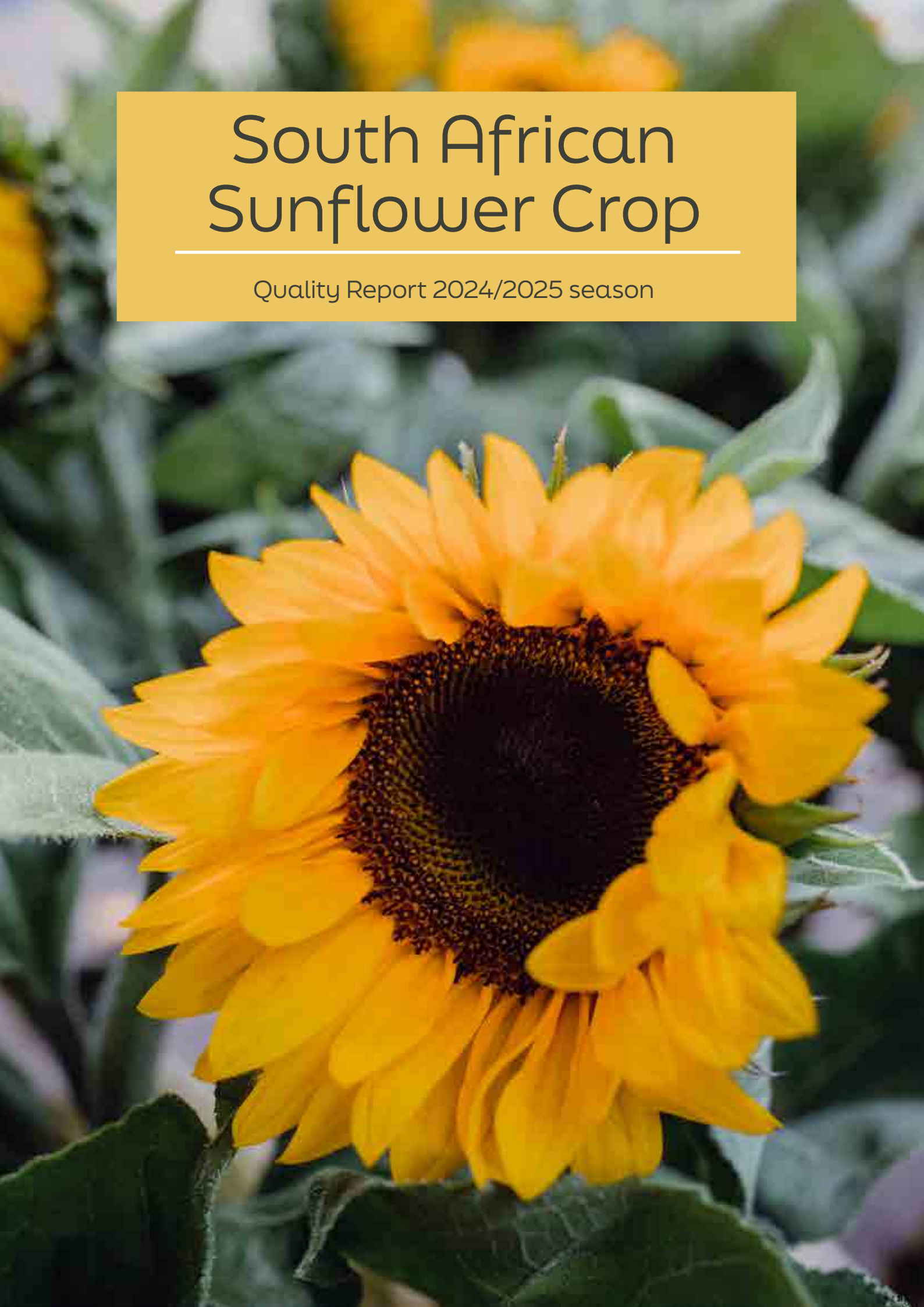

South African Sunflower Crop

Quality Report 2024/2025 season

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South African

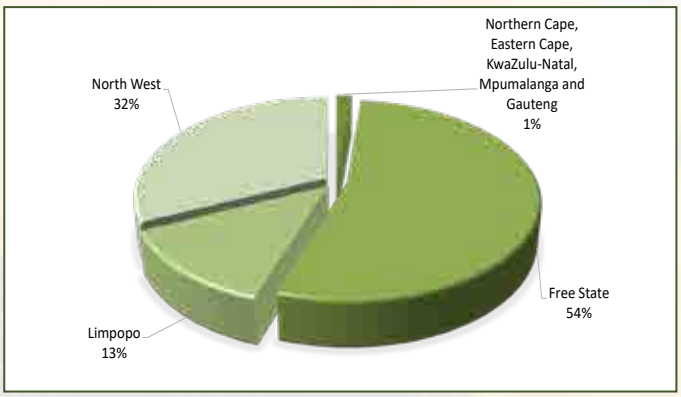
Commercial sunflower quality for the 2024/25 Season

Acknowledgements
With gratitude to:

- ***Oilseeds Advisory Committee (OAC) as well as the Oil & Protein Seed Development Trust (OPDT) for its financial support in conducting this survey.***
- ***Agbiz Grain and its members for providing the samples for this survey.***
- ***The Crop Estimates Committee (CEC) of the Department of Agriculture (NDA) for providing production related figures.***
- ***South African Grain Information Service (SAGIS) for providing sunflower related supply and demand figures.***

Introduction

The final calculated commercial sunflower crop figure of the 2024/25 season as overseen by the National Crop Estimates Liaison Committee (CELC) is 700 000 tons. This is 1.17% less than the final crop estimate figure of 708 300 tons. The crop increased by almost 11% (68 000 tons) year on year. The major sunflower-producing provinces, namely the Free State and North West, contributed almost 86% to the total crop.



Graph 1: Provincial contribution to the production of the 2024/25 sunflower crop

Figures provided by the CEC.

During the harvesting season, a representative sample of each delivery of sunflower seed was taken according to the prescribed grading regulations at the various grain intake points. The sampling procedure for the samples used in this survey is described on page 28. One hundred and thirteen (113) composite sunflower samples, representing the different production regions, were analysed for quality. The samples were graded, milled and analysed for moisture, crude protein, crude fat, crude fibre and ash content.

