE (g gain/kg feed)			
	F[3]	M[3]	Mean		F	M	Mean		F	M	Mean	
1	1 654	1 858	1 756	a,b	1 983	2 149	2 066	a,b	813	846	829	a
2	1 657	1 889	1 773	a,b	2 027	2 157	2 092	a,b	798	867	832	a
3	1 690	1 872	1 781	a	2 115	2 244	2 179	a	780	817	798	b
4	1 624	1 781	1 703	b	2 063	2 174	2 118	a,b	770	803	786	b
5	1 630	1 777	1 704	b	1 997	2 110	2 053	b	796	824	810	a,b
6	1 662	1 836	1 749	a,b	2 057	2 211	2 134	a,b	789	812	801	a,b
7	1 664	1 907	1 785	a	2 076	2 236	2 156	a	782	838	810	a,b
8	1 687	1 815	1 751	a,b	2 085	2 197	2 141	a,b	790	808	799	a,b
	1 658	1 842			2 050	2 185			790	827		
SEM[1]			26,5				40,7				14,9	
LSD 5%[2]			75,6				116				42,4	

[1] Standard error of the mean; [2] Least significant difference; [3] No significant interactions between soya treatment and sex. Means are for interest only; [a, b, c] Superscripts with the same letter do not differ (P>0,05).

match between *in vitro* and *in vivo* results is with trypsin inhibitor activity (TIA), with the lowest TIA coinciding with the highest FCE (treatment six) and the highest TIA corresponding to the poorest FCE (treatments one and two). This was not the case in trial 3, where potassium hydroxide (KOH) proved to be the best indicator of processing quality, although this relationship was not particularly good. Urease activity proved to be a very poor indicator of processing quality in both trials, as did reactive lysine.

Whereas KOH is used extensively as a measure of protein solubility, enormous variation in this measure has been noted between laboratories, and this casts doubt on its use as an indicator of the quality of processed soya bean meal. This variation in results has led to some interesting research, described in the following section, which may well improve the accuracy of this measure of quality in the future.

Table 2: *In vitro* analyses of protein quality in eight soya bean meals evaluated in Trial 3.

Soya bean	Urease activity	PCI	KOH protein solubility (%)	Trypsin inhibitor activity (mg/g)	Reactive lysine (%)	Reactive lysine/ lysine (%)
1	0,07	11,6	69,7	1,8	2,36	84,1
2	0,07	13,6	78,8	3,4	2,60	90,0
3	0,06	15,6	85,3	3,8	2,59	90,3
4	0,05	13,9	81,0	3,4	2,52	89,5
5	0,04	12,4	81,0	3,6	2,53	88,3
6	0,04	15,5	83,7	3,5	2,58	88,8
7	0,04	14,1	77,7	3,7	2,57	88,4
8	0,05	15,9	84,4	4,1	2,52	89,4

Table 3: Trial 4 – mean (± SD) bodyweight at 28 days, feed intake to 28 days and feed conversion efficiency (g gain/kg feed) of Ross 308 broilers[1] fed soya bean oilcake meals from different sources.

Soya bean	Bodyweight (g)			Feed intake (g)			FCE (g gain/kg feed)		
	Mean	SD[2]		Mean	SD		Mean	SD	
1	1 864	99	a	2 327	91	a	782	18,5	b
2	1 936	85	a	2 379	100	a	796	14,0	b
3	1 857	73	a	2 251	59	a	806	12,9	a,b
4	1 886	135	a	2 326	127	a	792	23,7	b
5	1 908	113	a	2 339	118	a	797	19,8	b
6	1 992	130	a	2 341	90	a	832	28,3	a
7	1 913	106	a	2 340	86	a	799	24,0	b
8	1 894	93	a	2 293	77	a	807	17,7	a,b
Mean	1 906			2 325			801		

[1] Males and females were not separated in this trial. Means are for mixed-sex sample; [2] Standard deviation; [a, b] Superscripts with the same letter do not differ (P>0,05).

New insights on KOH method

Two interesting and relevant papers have recently been published that relate to the use of the KOH method for measuring soya bean meal quality. Nelson Ruiz and Carl Parsons are well known for their work on the measurement of ingredient quality, and they have addressed the issue of high variability between laboratories in the measure of protein solubility using KOH (KOHPS). It appears that the major source of variation is the intensity with which the sample is agitated with 0,2% KOH over a 20-minute mixing period.

Their solution to the problem is not to standardise the degree of agitation, but for each laboratory to adjust this rate until a protein solubility value of between 80 and 85% is achieved when making use of a soya bean reference sample that they can supply, that has a KOHPS value in this range. Once the necessary intensity of agitation has been determined, a second, low solubility sample is prepared using the same protocol – this sample having a poor protein solubility of <20% (Ruiz, N; Parsons, CM; Steinlicht, B; Taysom, D; Wu, X; and Liu, F, 2025).

