

OILSEEDS

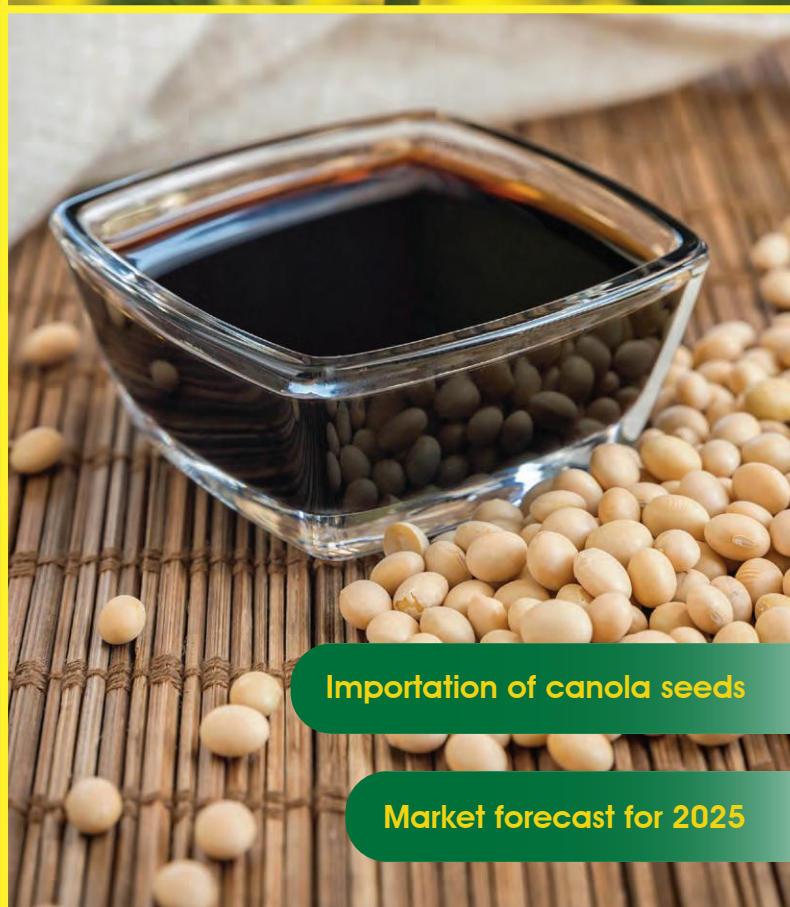
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Protein Research Foundation • Oil & Protein Seeds Development Trust • Oilseeds Advisory Committee



Groundnut industry trial evaluation

Airborne ascospore detection and monitoring



Importation of canola seeds

Market forecast for 2025



ISO 17025 ACCREDITED PROTEIN AND UREASE ANALYSIS

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Agricultural remedies: Why information sharing is crucial

By Rod Bell, CEO, CropLife South Africa

Before any agricultural remedy can be imported, manufactured, stored, marketed or sold in South Africa, the product must first be registered by the National Department of Agriculture in accordance with the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947)* and its supporting regulations. The registration dictates that an agricultural remedy (pesticide) can only be sold in its original approved packaging, with a detailed product label attached to the container. The label instructions must be strictly followed regarding the usage rate, the pest targeted, and the manner of application.

While *Act 36 of 1947* (and its supporting regulations) is the most important piece of legislation that impacts the agricultural remedy industry, there are other pieces of legislation that affect all role-players in the industry. Due to space constraints, all the legislation cannot be discussed, however, comprehensive guidance documents are available on CropLife SA's website (www.croplife.co.za).

New regulations relating to agricultural remedies were published on 23 August 2023 under *Act 36 of 1947*. Three concepts have a significant impact on CropLife SA's member companies and on South African producers. CropLife SA has issued detailed, in-depth briefing documents and provided them to grower associations to share among interested parties.

Remedies versus substances

It is important to note that restricted agricultural remedies are not the same as substances of concern. Both restricted remedies and substances of concern are classified as highly hazardous pesticides, but the criteria for each differ.

The criteria for restricted agricultural remedies are mostly dependent on the remedy regarded as acutely toxic to human health. Substances of concern, on the other hand, are mostly regarded as toxic and could lead to cancer and genetic mutations, and might even interfere with reproduction or the health of an unborn child due to

long-term exposure. However, in certain cases the criteria may apply to both remedies and substances.

Restricted agricultural remedies

Certain limitations as per the Registrar for *Act 36 of 1947* apply to these agricultural remedies. The limitations concern the sale and use of the products and includes certain conditions for the labelling thereof. They can only be sold to a registered pest control operator (PCO) who, upon purchase, must provide proof that they are sufficiently qualified and registered to administer the remedy. In both cases (sales and application), the PCO must be registered within the field applicable to the remedy.

Additionally, a suitably qualified person on a farm can apply to become a registered PCO to meet the legal requirements for restricted agricultural remedies to be sold to and applied under the supervision of a PCO registered in the fields of agriculture and forestry. (Refer to the detailed CropLife SA guidance document on the website for details on this requirement and how to register a suitably qualified person as a PCO able to handle restricted agricultural remedies.)

Substances of concern

These are agricultural remedies whose active ingredients and/or co-formulants can potentially endanger people's health. Some of them might cause cancer, induce genetic mutations, and might even interfere with reproduction or the health of an unborn child due to long-term exposure. Agricultural remedies classified as substances of concern will be phased out of the South African market by 31 May this year, and the use and sale of these products will be strictly prohibited.

However, the legislation driving this phase-out provides a derogation process for the temporary retention of essential remedies for specific crop-pest combinations. This process is designed to allow time for the development, approval and registration by the Registrar for *Act 36 of 1947* so that producers can have

access to effective, alternative agricultural remedies.

In addition to the derogation process, the latest regulation supporting *Act 36 of 1947* allows for the fast-track approval of new agricultural remedies that are considered as so-called 'low risk' agricultural remedies. The hope is that producers will always have a toolbox of plant protection solutions handy to effectively control all pests that impact their farming operations.

Prevention is better than cure

Regulation 33(6) of the latest regulation supporting *Act 36 of 1947* states "... any person in control of an establishment that sells an agricultural remedy, including through internet sales, shall provide safety instructions, training and awareness to the distributors, advisors and users of pesticides on safety instructions for human health and the environment."

This means that all role-players in the agricultural remedy value chain are legally required to train all participants on the hazards associated with the handling and use of all agricultural remedies.

The following applies to producers:

- Crop advisors/sales agents must inform their customers of the hazards associated with the use of the agricultural remedy being supplied.
- Producers must ensure that their farm workers handling and applying agricultural remedies are informed about the hazards associated with the use of the agricultural remedy being used on the farm.

Conclusion

The CropLife SA team will ensure that relevant updates and information pertaining to agricultural remedies in South Africa are regularly provided to grower associations in the country to share with our local producers. 🌱

For more information, email Rod Bell at rod@croplife.co.za or visit www.croplife.co.za.

How the value chain benefits from a free market

Free market principles are essential for transparent price discovery based on supply and demand dynamics in the grain and oilseeds market. The ability to operate in a free market helps producers and traders to make informed decisions regarding trading, production, handling, and storage. As a result, the grain and oilseeds market in South Africa has flourished despite difficult conditions.

Increased efficiency and innovation are two of the main benefits that motivate producers to produce crops efficiently, using strategies that meet the demands of the market while also maximising returns.

Encouraging innovation

The effective supply chain greatly benefits from production efficiency and the efficient functioning of the market. Producers understand that state-of-the-art machinery is required for technical farming. This ensures that farming practices utilise all the available technologies to improve productivity and reduce costs, both of which are essential for sustainability.

Local and foreign investment is required to encourage growth in the grain and oilseeds sector. By default, this will create more opportunities in the production sector and will benefit the entire value chain, leading to increased employment because of a conducive environment. Along with an assurance of no government intervention, producers can independently respond to the market environment.

Access to the market

Meeting local demand contributes to food security which can only be achieved by encouraging production. It is important that exports remain competitive, as it will create opportunities for producers with surplus production to gain access to global markets. This environment ensures the long-term advantage of creating lower prices for consumers, and the delivery of higher quality products.

Risk management tools that use instruments available on the Johannesburg Stock Exchange can only be used in a free market. A free market creates opportunities for producers to focus on producing the highest value crop and to invest in such a market. Producers are afforded the freedom to sell in their chosen market while being incentivised to become more entrepreneurial.

Efficient use of resources

In South Africa, the scant availability of government resources is alleviated by a reduced need for government to subsidise activities such as farming. The reduction of interventions of a bureaucratic nature are especially conducive to productivity. Therefore, emerging small-scale farmers can easily participate in free markets both for domestic consumption and export.

Enjoy this issue of *Oilseeds Focus* and be sure to send us an email with suggestions or comments. 📧

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: Martie Bester
martie@plaasmedia.co.za

News editor: Elmarie Helberg
elmarie@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

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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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NEWS

January sees growth in tractor sales

The new year started off positively in terms of tractor sales. January tractor sales of 457 units were almost 28% more than the 358 units sold in January last year. Five combine harvesters were sold in January, three less than the eight units sold in January last year.

While January sales, particularly of tractors, were encouraging, there is little doubt that the industry is facing another challenging year. Many of the summer crops are quite patchy, and it will only be at harvest time that producers will be able to assess production of their crops. Some decision-making by producers on capital purchases will therefore be delayed. Nevertheless, the overall sentiment in the market is one of cautious optimism.

The predicted fall in agricultural machinery sales back to 'normal' levels has occurred and tractor sales of approximately 6 200 units are likely for the 2025 calendar year. This is marginally down on the 6 465 units sold in 2024. Combine harvester sales of between 180 and 190 units are expected for 2025. – *South African Agricultural Machinery Association*

Epko beats drought with profit

The drought of 2024 is the main reason why the half-yearly profit of NWK, the agricultural company headquartered in Lichtenburg in North West, plummeted with approximately 50% from R133 million in October 2023 to R69 million in October 2024.

However, Epko, the company's oil seed crushing facility, showed a profit of R27 million after its income of R405 million in October 2023 increased to R907 million in 31 October 2024.

This follows after NWK entered into an agreement with the Ditsobotla Local Municipality whereby an alternative power supply line was constructed, enabling Eskom to supply electricity directly to Epko, the Lottie Halte Silo, as well as NWK's liquid fertiliser manufacturing facility.

The fact that the country has not had any significant load-shedding since March last year enabled Epko to crush at full capacity. Although crushing margins are still lower than ideal, the excellent quality of the oilseed contributed to Epko's achievement.

A new oilseed refining facility is currently in its implementation phase, and it is expected that this facility will refine up to a third of Epko's crushing capacity. – *Susan Marais, Plaas Media*

Minimum wage for farm workers increased

The minister of employment and labour, Nomakhosazana Meth, recently announced a 4,4% increase in the national minimum wage for farm workers, effective 1 March 2025. This adjustment raises the minimum wage from R27,58 to R28,79, a decision that reflects the complex economic landscape currently faced by the agricultural sector in South Africa.

According to a statement by Agri SA, the timing of this wage increase is significant as the agricultural sector is currently grappling with numerous challenges, including a contraction of around 5% in gross domestic product (GDP) for 2024. Recent disruptive weather patterns have led to severe drought conditions across many farming regions, placing considerable strain on producers and threatening profit margins over the short term. However, the Bureau for Food and Agriculture Policy has indicated that assuming a return to more normal rainfall patterns, overall agricultural GDP could see a recovery with an expected growth of 3,5% in 2025.

This adjustment aligns with the National Minimum Wage Commission's recommendation of CPI + 1,5%. – *Plaas Media*

Kenya tackles sunflower shortage

The county government of Nakuru in Kenya has distributed 45 000kg of certified sunflower seed to 11 900 farmers planting the crop on a total of 20 000 acres (8 093ha) across the devolved unit.

The initiative, a partnership between the devolved unit's administration and the Agriculture and Food Authority (AFA), through the Nuts and Oil Crops Directorate, targets to increase the acreage under the crop to more than 30 000 acres (12 140ha) within the next three years across the 11 constituencies.

The expected sunflower yield in the county is 3 000Mt. Under the initiative, the county government is co-ordinating the distribution of certified planting material to farmers, subsidising fertiliser, providing market linkages, and enhancing value addition to boost farmers' earnings.

The county executive committee member announced that the sunflower farmers will sell edible oil in the local market if they harvest desirable quantities. The county government is promoting oil crop farming to reduce the import bill for edible oils and lower the prices of cooking oil in Kenya.

Although sunflower is drought-resistant and adaptable to many ecological zones, Kenya is currently producing less than 50% of its needs. – *Kenya News Agency*



Mixed outlook for oilseeds

According to the latest predictions by the Crop Estimates Committee, the preliminary area estimate for sunflower seed is 552 000ha, which is 4,35% or 23 000ha more than the 529 000ha planted the previous season.

It is estimated that 1 122 million ha have been planted to soya beans, which represents a decrease of 2,43% or 28 000ha compared to the 1 150 million ha planted last season.

For groundnuts, the area estimate is 46 175ha, which is 12,08% or 4 975ha more than the 41 200ha planted the previous season.

The expected canola crop is 287 445 tonnes, which is 2,71% or 8 000 tonnes less than the previous forecast of 295 445 tonnes. The area estimate for canola is 165 750ha, with an expected yield of 1,73t/ha. – *Crop Estimates Committee*

Nigeria and Saudi Arabia sign export deal

Nigeria, through the Commodities Development Initiative (CDI), has signed a US\$10 million project with Saudi Arabia P and I Energy Consults, owners of Jurassic Abattoir, as part of a deal to export high-quality red meat and soya beans to the Kingdom of Saudi Arabia.

Under the agreement, Jurassic Abattoir will produce premium cattle and sheep meat products, while the CDI will facilitate market access to Saudi Arabia. This partnership aims to harness investments in infrastructure and systems to give Nigeria access to the global market.

The deal is expected to generate significant economic benefits for Nigeria, including export value of US\$273 million or N451 billion by 2025, 20 000 direct jobs/100 000 indirect jobs, GDP expansion contribution to Nigeria's GDP, and foreign exchange generation. – *Business Day*

Ghana urged to lift soya bean export ban

The Ghana Soybean Farmers and Aggregators Association has called on the government to repeal export restrictions on soya beans, citing adverse effects on their livelihoods.

According to the director of administration of the association, Abdul Hakeem Issah, the export ban has forced buyers to source soya beans from neighbouring countries such as Nigeria, Togo, and Benin. He stated that farmers have soya beans in abundance, but due to the export ban, the produce is left to rot because of the lack of buyers.

On 18 May 2022, the Akufo-Addo-led government banned the exportation of maize, rice, soya beans, and other grains to eight countries. The affected countries include Niger, Sierra Leone, the Republic of the Congo, the United Kingdom, Qatar, the United States of America, Italy, and Canada.

According to the government, the move aims to boost local poultry and livestock production and enhance food security in Ghana. Meanwhile, the minister of food and agriculture, Bryan Acheampong, has expressed optimism that Ghana will become the number one exporter of soya beans by 2030. – *GhanaWeb*

Hungary emerges as top sunflower producer

The European Union (EU) Commission slightly lowered its forecast of sunflower seed output in its February estimate for the 2024 oilseed harvest. According to recent information by the EU Commission, the 2024 EU sunflower seed harvest is seen to total around eight million tonnes, 7 000 tonnes less than expected at the end of December.

The revision increases the year-on-year decline to 18%, as unfavourable weather conditions throughout the year significantly curtailed yield potential. The harvest also falls 18% short of the long-term average, representing the EU's smallest sunflower seed harvest since 2015.

The downward revision is mainly due to the smaller crop in Germany. The Commission now forecasts German production at 127 000 tonnes, 7 000 tonnes below the December estimate. This represents a 25% drop from 2023, but remains just about 20% above the five-year average.

The harvest in Romania also declined compared to 2023, falling 38% to 1,2 million tonnes. Despite a record area planted with sunflower seed, this would represent the country's smallest harvest in 15 years. As a result, Romania lost its top position as the EU's largest producer, dropping to the fourth place. In contrast, Hungary climbed to first place for the first time, harvesting 1,7 million tonnes despite a presumed 13% decline from the previous year.

In France, crop development and harvest operations were severely impacted by persistent rainfall, according to research by Agrarmarkt Informations-Gesellschaft. With 1,7 million tonnes currently projected, France ranks as the second largest producer within the Community despite an 18% decrease compared to the previous year. – *Biofuels International* 🌱

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FARMER: Hanro Alberts (left) with
Pieter Geldenhuys, Pannar Representative

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Increasing sunflower production in South Africa

By Safiah Maali and Christiaan Vercueil

Sunflower is South Africa's fourth largest grain crop, with an average of 753 000 tons produced annually from 2012 to 2022. In 2022, 670 700ha were cultivated due to favourable market prices and late rains that delayed summer plantings. The Bureau for Food and Agricultural Policy (BFAP) predicts stabilisation at approximately 500 000ha, but a 23% production increase is expected over the next decade driven by technological advances.

Sunflower productivity is influenced by weather conditions and cultural practices, particularly planting date, which significantly affects yield and seed quality. In South Africa, sunflowers are usually planted from November to mid-January in the semi-arid Free State and North West provinces. However, adverse weather conditions can impact yields.

Countries such as the United States (US) offer premiums for higher oil yields, whereas South Africa does not have formal specifications for oil content delivery. The industry standard in South Africa is an oil content of above 36%, with an ideal target of 38%. Some crushers provide a 1,5% value for every 1% yield above 40%.

This study aims to investigate the impact of planting dates on hybrids with varying oil content, and whether incentives for high-oil hybrids could offset yield losses. A total of 47 field trials were conducted from 2018 to 2023 by the Agricultural Research Council-Grain Crops (ARC-Grain Crops) in Potchefstroom at different sites in the Free State and North West sunflower production region. Trials involved three planting dates: the first from 1 to 30 November, the second from 1 to 30 December, and the third from 1 to 30 January.

A total of 38 sunflower hybrids with different oil contents were planted and grouped according to the oil content percentage. The first group included all tested hybrids with oil content of $\leq 40\%$, the second group with oil content ranging from >40 to $<44\%$, the third group with oil content ranging from ≥ 44 to $<47\%$,

and the fourth group $\geq 47\%$. Responses were studied in a randomised complete block design with three replications. Grain yield was measured, and oil analysis was performed. Statistical analysis, including analysis of variance (ANOVA), was used to identify significant differences.

Effect of planting date

Figure 1 shows the mean seed yield of tested sunflower hybrids with different oil content under different planting dates. The highest seed yield of $2,89\text{t/ha}^{-1}$ was recorded for sunflower hybrids with oil

content $\leq 40\%$ planted during December. December planting yielded the best seed yield for all sunflower groups.

However, delaying the planting date until January can reduce the seed yield by different percentages, ranging from 22,9% for sunflower with oil content $\leq 40\%$, to 9,77% for sunflower with oil content ranging from >40 to $<44\%$. The sunflower hybrid with oil content <44 and $>47\%$ was most severely affected by delaying the planting date until January.

Figure 2 shows the impact of different planting dates on sunflower oil content.

Figure 1: Seed yield (t/ha^{-1}) for different sunflower groups and the planting date.