This is the thirteenth annual sunflower crop quality survey performed by The Southern African Grain Laboratory NPC (SAGL). SAGL was established in 1997 at request of the Grain Industry. SAGL is an ISO 17025 accredited testing laboratory and participates in various proficiency testing schemes, both nationally and internationally, as part of our ongoing quality assurance procedures to demonstrate technical competency and international comparability.

The goal of this crop quality survey is the compilation of a detailed database, accumulating quality data collected over several seasons on the national commercial sunflower crop, which is essential in assisting with decision making processes. The data reveal general tendencies and highlight quality differences in the commercial sunflower seed produced in different production regions nationally.

Results of previous surveys are available on the SAGL website (www.sagl.co.za). Reports are available for reading in an easy to page format or for download. Hard copy reports are distributed to Directly Affected Groups and interested parties.

In addition to the quality information, production figures (obtained from the Crop Estimates Committee (CEC)) relating to hectares planted, tons produced and yields obtained on a national as well as provincial basis, over an eleven-season period, are provided in this report. SAGIS (South African Grain Information Service) supply and demand information is provided in table and graph format. Import and export figures over several seasons as well as information on the manufacture, import and export of oil seed products, are also included.

The report of the Evaluation of sunflower cultivars for the 2024/25 season, conducted by the ARC-Grain Crops Institute in collaboration with Agricol, Corteva (Pannar & Pioneer), Syngenta and Limagrain Field seeds, is included in totality and as received. The national grading regulations published in Government Notice NO. 45 of 22 January 2016 are also provided.