In their second paper, Ruiz and Parsons report how they made use of their newly standardised protocol for measuring KOHPS to construct a regression equation for predicting digestibility coefficients for lysine and arginine in soya bean meals having a range of KOHPS values from 14 to 88%. Using 82 soya bean meal samples previously evaluated for measuring *in vivo* amino acid digestibility, using adult roosters, and with dLys coefficients ranging from 0,47 to 0,96, a broken line regression was evident with a plateau being reached at a KOHPS value of 80% and a dLys coefficient of 88 (Ruiz, N; Parsons, CM; and Parsons, BW, 2025).

Their published equations may be used by nutritionists to adjust the digestibility of lysine and arginine in soya bean meal samples having KOHPS values below 80%. It should be stressed, however, that the newly standardised protocol for measuring KOHPS should be used before applying such equations.

Table 4: *In vitro* analyses of protein quality in eight soya bean meals evaluated in trial 4.

Soya bean	Urease activity	PCI	KOH protein solubility (%)	Trypsin inhibitor activity (mg/g)	Reactive lysine (%)	Reactive lysine/ lysine (%)
1	0,040	14,3	84,9	3,7	2,62	91,2
2	0,037	13,4	85,2	4,0	2,68	91,6
3	0,038	14,6	82,6	3,4	2,55	90,2
4	0,037	12,6	77,1	3,3	2,57	90,4
5	0,041	12,3	78,9	3,4	2,61	89,6
6	0,038	13,0	80,8	3,0	2,60	90,3
7	0,038	11,7	76,8	3,3	2,43	89,6
8	0,041	12,9	79,8	3,5	2,55	90,3

For more information or references, send an email to the author at gous@ukzn.ac.za

Soya beans for global nutrition: A numbers story

Soya beans have gained significant importance in the global food system. From their origins as a regional crop primarily grown in China, they have transformed into a major global agricultural commodity over the past 60 years. Here, we explore the changes in soya bean production, yield, area harvested, and per capita food supply over time, and examine their current and potential role in global nutrition.

Today, soya beans are cultivated extensively, from North and South America to Asia and beyond. Various factors, such as advances in agricultural technology, better crop management practices, and the development of high-yield varieties, have contributed to this growth. Moreover, the mid-20th century Green Revolution further raised soya yields through the widespread adoption of improved seeds, fertilisers, and irrigation methods.

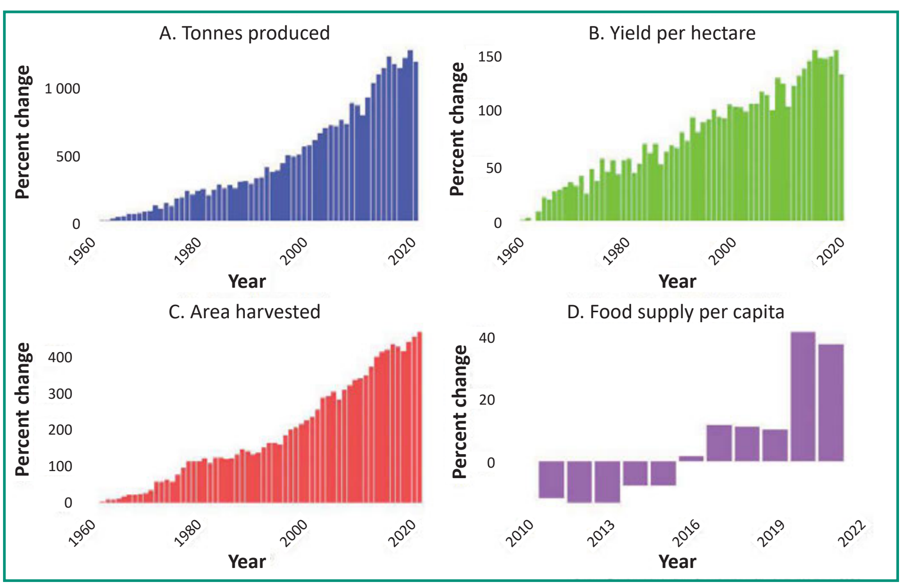
From 1960 to 2022, key metrics such as area harvested, yield, production, and per capita food supply have seen major growth, highlighting the growing importance of soya beans in the global food system. The most recent data from the Food and Agriculture Organization (FAO) show that global soya production reached approximately 350 million metric tonnes in 2022.

Major producers like the United States, Brazil, and Argentina have driven this growth. The rise in production is closely tied to the expansion of the area harvested and improvements in yield.

Not only has global soya bean production changed over time, but so has the area harvested for soya beans, especially in South America. Countries like Brazil and Argentina have converted extensive areas of land to soya bean fields. *Figure 2E* shows a rise from 24 million hectares in 1961 to 134 million hectares globally in 2022.

This expansion has had both positive and negative consequences and was largely driven by rising demand for animal feed and vegetable oils. On the one hand, it has boosted global food supply, either directly or indirectly. On the other hand, it has raised concerns about deforestation and environmental sustainability.

Figure 1: Changes in soya bean metrics over different periods. From 1961 to 2022: Global area harvested increased by 462%, production quantity by 1 198%, and yield per hectare by 131%. From 2010 to 2021: Per capita food supply increased by 37% (kg/capita/year). (Source: Food and Agriculture Organization of the United Nations, 2024)



Yield improvements

Advances in agricultural practices, such as the adoption of genetically modified crops, precision farming, and improved pest management, have improved global soya bean yields. *Figure 2F* Yield (t/ha) illustrates the global trend in soya bean yields over the past six decades, demonstrating a steady increase from 1,1t/ha in 1961 to 2,61t/ha in 2022. This upward trend highlights the yield effectiveness of modern farming techniques.