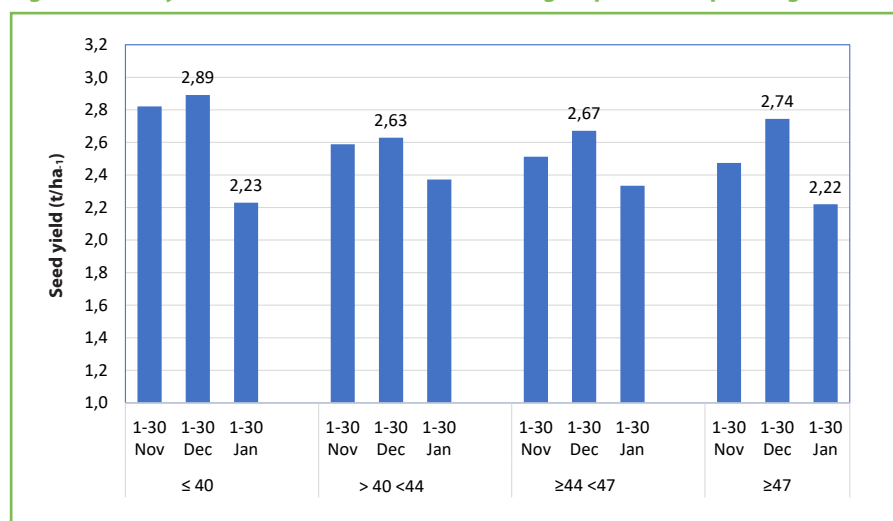


Figure 2: Oil content (%) for different sunflower groups and planting date.

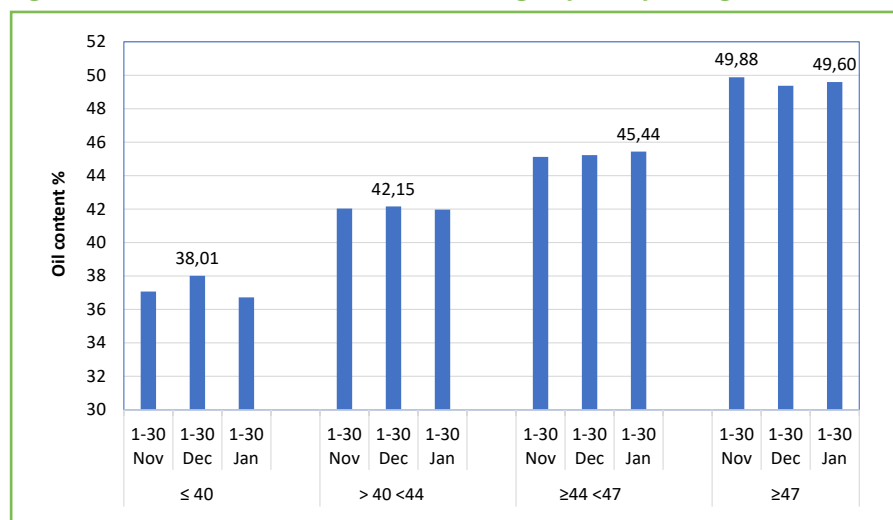
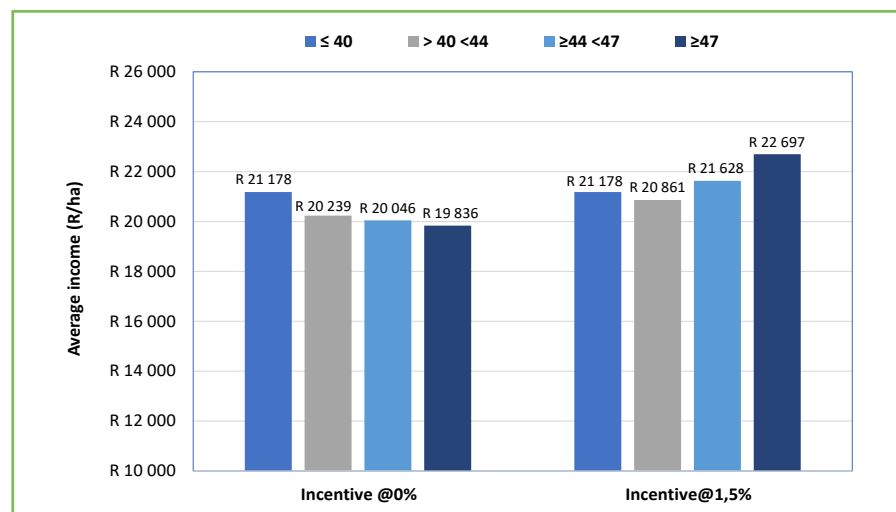


Figure 3: Average income (R/ha) for sunflower groups with different oil content per different premium.



December planting resulted in the highest oil content for groups one and two, while January planting yielded the highest oil content for group three, and November planting was most favourable for group four. Delaying the planting date until January reduced the oil content by 3% for sunflower group one with oil content ≤40%, but there was no significant effect on the other sunflower groups. Oil content is less affected by the planting date than seed yield, especially with high oil content sunflower hybrids.

Proposed incentive percentage

Premiums: When looking at oilseeds, the intrinsic value of the commodity lies in the processed product, primarily in the form of oil and secondarily in the form of oilcake. Internationally, premiums on oilseed with higher oil content is offered to producers in the following countries and regions: Argentina, Brazil, the United States (US), Canada, India, Ukraine, Russia, and the European Union.

In most countries the principles are as follows:

- **Benchmark and testing:** A standard regarding the oil content is set. A premium is offered for oil content above this standard with testing being done at the crushing plant or processing facility.
- **Sliding scale:** In most countries, a sliding scale is used to determine the premium offered. Lower oil content is offered for lower premiums and as oil content increases, the premium offered also increases.

This system encourages producers to grow cultivars with higher oil content. This benefits profitability for both producers and processors.

Figure 3 indicates the average income per hectare with oil premiums considered. In this scenario, the standard for oil content is set at 40%. Oil content below or equal to 40% has no incentive and therefore the income received at the different incentives remains constant at R21 178. This scenario looks at 1,5 incentive percentages on oil content. The assumption is made that the sunflower price was R8 000/ton.

Average income at the 1,5% incentive rate: In this scenario, sunflower with higher oil content ≥47% is the most profitable –

the average income received is R22 697/ha and the income benefit is R2 861/ha.

Sunflower with oil content ranging from ≥44 to <47% has an average income of R21 628/ha and the income benefit is R1 582/ha. The lowest income was R20 861/ha for sunflower with oil content ranging from >40 to <44% with R622/ha extra income.

Planting date

Average income at the 1,5% incentive rate:

Sunflower with oil content ranging from >40 to <44% can benefit from any planting date with income ranging from R630, R680 and R561/ha for November, December and January planting, respectively. Sunflower hybrids with oil content ranging from ≥44 to <47 benefited from an income of R1 543, R1 676 and R1 522/ha for November, December and January planting, respectively.

The sunflower group with oil content ≥47 benefited from an income of R2 933, R3 086 and R2 540/ha for November, December and January planting, respectively. December planting yielded the highest income for all sunflower studied groups. The sunflower group with oil content ≥47 yielded the highest profit (*Table 1*).

Sunflower performance

Table 2 presents the performance of 17 sunflower hybrids tested across ten different localities. The seed yield ranged

Table 1: Average income for different sunflower groups per different premium at different planting dates.

Sunflower group	Planting date	Incentive @0%	Incentive @1,5%	Benefit R/ha
≤40	1-30 Nov	R22 566	R22 566	R 0
	1-30 Dec	R23 132	R23 132	R 0
	1-30 Jan	R17 837	R17 837	R0
>40 <44	1-30 Nov	R20 709	R21 338	R630
	1-30 Dec	R21 032	R21 711	R680
	1-30 Jan	R18 976	R19 537	R561
≥44 <47	1-30 Nov	R20 096	R21 639	R1 543
	1-30 Dec	R21 368	R23 044	R1 676
	1-30 Jan	R18 674	R20 196	R1 522
≥47	1-30 Nov	R19 789	R22 721	R2 933
	1-30 Dec	R21 954	R25 040	R3 086
	1-30 Jan	R17 764	R20 304	R2 540
Sunflower price R8 000/t				

Table 2: Seed yield (t/ha⁻¹), oil content income at 0% and at 1,5% premium, and extra income achieved for different sunflower hybrids tested in the 2023/24 growing season.

Cultivar name	Mean seed yield (t/ha ⁻¹)	Mean oil content (%)	Income @R8 000/t (R/ha ⁻¹)	Income (R ha ⁻¹) @ 1,5% premiums	Benefit (R/ha ⁻¹)
AGSUN5103CLP	2,27	38,83	R18 192	R18 192	R0
AGSUN5106CLP	2,31	39,07	R18 504	R18 504	R0
AGSUN5110CLP	2,19	38,54	R17 520	R17 520	R0
AGSUN5111CLP	2,33	39,48	R18 608	R18 608	R0
AGSUN5270	2,28	43,09	R18 264	R19 110	R846
LG50745	2,24	43,05	R17 928	R18 749	R821
P65LL25	2,36	45,60	R18 856	R20 440	R1 584
P65LP54	2,36	39,39	R18 872	R18 872	R0
P65LP65	2,32	42,04	R18 560	R19 127	R567
PAN7080	2,29	40,17	R18 336	R18 383	R47
PAN7090	2,26	42,33	R18 040	R18 670	R630
PAN7100	2,29	42,48	R18 320	R19 000	R680
PAN7102CLP	2,45	39,81	R19 632	R19 632	R0
PAN7160CLP	2,44	41,61	R19 528	R19 998	R470
PAN7180CLP	2,37	40,38	R18 968	R19 075	R107
SNK270CL	2,32	48,59	R18 520	R20 908	R2 388
SY3970CL	2,19	50,34	R17 496	R20 209	R2 713
Mean	2,31	42,05	R18 479	R19 118	R638

from 2,19 to 2,45t/ha, while the oil content varied between 38,54 and 50,34%. With an incentive rate of 1,5%, the additional income ranged from zero for hybrids with an oil content of 40% or less to R2 713/ha for the top performing hybrids.

A total of 65% of the evaluated sunflower hybrids can benefit from the proposed 1,5% premium for each percentage point for oil content above 40%. The top five hybrids that stand to gain the most from this premium are SY 3970 CL (R2 713), SNK 270 CL (R2 388), P 65 LL 25 (R1 584), AGSUN 5270 (R846), and LG 50745 (R821) per hectare, respectively.

Conclusion

All sunflower groups with an oil content of more than 40% benefit from the 1,5% premium. December planting yielded the highest income benefit. It is recommended to introduce the premium for sunflower hybrids with oil content of more than 40% to promote sunflower production in South Africa. 🌻

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Groundnut industry trial evaluation: Advancing groundnut innovation

By Adri Botha, chairperson, SA Groundnut Forum

Members of the South African Groundnut Association (Saga), in collaboration with the Agricultural Research Council-Grain Crops (ARC-Grain Crops) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), convened in Setlagole in North West in October last year to view and discuss the progress and potential of the 2023/24 season groundnut cultivar trials.

A collaborative effort for growth

Due to the size and structure of the groundnut industry in South Africa, the involvement of large commercial seed companies, commonly seen in crops such as maize, sunflower and other major summer rainfall crops, is notably absent. Therefore, the responsibility of identifying and providing new technology, as well as maintaining and producing seed, rests squarely on the shoulders of the industry and cultivar owners.

By adhering to the South African National Seed Organisation's (Sansor) protocols, these stakeholders play a critical role in ensuring the integrity of existing cultivars while providing a transparent and inclusive platform for future cultivar evaluation, development, and registration. They oversee the production of high-quality seed and facilitate its distribution throughout the value chain, rather than relying on companies that trade in seed only. This collaborative approach sustains the groundnut industry and meets the needs of small- and large-scale producers. Therefore, the sustainability of this approach is one of the SA Groundnut Forum's most important goals.

The success of industry-driven and funded trials is underscored by these vital stakeholder partnerships and a positive sense of unity, which is critical to groundnut research and development



The 2023/24 trials in progress.

under local supply chain conditions. Breeding, selecting and registering a new groundnut cultivar is a 15-year process at best. Saga's ongoing collaboration with the ARC and ICRISAT has significantly boosted the potential of increasing the availability of improved cultivars and technical expertise in the short- to medium term. Since these partnerships assist in stabilising and strengthening the groundnut industry, it also gives new hope to groundnut and seed producers alike.

ICRISAT is instrumental in supplying the trials with locally compatible material from their extensive breeding programme. These high-potential cultivars, coupled with ICRISAT's technical input, enrich local efforts and provide invaluable insights into identifying the potential for improved and consistent yields, shorter growing periods, acceptable crop quality and kernel characteristics, all while meeting market preferences.

Although material from other origins is not excluded for future inclusion in the trials, experience has shown that runner types, mostly produced by other regions, generally do not fare well in South African conditions, and do not seem to offer sufficient potential at beating local cultivars on yield and quality. However, it



One of the groundnut cultivars trialled during 2023/24.

remains a continuing process of evaluation and consideration of new developments.

Spanish type groundnuts

Spanish and runner type groundnuts differ primarily in their growth characteristics, uses, and market preferences. Spanish types produce smaller, rounder kernels with a higher oil content, making them ideal for snack foods and confectionery.

They are prized for their rich flavour and uniform shape, which cater to niche markets, and their shorter growing seasons are better suited to semi-arid climates such as those in South Africa.

On the other hand, runner type kernels are larger and more elongated with a lower oil content, making them a popular choice for peanut butter production due to their consistent size and higher yields. Runner types dominate global groundnut production and are commonly planted in countries with large-scale, commercial farming systems.

Since Spanish type varieties so far outperform runner types in local conditions, it makes them a more reliable choice for producers who are increasingly faced with erratic climatic conditions.

Unlike the runner-type varieties commonly planted in other producing countries, Spanish type groundnuts enjoy a niche demand, making them a strategic choice for export markets and, as such, they provide the local industry with a potential competitive advantage due to their superior taste, appealing shape and tan colour.

By maintaining access to these cultivars as one of the key focus areas, the programme not only supports local production to decrease our need to import raw material, but also positions South Africa to revive its position as a leader in

supplying these premium products to international markets, while still filling the local edible and peanut butter markets.

DNA profiling

Ensuring the purity and quality of seed stock is critical to sustaining the industry's growth. To this end, the ARC has conducted DNA profiling of all existing commercially available cultivars, with the intent to extend this practice to future registrations. This initiative supports the cultivation of a pure and well-maintained seed programme, laying a strong foundation for consistent yields and quality.

DNA profiling also strengthens the credibility of South Africa's groundnut exports. Buyers can trust the traceability and authenticity of the product, further enhancing the country's reputation as a reliable supplier of premium groundnuts. This level of assurance is becoming increasingly important in international markets, where transparency and quality are non-negotiable.

The Saga Seed Producers Group, in addition to trial support, plays a critical role in the breeder seed maintenance and multiplication programme.

Advancing groundnut production

At the heart of the group's collaborative goals is the industry-driven trial programme, which plays a vital role in

advancing groundnut production and supply in South Africa. The trials are designed to address key challenges faced by producers while aligning with market demands. Shorter growing periods, pest and disease resistance, and drought tolerance with consistently higher yields are top priorities, as they directly impact profitability and viability for producers, while allowing the uptake side of the industry to maintain and increase investment into processing and manufacturing capabilities.

Equally important is the focus on meeting market specifications and preferences. By developing cultivars that align with the stringent requirements of local and international buyers, the programme ensures that South African groundnuts are positioned as a first choice for buyers.

One of the overarching goals of the collaboration and trial programme is to demonstrate to producers the significant potential and financial opportunities of groundnuts as a commodity choice, and therefore, by fostering confidence in the groundnut sphere, Saga and its partners aim to attract more producers to the sector, ensuring a steady and reliable supply of high-quality groundnuts.

The 2023/24 Elite trials

In cultivar breeding or selection, a PC line typically refers to a pure line cultivar or progeny cultivar line. This is a genetically uniform line that has been developed through self-pollination and selection over multiple generations. The goal is to stabilise desirable traits, such as high yield, disease resistance, or specific market qualities such as size, taste, or oil content, resulting in a line with consistent performance.

Elite 1

- Single plant selection focussed on disease resistance evaluation.
- Two sprayed and two non-sprayed trials in the Vaalharts and Setlagole areas.
- Included 14 ARC PC lines.

Elite 2

- Included best lines from 2022/23 Elite 1, focussed on disease resistance and yield evaluation.
- Planted over three locations, namely Bultfontein, Hartswater, and Setlagole.

Table 1: Top five results, based on income per hectare from the evaluation and new line trials.

2023/24 Saga/ICRISAT/ARC – Evaluation trial (top five per R/ha)							
Cultivar	Kernels kg/ha	Kernel content	Choice 1	Choice 2	80/100	Splits	Crush
Sellie Plus	3,869	74%	66%	14%	7%	1%	4%
Anel	3,924	71%	65%	13%	8%	1%	6%
ICGV-SM Ref 1	3,769	69%	60%	15%	9%	2%	6%
ICGV-SM Ref 2	3,605	72%	63%	13%	8%	1%	6%
ICGV-SM Ref 3	3,595	69%	64%	11%	4%	1%	9%
Average	3,752	71%	63%	13%	7%	1%	6%
2023/24 Saga/ICRISAT/ARC – New Line trial (top five R/ha)							
Cultivar	Kernels kg/ha	Kernel content	Choice 1	Choice 2	80/100	Splits	Crush
ICG-Ref A	4,371	81%	80%	11%	2%	1%	2%
ICGV-SM-Ref B	4,215	80%	82%	9%	2%	1%	2%
ICGX-SM-Ref C	4,190	79%	71%	12%	3%	1%	3%
ICGV-SM-Ref D	3,913	76%	90%	3%	1%	1%	2%
ICGX-SM-Ref E	3,344	78%	86%	7%	2%	1%	3%
Average	4,007	79%	82%	8%	2%	1%	2%

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Figure 1: Comparison between two top New Line cultivars versus Sellie Plus.