Production

World sunflower seed production for the 2024/25 season stands at 55.4 million metric tons with Russia and the Ukraine contributing 53% to this total. An area of 30.4 million hectares were harvested resulting in a yield of 1.82 metric tons/hectare. The forecasted figure for the 2025/26 season is 56.6 million metric tons harvested on 33.0 million hectares with a yield of 1.71 metric tons/hectare.

Please see Table 1 for the world sunflower seed supply and disappearance figures.

Table 1: World Sunflower Seed Supply and Disappearance (October through September)

Season	2020/21	2021/22	2022/23	2023/24	2023/24 (Revised)	2024/25 (Forecast)
Area Harvested (1 000 Ha)	***28 045***	***29 877***	***29 983***	***29 822***	***30 400***	***33 017***
Yield (MT/Ha)	***1.81***	***1.95***	***1.87***	***1.99***	***1.82***	***1.71***
Production (1 000 MT)						
Argentina	3 200	3 360	4 130	3 840	5 170	5 750
European Union	8 969	10 389	9 520	9 983	8 717	8 538
China	2 750	2 880	2 930	3 000	3 100	3 200
Russia	13 420	15 660	17 100	18 600	17 500	18 300
Ukraine	13 900	16 900	12 680	15 100	12 100	11 400
United States	1 353	864	1 276	1 024	520	1 053
South Africa	678	846	720	632	708	700
Turkey	1 580	1 750	1 730	1 280	1 250	1 130
Other	4 995	5 652	5 947	5 970	6 366	6 480
TOTAL	***50 845***	***58 301***	***56 033***	***59 429***	***55 431***	***56 551***
Seed Import (1 000 MT)						
Turkey	844	673	981	301	794	900
European Union	817	1 807	1 466	834	587	771
Other	1 308	1 639	1 492	1 480	1 343	1 373
TOTAL	***2 969***	***4 119***	***3 939***	***2 615***	***2 724***	***3 044***
Seed Export (1 000 MT)						
Argentina	178	158	91	80	133	220
United States	72	69	63	47	36	50
Russia	528	280	285	324	267	275
Ukraine	186	1 793	1 685	302	69	52
Other	1 907	1 875	1 755	1 964	2 475	2 385
TOTAL	***2 871***	***4 175***	***3 879***	***2 717***	***2 980***	***2 982***
Oilseed crushed	***45 568***	***48 315***	***52 180***	***55 470***	***49 741***	***51 478***

National Sunflower Association website www.sunflowernsa.com,
Table updated January 14, 2026; Source: Oil World & USDA.

Sunflower seed production is very suitable for South African climatic conditions. Sunflower plants are drought tolerant and thus a crucial risk diversification crop going forward. The deep root system of a sunflower plant enables the plant to perform better than other crops during dry seasons. Planting sunflowers is also advantageous when rainfall occurs late in the season, due to the late planting window relative to that of maize.

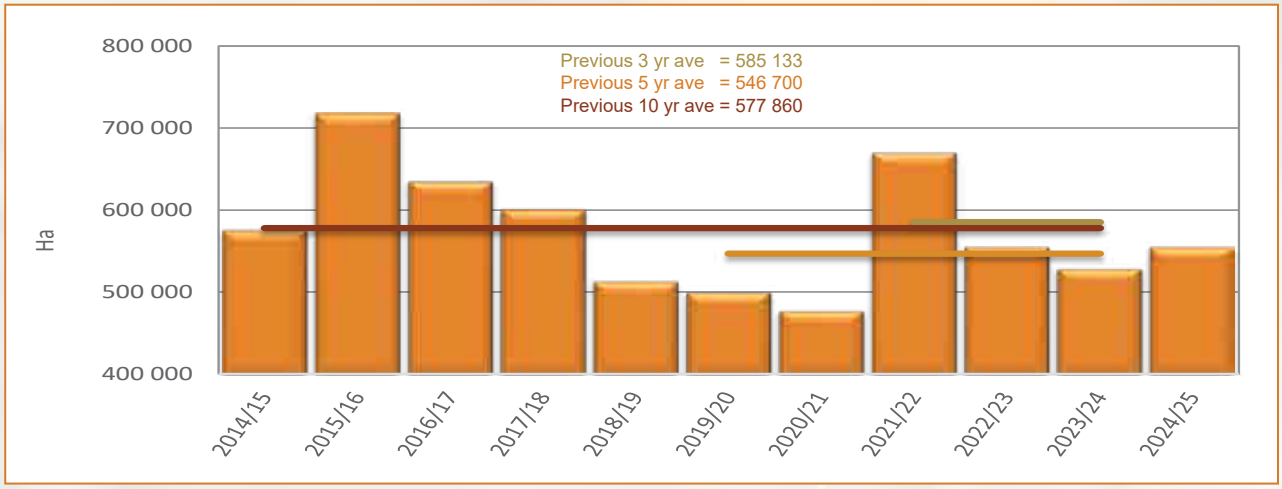
The area utilised for sunflower production increased by 5% to 555 700 ha, compared to the 529 000 ha of the previous season. The national yield average increased by almost 6% from to 1.19 t/ha in the previous season to 1.26 t/ha this season.