However, these yield improvements have not been uniform across all regions. While soya bean yields per hectare are high in specific African countries, particularly in Uganda (6,80t/ha), many other countries in the region have not experienced similar progress. In 2022, the global average yield per hectare was 2,61t/ha, but this is driven by a few very high-yielding countries, with most countries falling below this number.

Per capita food supply

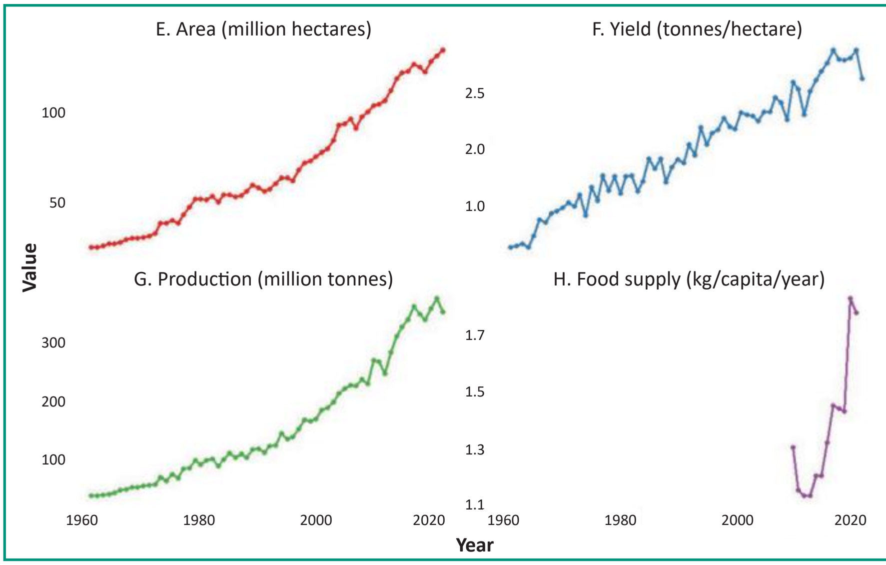
The per capita food supply of soya beans available for human consumption has also witnessed a considerable increase. Soya beans are valued as a source of protein and essential nutrients, such as iron, that are critical for food and nutrition security worldwide.

Figure 2H Food supply (kg/capita/year) depicts the rise of soya bean consumption per capita across the world, showing an increase from 1,29kg per capita per year in 2010 to 1,77kg per capita per year in 2021.

Two key observations emerge: Firstly, countries with the largest harvested areas and production, such as the United States, Brazil, and Argentina, have lower per capita food supply – likely due to their focus on exports and industrial uses, including livestock feed. Secondly, soya bean supply for food is highest in Asia, particularly in countries like China, Japan, and South Korea.

This concentration highlights the role of these nations in global soya bean consumption patterns, driven by the high dietary integration of soya products such as tofu, soya milk, and tempeh, as well as the increasing demand for plant-based alternatives to animal proteins.

Figure 2: Global trend in soya bean production and per capita supply over time. (Source: Food and Agriculture Organization of the United Nations, 2024)



Global soya bean allocation

Soya beans are a major global crop with diverse uses, but a striking majority of this valuable resource is directed away from human consumption. *Figure 3* shows the breakdown of soya bean uses from 2017 to 2019. On the left, we see global soya production, followed by its three primary uses – direct human food, animal feed, and industrial processes – and the final products on the right. More than one-third (37%) of global soya is used as feed for chickens and other poultry, about 20% for pigs, and 6% for aquaculture. Surprisingly, only 2% is used in beef and dairy production.

In contrast, only a modest 20% of the world's soya is used directly for human food, with the majority being processed into soya bean oil. Traditional soya-based foods such as tofu, soya milk, tempeh, and edamame beans make up just 7% of soya use. This distribution raises important questions about food priorities and sustainability in our global agricultural systems.

Addressing nutritional gaps

Nutrient deficiency, especially iron deficiency, remains a critical issue in global nutrition. Iron deficiency can lead to severe health consequences, including anaemia and impaired cognitive development, particularly affecting vulnerable populations like women and children.

Soya beans, rich in iron and other essential nutrients, offer a potential solution to these nutritional gaps. *Figure 4* presents the nutrient profile of soya beans per 100g, based on data from the United States Department of Agriculture. It shows the potential of soya beans to meet various nutritional requirements, including calcium, iron, protein, magnesium, phosphorus, potassium, and zinc.

For example, *Figure 4* reveals that soya beans are notably rich in iron, providing 15,7mg/100g. This amount meets 70% of the requirement for diets with low iron bioavailability. While soya beans are rich in iron, it's important to note that this is non-heme iron, which is less readily absorbed than heme iron found in animal products. Therefore, enhancing the absorption of non-heme iron, such as through the consumption of vitamin C-rich foods, can optimise its benefits.