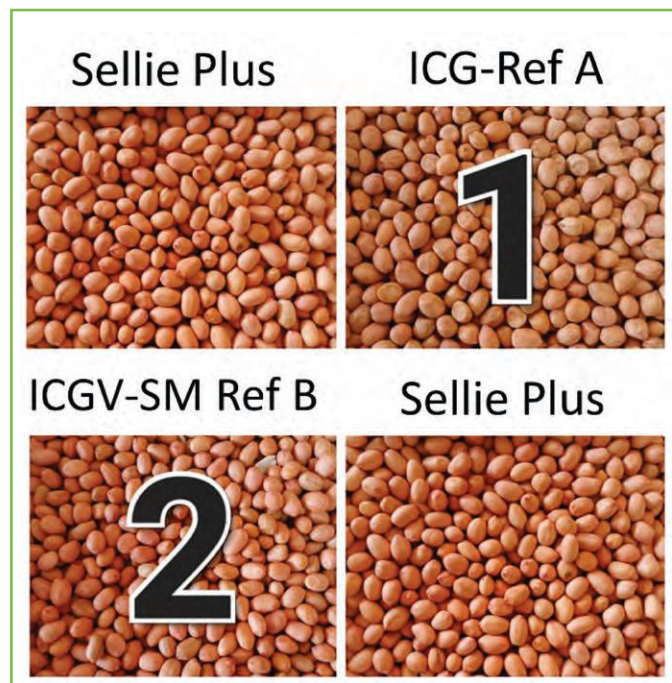
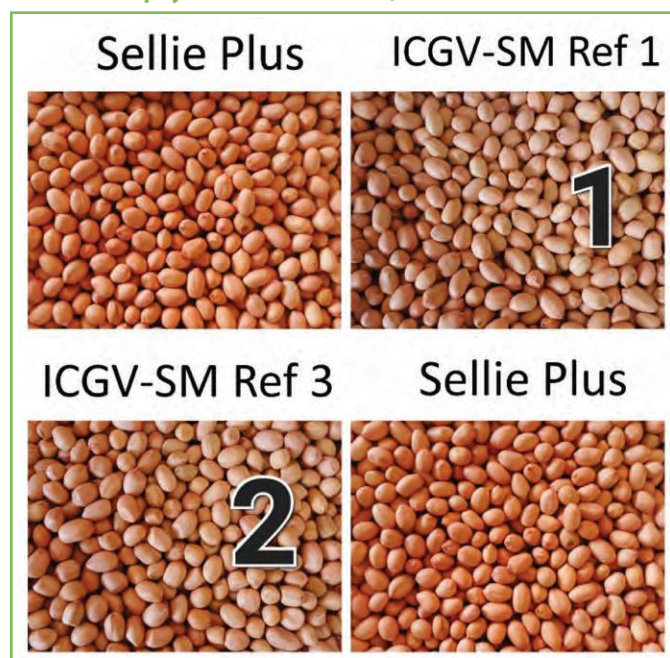


Figure 2: Comparison between two top cultivars from the evaluation trail versus Sellie Plus (ref 2 was eliminated due to undesirable physical characteristics).



- Included 11 ARC PC lines and three ICRISAT lines along with two control cultivars.

Elite 3

- Included best lines from 2022/23 Elite 2, focussed on disease and yield evaluation.
- Planted over three locations, namely Hoopstad, Hartswater, and Setlagole.
- Included 11 ARC PC lines and three ICRISAT lines along with two control cultivars.

National trials

The focus shifts here to broader performance testing and evaluation of the adaptability, yield consistency, and market acceptability across multiple environments to assess performance and commercial feasibility under real-world farming conditions and multiple seasons. The final goal is to register new cultivars for commercial planting and inform producers' choices from existing cultivar options.

In essence, PC line trials are about refining potential, while cultivar trials are about proving performance.

- These included 12 best ARC PC lines, and six ARC registered cultivars.
- Planted over seven locations, namely Bultfontein, Vaalwater, Dundee, Hoopstad, Bothaville, Groblersdal, and Jan Kempdorp.
- Three irrigation and four rainfed trials were planted.

Special focus trials

In addition to the elite and national trials under the ARC's banner and in collaboration with the local industry and ICRISAT, the Saga Seed Producers Group planted the following trials to inform decisions on future inclusion and development.

Evaluation of shorter growers

Seven ICRISAT lines (along with two ARC control cultivars) were planted in Setlagole, Vaalharts and Hartswater to evaluate the potential of these shorter growers under local conditions and inclusion in future national trials.

Evaluation trial

A total of 13 additional ICRISAT lines, along with seven ARC cultivars were

planted in Setlagole, Vaalharts, Hoopstad, and Bultfontein. The trials focussed on identifying high oleic and shorter grower options.

High oleic/new line trial

A total of 12 newly obtained ICRISAT lines with high oleic properties were planted in an initial trial to increase material and to inform inclusion in future trials.

A shared vision for the industry

The combined efforts of Saga, ARC, and ICRISAT were on display in Setlagole, allowing the collaborators to consider the results that would guide the next round of trials. Once these trials have run their course over three to four years, during which time new cultivars may have been registered and included in the seed multiplication programmes, regional cultivar days will be opened to commercial producers to obtain first-hand access to the results and findings, informing future planting decisions.

With continued research, innovation, and engagement, the future of South Africa's groundnut industry is set on a hopeful course to achieving even greater success in the years to come. 🌱

For more information, send an email to Adri Botha at groundnutforum@opot.co.za or visit www.opot.co.za.

Tracking the invisible suspect:

Airborne ascospore detection and monitoring of *Sclerotinia* stem rot of canola

By Mariana van Deventer, Lisa Rothmann, Lizette Nowers, André van der Merwe, and Diane Mostert

This article is the final instalment of the series on *Sclerotinia sclerotiorum* and the life of ascospores. It provides an overview of ascospore detection and tracking of *Sclerotinia* stem rot, focussing on canola, linked to ongoing research at Stellenbosch University's Department of Plant Pathology.

Early and accurate plant pathogen detection is the foundation of an effective disease management programme. Tracking the movement of plant pathogens, much like pursuing a suspect in a criminal investigation, is crucial to limit losses and ensure timely intervention. The process begins with detection, which refers to identifying causative pathogen/s from plant tissues or the surrounding environment.

Once the culprit is detected and infection is confirmed, the progression and spread of the plant disease can be monitored to determine when the appropriate management strategies may be implemented to minimise crop loss (Yang *et al.*, 2013).

The disease management arsenal

Detection and disease monitoring are invaluable weapons in a crop producer's disease management arsenal, especially in sporadic plant diseases such as *Sclerotinia* stem rot (SSR) (Derbyshire and Denton-Giles, 2016). The ascospore-releasing fungus *Sclerotinia sclerotiorum*, which causes SSR in canola, soya bean, and sunflower, and infects many other crops, is notoriously unpredictable. SSR occurrence and spread are heavily influenced by inoculum load and environmental factors such as temperature, rainfall, and relative humidity.

Well-timed fungicide applications are vital in controlling canola stem rot; however, producers face challenges in determining when and how often to apply the proper chemistry. Careful monitoring of initial pathogen presence and disease

initiation are steps to improve decision-making and management.

S. sclerotiorum infects its host by forcibly releasing a multitude of microscopic ascospores into the atmosphere that lodge onto senescent plant tissue. In the case of canola, the petals are most vulnerable to infection; thus, detection efforts have focussed on determining the presence of ascospores in the air and petals (Rogers *et al.*, 2009).

Detecting the suspect

Identifying pathogens using semi-selective growth media filters out distractions from other microbial culprits to pinpoint the pathogenic suspect, as the agar-based media promotes the growth of the target organism while inhibiting competitors, simplifying pathogen confirmation. An antibiotic, fungicide and pH-indicator amended medium can identify *S. sclerotiorum* after three days of incubation (Steadman *et al.* 1994). Initial detection of the pathogen is possible through the pH indicator component, as *S. sclerotiorum* grows, oxalic acid is produced, generating a low pH environment that causes the colour of the agar to change from purple-indigo to yellow (Figure 1).

However, it is best to verify the identity of the fungus by observing the formation

of sclerotia, the characteristic melanised survival structures. These may take weeks to appear, and without screening for sclerotia, there is a risk of identifying false positives since a handful of other fungal species also generate a colour change (Peres *et al.*, 2002).

Determining the degree of petal infestation is essential in tracking the pathogen's spread, as infected petals are the primary means of forming disease foci (concentrated patches of symptomatic plants) in a canola field (Figure 2). Petal infestation has been correlated with SSR incidence since the late 1980s and is also applied to predict disease outbreaks using an agar test (Turkington and Morrall, 1988; Almquist and Wallenhammar, 2015). However, canola grows rapidly during the flowering stage (three to five flowers opening per day). Therefore, it may be too late to propose a disease management strategy when results are obtained.

Sampling of spores

Airborne ascospores drifting in the atmosphere can cause petal infection for up to two weeks after the initial release. Determining the inoculum load in the air is thus key to assessing the risk of SSR disease initiation (Rogers *et al.*, 2009). Commercial spore samplers, such as the Burkard volumetric spore sampler,

Figure 1: Indigo-coloured semi-selective media developed by Steadman *et al.* (1994) displaying degrees of *Sclerotinia sclerotiorum* growth emerging from canola petals, where (A) displays no growth (no colour change), (B) displays some initial yellow halo formation indicative of *S. sclerotiorum*, and (C) displays significant mycelial growth. In (D), tough dark structures (sclerotia) can be observed near the edges of the petri dish, confirming the presence of *S. sclerotiorum*.

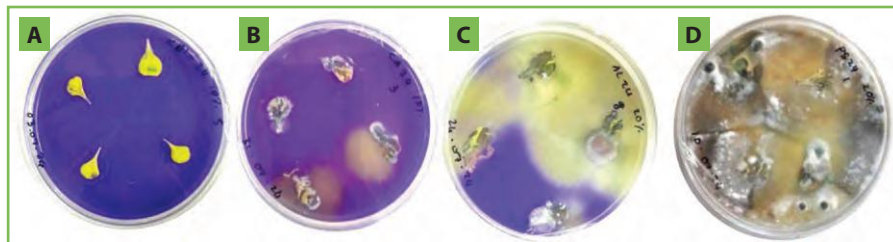


Figure 2: Typical disease progression of *Sclerotinia* stem rot (left to right) in canola; infection in the leaf material is initiated by ascospore-infested petals falling on the nodes between the petiole and the stem of a canola plant, allowing the fungus to infect the stem eventually.



use built-in vacuum pumps to filter ascospores from the air. However, the Burkard device is expensive and heavy-set, not ideal for mass ascospore monitoring across many fields, and would be at risk of being damaged by agricultural machinery.

Therefore, in collaboration with Dr André van der Merwe at the Department of Industrial Engineering (Stellenbosch University), simplistic spore trap prototypes were designed and tested in selected canola fields to optimise spore sampling (Figure 3). Designing these novel traps aims to provide more affordable options without neglecting accurate and reliable spore sampling diagnostics.

The mechanism of gravitational settling traps, such as the prototypes in

our research, typically involves a small spore-trapping surface upon which the spores are captured. An adhesive-coated microscope slide or small rod is often used for this purpose. Some spore samplers, like the rotorod traps, are structured to enable rotation of the spore-trapping surfaces, allowing for more effective capturing of ascospores drifting in the air currents. The two prototypes developed in our research are based on the rotorod principle: The spore-trapping surfaces of Prototype 1 rotate using a wind turbine, and Prototype 2 comprises a solar-powered battery that enables rotation through a micromotor.

To measure the airborne inoculum gathered on a particular spore sampler, the spore-trapping surfaces are removed

from the main frame of the sampler and replaced at consistent time intervals, and the collected samples are then analysed in a laboratory setting. In earlier years, microscopy was employed to screen for spores, similar to connecting fingerprints to a suspect; however, ascospores of *S. sclerotiorum* are inconspicuous under a microscope and can easily be mistaken for *Botrytis cinerea* spores (Rogers *et al.*, 2009). Therefore, DNA-based molecular detection techniques are required to verify the identity of the pathogen, much like finding blood or hair samples to confirm the identity of the alleged perpetrator.

Molecular techniques are fast, reliable and readily applied to detect plant pathogens such as *S. sclerotiorum*. Quantitative PCR (qPCR) is a molecular test that allows for further diagnosis by determining the amount of a specific pathogen's DNA in real-time (Rogers *et al.*, 2009; Almquist and Wallenhammar, 2015).

Results from qPCR analysis and weather conditions before the collection of ascospore samples can be used to pinpoint favourable events for disease development. In turn, those datasets have the potential to be incorporated into an early warning system or disease risk assessment tool (Rogers *et al.*, 2009). By integrating this information, producers can anticipate periods of high disease pressure and respond proactively. The spread of infection and disease progression can be tracked continuously over a growing season to establish the optimal window for fungicide application and effective control.

A final thought

Our research group has recently optimised petal infestation tests and spore sampling, adding qPCR confirmation to detect and quantify the invisible *S. sclerotiorum* ascospores, and we are in the process of building a database for disease risk assessment using results from the tests mentioned here combined with micro- and macroclimate data. With more light shed on disease progression, local producers can respond in a timely and economically feasible manner to effectively counter this elusive pathogen. 🌱

For more information, send an email to Dr Lisa Rothmann at lisa.ann.rothmann@gmail.com.

Figure 3: Two novel simplistic spore trap prototypes developed in collaboration with Dr André van der Merwe are displayed. In (A), both prototypes are present: Prototype 1 on the left and Prototype 2 on the right. The wind turbine atop Prototype 1 can be seen on the left and the solar panel powering the rotorods is visible on the right. In (B), the main structure of Prototype 1 is illustrated: A wind turbine attached to an aluminium pole that rotates as the wind blows, and an adhesive-coated acrylic rod that acts as the spore-trapping surface which ascospores, drifting in the air, stick onto.



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Effective management of mealie crotalaria

By Maryke Craven, technical lead, Syngenta (Photographs: F Roos)



Meele crotalaria, also known as wild lucerne (*Crotalaria sphaerocarpa*), mostly grows in the sandy soil regions of South Africa.

Not only does its bushy growth complicate harvesting; its poisonous seeds can result in grain being rejected at silos.

Apart from the fact that most *Crotalaria* species are naturally resistant to nematodes, we have little information regarding mealie crotalaria that can be of value in a management strategy. Therefore, when it comes to the control of mealie crotalaria, we revert to the basic principles of an integrated weed-control programme that includes agronomical, mechanical, and chemical approaches.

Alternating herbicides with different modes of action, crop rotation and increased crop competition (narrower rows) or the introduction of more competitive crops (via crop rotation, cultivar choice or cover crops) underpin such programmes.

Given the increased incidence of herbicide-resistant weeds, it is more important than ever to ensure that weed control does not solely rely on chemicals. By simultaneously implementing a variety of tactics, it is possible to reduce weed pressure that requires chemical control and, in doing so, the risk of resistance developing.

Identifying mealie crotalaria

Accurate identification is always the first step in controlling any type of weed, especially as not all herbicides are equally effective in controlling all types of weeds. Mealie crotalaria is a multi-branched, upright annual plant (*photograph 1*) with characteristic hand-shaped compound leaves arranged alternately. Each leaf consists of three leaflets with rounded points (*photograph 2*), while small yellow flowers grow on unbranched stems that can be up to 25cm in length.

The weed grows from large, kidney-shaped seeds that germinate



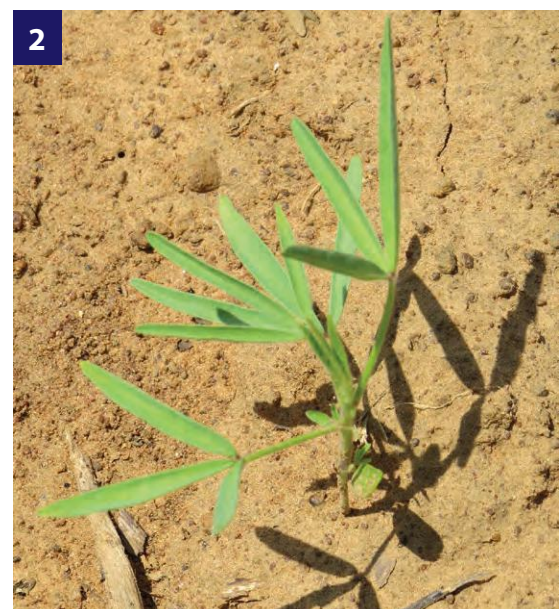
Mealie crotalaria mostly grows in South Africa's sandy soils.

in deep or shallow soil throughout the season. The use of residual herbicides is therefore instrumental in controlling mealie crotalaria. The leaves of the weed are covered in microscopic waxy scales, which necessitate the application of a wetter with the chosen post-emergence herbicide for effective control.

Mealie crotalaria control

Internationally, the importance of early season weed control has been shown repeatedly. Row spacing and cultivar choice as part of an integrated weed-control strategy, combined with pre-emergence herbicides and/or the use of cover crops (rye), have, for example, been used successfully to control weeds such as goosefoot (*Chenopodium album*) in soya bean. Properties that contribute to a specific cultivar's ability to compete with weeds include leaf area, plant height, rate of leaf surface increase, and the canopy.

In the 1980s, the University of Pretoria found that atrazine combined with a wetter provides excellent mealie crotalaria control. Consequently, maize growers today have a choice of several one-can solutions containing atrazine. CAMIX® Plus (Syngenta) contains atrazine,



The characteristic hand-shaped compound leaf of mealie crotalaria consists of three leaflets. Leaves are covered in microscopic waxy scales that complicate chemical control.

mesotrione and S-metolachlor and, as a pre-emergence herbicide (at 3,725ℓ/ha⁻¹), effectively controls mealie crotalaria. As three modes of action are placed in one application, the development of resistant weeds is prevented.



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Similar options are available such as GARDOMIL® Gold (pre- and early post-emergence), LUMAX® (pre- and post-emergence) and SORGOMIL® Gold (pre- and post-emergence). The residual action that helps to control late-germinating mealie crotalaria must be kept in mind where triazine-sensitive follow-on crops such as soya bean and sunflower are concerned. By adhering to label recommendations, long-lasting weed control can be obtained while follow-on crops such as soya bean are cultivated safely.

Since the identification of atrazine, few other actives have been found that can control mealie crotalaria effectively in different crops. Actives registered for the control of mealie crotalaria in soya bean are therefore limited. Pre-emergence herbicides containing flumioxazin are available; and others containing diclosulam or dimethenamid provide inconsistent control. In terms of post-emergence herbicides, glyphosate is the only registered option for glyphosate-tolerant soya bean (Roundup Ready).

It is important to adjust the dosage according to the size of the weed in post-emergence applications. Ideally, weeds should be controlled when they are still small as bigger weeds require a higher dosage.

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Glyphosate should be applied with considerable care to safeguard its versatile control benefits for future generations. Apart from the actives registered on maize, CAPTORA™ (imazapyr/imazamox) suppresses mealie crotalaria by between 60 and 90% in Clearfield® sunflower. No other post-emergence herbicides are registered for its control in sunflower.

While mealie crotalaria can be readily controlled in maize plantings, lack of effective herbicides in other crops means that it must be carefully managed with

regard to soya bean and sunflower. This requires thorough planning, can take several years, and must include crop rotation.

Benefits of crop rotation

Soya bean-maize rotations have numerous advantages such as enabling growers to diversify their production systems. Since they have different growth habits, nutrient needs as well as pest and disease pressures, maize and soya bean are suitable crop-rotation partners. Due to its high nutrient needs, maize can absorb a lot of nutrients from the soil, while soya bean can extract nitrogen (N) from the air and store it in nodules on the roots, thus contributing to the N economy of fields. Furthermore, because of its root exudates, literature states that soya bean rotations can improve a cereal crop's access to phosphorus in the soil under phosphorus-deficient conditions.

Local research published in 2023 demonstrated that maize in rotational systems with soya bean and cover crops

performed 14% better than maize in monoculture systems. In addition, soya bean production and profitability increased up to 40% over time when incorporated with maize. In another study, an average increase in cereal yields of 0,49t/ha⁻¹ was recorded when soya bean and maize were rotated compared to maize monoculture practices.

Crop rotation has always been viewed as an important strategy to control or manage disease pressure as it disrupts disease cycles and prevents pest populations from building up over time. For example, soya bean is not susceptible to common maize diseases such as *Diplodia* head and stalk rot, while maize does not get *Sclerotinia* stalk rot. As soya bean is a non-host of *Striga* (*Striga asiatica* or *S. hermonthica*), planting them in fields with high *Striga* pressure drastically reduce the weed's seedbank.