Beyond iron, soya beans can fulfil 48% of the daily zinc requirement (unrefined diet), 81% of the protein requirement, and about 101% of the phosphorus requirement. Although this focusses on a select few nutrients, it highlights the nutritional density of soya beans, making them a valuable resource to address nutrient deficiencies, particularly in regions where these gaps are common.

Figure 3: The allocation of global soya production to its end used by weight (based on data from 2017 to 2019). (Source: Food Climate Resource Network, University of Oxford; and USDA PSD database. OurWorldinData.org)

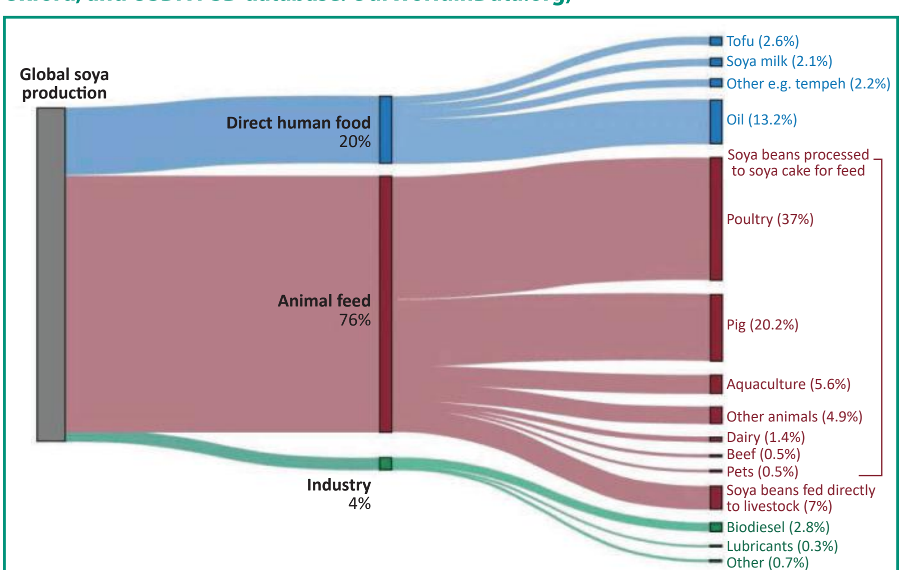
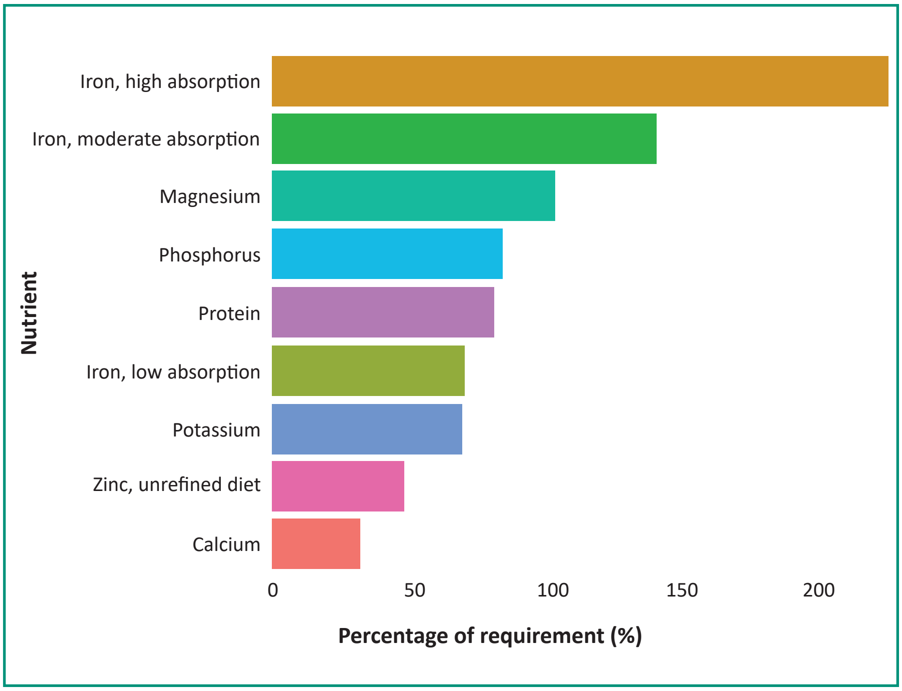


Figure 4: Nutrient profile of soya beans per 100g. (Source: US Department of Agriculture, Agricultural Research Service, 2024)



It is important to note that these numbers refer to whole soya beans, as many processing methods reduce the nutritional content of soya in consumer products.

Key takeaways

While global soya bean production has risen sharply, particularly in major exporting countries like the United States, Brazil, and Argentina, most soya beans are used for livestock feed, biofuels, and industrial applications. Only 7% is used directly for human consumption. Current global production is substantial, but redirecting more of it to human consumption could enhance its potential to improve global nutritional outcomes, as current use patterns limit its potential. However, despite its rich nutritional profile, soya beans alone are not a panacea. It could be part of a broader strategy that includes supplementation and other dietary interventions to address global nutritional deficiencies.