As stated, crop rotation supports weed control strategies through the use of herbicides with different modes of action, as well as tillage timing.

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CAMIX® Plus contains mesotrione (callistemonone) 26,8g/ℓ, S-metolachlor 208,5g/ℓ, and atrazine 208,5g/ℓ (Reg no L8327, Act 36 of 1947). Warning: GHS-hazard statements: May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life with long-lasting effects.

GARDOMIL® Gold contains atrazine (and related active triazines) 248,6g/ℓ, terbuthylazine (and related active triazines) 248,6g/ℓ, and S-metolachlor (α-chloroacetamide) 102,8g/ℓ (Reg no L6246, Act 36 of 1947). Warning: GHS-hazard statements: May cause an allergic skin reaction. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life with long-lasting effects.

LUMAX® contains mesotrione (callistemonone) 37,5g/ℓ, S-metolachlor 37g/ℓ, and terbuthylazine 125g/ℓ (Reg no L7483, Act 36 of 1947). Warning: GHS-hazard statements: Harmful if swallowed. Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure. Very toxic to aquatic life with long-lasting effects.

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The importation of canola seed: Challenges and implications for South Africa

By Gerdus Steyn, SSK

South Africa's agricultural sector is becoming increasingly dependent on the importation of canola seed to meet growing demand and production needs. This process requires meticulous planning and co-ordination to ensure the timely availability of seed for local producers. However, the process is influenced by several challenges, including external factors such as climate conditions, regulatory restrictions, logistical barriers, and the careful management of optimal planting windows.

Planning and timing

Suppliers are notified annually as early as February of the preceding year regarding

South Africa's canola seed requirements. This early communication is crucial to align with international production schedules. Local producers base their planting plans on the confirmed availability of seed from suppliers.

One of the greatest challenges is ensuring the seed arrives in South Africa on time, as canola has a narrow optimal planting window. In many cases, seed is delivered only after this window has closed, complicating producers' plans and negatively impacting production if planting occurs late. While climate conditions may shift this window by a few days, the timeliness of seed delivery remains critical for successful yields.

Climate conditions in seed-producing countries can also affect international production, further limiting seed availability. Adjusted yield forecasts are typically made available from June, which is already after the initial phase of South African producers' planning cycles. This unpredictability hampers long-term planning and increases risks for local producers.

GM canola regulatory restrictions

South Africa's strict regulations on genetically modified (GM) canola pose an additional challenge. The presence of GM material in seed can only be determined after processing and treatment, often as late as December or January. If GM material is confirmed, the seed is withdrawn, making it impossible to secure alternative seed in time.

This late withdrawal forces producers to replace their first-choice cultivars with second-choice alternatives, often leading to reduced yields and economic losses for producers who rely on specific cultivars suited to their local conditions.

Logistical challenges

Even when seed is available, transporting it from overseas remains a challenge.

Traditional sea freight is often slower and cannot always meet the necessary speed to accommodate the limited planting window. Air freight is sometimes used as a faster alternative, but it is significantly more expensive. The higher cost of air freight negatively affects the overall input costs for seed, ultimately impacting producers' profitability.

The use of air freight must therefore be strategically managed to ensure it is employed only when necessary, as the financial implications of this method significantly affect producers' margins.

Conclusion

The importation of canola seed plays a critical role in South Africa's agricultural industry, but it is not without its challenges. Ongoing communication with international suppliers, collaboration among stakeholders, and the management of risks related to GM regulations are essential to ensure the sector's sustainability. Strategic solutions to overcome logistical obstacles and mitigate the impact of external factors, such as climate conditions, should also be prioritised.

The risk of late seed withdrawal due to GM presence requires special attention. This necessitates solutions that enable earlier testing, allowing producers to be informed on time and plan alternatives. Ensuring the timely delivery of seed, particularly within the narrow planting window, must also remain predictable. Air freight offers a potential solution for expedited delivery, but its financial impact must be carefully weighed. With an integrated approach, the challenges surrounding seed importation can be addressed, ensuring sustainable growth for the sector. 🌱

For more information, send an email to Gerdus Steyn at gerdus.steyn@ssk.co.za or visit www.ssk.co.za.



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The Sensako sunflower pipeline now offers farmers high-performing, high-oil hybrids with several benefits.



Sensako sunflower: From zero to hero

Syngenta Seed's journey in the South African sunflower market is a testament to innovation, perseverance, and strategic growth.

One of the many advantages of the Sensako brand becoming part of the multinational Syngenta company, is access to global germplasm. Internationally, Syngenta is regarded as the leader in sunflower genetics and now, following the amalgamation of Syngenta and Sensako, farmers have direct access to top sunflower genetics.

One such example is access to Argentinian sunflower material that is suited to South African conditions, with the added advantage of high oil content in hybrids, as well as herbicide tolerance.

The company faced an uphill battle in a very competitive landscape with only one hybrid, SY 3970 CL. Since 2020, however, the goal was to invest in research and development and all decisions regarding the advancement and placement of products were based on multi-season data.

Diverse hybrid offerings

The introduction of SNK 270 CL marked a turning point within the Syngenta sunflower package, and with the introduction of two additional new Sensako hybrids, SNK 242 CL and SNK 441 CL,

Syngenta focusses on the following attributes in their Sensako sunflower breeding programme:

- Oil percentage: The idea is to select early in the programme for high oil percentage.
- Agronomic type: Hybrids are evaluated across various environments and planting dates according to plant height, size of the head, standability, angle of the sunflower's head, as well as days to flowering and maturity.
- Disease tolerance.
- Herbicide resistance.
- Grain yield.
- Seed production.

the Sensako brand is strengthening the diversity of the hybrid offering.

"Our pipeline is now offering farmers high-performing, high-oil hybrids with the added benefit of flexibility," says Charles Basson, sunflower breeder and product placement lead.

SNK 441 CL (70 to 72 days to 50% flowering) and SY 3970 CL (66 to 70 days to 50% flowering) offer farmers early planting date options with SNK 270 CL (64 to 68 days to 50% flowering) and SNK 242 CL (62 to 64 days to 50% flowering) offering farmers more flexibility with early to late planting date options.

Multiple, superlative benefits

This pipeline of high-quality seed not only ensures better and more productive crops, but also plays an important role in mitigating risks associated with grain production, such as disease, pests and climatic diversity, thus enabling farmers to grow food using less land, less water, and fewer inputs.

Sunflower's ability to adapt to different climate and seasonal conditions is ascribed to its tolerance for high and low temperatures alike. The crop's capacity to deal with drought conditions also proved to be a great advantage during the onset of the 2024/25 season.

"We strongly recommend planting a hybrid package to strategically manage disease and drought stress. With our new sunflower package, we recommend that farmers stagger their planting dates to enhance risk management," says Basson.

Strong farmer relationships and building trust through consistent performance and on-the-ground support, remains one of Syngenta Seed's key priorities alongside continued innovation where ongoing development of new high-yielding, high-oil Sensako hybrids remain the key focus.

Visit www.syngenta.co.za or www.sensako.co.za for more information.

Herbicide-resistant weeds threaten profitable soya bean production

By Prof Charlie Reinhardt

Herbicide-resistant weeds challenge producers and agrochemical companies with a vexing issue that some refer to as a 'wicked problem'. The 'wicked' connotation touches on an issue to which there is not a clear or easy solution.

Certainly, everyone struggling with herbicide-resistant weeds will agree that the wicked label is appropriate. Weed resistance to herbicides is a newer phenomenon than insect resistance to insecticides, and human resistance to antibiotics. Herbicide-resistant weeds came to the fore relatively late, starting in the 1970s and then rapidly increasing during the 1980s and 1990s. To date, there is no solution to this problem.

The process by which all these resistances evolve is fundamentally the same, i.e., repeated use of a particular remedy can eventually lead to resistance. Over time (three to five years), chemical (herbicide) selection of biotypes (individuals) occurs in populations with natural (genetic) resistance to the remedy. Persisting with the practice that promoted resistance in the first place can only worsen the situation.

Herbicide mechanism of action

In weed management, the factors contributing most to the development of herbicide-resistant weeds are dependence on a single herbicide mechanism of action, and both under-dosing and over-dosing with that sole herbicide or herbicide group (Tables 1 and 2).

Glyphosate, the near-perfect or 'once in 100 years' herbicide, unfortunately ran into the wicked weed problem through sole and over-use, which became synonymous with the practice of zero-tillage and the technology of glyphosate-tolerant crops. However, based on how many weed species have evolved resistance, glyphosate, with 60 resistant

weed species cases reported globally by 2023, is not the leader. The herbicides (HRAC group 2) that inhibit the ALS enzyme in weeds is the front-runner with 176 weed species (weeds-science.org).

The global story of herbicide-resistant weeds can be found on weeds-science.org, the *International Herbicide-Resistant Weed Database*. This source hosts 534 unique cases (species x herbicide) that involve 273 weed species (156 dicots or broadleaf weeds, and 117 monocots comprising mainly grasses and sedges).

Records show that weeds have evolved resistance to 21 of the 31 known herbicide mechanisms of action and to 168 different herbicides. The scenario becomes more ominous when considering that of the 31 mechanisms of action only around 26 are economically important. Moreover, a vexing reality is that hardly any unique herbicide modes of action have entered the market in the past 30 to 40 years. This demands that we do our best with 'old' chemistry (herbicides). Of course, herbicides are not the only weed management tools.

Disastrous herbicide resistance

There are other methods such as mechanical control (e.g., tillage), cultural control (cropping practices), and biological control (employing natural enemies of weeds). The best chance of effectively dealing with herbicide-resistant

weeds, and weeds in general, is to combine or integrate weed control methods as far as it is practical and economical.

Soya bean in South Africa is relatively well-endowed with herbicide diversity with 26 different herbicides registered (Tables 1 and 2). Maize has 34, groundnuts 21, and cotton a scant ten. The smaller the herbicide diversity (choice) in a crop, the greater the risk for herbicide resistance evolving due to over-dependence on too few modes of action.

An example of the implications of herbicide resistance is bankruptcy among cotton farmers in the United States due to the intense battle with *Amaranthus palmeri* (Palmer amaranth), first recorded as an alien invader species in South Africa in 2018 by the SAHRI team. The SAHRI research group (up.ac.za/sahri) has since confirmed resistance in Palmer amaranth to glyphosate and chlorimuron-ethyl in soya bean/maize cropping systems, as well as the same resistance profile in *Amaranthus hybridus* (common/Cape pigweed) populations in the Bergville and Winterton areas of KwaZulu-Natal.

Research continues and solutions for the steadily increasing herbicide-resistance problems are being investigated.

Ways to control wicked weeds

Soya bean, due to its ability to rapidly form a dense canopy, can control weeds by withholding light from those that

Table 1: Number of herbicides registered for use in soya bean.

Herbicide mechanism of action (site of action)	Number of herbicides registered	Weed spectrum controlled		
		Grass (mainly)	Broadleaf (mainly)	Grass + broadleaf
Long-chain fatty acid synthesis	7	7	–	–
Photosystem II function	2	–	–	–
Carotenoid synthesis	1 (clomazone)	–	–	1
ACCase enzyme	6	6	–	–
*ALS enzyme	4	–	4	–
Cell division	2	2	–	–
*PPO enzyme	3	–	3	–
*EPSPS enzyme	1 (glyphosate)	–	–	1

*ACCase = acetyl coenzyme A carboxylase; ALS = acetolactate synthase; PPO = protoporphyrinogen oxidase; EPSPS = enolpyruvylshikimate-3-phosphate synthase.

Table 2: Registered herbicides in South African soya bean and their international weed-resistance profile (Source: *The International Herbicide-Resistant Weed Database*, 10 January 2025, weedsience.org)

Herbicides registered in South African soya bean	Mechanism of action (HRAC classification)	Weed-resistance profile (Note: named weeds also occur in South Africa)
Acetochlor, alachlor, dimethenamid-P, flufenacet, metazachlor, metolachlor, S-metolachlor	Inhibition of long-chain fatty acid synthesis (HRAC group 15)	Very few cases in general; in soya bean, resistance to only S-metolachlor for <i>Amaranthus palmeri</i>
Bendioxide (=bentazon), metribuzin	Inhibition of Photosystem II electron transport (HRAC group 6 and 5, respectively)	Multiple cases, e.g. <i>Amaranthus hybridus</i> , <i>Chenopodium album</i> , <i>Eleusine indica</i>
Clomazone	Inhibition of carotenoid pigment synthesis (HRAC group 13)	<i>Echinochloa crus-galli</i>
Cycloxdim, fluazifop-P-butyl, haloxyfop-R-methyl, propaquizafop, quizalofop-P-ethyl, quizalofop-P-tefuryl	Inhibition of the acetyl coenzyme A carboxylase (ACC) enzyme (HRAC group 1)	Multiple cases, e.g. <i>Lolium</i> species, <i>Digitaria sanguinalis</i> , <i>Digitaria ciliaris</i> , <i>Sorghum halepense</i> , <i>Eleusine indica</i>
Chlorimuron-ethyl, diclosulam, flumetsulam, imazethapyr	Inhibition of the acetolactate synthase (ALS) enzyme (HRAC group 2)	Several, e.g. <i>*Amaranthus hybridus</i> , <i>*Amaranthus palmeri</i> , <i>Bidens pilosa</i> , <i>Chenopodium album</i> , <i>Xanthium strumarium</i>
Pendimethalin, trifluralin	Inhibition of cell division (HRAC group 3)	Several cases, e.g. <i>Eleusine indica</i> , <i>Echinochloa crus-galli</i> , <i>Poa annua</i> , <i>Sorghum halepense</i>
Flumioxazin, fomesafen, saflufenacil	Inhibition of protoporphyrinogen oxidase (PPO) enzyme (HRAC group 14)	Several cases, e.g. <i>Amaranthus hybridus</i> , <i>Ambrosia artemisiifolia</i> , <i>Euphorbia heterophylla</i>
Glyphosate	Inhibition of the enolpyruvylshikimate-3-phosphate synthase enzyme (HRAC group 9)	Multiple cases, e.g. <i>*Amaranthus hybridus</i> , <i>*Amaranthus palmeri</i> , <i>*Conyza bonariensis</i> , <i>Digitaria sanguinalis</i> , <i>Eleusine indica</i> , <i>Echinochloa colona</i> , <i>Sorghum halepense</i> , <i>Urochloa panicoides</i>

*Resistance was also reported in South Africa based on research in the South African Herbicide Resistance Initiative (SAHRI), University of Pretoria.

flourish under high light conditions, such as grasses and sedges. For example, yellow and purple nutsedge (*Cyperus esculentus*, *C. rotundus*) can be controlled effectively in this way. Providing irrigation is available and shifting planting dates to times (temperatures) that do not favour weeds and do not hamper the crop is also effective.

Pre-plant and pre-emergence applied herbicides are important tools that allow the crop to gain a biomass (cover) advantage over weeds early in the growing season. Avoid over-dependence (=over-use) of a single herbicide mode of action, such as glyphosate in glyphosate tolerant crops (maize/soya bean/cotton). This is especially true for zero or reduced tillage systems where the benefit of mechanical weed control is absent or reduced.

It is of utmost importance to be aware of both over- (exceeding label rates) and under-dosing, for example using reduced rates of individual herbicides when part of spray mixtures; spraying weeds that are beyond the ideal age/size for effective control; and spraying under conditions that limit or prevent herbicide uptake by weeds. Be aware that spraying weeds that are too advanced in either age or size effectively is 'unintentional under-dosing' due to the dilution factor in such plants – reminder: both under- and over-dosing promote herbicide resistance in weeds.

When poor weed control tempts you to exceed label (=registered/legal) rates you must consider the real possibility that there is a resistance problem – make it known and have it investigated according to the prescribed scientific protocol. 🌱

Dr Charlie Reinhardt is a research leader in the South African Herbicide Resistance Initiative (SAHRI) at the University of Pretoria, and a member of the agricultural programme development panel at Akademia NPC. He can be contacted at 083 442 3427 or dr.charlie.reinhardt@gmail.com.

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Corteva crop protection: Putting canola producers first

By Henry Hoek, category marketing manager: herbicides, Corteva Agriscience

At Corteva Crop Protection South Africa, producers are at the heart of everything we do. We understand that farming is not merely a profession – it's a way of life, a legacy, and the backbone of our nation's food security. As a trusted partner, we are committed to empowering producers by delivering innovative solutions, expert support, and tools tailored to tackle the unique challenges they face daily.

The South African agricultural sector is as diverse as its people, spanning vast geographies, crops, and farming practices. At Corteva, we recognise that no two farms are alike. We begin by listening to producers, understanding their challenges, priorities, and aspirations. Whether it is managing pests, combating weeds, or adapting to unpredictable weather patterns, we strive to provide solutions that are practical, effective, and sustainable.

Our team of technical sales representatives work hand in hand with crop advisors and agents to assess specific problems and recommend tailored interventions. This direct engagement ensures that our solutions are not only scientifically robust, but also relevant to the realities on the ground and crops that are specific to certain areas.

One such crop is canola, which plays a key role in the country's agricultural sector and economy. Primarily grown

in the Western Cape, canola is valued for its high-quality oil, which is widely used in cooking, food production, and biodiesel manufacturing. Canola also benefits producers through crop rotation, improving soil health, and boosting yields of other staple crops such as wheat.

As the demand for healthier vegetable oils and sustainable farming practices increases, canola continues to grow in significance, contributing to both local food security and economic development in South Africa.

Protecting canola

When it comes to protecting this valuable crop from invasive weeds and grasses, we put our producers first by offering a sustainable and environmentally responsible crop protection solution in the form of Kerb™ FLO 400 SC (Reg no L4065). A suspension concentrate herbicide used for annual winter grasses in canola, as well as other crops as indicated on the label in the winter rainfall areas.

Kerb™ FLO 400 SC includes good residual control of grasses that have not germinated during application, although caution should be taken when it comes to deep germinators such as Avena and Brome.

Annual grasses controlled by Kerb™ FLO 400 SC include bluegrass (*Poa annua*), canary seedgrass (*Phalaris canariensis*), common wild oats (*Avena fatua*)**, mouse barley (*Hordeum murinum*),

ratstail fescue (*Vulpia myuros*), ripgut brome (*Bromus diandrus*), rescue grass (*Bromus catharticus*)**, ryegrass (*Lolium spp.*), and volunteer wheat (*Triticum aestivum*).

Our crop protection solutions

We believe that knowledge is critical in achieving success. That is why Corteva invests in producer education and training programmes across South Africa. From workshops on sustainable farming practices to one-on-one consultations, we equip producers with the skills and insights they need to make informed decisions.

With our innovative Corteva FarmFundi App we put our producers first by offering information and solutions at the touch of a button. We strive to provide guidance, insights, and research as well as crop protection product information and solutions, helping you to identify, prevent and control problems efficiently and effectively. The app also keeps you up to date and informed of our latest events, news, and product launches.

Improve your knowledge and stay informed with our product fact sheets on herbicides, fungicides, and insecticides; informative articles on diseases, pests, and weeds; our latest product launches and event news; and our easy-to-use spray calendars.

At Corteva Crop Protection South Africa, our mission is clear: to put producers first by solving their problems and supporting their success. Together, we are building a resilient, thriving agricultural sector – one that feeds the nation and secures a sustainable future. With Corteva by their side, South African producers can face tomorrow's challenges with confidence and optimism.