Originally published by the Sustainable Nutrition Initiative® (SNi), Riddet Institute, Massey University, New Zealand.
Abafe, E.A., Smith, N.W., and McNabb, W.C. (2024). *Soya beans for Global Nutrition: A Numbers Story*. Sustainable Nutrition Initiative®. Available at *www.sustainablenutritioninitiative.com/soya beans-for-global-nutrition-a-numbers-story/*

Effects of conventional and novel processing on the feed value of canola meal for poultry

By HL Classen, RW Newkirk and DD Maenz, University of Saskatchewan

The objectives of this paper are to discuss various aspects of processing that can influence the nutritional value of canola meal and to describe an alternative method of processing that has potential to increase the utilisation of canola nutrients.

Soya bean meal processing is required to destroy anti-nutritional factors, and the optimum conditions are well defined. Relatively simple assays have also been developed to assist processors and feed manufacturers in assessing both under- (urease activity) and overprocessing (solubility in 0,2% potassium hydroxide) of the meal. The finding that canola meal processing causes variable and low digestible amino acid levels demonstrates a similar need to monitor meal quality from both a processor and meal user standpoint.

To date, protein solubility has received the most attention and solubility does decrease in response to heat application (Anderson-Hafermann *et al*., 1993; Pastuszewska *et al*., 1998). However, there is little information on how it is related to amino acid content and digestibility. Regression analysis from a limited data set from our laboratory indicated that neutral detergent insoluble nitrogen (NDIN) may also be able to predict lysine (LYS) digestibility. NDIN is commonly used to assess feed quality for ruminant species, and it appears that protein that remains insoluble during neutral detergent extraction is not or is poorly digestible by chickens.

Near infrared reflectance spectroscopy (NIRS) can estimate the moisture, protein, and amino acid content of feed ingredients (Williams *et al*., 1983; Fontaine *et al*., 2001) and appears to also have potential in assessing nutrient digestibility (Van Kempen, 1998). Therefore, NIRS may also have merit in assessing the nutritional value of canola meal.

Research was conducted to assess the relationship between *in vitro* analyses and amino acid digestibility (Newkirk and Classen, 2001). Protein solubility in 0,5% potassium hydroxide (KOH), NDIN and NIRS were used to establish relationships using the samples collected from western Canadian processing plants. Except for NIRS, regression analyses were completed separately for all samples (non-toasted canola meal [NTCM] and toasted canola meal [TCM]) and for those which were conventionally processed (TCM).

Using all samples, a linear relationship was found between LYS digestibility ($R2 = 0,65$) and digestible LYS content ($R2 = 0,74$), and protein solubility in 0,5% KOH. However, if only TCM samples were included in the analyses, the relationship was weak ($R2 = 0,17$). Therefore, protein solubility in KOH is not sufficiently accurate to predict the nutritional value of canola meal.

NDIN was negatively associated with the digestibility and digestible content of LYS ($R2 = 0,78$) and other essential amino acids when all samples were included in the analysis. Even with only TCM samples, the relationships for LYS digestibility ($R2 = 0,54$) and digestible LYS content ($R2 = 0,58$) were sufficiently strong to have value in the quality assessment of canola meal. Based on this study, it appears that meals with less than 12% of the protein as NDIN are of very good nutritional value.

NIRS accurately predicted both LYS digestibility ($R2 = 0,92$) and the digestible content of LYS ($R2 = 0,84$) when both NTCM and TCM samples were used. Unfortunately, there was no opportunity to evaluate only TCM samples to determine the predictive value of NIRS using conventionally processed canola meal. Additional research is required to establish if it has value in assessing canola meal quality. Meal colour has also been mentioned as a characteristic that distinguishes NTCM and TCM samples. However, it has not been possible to use colour as an accurate predictor, possibly because early Maillard reactions reduce amino acid digestibility without causing colour reactions.

In conclusion, NDIN is the best predictor of canola meal quality at the present time, but NIRS has the potential to be used in the future. Because of the expense of biological testing required for calibration and validation of NIRS, it may be useful to use NIRS to indirectly predict quality by estimating NDIN content.

Processing factors and quality

It was of interest to study the conditions that are associated with reduced content and availability of amino acids because of desolventisation/toasting (DT). Based on the knowledge of Maillard reactions in other processed material, time of exposure to various temperatures and moisture conditions were the most relevant for this study. Therefore, air desolventised post-hexane extraction meal was exposed to various temperature and moisture conditions in a laboratory setting.

In the first experiment, meal was exposed (0 to 60 minutes) to temperatures ranging from 85 to 120°C using an isothermal autoclave. It was not possible to regulate moisture content in this experiment or accurately assess the moisture level after removal from the autoclave. At temperatures less than 100°C there was no change in NDIN regardless of time of exposure.

Exposure to higher temperatures resulted in a quadratic increase in NDIN with the degree of response temperature dependent. It was concluded that temperatures less than 100°C during desolventisation were desirable to prevent protein damage.