For more information, visit www.corteva.co.za or download the Corteva FarmFundi App on the App Store or Google Play.



Concentration and removal of macronutrients by soya bean seeds over 45 years in Brazil: A meta-analysis

By Dionata Filippi, Luiz Gustavo de Oliveira Denardin, Vitor Gabriel Ambrosini, Lucas Aquino Alves, João Pedro Moro Flores, Amanda Posselt Martins, Osmar Henrique de Castro Pias and Tales Tiecher

Brazil is the largest soya bean producing country worldwide, accounting for 37% (120 million megagrams) of the global soya bean production in the 2019/20 cropping season (USDA, 2020). In the last 15 years, soya bean seed yield in Brazil increased by 20% (Conab, 2017), reaching an average of 3,3Mg ha⁻¹ in the 2019/20 cropping season.

This yield increase is a result of changes in environmental conditions, improvements in genetics and management practices, as well as the interactions among these factors (Rowntree *et al.*, 2013; Balboa *et al.*, 2018), which may affect the nutrient concentration in soya bean seeds over the years (Juhász *et al.*, 2017; Tamagno *et al.*, 2017; Balboa *et al.*, 2018).

Soya bean requires extracting approximately 170kg of macronutrients to produce 1Mg of seeds, but the removal by the grains is approximately half of that (Lantmann and Castro, 2004; Bender *et al.*, 2015). These nutrients are taken up essentially from the soil (except nitrogen [N] that can also be derived from the air), thus requiring a replenishment to prevent soil nutrient depletion and ensure high soya bean yields in the following harvests.

In production systems where soil fertility is above the critical limit and losses by erosion and/or leaching are minimal, fertiliser management could be based only on the amount of nutrients exported by seeds (CQFS-RS/SC, 2016; Pauletti and Motta, 2019). Therefore, reliable reference values for nutrient concentration in soya bean seeds are essential to increase the accuracy of fertilisation recommendation systems.

Reference values of nutrient concentration in soya bean seeds used by the official recommendation systems in Brazil present a wide variability. For example,

the Cerrado fertilisation recommendation system (Sousa and Lobato, 2004) indicates an average P removal of 4,4kg Mg⁻¹, while the official recommendation for the states of Rio Grande do Sul (RS) and Santa Catarina (SC) (CQFS-RS/SC, 2016) indicates an average value of 6,1kg Mg⁻¹.

The same disagreement can be observed for K; the official recommendation for this nutrient in the Paraná State (PR) (Pauletti and Motta, 2019) indicates an average of 14,2kg Mg⁻¹, while the official recommendation for the São Paulo State (Raij *et al.*, 1997) indicates an average of 19kg Mg⁻¹. Moreover, although some of these official recommendations are periodically updated, other reference values remain the same for decades (P = 6,1kg Mg⁻¹ and K = 16,7kg Mg⁻¹ [CQFS-RS/SC, 2004; CQFS-RS/SC, 2016]), which might cause confusion on the amount of nutrients that must be provided to soya beans.

Meta-analysis: An alternative

Thus, understanding the variability of macronutrients in seeds is critical to improve the management of soya bean fertilisation. Moreover, the recommendation systems usually do not indicate when and/or how the data was obtained, and some of them do not have any reference values for nutrient removal by soya bean seeds, such as those from the states of Minas Gerais (Ribeiro *et al.*, 1999) and Pará (Brasil *et al.*, 2020).

Studies comparing the concentration of nutrients in seeds and the reference values might be helpful to update the fertilisation recommendation systems. In this regard, Duarte *et al.* (2019) analysed 175 maize (*Zea mays* L.) seed samples in some states of Brazil, and Villamil *et al.* (2019) evaluated P and K removal by soya bean, maize, and wheat (*Triticum aestivum* L.) seeds in the United States. However, this type of research in a

continental-sized country such as Brazil might be unfeasible since it requires a large number of samples in a varied environment of different regions, raising the costs and requiring complex logistics.

Another way to obtain a more representative and reliable database of nutrient concentration in soya bean seeds is to compile and analyse data available in the literature through a meta-analysis (Rotundo and Westgate, 2009).

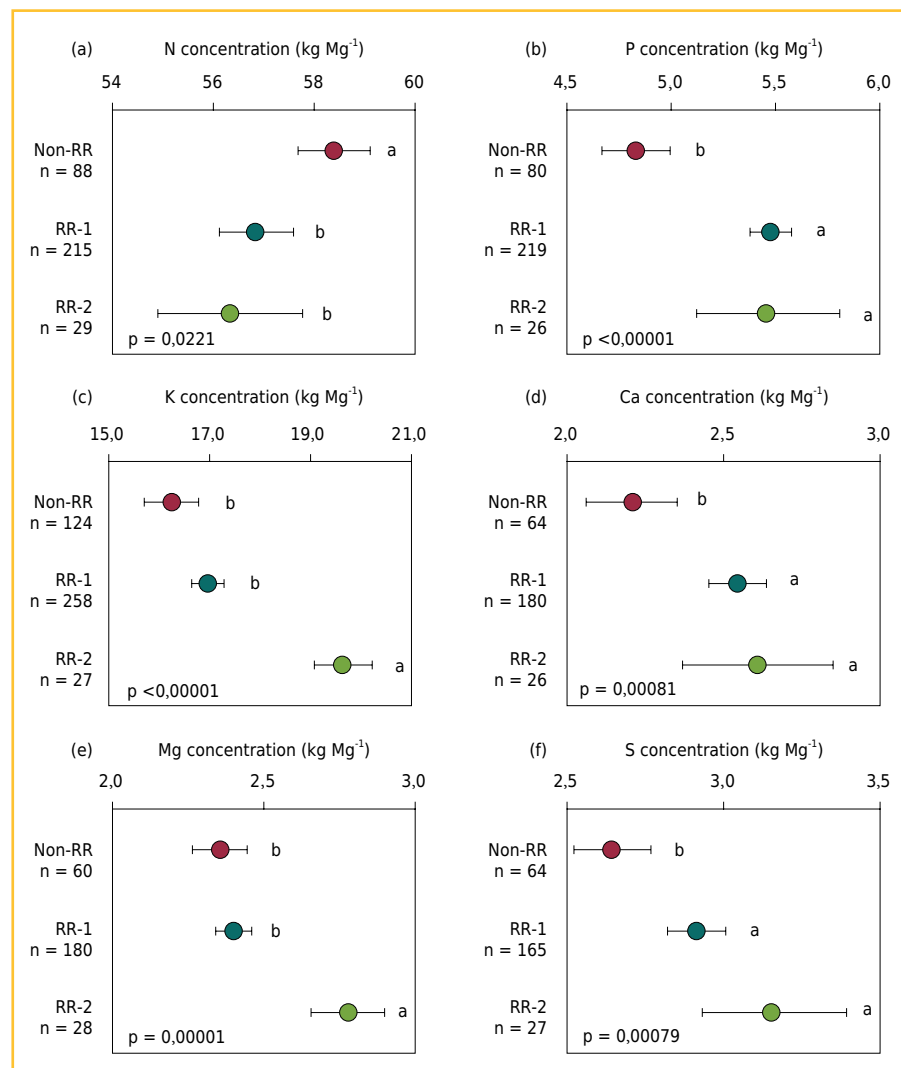
Impact of high soya bean yield

Over the last 45 years, there was important progress in the development of technology for the production and management of soya bean, such as the genetic improvement of varieties more adapted to diverse growing conditions and the approval of cultivation of genetically modified soya bean in Brazil (RR-1 and RR-2 genotypes) (Toledo *et al.*, 1990; Santos Silva *et al.*, 2017). From 1961 to 2018 in Brazil, the average seed yield shifted from 1,1 to 3,4Mg ha⁻¹, corresponding to an increase of 40kg ha⁻¹ yr⁻¹ (Faostat, 2020).

Considering the total amount of macronutrients removed by soya beans (87,7kg Mg⁻¹ of seeds) obtained in our study, this increase in soya bean yield promotes an increase in macronutrient removal by seeds of about 3,5kg ha⁻¹ yr⁻¹ in the last six decades. Although this annual increase seems insignificant, it directly impacts the fertiliser rate demanded to replenish the nutrient removed by harvest.

Our results suggest that modern soya bean genotypes are more demanding in macronutrients than older varieties, thus requiring greater amounts of K, P, Ca, Mg, and S to replenish their greater removal by seeds (Figure 1). Two main physiological processes contribute to the increase of nutrient concentration in the

Figure 1: Concentration of N (a), P (b), K (c), Ca (d), Mg (e), and S (f) in soya bean seeds of each genetic material group from studies published between 2005 and 2019.



Non-RR: conventional material; RR-1: Roundup Ready; RR-2: Intact RR-2. Means followed by the same lowercase letter do not differ statistically by the Kruskal-Wallis H-test ($p < 0.05$). n = number of observations for each genetic material group. The circles indicate the mean values, and the whiskers indicate the 95% confidence interval calculated with 5 000 samples generated using bootstrap iterations.

soya bean seeds: (i) via direct partitioning after the beginning of seed filling for tissue synthesis or (ii) via remobilisation of nutrients from plant tissues (Bender *et al.*, 2013).

The increase in K concentration in soya bean seeds, especially in the modern RR-2 genotypes, might be related to the increment in oil content (Wijewardana *et al.*, 2019) and/or to high levels of soil available K (Stewart *et al.*, 2005; Moreira *et al.*, 2015; Firmano *et al.*, 2019). This may be associated with decreased protein content in soya beans (Ortez *et al.*, 2018), as observed in our study through the lower N concentration in the seeds of modern cultivars (RR-1 and RR-2) compared to

non-RR genotypes. These findings might be helpful to the fertilisation programmes that calibrate the nutrient replacement rates for different groups of genetic materials.

Decrease in the P concentration in soya bean seeds with the increase in soya bean yield may be related to the reduction of the P partition for the reproductive organs with the increase of the phosphorus internal efficiency (PIE) (Balboa *et al.*, 2018). This means that there is a higher grain yield but with a lower concentration of P in these organs. Bender *et al.* (2015) observed that more than 45% of P was taken up by soya bean during the period of seed filling (growth stage R4). Therefore, the adequate content of soil available P until the final

stages of the crop is essential to ensure adequate plant nutrition.

By contrast, the decrease in the concentration of K in the soya bean seeds may be related to the lower Kharvest index (KHI) or K internal efficiency (KIE) (Balboa *et al.*, 2018), despite a higher absorption of K by the plant. According to Bender *et al.* (2015), almost three quarters of total K uptake occurred before the seed filling stage (growth stage R4); however, only 46% of the total accumulated in the plant was remobilised for the seeds, with an important contribution of K present in the stem. As for P, adequate available K levels in the soil, especially until the grain filling period, can guarantee better nutrition for the plant.

Remobilisation of nutrients

Concentration of Ca, Mg, and S in the soya bean seed was not affected by soya bean yield. This may be related to the low harvest index (HI) for Ca and Mg (approximately 9 and 18%, respectively [Bender *et al.*, 2015]), showing that even in high yields, only a small part of the total of these nutrients accumulated in the plant tissue is remobilised and removed by the seeds.

Despite the increment in the total amount of macronutrients removal by increasing soya bean yield, there is a greater distance from the values of total nutrient removal in relation to the 1:100 line plotted as seed yield increases (Figure 2), which suggest a lower concentration of nutrients in seeds when high yields are reached. Since the seed yield and amount of removed nutrients are variables intrinsically auto correlated, this result is possibly related to nutrient remobilisation below that demanded by seeds in high yield conditions, thus causing a nutrient dilution in seeds, especially for P and K.

As seed yield increases, the greater the total amount of nutrient removal by soya beans. Thus, the seed yield estimate for a given site might be useful to predict the amount of nutrient removal by soya bean harvest, such as the seed yield maps used in precision agriculture to set nutrient replacement at variable rates (Amado *et al.*, 2016).

Nutrient removal variability

Although the concentration of macronutrients in seeds related to seed

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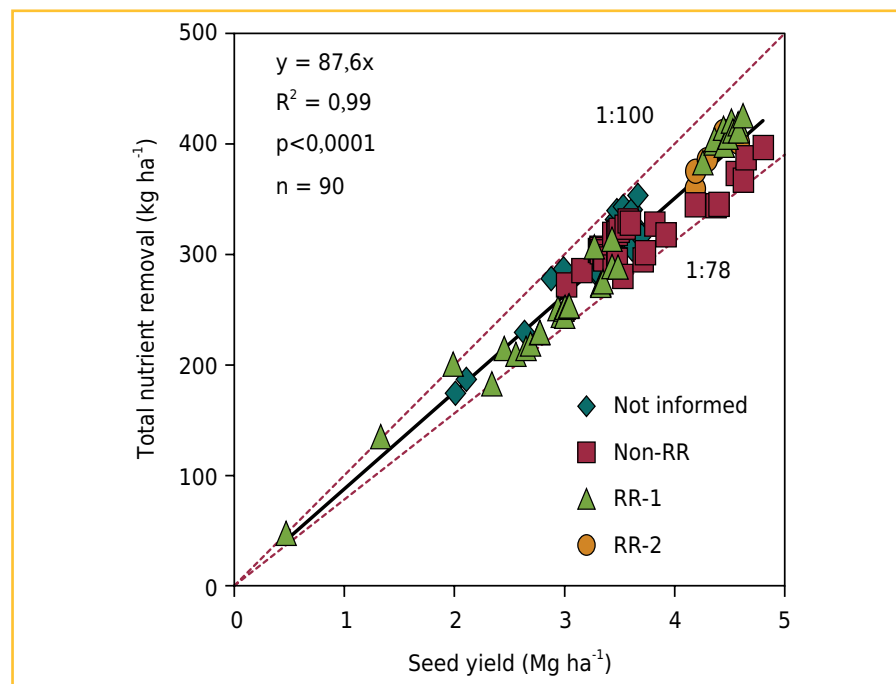
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Figure 2: Relationship between soya bean yield and the total removal of macronutrients in soya bean seeds. Solid black line represents a positive slope ($p < 0,05$). Graphs were generated using all available data from field experiments containing all six nutrients in soya bean seeds and the soya bean yield from 1974 to 2019. Dotted lines indicate boundaries for maximum and minimum ratio for each dataset.



yield varied among the nutrients, the removal of all of them by seed harvest was dependent on the seed yield increment. This relationship was expected since the removal was calculated based on seed yield. The dispersion of observations around the tendency line for nutrient removal shows that it is possible to obtain different nutrient removal for very close yields.

Such variations might be associated with environmental factors related to genetics (genotypes) and/or soil and crop management (Houx III *et al.*, 2014). Variability in nutrient removal was also observed by Culman *et al.* (2019) and Villamil *et al.* (2019) for soya beans in the United States, and Duarte *et al.* (2019) in a recent study reporting nutrient concentration in maize grains in some states of Brazil.

Role of fertilisation

Considering only the soya bean production of 2019 in Brazil and the reference values currently used for P and K replacement fertilisation in each state of the federation, it is possible to obtain underestimates and overestimates in the order of hundreds

of thousands of tonnes of fertilisers. Moreover, despite the growing increase in soya bean yield over the years in Brazil, the average soya bean yield can still increase by 2,5Mg ha⁻¹ (Battisti *et al.*, 2018), impacting the amount of nutrient removal by seeds directly.

The increase in soya bean yield coupled with unbalanced estimates of the removal of nutrients by the crop's seeds may threaten the sustainability of soya bean production in the country, especially due to the high dependence on imports of P and K fertilisers used in Brazilian agriculture (ANDA, 2020).

Therefore, seeking to reduce the impacts on the use of finite natural resources such as fertilisers for soya bean production, is essential to adjust the fertiliser rates according to the soil analysis and with the removal via soya bean seeds to replace an adequate amount of nutrients in the soil. For this purpose, future studies must seek to better understand the environmental and genetic factors that affect the concentration of nutrients in soya bean seeds, in the different groups of genetic materials and different yield ranges,

aiming to improve the estimates of nutrient removal by the seeds.

Conclusions

Concentration of macronutrients in soya bean seed is affected by both soya bean yield and genetic material. Modern genotypes of the Intacta Roundup Ready-2 group remove 15, 21, 18, 17, and 23% more K, P, Ca, Mg, and S and 4% less N compared to non-Roundup Ready genotypes. The increase in soya bean yield was followed by an increase in the concentration of N and a decrease in the concentration of P and K in soya bean seed.

Data obtained from studies published between 2015 to 2019 indicates that soya bean removes, on average, 57,2, 17,6, 5,5, 2,9, 2,6, and 2,5kg Mg⁻¹ of N, K, P, S, Ca, and Mg, respectively. These macronutrient concentrations in soya bean seeds are in disparity with most reference values described in official fertilisation recommendation systems in Brazil.

The reference values used for P replacement fertilisation in the states of Rio Grande do Sul, and Santa Catarina are overestimated, while the other Brazilian recommendation systems underestimate the need for P replacement fertilisation. On the other hand, the reference values used for K replacement fertilisation in the state of São Paulo are overestimated, while the other Brazilian recommendation systems underestimate the need for K replacement fertilisation.

Our results highlight the need to review the standard values for macronutrient removal by soya bean seed from Brazilian fertilisation recommendation systems. Current findings can contribute to agronomic recommendations, improving the efficiency of fertiliser use by replenishing the quantities required according to plant demand. Future studies should focus on the influence of genetics on soya bean seed composition to ensure high soya bean productivity with rational use of fertilisers. 🌱

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Know your oils:

Nu-Pro Group's guide to oilseeds



Canola, soya bean, and sunflower are three widely cultivated crops valued for their oil-rich seeds, which serve various applications in culinary, industrial, and health-related fields. Each oil has distinct characteristics, including oil content, extraction methods, and uses.

Canola

Canola, a selectively bred variety of rapeseed, is grown primarily for its oil. It is low in saturated fat and high in omega-3 fatty acids, making it a heart-healthy option. Canola seeds contain 40 to 45% oil, extracted through mechanical pressing or solvent extraction (typically with hexane). The oil is refined to remove impurities, resulting in a 99% extraction efficiency.

Canola oil uses

- **Food industry:** Used in cooking, frying, and processed foods.

- **Biofuels:** A key component in biodiesel production.
- **Industrial uses:** Lubricants, paints, plastics, and cosmetics.

Soya bean

Soya beans are valued for both their oil and protein content, making them essential in food production and animal feed. Soya bean oil is the most widely consumed edible oil globally. Containing 18 to 20% oil, soya bean has a lower yield than canola or sunflower. The oil is extracted through mechanical pressing and solvent extraction, with 98 to 99% efficiency.

Soya bean oil uses

- **Food industry:** Used in frying, salad dressings, and processed foods.
- **Industrial applications:** Used in biodiesel, paints, and coatings.
- **Animal feed:** The protein-rich meal is a key livestock feed ingredient.

Table 1: Variations in canola, soya bean, and sunflower oils.

Oil type	Oil content	Notable benefits
Canola	40 to 45%	High in omega-3, heart-healthy
Soya bean	18 to 20%	Rich in polyunsaturated fats
Sunflower	40 to 50%	High vitamin E content

Sunflower

Sunflower oil is known for its light taste and high vitamin E content, making it popular in food and cosmetics. It comes in high-oleic and linoleic varieties, differing in fatty acid composition. With 40 to 50% oil content, sunflower seeds offer yields comparable to canola. The oil is extracted primarily via solvent extraction, achieving 99% efficiency.