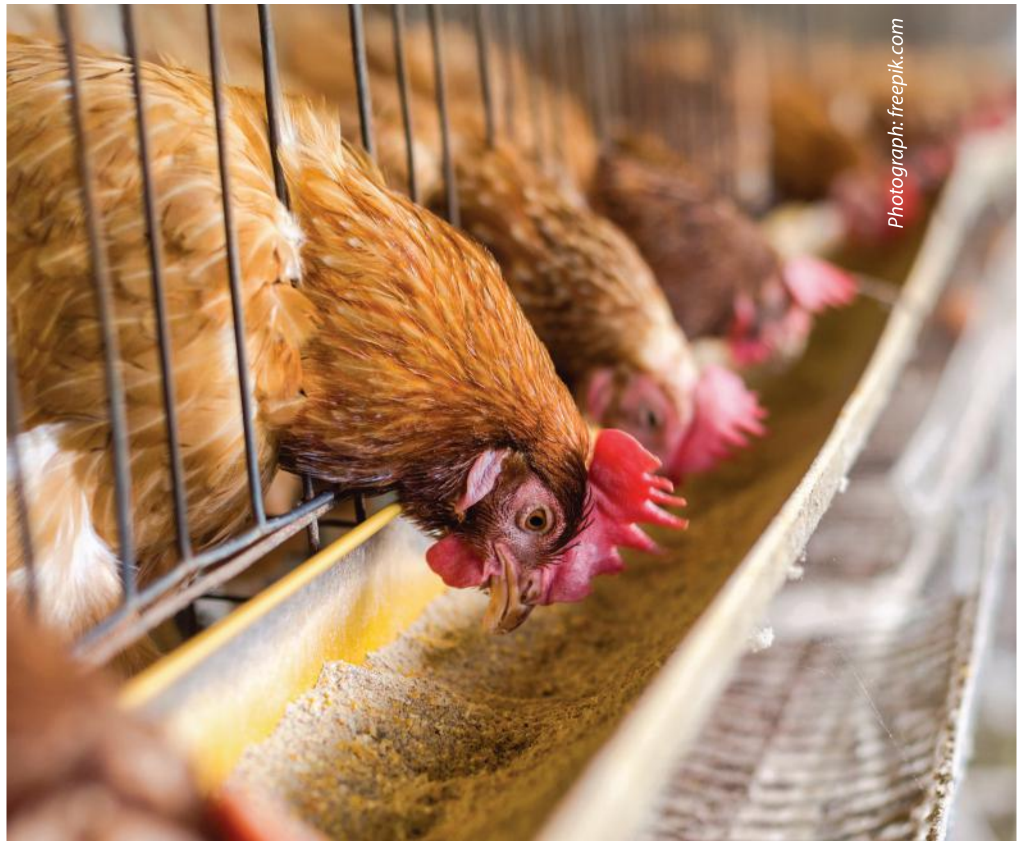
The effect of temperature and moisture was examined in a second experiment using NDIN, amino acid content and colour as response criteria. Temperature and moisture content ranged from 100 to 115°C and 7 to 18%, respectively, and meal was treated for ten minutes. Moisture affected NDIN, amino acid content, and colour of meal in a temperature related manner. At 7% moisture no effects were noted regardless of temperature, while with increasing moisture content the levels of NDIN increased, amino acid levels decreased (particularly LYS), and the meal became darker with increased temperature. The results indicate that moisture is an important factor in determining protein damage during canola meal desolventisation. The moisture level of meal exiting solvent extraction is approximately 7%.

In conventional processing, moisture is added via the direct injection of steam, water contained in gums that could enter at this stage, and water used to control dust in the upper tray of the DT. Although it would be desirable to minimise moisture addition, other factors may delay conversion of processing plants. In the processing plants in use in Canada, the steam added in the final plates of the DT assists in driving residual hexane through upper trays and meal prior to exiting the top of the unit. Alternate methods of removing hexane at this stage are required before sparge steam can be eliminated.

Large capital investments in existing equipment will also slow adoption but alternative methods of desolventisation should be developed for the next generation of processing equipment.

Novel processing of canola meal

Canola meal is a composite of nutrients/materials that make it less than ideal for the animals to which it is fed. Canola meal has an excellent amino acid profile and its protein has low antigenicity, but high levels of fibre, phytate and possibly other anti-nutritional factors restrict its use in poultry and swine, and eliminates its potential in aquaculture.



In contrast, ruminants can utilise more of the fibre and phytate phosphorus, but the high-quality amino acids are an expensive source of nitrogen for rumen bacteria. As such, canola meal is non-optimised for use as a feed ingredient. This knowledge has led to research investigating the economic fractionation of canola meal into value-added products that more closely match the requirements of target species.

The fractionation procedures are proprietary, but in general the process involves liquid fractionation. Although it is possible to obtain several different product lines, the three of most interest are insoluble, soluble, and fibre protein fractions. The insoluble and soluble products maintain the excellent amino acid balance and low antigenicity characteristics of canola meal but concentrate the protein (650 to 800g/kg) and eliminate or reduce the levels of phytate and other anti-nutritional factors. These products are designed to compete with fish meal and high protein plant concentrates in non-ruminant and aquaculture diets.

The fibre protein product retains high-quality insoluble protein (34%) and is primarily designed for ruminant markets. A fourth stream from this processing system is sugar rich and contains high levels of available minerals. It is envisaged that this product may be combined with the fibre protein as a ruminant feedstuff.