Sunflower oil uses

- **Food industry:** Used in frying, baking, and salad dressings.
- **Cosmetics and skincare:** Found in lotions, soaps, and creams.
- **Biodiesel:** Used in renewable energy production.

Key differences

The main differences between these oils are their oil content, fatty acid composition, and applications.

While canola and sunflower have higher oil yields, soya bean oil remains the most consumed globally due to its affordability and versatility.

Conclusion

Canola, soya bean, and sunflower oils each offer unique benefits and serve various industries, from food production to biodiesel and cosmetics. Understanding these differences helps consumers and manufacturers make informed choices based on health benefits, oil yields, and industrial applications.

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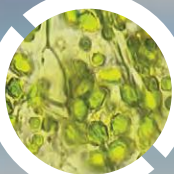
NuSoy Plant (full-fat soya)

NuSoy, part of Nu-Pro Group in Bethlehem in the Eastern Free State, began operations in February 2024, producing 1 500 to 3 000 tonnes of full-fat soya per month. At NuSoy, FOSS NIR analysis with Evonik calibrations ensure quality. Our full-fat soya contains 18 to 20% oil, and 36 to 38% protein. Producers can contact Nu-Pro Commodities for soya bean deliveries during the harvest season.



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Market forecast 2025:

Key insights and projections

By Marguerite Pienaar, economist, Grain SA

As the global agricultural landscape evolves, the oilseed market remains a critical component of food security, biofuel production, and industrial applications. With shifting trade policies, climate variability, and technological advancements shaping the sector, 2025 presents both opportunities and challenges for producers, traders, and policymakers.

Soya bean outlook for 2025

South Africa's soya bean production is set to decline slightly in 2024/25, with planted area down from 2,43% to 1 122 500ha, compared to 1 150 500ha in 2023/24. The 2023/24 soya bean harvest reached 1,84 million tonnes, which was significantly lower than the 2,77 million tonnes produced in 2023/24.

Despite the drop, domestic processing remains resilient, driven by rising input costs for summer grains and steady demand for soya bean meal and oil. The Free State, Mpumalanga, and North West remain the top-producing provinces, accounting for the bulk of national output.

Global disruptions

A major shift in the global soya bean trade could impact South Africa's positioning. China, the world's largest

soya bean importer, recently suspended shipments from five major Brazilian exporters due to phytosanitary concerns. China sources 71% of its soya bean from Brazil, amounting to 74,65 million tonnes in 2024. While the suspension is expected to be temporary, any prolonged disruptions could shift demand towards alternative suppliers such as Argentina, the United States (US), and potentially South Africa.

The US Department of Agriculture's latest World Agricultural Supply and Demand Estimates (WASDE) report projects 2024/25 US soya bean prices at US\$371,11 per ton, down US\$3,67 from the previous forecast, while global soya bean stocks are expected to decline to 124,3 million tonnes due to lower production in Argentina and Paraguay.

Potential impact on South Africa

South Africa remains a net processor of soya bean and therefore shifts in global trade could unlock new export opportunities. If international buyers seek alternative suppliers, South African soya bean may gain improved market access, enhancing price competitiveness. These developments could support domestic prices and trade margins, with the full impact on local markets unfolding in the coming months.

Figure 2 shows the success story of soya bean production and advancement in South Africa over the past decade. Since 2021, South Africa has seen significant decline in the dependency on soya bean oilcake imports. This was due to expansion in local soya bean production in combination with increased local crushing capacity.

Sunflower outlook for 2025

The production of sunflower for the 2024/25 season has declined slightly – by around 5% from the previous season – and is well below the ten-year average of 578 000ha planted, with only 529 000ha planted. This decline in the planted area led to a decrease in the local production of sunflower despite a small increase in yields. Sunflower has experienced this decline for the past three years, moving from 846 000 tonnes produced in 2022 to only 635 000 tonnes produced in 2024/25.

Figure 3 shows the production of sunflowers compared to the imports and exports of sunflower oil and oilcake. In this figure, we can see that imports are inversely related to local production. As production declines, crushers and traders import sunflower products such as oil and oilcake to make up for the local demand.

Figure 1: Global soya bean production. (Source IGC)

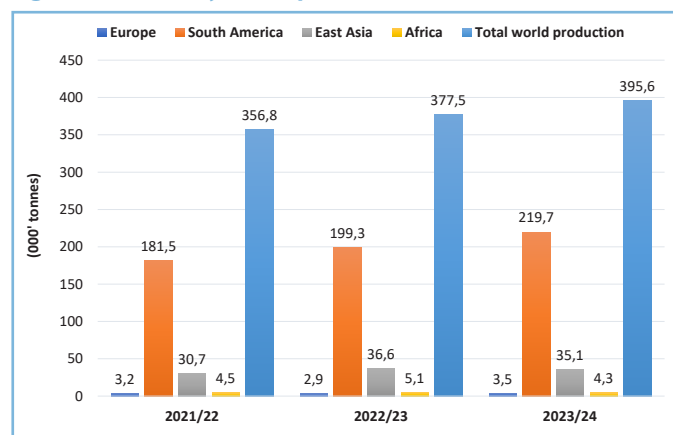
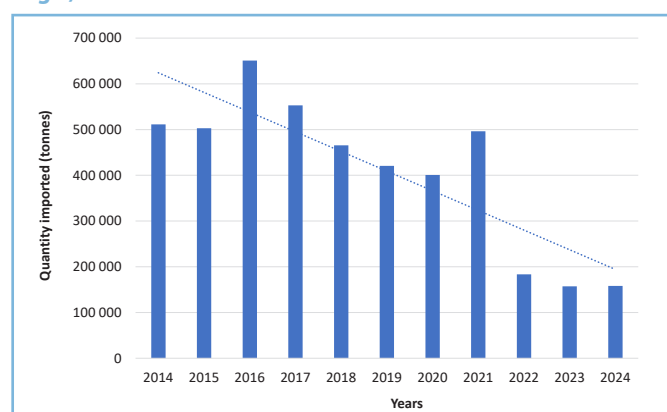


Figure 2: Soya bean oilcake imports for South Africa. (Source: Sagis)



For the 2025/26 season, the Crop Estimates Committee has estimated a preliminary planted area of 552 000ha for sunflowers, and while this represents an increase from the previous season, a record high yield will be needed if South Africa is to avoid importing sunflower products. This situation is a net effect of lower commercial deliveries in 2024/25, as well as higher demand and total exports which led to low ending stocks.

When looking at the market environment, the South African Futures Exchange (Safex) sunflower seed price currently trades below export parity as shown in *Figure 4*. This supports exports, as local prices are not favourable to producers.

Groundnut outlook for 2025

South Africa's groundnut industry has declined significantly in the past two decades, with planted area shrinking from 71 500ha in 2004/05 to 31 000ha in 2023/24. Despite this, improved yields of 1,26t/ha helped push 2023/24 production to 51 745 tonnes, slightly below the previous season.

The 2024/25 season is projected at a 12,08% increase in hectares to 46 175ha in the Free State and North West. However, production remains highly volatile, with climate risks and crop competition influencing producer decisions.

Market dynamics and outlook

Unlike soya bean and sunflower, groundnuts are not traded on Safex, making price discovery challenging. Producers rely on import parity levels from Argentina and the US, alongside direct contracts with processors. Imports continue to bridge the domestic supply gap, accounting for 31% of total consumption, with Argentina and the US as key suppliers. South Africa's 2025 import needs will depend on yield performance, with projections ranging from 7 246 to 24 981 tonnes based on different yield scenarios.

South Africa remains a net importer of groundnuts, constrained by high production costs, inconsistent yields, and a lack of formalised price structures. While localised production improvements could reduce import reliance, global trade and cost competitiveness will continue shaping the market.

Figure 3: Sunflower production compared to sunflower oil and oilcake imports and exports.

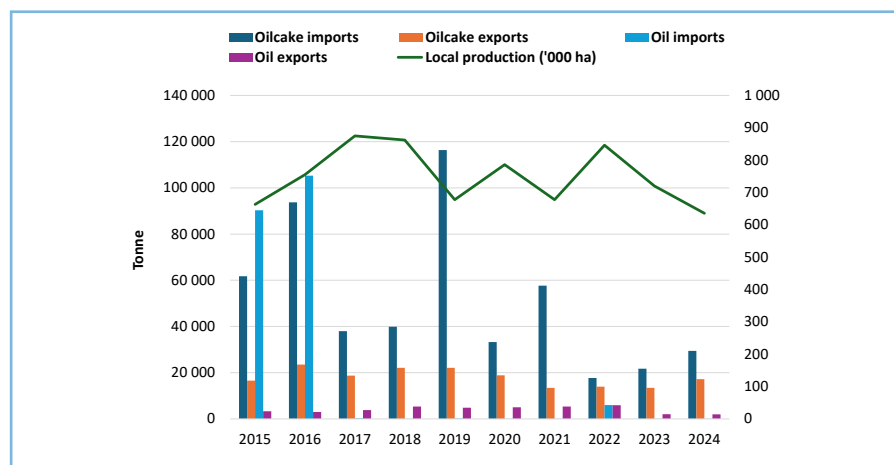


Figure 4: Import an export parity price of sunflower seed delivered in Randfontein. (Source: Grain SA)

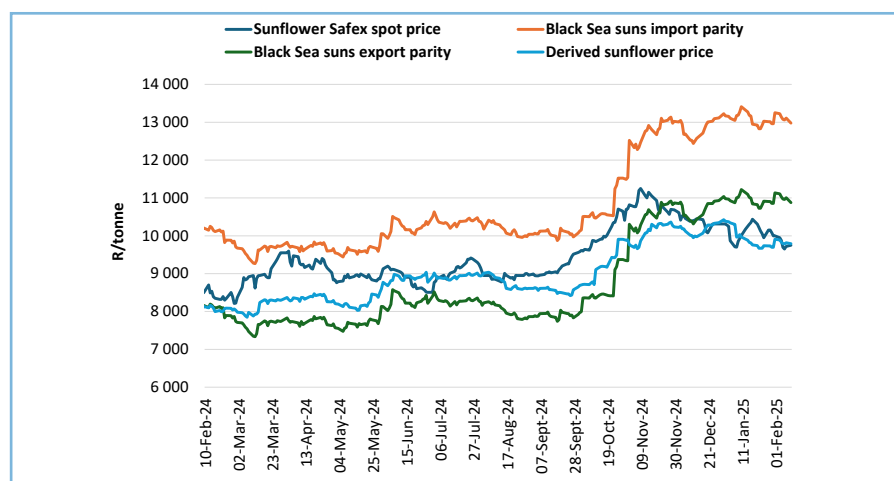
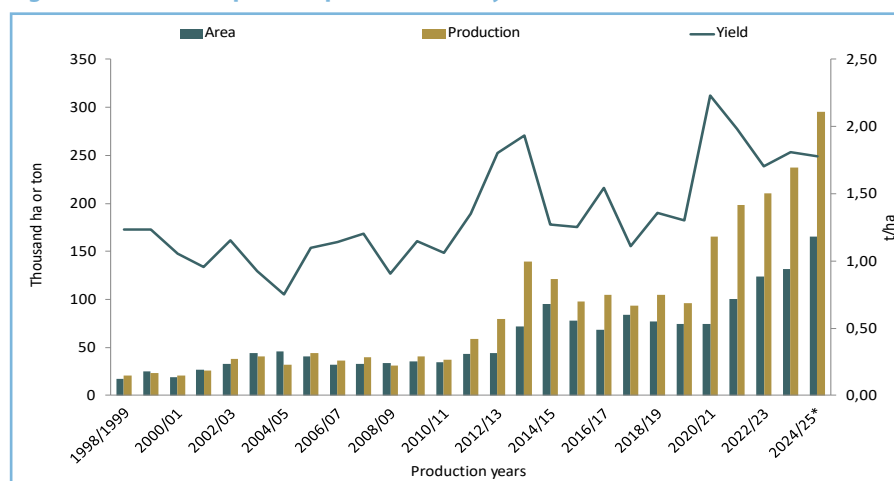


Figure 5: Canola area planted, production and yield. (Source: Grain SA)



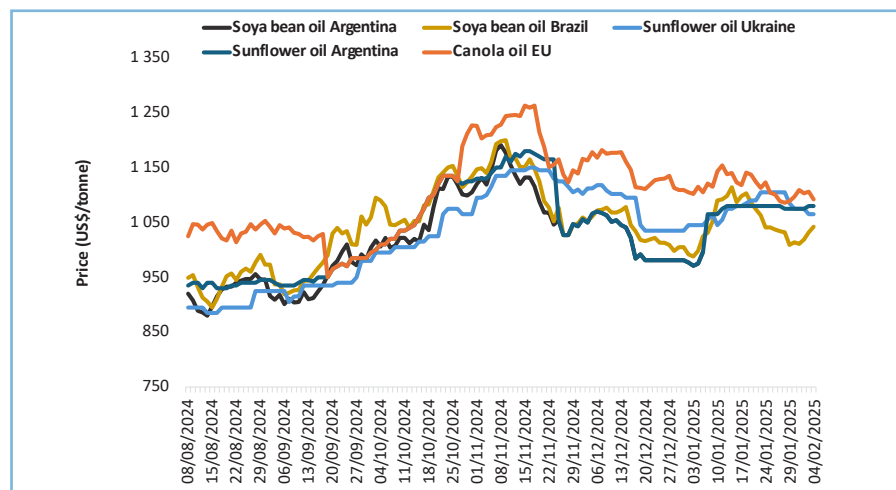
Canola outlook for 2025

Local canola production has experienced significant growth over the past decade. In the 2014/15 season, 95 000ha of canola were planted. For the 2024/25 planting

season, the preliminary planted area is 165 750ha, representing an increase of approximately 90%.

Due to the low profitability currently experienced in South Africa regarding

Figure 6: Comparison between oilseed prices. (Source IGC)



with total production rising by 78,86 and 84%, respectively. From 2014/15 to 2024/25, the country's total annual demand for canola has also increased from approximately 103 000 tonnes to 293 000 tonnes, marking a 64,9% increase over a ten-year period.

Figure 6 depicts a comparison between the main oilseed oil prices. From the figure it is evident that palm oil is the most expensive at this point, while soya bean oil, relative to the other oils, is the most affordable.

Conclusion

While demand for oilseeds continues to rise – driven by food, feed, and biofuel industries – producers face challenges such as fluctuating input costs, weather uncertainties, and shifting regulatory frameworks. Despite these challenges, innovation in crop genetics, improved farming practices, and expanding processing capabilities present opportunities for growth. 🌱

wheat production, some grain producers in the summer rainfall regions under irrigation in the provinces of Mpumalanga, KwaZulu-Natal, and Limpopo have opted to plant canola as a winter crop instead. These provinces have planted 800, 200, and 2 000ha, respectively, and produced

a total of 7 500 tonnes of canola in the 2023/24 season. The yield for Limpopo was 5 000 tonnes, for Mpumalanga 2 000 tonnes, and for KwaZulu-Natal 500 tonnes.

The Northern Cape and Free State saw a significant increase in canola production for the 2023/24 season,

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World oilseeds markets and trade, January 2025: Indonesia B40 implementation expected to curb exports

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

On 3 January 2025, the Indonesia Ministry of Energy and Mineral Resources decreed 15,6 million kilolitres of biodiesel to be included in the domestic fuel pool, raising the blend rate for biodiesel from 35 to 40%. The measure had an implementation period through 28 February that would give industry time to adapt to the higher inclusion requirement.

This policy change is expected to increase Indonesia's industrial palm oil consumption by approximately one million metric tonnes from the prior year to a record of 14,5 million tonnes in 2024/25. Consequently, this increase in domestic consumption is expected to reduce the amount of palm oil available for export.

According to the ministry, 48% of the biodiesel allocation is set aside for the public service obligation, which covers utilisation by government entities such as public transportation. Biodiesel allocated to the public service obligation will be subsidised by the funds raised by the palm oil export levy. The remaining biodiesel will be sold at market rates. Palm oil prices are holding at multi-year highs, and the fiscal demands on the Indonesia palm oil fund will be significant.

Indonesia palm oil production is expected to reach a high during 2024/25, largely on gains in harvested area.

Despite record production, exports are expected at nearly the lowest level in a decade. The anticipated increase in domestic consumption from B40 adoption will push the percentage of palm oil production exported to fall to 52%, the second lowest level in 25 years.

Lower available supplies for export have fuelled gains in palm oil prices, helping to propel palm oil to its position as the highest priced vegetable oil in recent months. Vegetable oil importers across the globe have started shifting to lower-priced oils, including soya bean oil from the United States.

Iraq emerges as soya importer

After decades of relying on imported soya bean meal to meet feed demand, Iraq emerged as a soya bean importer in recent years. In 2023, Iraq built a soya bean crushing facility at the southern Umm Qasr Port. The World Bank's International Finance Corporation financed its construction, and the project also included warehouses to store both maize and soya beans. The new facility has a crushing capacity of approximately 3 000 tonnes per day, which is nearly sufficient to meet domestic soya bean meal demand if operating at peak output.

In January this year, USDA's Production, Supply and Distribution database was expanded to include soya beans and

soya bean oil balance sheets for Iraq starting in marketing year 2015/16. USDA had maintained soya bean balance sheets for Iraq from 1973/74 and 1984/85, a period in which annual soya bean imports averaged 17 000 tonnes.

In 2022/23, Iraq imported 760 000 tonnes of soya beans, marking the first substantial trade volume in decades. The United States (US) and Brazil are the primary suppliers of Iraq's imports, and none are produced domestically. Soya bean meal and soya bean oil imports have declined in line with growth in domestic production of these products. Exports of soya bean oil to India were reported in 2022/23 and 2023/24.

For 2024/25, Iraq soya bean imports are forecast at 800 000 tonnes. From October to December last year, Iraq imported 460 000 tonnes, including 118 000 tonnes from the US, showing a strong start to the year.

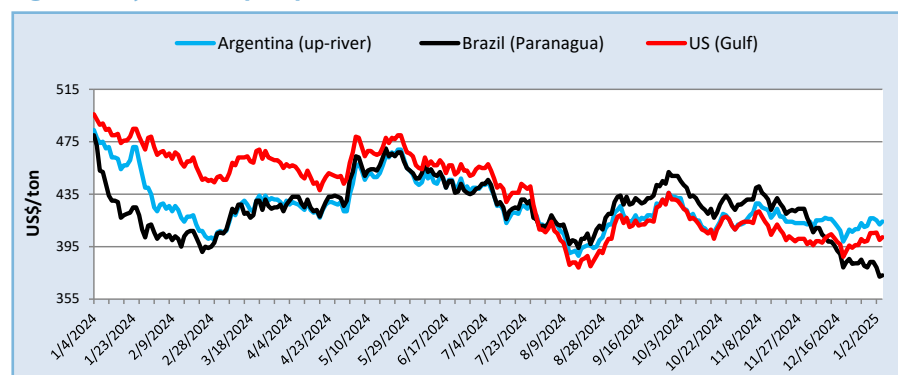
Data series revisions

China rapeseed production was revised to align with data published by China's National Bureau of Statistics for 2010/11 through 2022/23. The production forecast for 2023/24 was also adjusted lower after incorporating these revisions. In line with the changes, rapeseed utilisation and stocks – including crush and rapeseed meal and oil consumption – have been adjusted for these years.