The direction taken for this type of technology represents an opportunity for other feed ingredients that are undervalued and non-optimised for animal feeding. By following similar processing methods, the resulting products have the potential to generate value exceeding that derived from the original commodity. Methods of adding value to feed ingredients using new process technology are undoubtedly going to see increased prominence with more pressure for both economic and environmentally sustainable animal production.

This article was shortened for publication in *Oilseeds Focus*. For the full article, visit *www.thepoultrysite.com*

Five reasons to enrol for an Agri Skills Transfer diploma

Agriculture remains the backbone of South Africa's economy. With the growing demand for food, sustainable farming practices, and specialised skills, the agricultural sector offers immense career potential. If you are planning a future in this exciting field, now is the perfect time to enrol for the 2026 academic year.

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2 Flexible study options

At Agri Skills Transfer, we understand that every student's situation is different. That is why we offer three flexible study options so you can learn in a way that suits your work, family, and personal commitments.

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- **Groenkloof City Campus:** Live in the city but want hands-on agricultural training? The Groenkloof campus offers the best of both worlds – comprehensive theoretical learning combined with practical experience, all while enjoying city life.
- **Full-time at Cullinan farm:** For students seeking full immersion in the agricultural world, the Cullinan farm – just outside Pretoria – is the ideal choice. Gain practical experience in a fully operational farm environment, preparing you to successfully manage your own farm or agricultural business.

3 A career with potential

In a world where sustainability and food security are becoming increasingly important, agriculture offers one of the most rewarding and exiting career paths. From organic farming, the use of cutting-edge technologies that drive efficient production, and the growing demand for locally produced, sustainable food – the sector offers a multitude of opportunities.

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4 The future of agriculture

As South Africa's agricultural landscape evolves, Agri Skills Transfer is at the forefront of promoting sustainable and innovative farming practices. Our specialised programmes combined with modern techniques empower students with the knowledge and skills needed to address the challenges of a changing industry.

Whether your goal is to advance sustainable agriculture, master precision farming, or build a competitive agribusiness, Agri Skills Transfer provides the foundation to turn your ambitions into reality.

5 Secure your spot for 2026

If you want to guarantee your spot for 2026, early enrolment is essential. Entries for our diploma programmes are limited, and registering early not only increases your chances of acceptance but also gives you ample time to plan and prepare for your studies.

There's no better time than now to start or advance your career in agriculture. Whether you're an experienced producer looking to broaden your expertise or someone new to the industry, our diploma programmes provide the knowledge and skills needed for a successful future.

Register before the end of December to secure your place for 2026. Contact us at 012 002 3723 or 076 203 3816 (WhatsApp), or visit *www.agriskills.net*

Taking the law into your own hands

By Hans-Jurie Moolman, Moolman & Pienaar Incorporated

In previous articles, we examined the issue of illegal evictions and their consequences. In this article, we turn our attention to another serious concern: the implications when individuals take the law into their own hands.

The *Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)* upholds the rule of law and affirms that the courts are the ultimate and exclusive authority resolving disputes between citizens and institutions. This means that, in most circumstances, aggrieved individuals may not lawfully resort to physical action or self-enforcement in legal disputes with other people or institutions without judicial intervention or formal legal proceedings.

Avoid taking shortcuts

Many people find the legal process frustrating, as court cases are often expensive, and the system itself can be inefficient and inaccessible, especially when it comes to resolving disputes in a timely manner. When this happens, some individuals are tempted to take matters into their own hands. This might include actions such as cutting off someone's water or electricity supply, or installing a new lock on an entrance gate, to name but a few examples.

Often, the person taking such action believes they have a legitimate right to do so; however, they make the mistake of improperly enforcing that right without going through the courts or legally obtaining a court order.

Under our common law there is a distinction between different types of rights, such as ownership, rights of use, and rights over or to property that arise from agreements between parties, as well as peaceful control or possession of something. For instance, a farm owner may have full ownership of the land but could have granted a tenant certain rights of use and possession through a lease agreement. In such cases, the tenant's possession is legally protected. The same principle applies to movable property, such as vehicles or equipment.

Doing things yourself

When a dispute arises and property is taken back, the rightful owner may not simply reclaim it through personal force. The undisturbed use and possession of property is legally protected, and any attempt to enforce rights without due process is prohibited by a legal remedy known as the *mandament van spolie* (spoliation). There are very limited circumstances connected with timing where possession can be regained without approaching the court. This necessitates an approach where one would rather err on the safe side.

Anyone deprived of their undisturbed possession of something without a court order and by someone who takes the law into their own hands, may urgently approach the court for a spoliation order to restore possession.

In considering such a request, the court does not examine the legal rights to the property itself. Instead, it evaluates:

- Whether the applicant (aggrieved person) had peaceful and undisturbed possession or control before the interference.
- Whether the respondent unlawfully disrupted this possession and control without judicial intervention.

A spoliation order serves to immediately restore possession of the property and requires the respondent to pursue any legal claims through proper legal channels, and not by taking the law into their own hands.