Overview 2024/25

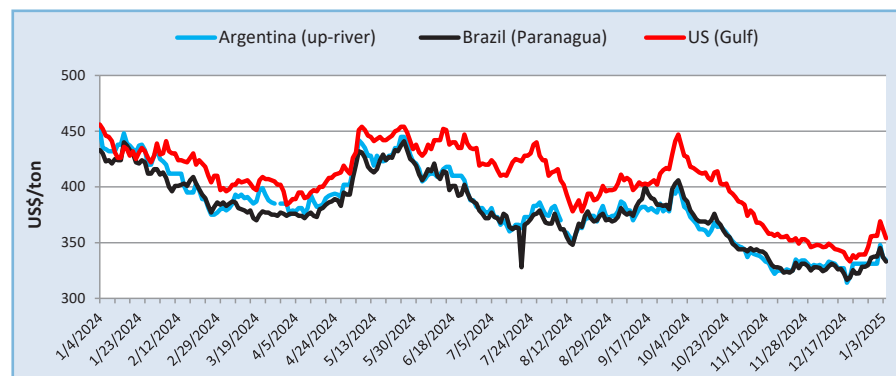
The global oilseeds production forecast is down three million tonnes to 680,4 million in January this year on lower US soya bean, and India and Russia rapeseed, not offset by an increase in China cottonseed production. Oilseeds trade remains unchanged at 207,3 million tonnes, with higher Canada rapeseed exports offsetting lower rapeseed exports by Australia, Ukraine, and Uruguay. Oilseeds ending stocks are lowered 2,9 million tonnes to 144,3 million on lower US and Brazil

Figure 1: Soya bean export prices. (Source: International Grains Council)



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

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



soya bean stocks despite higher China rapeseed ending stocks.

Global crush is raised over two million tonnes to 560,3 million on higher Brazil soya bean crush and the addition of the Iraq soya bean balance sheet. Global meal trade is up over 300 000 tonnes to 107,4 million on higher Brazil soya bean meal exports despite lower Russia rapeseed meal exports. Global vegetable oil trade is up slightly to 86,4 million tonnes with higher US soya bean oil and Russia

sunflower seed oil, not offset by lower Russia rapeseed oil exports.

The projected US season-average farm price for soya beans is unchanged at US\$10,20 per bushel.

Export prices

Since the last WASDE report, soya bean export prices from Argentina and the US increased, while Brazilian soya bean prices fell. Brazilian soya bean prices diverged from competitors

on favourable rains and a weakening exchange rate that pressured prices in the last weeks of 2024, and are below US prices for the first time since July 2024. Soya bean meal prices from major origins rose on concerns about current dry weather in Argentina.

Soya bean oil prices also declined since the last *World Agricultural Supply and Demand Estimates* (WASDE) report, in part due to a record US daily crush rate in November 2024 and uncertainty about the 45Z Clean Fuel Production Credit, which was scheduled to be implemented on 1 January, as guidance has yet to be released from the Treasury Department. These factors helped US soya bean oil maintain its status as the global discount oil and boosted export sales.

Palm oil prices also retreated during the last month on weakened demand. Indonesia's recent announcement to increase the biofuel allocation allayed uncertainty surrounding palm oil availability, also causing prices to tick down. 🌱

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Soya bean GMO import dynamics and the way forward

Compiled by Dr André van der Vyver and Juan-Pierre Kotzé, South African Cereals and Oilseeds Trade Association (Sacota)

South Africa has faced a challenging season for soya bean production, characterised by a significant decrease in production. The decline is a result of the El Niño drought conditions experienced last season, which prompted the country to seek alternative sources of soya bean to meet the demands of South Africa and its neighbouring countries.

Soya bean production during the 2023/24 production season in South Africa dropped by 930 000 tonnes or 34% to 1,84 million tonnes compared to the previous year. According to the most recent supply and demand numbers published by the National Agricultural Marketing Council (NAMC), South Africa had only approximately 128 000 tonnes of stock left at the end of February. This is in stark contrast with the 320 000 tonnes carried over from the previous season.

Despite these domestic challenges, South Africa is expected to export 290 000 tonnes of soya beans and soya bean products, with significant volumes destined for Zimbabwe and Mozambique. Notably, exports to neighbouring countries have increased due to their poor soya bean crops – a result of similar El Niño drought conditions as experienced in South Africa.

Soya bean oilcake arrives in SA

The low supply of soya beans became more evident as the December 2024 JSE/Safex price started to increase. This price increased from a low of R8 050 in February last year to a high of R9 620 at the end of May in the same year, representing an increase of 19%. To address the domestic shortfall, Sacota member Seaboard Overseas and Trading Group imported its first shipment of both soya bean oilcake and yellow maize from Argentina in May last year. It then continued to import shipments of both soya bean oilcake and yellow maize monthly.

South African Grain Information Service (Sagis) numbers indicate that between

April and November last year, a total of 157 000 tonnes of soya bean oilcake was imported to compensate for the decrease in production and the high cost of local soya beans – despite an import tariff for soya bean oilcake of 4,95% under the Mercosur agreement. This compares to 71 000 tonnes in the previous season (April 2023 to March 2024). It is often much more cost-effective to import soya bean oilcake and/or soya bean oil, particularly in Cape Town or along the coast, than soya beans.

Despite the importation of soya bean oilcake, industry demand and cost calculations show that there is merit in importing whole soya bean seed. Another Sacota member, Ameropa, took initiative and imported the first batch of United States (US) produced soya beans that arrived in the Durban harbour in November last year, carrying 32 255 tonnes of soya bean. The combination vessel also carried US white maize that was offloaded in Mozambique and destined for Zimbabwe.

Unfortunately, from a commercial perspective, importing soya beans from Brazil during the last few months has not been cost effective (because of seasonal harvesting patterns). This may change with new season soya beans soon to be harvested in Brazil (and Argentina). (Brazilian yellow maize has been imported, though.)

GM approved events in SA

Sacota, in collaboration with the Southern African Grain Laboratories (SAGL), the

Oil and Protein Seeds Development Trust (OPDT)/Oilseeds Advisory Committee (OAC), as well as local government, is collecting imported soya bean samples for quality analysis and comparison with local soya beans. However, the process of obtaining regulatory approval to import genetically modified (GM) soya beans from major producers such as Argentina, Brazil and the US has proven to be complex and time-consuming.

GM approved events in South Africa fall into two categories. The first category is 'commodity clearance', which refers to events that South Africa is allowed to import for crushing purposes only. Regulations for importing these commodities state that the commodity must be transported directly from the harbour to the crushing facility and the importer must ensure that no spillage occurs.

The second category is referred to as 'general release' and these events are approved for planting within South Africa. However, as most commodity imports usually contain a combination of events in both categories, all imports should be treated in accordance with the regulations for events with commodity clearance.

Sacota leads the way

A crucial aspect of importing soya beans involves synchronising the GM soya bean approval lists between South Africa and the exporting countries. To synchronise such a list, it is crucial to know whether it is approved for food and feed use (commodity clearance in South African terms); whether it is experimental;

Table 1: Cost-effectiveness of importing soya bean oilcake.

HTS code	Description	General	EU/UK	*EFTA-SACU	SADC	Mercosur	AfCFTA
1 201,10	Soya bean	8%	Free	8%	Free	8%	4%
2 304,00	Soya bean oilcake	6,6%	Free	6,6%	Free	4,95%	3,3%

*European Free Trade Association/Southern African Customs Union.

whether it is commercially planted or not; and whether it is outdated and no longer in production. In the case of the last three options, such events would not be present in export consignments and can be excluded from synchronisation requirements.

For synchronisation with the exporting country, the Registrar for Biosafety, seated within the National Department of Agriculture, requires that GM events approved for commodity clearance or general release locally, align with those commercially available in the exporting country. If a GM event on the exporting country's list is not on South Africa's approved list, Sacota must obtain confirmation that such an event has not been commercially released for planting in the exporting country. This process involves obtaining letters from seed developers or confirmation on this matter from the exporting country's competent authority.

Sacota took the lead in synchronising the events list of the respective exporting country with that of South Africa,

and collaborated closely with the former Department of Agriculture, Land Reform and Rural Development (DALRRD), the embassies of exporting countries, international trade associations, multinational seed companies and associations, and other stakeholders. The soya bean import market opened for Brazil on 29 August 2024 followed by the US on 30 September in the same year.

In recent years, once a GM event approval has been obtained in a prominent exporting country, it became standard practise for multinational seed companies to apply for approval in other prominent grain and oilseed trading countries such as South Africa. This practise has helped significantly to facilitate the synchronisation process.

A collaborative way forward

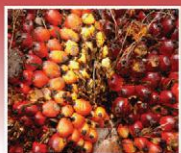
Sacota and CropLife hosted a workshop on 14 November last year, which was attended by CropLife members Corteva, Bayer, BASF and Syngenta, and delegates from the embassies

of Argentina, Brazil and the US, and the South African National Seed Organisation (Sansor). The goal of the workshop was to discuss a way forward and devise a standing arrangement to ensure the synchronisation process would be simplified and streamlined in the future. Although South Africa does not regularly import maize and soya beans, it is important that if, and when, the need arises the industry is able to act swiftly.

Although all the emphasis has been on imports, it is worthwhile to remember that many of the same events should also be synchronised when South Africa is exporting soya beans, depending on the importing country. It is a multi-dimensional process where events are approved in the leading production countries and then registered in countries such as, for example, China and South Africa where there is a combination of both local production and imports. Once globally approved in other importing countries, it is much easier for South Africa to synchronise our events in an export year. 🌱

For further information, contact Dr André van der Vyver at andre.vandervyver@sacota.co.za or info@sacota.co.za.

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Two markets, one ingredient: A gap worth exploring

By Dr Carmen Muller, Dr Beulah Pretorius, and Prof Hettie Schönfeldt

In South Africa, soya stands out as a nutritional powerhouse with the potential to address nutritional challenges across diverse income groups. Soya, a versatile and nutrient-rich crop, has cemented its place as a key player in South Africa's food systems.

This humble legume, celebrated for its affordability and versatility, has long been a staple in the diets of lower-income households. It also plays a critical role in the National School Nutrition Programme (NSNP), which provides millions of schoolchildren with meals that include soya as a key protein source. But soya is not merely an affordable option, its use in premium meat analogues targeted at higher-income consumers highlights an exciting opportunity to rethink its market positioning.

Protein is a vital component of a healthy diet, but for many South Africans traditional protein sources such as meat and fish are prohibitively expensive. Soya provides an affordable and accessible alternative, delivering high-quality protein and essential nutrients. Texturised vegetable protein, also known as soya mince, is widely used in budget-conscious households to prepare hearty and nutritious meals.

Long-term food security

Soya is an essential ingredient in the NSNP's meals, as the objective is to combat malnutrition among schoolchildren. The inclusion of soya in these meals ensures that children receive adequate protein that supports growth, benefits cognitive development, and contributes to their overall health.

By leveraging soya's affordability and nutritional value, the programme

addresses immediate dietary needs while promoting long-term food security. Many children in the NSNP have not had any exposure to soya before and, should they have a pleasant experience, the programme could contribute to attaining lifelong users of the product.

At the opposite end of the economic spectrum, soya has emerged as a star ingredient in the booming plant-based meat alternatives market. These products, marketed primarily to health-conscious and environmentally aware consumers, are gaining traction among South Africa's affluent urban population. Soya's adaptability and nutritional profile lends itself to being an ideal base ingredient in many of these products, which aim to mimic the taste and texture of meat while offering an alternative protein option.

Innovation opportunities

The stark contrast between soya's role in these two markets raises an intriguing question: Can lessons from the premium segment influence the offerings to lower-income households, and vice versa? It is exceptional that soya is both a cost-saving staple and a luxury ingredient that provides the market with untapped opportunities for innovation.

This begs the question whether there is space for these products within the alternate market. Can lower-cost soya products be rebranded or slightly modified to appeal more broadly? Improved packaging, enhanced flavours, or diversified products would make soya more attractive across many income groups.

Similarly, insights from the high-end market, where soya is commonly used in ready-made processed foods, can result in ready-made soya products that would appeal to lower income consumers. Due to rising costs, they are becoming more reliant on affordable and convenient food options.

Soya products marketed in the high-income segment tend to be more

costly and highly processed. Products marketed in the lower income segment can inspire the efficiency and scalability of soya-based products aimed at the mass market. The combination of these factors may even unlock a new middle-income market segment by leveraging strategies of premium brands to sell a nutritious convenience product. Insights from the mass market can contribute to affordability while attaining economics of scale without compromising on quality.

A win-win situation

Soya producers can embrace the dual role it plays in the South African market as both a staple and premium ingredient. By reimagining product offerings and marketing strategies, the soya industry could create solutions that transcend income divides.

Soya has already proven its value as a dietary staple and a premium ingredient, but its full potential lies in bridging these markets. Innovation within the affordable segment and the promotion of soya's premium associations will enable the industry to create a win-win situation that addresses food security, nutritional equity, and meets consumer aspirations.

In South Africa, where income inequality is stark, soya's versatility offers a unique opportunity to foster inclusivity and sustainability in the food system. Currently the soya industry holds the power to rethink how this versatile legume is marketed and consumed, ensuring that its benefits are shared across all segments of the diverse South African market. 🌱

For more information, send an email to Dr Carmen Muller at carmen.muller@up.ac.za, Dr Beulah Pretorius at beulah.pretorius@up.ac.za or Prof Hettie Schönfeldt at hettie.schonfeldt@up.ac.za.



The life-changing benefits of peanut butter

Compiled by Adri Botha, chairperson, SA Groundnut Forum

The SA Groundnut Forum's recent submission advocates for the inclusion of peanut butter in South Africa's list of zero-rated VAT food items. As a beloved staple in many South African households, the exceptional nutritional profile, affordability, and health benefits of peanut butter offer practical solutions in combating malnutrition, supporting nutritional security, and enhancing public health outcomes.

Exceptional nutritional profile

A single serving of peanut butter (approximately two tablespoons) provides 7g hunger-satisfying protein, along with essential nutrients that are often hard to obtain from other single food sources. These nutrients include dietary fibre, potassium, magnesium, thiamin, and vitamin E. The protein in peanut butter is particularly valuable as it helps build and repair tissue, supports immune function, and aids in the production of enzymes and hormones, while polyphenols, particularly resveratrol, have been associated with a lower risk of diabetes, certain cancers, and cardiovascular diseases because of their antioxidant properties.

Dietary fibre promotes healthy digestion, helps maintain bowel health, and lowers cholesterol levels. Potassium is vital for proper cell and muscle function, while magnesium plays a crucial role in over 300 biochemical reactions in the body, including muscle and nerve function, blood glucose control, and blood pressure regulation. Thiamin, or vitamin B1, is essential for the metabolism of carbohydrates and the production of energy. Vitamin E acts as an antioxidant, protecting cells from damage caused by free radicals.

With a protein content of around 25g/100g, peanut butter stands out as

a plant-based protein alternative when compared to other protein sources. Cooked soya, for example, provides 18g protein per 100g, while chicken, particularly skinless breast, provides approximately 31g protein per 100g.

Recommended daily intake

The recommended daily intake of peanut butter varies according to age, dietary needs, and activity levels. Here are some general guidelines:

For children

- **Ages 2 to 5 years:** Approximately one tablespoon (16g) per serving, up to two servings per day. Peanut butter can serve as a protein source for small meals or snacks.
- **Ages 6 to 12 years:** Two tablespoons (32g) per day is often recommended, depending on caloric needs and activity levels. This provides a good balance of protein and healthy fats for growing children.

For adults

- **General population:** Two tablespoons (32g) per day is a standard serving size. This provides approximately 8g protein, healthy monounsaturated fats, and several essential nutrients, making it a powerful addition to a balanced diet.
- **Athletes or active adults:** Those with higher energy needs can consume three to four tablespoons daily, as peanut butter is an excellent source of calories, healthy fats, and protein.

Child health and development

South Africa's low economic growth is linked to poor child development. Nutritional stunting hinders cognitive development, leading to poor educational outcomes and limiting the workforce's



Peanut butter has a protein content of around 25g/100g and its combination of protein, fibre, and unsaturated fats have a satiating effect.

skills base. According to the Human Capital Index, a South African child today is projected to achieve only 43% of their potential productivity.

In 2022/23, a staggering 15 000 children required hospitalisation due to severe acute malnutrition (SAM), while health minister Dr Aaron Motsoaledi recently confirmed in a written parliamentary response that during the past two years, at least 1 457 South African children have been reported to have died of acute malnutrition, with the majority linked to SAM. In 2023, it was revealed that in the past decade, 12 582 South African children died from SAM and moderate acute malnutrition (MAM).

Sadly, this trend is not improving. SAM increased by a concerning 26,3% between 2018/19 and 2022/23. As a direct result of malnutrition, at least one in four children under five are stunted, while data shows a continuing increase. Furthermore, a startling 69% of obese adults resided in food-insecure households, limited to low-nutrient food.

Economic benefits

A healthy child who grows well learns well, and prioritising affordable protein sources such as peanut butter is a strategic investment in South Africa's human capital and future economy. Peanuts and peanut

butter have widely been recognised as a practical component of nutritional interventions due to affordability, being shelf-stable, and providing an excellent source of nutrients essential for growth and development. Peanut butter's taste and texture make it appealing to children, which improves compliance in nutritional programmes.

Peanuts and peanut butter are the most affordable and well-loved protein package available. Not only do they beat other plant-based sources in affordability; they are more economical and more accessible than most animal-based proteins.

It offers an essential, convenient, and affordable dietary supplement to the more than 64,7% households in South Africa living in food poverty, many of which are headed by children and teenagers having to care for siblings and elders, due to various socio-economic reasons.

Health benefits

Peanut butter's combination of protein, fibre, and unsaturated fats help people feel full without weighing them down. Studies have shown that due to the satiating effect of its high protein and fibre content, eating peanut butter in the morning can reduce the urge to snack throughout the day. Specifically, according to assistant professor of paediatric nutrition Jennette Moreno at the Baylor College of Medicine in the United States (US), children who consumed peanuts at least once a week are less likely to be overweight or obese while peanut consumption in adolescents is associated with improved weight status.

A Harvard University study titled "Association of nut consumption with total and cause-specific mortality" (2013) published in *The New England Journal of Medicine*, showed that eating peanuts or peanut butter twice a week resulted in a reduced risk of:

- Death from all causes by 12%.
- Heart disease by 24%.
- Respiratory disease by 16%.
- Infections by 32%.
- Kidney disease by 48%.

Additionally, a daily serving of 10g nuts such as peanuts has been associated with a 20% reduced risk in overall cancer mortality, while a recent international study links consumption

of peanuts to enhanced key bacterial communities, which support a healthy gut. The unsaturated fats in peanut butter, particularly monounsaturated fats, are beneficial for heart health.

Richard Mattes, a professor of nutrition science at Purdue University in the US, published findings to indicate that daily peanut or peanut butter consumption offered significant benefits to participants with elevated serum lipids and blood pressure.

Foods with a low glycaemic index, such as peanuts and peanut butter, have shown to significantly improve glucose control in patients with type 2 diabetes, with research published by the American Medical Association indicating that regularly consuming only two tablespoons of peanut butter per day can substantially reduce the risk of type 2 diabetes.

Due to their nutrient-dense composition, numerous studies have highlighted the role of peanuts and peanut butter in nutritional security.

In addition to providing the energy the body and brain need to stay focussed, researchers reported that an antioxidant in peanuts (p-coumaric acid) helps counteract cellular damage linked to cardiovascular diseases and may have anxiety-reducing effects. Furthermore, niacin and resveratrol have been linked to reduced risks of age-related cognitive decline and support overall brain health, and folate aids in the prevention of neural tube defects and supports healthy brain development in children.

Nutritional interventions

Due to their nutrient-dense composition, numerous studies have highlighted the role of peanuts and peanut butter in nutritional security. Specific focus has been placed on their inclusion in nutritional programmes to address protein and energy deficiencies, particularly in underprivileged communities

The combination of protein, energy, and key micronutrients such as iron and folate make peanuts a powerful tool in addressing growth deficiencies. In 2007,

the World Health Organization, the United Nations Children's Fund (UNICEF), the World Food Programme, and the United Nations Standing Committee on Nutrition endorsed peanut-based ready-to-use therapeutic food (RUTF) as the standard treatment for uncomplicated cases of SAM. This endorsement underscores the nutritional value of peanuts and peanut butter in addressing malnutrition.

Improving the nutritional status of children starts with improving the nutritional status of mothers, as stunting often begins in the womb and continues for at least two years after birth. Women of reproductive age need access to adequate nutrition for a healthy pregnancy and to be able to breastfeed, and it is therefore no coincidence that peanut butter is listed as one of the ten budget-friendly food items in the Grow Great campaign (www.growgreat.co.za).

Accordingly, preliminary findings from a study in Malawi show that babies of mothers who received peanut-based supplements gained significantly more weight than those whose mothers received other types of supplements. This demonstrates the potential of peanut-based nutrition to improve outcomes in malnourished populations.

While peanut butter is included in the National School Nutrition Programme (NSNP), further education and collaboration with programme managers, school bodies and parents should be investigated to support sustainable procurement and distribution of high-quality products into this critical programme.

Triple burden of malnutrition

South Africa grapples with the triple burden of malnutrition, namely undernutrition, hidden hunger, and obesity that stem from nutrient-poor diets.

Undernutrition, characterised by inadequate intake of energy and nutrients, can lead to stunted growth, weakened immunity, and increased susceptibility to diseases. Hidden hunger refers to the lack of essential vitamins and minerals in the diet, even when caloric intake is sufficient. Obesity, often resulting from the consumption of energy-dense but nutrient-poor foods, increases the risk of chronic diseases such as diabetes, heart disease, and certain cancers.

Peanut butter, with its balance of protein, healthy fats, and micronutrients, offers a comprehensive solution to these issues.

The prevalence of stunting among children under five was recorded at 28,8%, and a startling 69% of obese adults resided in food-insecure households which are limited to low-nutrient food. Peanut butter, with its rich nutritional profile, can play a crucial role in addressing these varied forms of malnutrition. Peanut butter is also an easily digestible food that helps prevent malnutrition in our senior communities, while reducing risks of cardiovascular disease, cognitive decline and diabetes, remaining a convenient staple for those with limited meal preparation abilities.

Cultural relevance and acceptance

Peanuts and peanut butter have deep cultural and social significance in Southern Africa and throughout the African continent. Other than bringing up fond childhood memories of a peanut butter and syrup sandwich in lunchboxes, these legumes are key ingredients in traditional dishes such as *tihove*, a ground peanut-based dish mixed with maize; *xiendla hi vomu*, a peanut-based dish with wet grain; or *nhopi*, a porridge-like dish made with pumpkin, winter squash, mealie meal, and peanut butter. These dishes are not only dietary staples but are central to cultural practices surrounding family gatherings, celebrations, and communal meals.

Peanut butter enhances the accessibility to nutrients by providing a convenient and shelf-stable product option that can be easily incorporated into a vast number of traditional, contemporary, and convenience meal choices. This is especially beneficial in low-income communities, where access to refrigeration and other preservation methods may be limited.

Promoting sustainable development

The inclusion of peanut butter as a pantry staple furthermore supports the government’s National Development Plan (NDP2030) and the United Nations’ Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-Being), where the key objectives are:

- Eradicating malnutrition by ensuring access to sufficient, safe, and nutritious food for all people, especially children and vulnerable populations.
- Doubling agricultural productivity and ensuring sustainable food production systems to enhance resilience against climate change and other shocks.
- Reducing maternal and child mortality rates.
- Combating malnutrition, communicable diseases, and lifestyle-related health issues.
- Promoting mental health and well-being.

Improved nutrition reduces the strain on public healthcare systems, while well-nourished populations are more productive, contributing to economic growth.

Peanut butter’s caloric density ensures cost-efficient calorie delivery compared to other protein sources and offers practical solutions in combating malnutrition, supporting nutritional security, and enhancing public health outcomes. Government relief programmes have mitigated some of these challenges, but the ongoing crisis calls for further interventions both from state and private sectors to ensure nutritional security for all South Africans.

Environmentally sound

In addition to their culinary and nutritional importance, peanuts play an important role in the agricultural landscape, thriving in the varying climates of many African regions. Peanuts are more adapted to drought than other summer crops and well positioned for both commercial as well as small, family-based and subsistence farming operations. This widespread cultivation of peanuts makes them, and the products derived from them, an affordable and accessible food source for many households across the country and continent.

Peanut butter production creates lower levels of CO₂ compared to other protein sources, including meat, eggs, and cheese. Being part of the legume family, they require less water compared to other nuts (less than half of what almonds need). Peanut plants replenish nitrogen in the soil,

Table 1: Nutritional profile of peanut butter (per 100g).

Nutrient	Amount per 100g	% of RDA (for an adult)
Energy	588kcal	—
Protein	25,09g	50%
Total fat	50,42g	77%
Saturated fat	10,15g	51%
Monounsaturated fat	24,4g	—
Polyunsaturated fat	15,56g	—
Cholesterol	0mg	—
Carbohydrates	20,06g	7%
Sugars	3,87g	4%
Fibre	6,0g	24%
Sodium	17mg	1%
Potassium	649mg	18%
Calcium	49mg	5%
Iron	1,9mg	11%
Magnesium	168mg	42%
Phosphorus	332mg	47%
Vitamin E	8,33mg	56%
Vitamin B1 (thiamine)	0,64mg	53%
Vitamin B2 (riboflavin)	0,09mg	7%
Vitamin B3 (niacin)	12,06mg	75%
Vitamin B6	0,35mg	27%
Vitamin B9 (folate)	37µg	9%
Vitamin C	0mg	0%

making it ideal for crop rotation, with every part of the plant being processed and utilised for human or animal consumption.

Conclusion

Through its affordability and nutrient density, peanut butter stands out as part of a practical and effective solution to some of the most pressing nutritional challenges of our time. As we continue to seek ways to improve public health and food security, peanut butter offers a promising and accessible option for all South African communities. 🌱

For more information, send an email to Adri Botha at groundnutforum@opot.co.za.

Mediation in terms of the new *Land Court Act*

By Clarissa Pienaar, Moolman & Pienaar Incorporated

The *Land Court Act, 2023 (Act 6 of 2023)*, or the *Land Court Act*, came into effect on 5 April last year and brought about significant changes, much like the amendments to the *Extension of Security of Tenure Act, 1997 (Act 62 of 1997)* or *Esta*, which came into effect on 1 April last year.

The Land Court, established by the *Land Court Act*, replaces the former Land Claims Court which was established by the *Restitution of Land Rights Act, 1994 (Act 22 of 1994)*, or the *Restitution Act*. The *Land Court Act*, among others, repeals Chapter III of the *Restitution Act* in its entirety, which dealt with, inter alia, the powers, jurisdiction, and composition of the Land Claims Court.

Any proceedings initiated in the former Land Claims Court must continue in the Land Court, unless the court considers this to not be in the interest of justice, in which case the court must conclude the proceedings in the manner done prior to the *Land Court Act* coming into effect.

Court or mediation

The provisions set out in the new *Land Court Act*, as well as certain amendments to *Esta*, place considerable emphasis on first engaging in mediation and arbitration to settle disputes. When proceedings are instituted in terms of the *Land Court Act*, the registrar of the Land Court must refer the matter to the judge president of the court. The judge president must then decide whether the matter should be heard in the Land Court or referred for mediation.

If, during the proceedings (but prior to judgment), the presiding judge does find that the matter can be resolved through mediation, he or she can order that the parties mediate the issue(s) in order to try and resolve it, and can suspend the proceedings pending the mediation process.

If the judge president or judge refers the matter for mediation, an order must be granted in terms of which:

- The registrar of the Land Court is ordered to transfer the matter to a mediator in terms of the regulations of the *Land Court Act*.
- The time, date and place of the mediation process must be specified.
- A suitable person is appointed as mediator to preside over the first meeting between the parties. The *Land Court Act* stipulates that the parties may, if agreed upon and at any stage of the mediation process, appoint another person as mediator.

The regulations pertaining to some aspects of the mediation process, including the matter of appointing a mediator and the procedure for referring matters for mediation in terms of the *Land Court Act*, have yet to be published. Once the matter has been referred to a mediator, he or she must act swiftly and in accordance with the regulations of the Land Court.

An unsatisfactory outcome

If the matter cannot be resolved satisfactorily, or if one or more of the parties lodges a request, the mediator must refer the case back to the court in accordance with the prescribed regulations. All discussions, disclosures, and submissions made during the mediation process are privileged, unless the parties agree otherwise.

If the parties do reach a settlement, the court may choose to make this agreement a court order. If the court were to propose technical amendments, the parties must be notified thereof and comments from the parties must be received and considered before any amendments are made.

If negotiation or mediation leads to the matter being settled out of court and all parties agree to the settlement agreement, the registrar of the court must present the agreement to the court for ratification or rejection. The court must consider the settlement agreement and can either ratify and make it a court order, or refer it back to the parties for reconsideration.

Only in exceptional cases will the Land Court grant cost orders against unsuccessful parties. When the Land Court determines whether to grant a cost order in a particular case, one of the factors considered is whether the matter should instead have been referred to mediation or arbitration, and what the cost would have been if the matter was referred directly to the Land Court instead of mediation.

The *Esta* also contains certain provisions regarding the granting of eviction orders in cases where attempts have been made to settle the dispute through mediation or arbitration, and the court is satisfied that the circumstances pertaining to the eviction order cannot be resolved this way.

In some cases, peaceful solutions are possible through mediation, but in others not. Time will tell how the new *Land Court Act* and its rules and regulations will be implemented, and to what extent it will lead to speedy land reform and peaceful dispute resolution. 🌱

For more information, email Clarissa Pienaar at clarissap@mmlaw.co.za or phone the Pietermaritzburg office at 033 032 0241 or the Potchefstroom office at 018 297 8799.

CCMA case after employee dismissal

By Anneline Scriven, senior legal advisor, LWO Employers Organisation

A dismissed employee can refer a dispute to the Commission for Conciliation, Mediation and Arbitration (CCMA) to challenge the fairness of their dismissal. Therefore, prior to dismissal, employers should ensure that they follow the correct procedure and have sufficient grounds for dismissal.

An employee who refers a case to the CCMA becomes the applicant and the employer the respondent. The applicant has 30 calendar days after the date of dismissal to refer a dispute online or in person to the CCMA. A completed referral form sets out the basis of the claim, and is served on the employer and filed with the CCMA.

After the 30-day period has lapsed, the applicant may still refer the matter but must show good cause for the late referral. This is usually done as an application for condonation of the late filing of the referral, which the respondent (employer) can oppose through a written submission. The commissioner dealing with the matter will address the late filing and decide on the outcome.

Upon receipt of the referral form, the CCMA sets the matter down on a date and time that parties need to attend for either a conciliation or a con-arb process. The CCMA must provide parties with 14 days' written notice of the proceedings in case of a conciliation or con-arb, and 21 days' written notice in case of an arbitration, with an additional seven days' notice if sent via registered mail.

CCMA processes

- **Conciliation:** The commissioner will attempt to resolve the matter

on an informal basis. Conciliation proceedings are private and confidential. No person may refer to anything said during conciliation proceedings in any subsequent proceedings, unless agreed to by the parties in writing or if ordered by a court of law.

- **Arbitration:** A formal hearing where a commissioner will give both parties the opportunity to present their case, including witnesses and evidence. Once concluded, the commissioner has 14 days to make a ruling as to the fairness of the dismissal.
- **Con-arb:** Conciliation and arbitration is heard on the same day. If the matter is not resolved at conciliation, arbitration will follow directly thereafter. Either party can object to arbitration immediately after conciliation in an unfair dismissal dispute by written notice to the CCMA and the other party, no later than seven days prior to the scheduled date.

The respondent (employer) must prove the following at the CCMA:

- **Procedural fairness:** Includes presenting the employee with a notice of disciplinary hearing setting out the charges and allowing the employee reasonable time to prepare

for the hearing. At the hearing, the employee may request an interpreter, to be represented, to state his/her case, to call witnesses, to question the evidence of the employer's witnesses, etc. An independent chairperson should then hear the evidence and make a finding on the charge(s).

- **Substantive fairness:** Proof that the employee was guilty of misconduct which was serious enough to warrant a sanction of dismissal in the specific circumstances.

What to expect

If an employer fails to follow fair procedures, it may result in a CCMA order made against the employer of up to 12 months' salary to the employee. Likewise, if a dismissal is found to be substantively unfair, the CCMA may either order the employee's re-instatement or re-employment, or, if returning to work is not feasible, award the employee compensation.

CCMA processes can be intimidating, and it is a good idea to get expert advice. An employer can be represented by any employee/director of the business, or by an office bearer/official of an employers' organisation that is registered with the Department of Employment and Labour. 📍

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, send an email to Anneline Scriven at anneline@lwo.co.za or info@lwo.co.za, or visit www.lwo.co.za.



PLANT WITH VISION CUT YOUR LOSSES WITH PRECISION

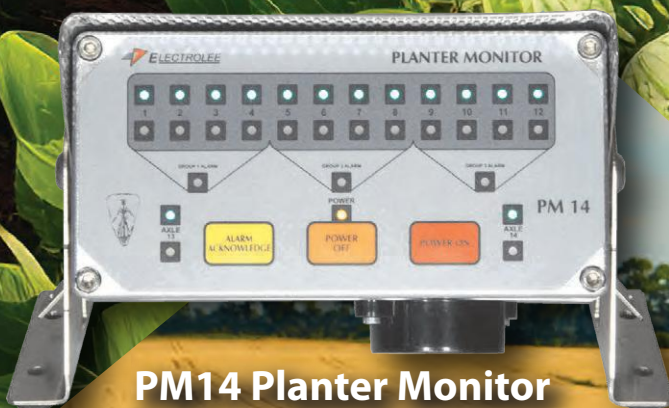
Electrolee's monitors arm you with the knowledge of knowing how your planting process is progressing.

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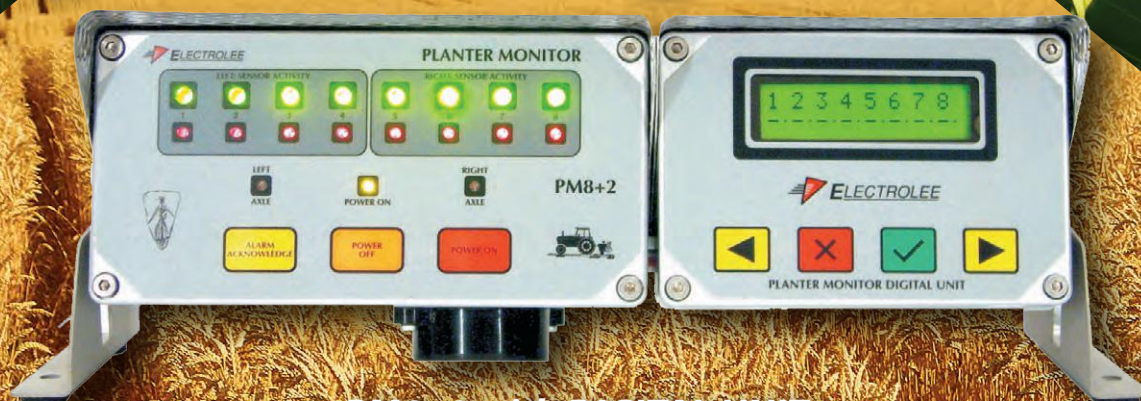


PM22 Planter Monitor

Models: PM8, PM8+2, PM14, PM22, PM26 and DIGITAL UNIT which can be added to any model provided one channel is kept for monitoring axle rotation. The DIGITAL UNIT is factory fitted to the Basic Planter Monitor.



PM14 Planter Monitor



PM8+2 with DIGITAL UNIT



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MANURE & STONE FORKS



Q-Series



X-SERIES

(HEAVY DUTY LOADER)

- Parallel lift
- ± 500 Cycle hours per annum
- Rated for tractors from 30 - 120hp
- Lift capacity, from 1520kg up to 1680kg
- Mechanical joystick control
- 3 Models on offer

OPTIONAL EQUIPMENT

- Soft Drive suspension

NOTE: Not suited for dairy farming activities.

PROMOTION PRICE INCLUDES THE FOLLOWING:

LOADER	± TRACTOR SIZE	BUCKET	SUB-FRAME	HYDRAULICS	MECH. JOYSTICK
X3s	(50 - 80hp)	GM 140 (540L)	✓	✓	✓
X4s	(60 - 100hp)	SM 160 (760L)	✓	✓	✓
X5s	(70 - 120hp)	SM 160 (760L)	✓	✓	✓

Q-SERIES

(EXTRA HEAVY DUTY LOADER)

- Parallel lift
- ± 2000 Cycle hours per annum
- Rated for tractors from 80 - 280hp
- Lift capacity, from 1920kg up to 2490kg
- Mechanical joystick control
- 4 Models on offer

OPTIONAL EQUIPMENT

- Soft Drive suspension
- Electronic joystick control
- 3rd Function
- Q-companion

PROMOTION PRICE INCLUDES THE FOLLOWING:

LOADER	± TRACTOR SIZE	BUCKET	SUB-FRAME	HYDRAULICS	MECH. JOYSTICK
Q4s	(80 - 140hp)	SM 160 (760L)	✓	✓	✓
Q5s	(100 - 180hp)	SM 180 (860L)	✓	✓	✓
Q6m	(120 - 220hp)	SM 180 (860L)	✓	✓	✓
Q7m	(140 - 280hp)	SM 220 (1060L)	✓	✓	✓

SUB-FRAMES IN STOCK FOR SPEEDY DELIVERY (MODELS NOT LISTED, MADE TO ORDER.)



Sub-Frame

IN STOCK

- 1) JOHN DEERE B-Series (6095B to 6110B)
- 2) JOHN DEERE 5090E
- 3) JOHN DEERE 5075E
- 4) JOHN DEERE 6140M, 6150M, 6155M
- 5) NEW HOLLAND T6050
- 6) MASSEY FERGUSON 275 XTRA

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- Open to all dealers.
- We fit loaders to all makes and models of tractors, old and new.
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