Possession protects everyone

Apart from the embarrassment of ending up on the losing side and having to return property, a spoliation order is often sought alongside a cost order, sometimes even punitive, against the respondent who is required to restore possession. These costs can amount to thousands of rand.

While it is important to acknowledge the desperate circumstances that often give rise to disputes between individuals and institutions, acting out of frustration and taking the law into one's own hands is ill-advised. Beyond the legal consequences and financial burden of a cost order, it is imperative to recognise that the legal framework safeguarding possession exists to protect everyone in South Africa. Undermining this framework opens the door to lawlessness – a society where violence, disregard for legal processes, and the erosion of the courts' authority in resolving disputes prevail.

Seeking sound legal advice and carefully assessing the potential consequences of any action before taking steps in a dispute over physical control or possession is not just wise – it is essential. The personal and financial costs of taking matters into your own hands far outweigh any perceived benefit.

For more information, send an email to Hans-Jurie Moolman at hj@mmlaw.co.za or contact the Potchefstroom office at 018 297 8799 or the Pietermaritzburg office at 033 032 0241.

Labour inspections: Is the official official?

By Hannes Latsky, training and compliance manager, LWO Employers Organisation

Workplace inspections by the Department of Employment and Labour (DoEL) have become more routine to ensure compliance with labour legislation. It is crucial for producers, in their role as employers, to understand how to identify labour inspectors and recognise their authority – not only to ensure compliance, but also to guard against fraudulent individuals posing as officials.

Earlier this year, the DoEL announced plans to recruit 20 000 new graduate interns nationally into its Inspection and Enforcement Service (IES) division over a two-year period. The recruitment process began in February this year with the first 10 000 interns. These interns are expected to support labour inspectors by assisting with the checking of wage payments, monitoring employment conditions, evaluating workplace safety, and performing other key inspection duties.

Labour inspectors are appointed in accordance with Section 63(1) of the *Basic Conditions of Employment Act, 1997 (Act 75 of 1997)* or *BCEA*, as amended. They are empowered to monitor and enforce compliance with the *BCEA* as well as other key labour-related legislation:

- *Compensation for Occupational Injuries and Diseases Act, 1993 (Act 130 of 1993)*, as amended.
- *Employment Equity Act, 1998 (Act 55 of 1998)*, as amended.
- *National Minimum Wage Act, 2018 (Act 9 of 2018)*, as amended.
- *Occupational Health and Safety Act, 1993 (Act 85 of 1993)*, as amended.
- *Unemployment Insurance Act, 2001 (Act 63 of 2001)*, as amended.

Identification of inspectors

Employers must verify the identity of any individual claiming to be a labour inspector. According to Section 66(3)(a) of the *BCEA*, labour inspectors are legally required to produce their official appointment certificate upon request.

The *BCEA* provides for two types of official identification issued to inspectors:

- **An appointment certificate** (*BCEA* Annexure 14A), typically issued in document format, confirms that the bearer is duly appointed and authorised by the DoEL to carry out specific functions. It includes the inspector's full name, identification number, signature, serial number, the DoEL logo, and the legislation they are authorised to enforce.
- **An inspector card** (*BCEA* Annexure 14B), typically similar in size to a bank card and made from plastic, which contains the inspector's photograph, signature, serial number, and the signature of the provincial executive manager of the inspector's office.

If an individual is unable to present valid statutory identification upon request, he/she must be denied access to the premises. Notably, official inspectors from the DoEL are prohibited from charging any fees for inspections, investigations, guidance, or assistance. Furthermore, the DoEL does not authorise any third party to carry out inspections on its behalf, and inspectors are not permitted to sell posters, documents, or any products.

The legal rights of inspectors

Labour inspectors have extensive powers under Section 65(1) of the *BCEA*. They may access any workplace or business premises – excluding private residences – without a warrant or prior notice, provided the visit occurs during reasonable hours. During inspections, they are empowered to question individuals, examine documents, and verify adherence to applicable labour legislation.

Planned inspections are typically communicated ahead of time, giving employers the opportunity to prepare by gathering essential documents such as employment contracts, payslips, time records, and health and safety policies.

In contrast, unannounced inspections or blitz operations have become increasingly prevalent. These surprise visits are conducted without prior warning to ensure that employers consistently uphold compliance, rather than merely preparing for scheduled inspections.

In terms of the *BCEA*, both employers and employees are legally obligated to cooperate fully with labour inspectors. This includes responding to questions honestly and to the best of their ability, as well as granting access to records and facilities necessary for the inspection process.

Employers must always request and verify the credentials of anyone claiming to be a labour inspector. Once the individual's official status is confirmed, cooperation is not optional – it is a legal requirement. Failure to comply, whether intentional or inadvertent, may lead to substantial penalties and pose operational risks.

The LWO Employers Organisation assists employers to comply with labour law, and to use it to their advantage to protect their business. As a registered employers' organisation with the Department of Employment and Labour, the LWO has the right to represent members at the Commission for Conciliation, Mediation and Arbitration (CCMA). Take note that this article is not legal advice – consult one of our legal advisors about any specific legal problem or matter. For more information, email Hannes Latsky at hannes@lwo.co.za, info@lwo.co.za, or visit *www.lwo.co.za*

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