Please see Table 2 for an overview of sunflower production under dry land conditions versus irrigation in the 2024/25 season, compared to the 2023/24 season. Graphs 2 to 4 provide national figures with regards to hectares planted, tonnage produced and yields obtained over the last 11 seasons and Graphs 5 to 10 similar figures for the major sunflower producing provinces, namely the Free State and North West as well as Limpopo.

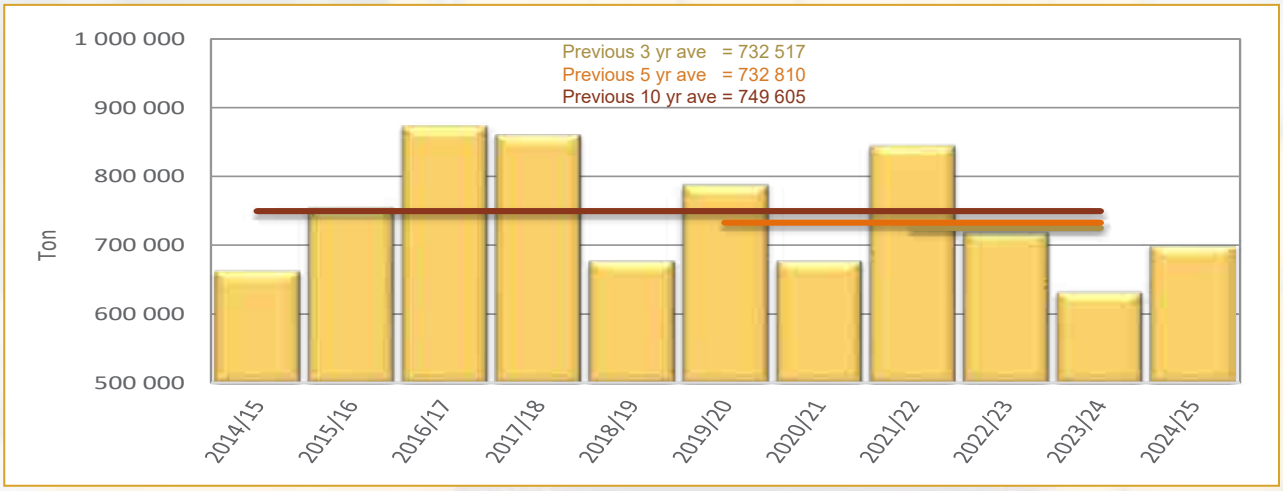
Table 2: Sunflower production overview over two seasons

Province	Type of production	2024/25			2023/24		
		Hectares planted, ha	Production, tons	Yield, t/ha	Hectares planted, ha	Production, tons	Yield, t/ha
Western Cape	Dryland	-	-	-	-	-	-
	Irrigation	-	-	-	-	-	-
	Total	-	-	-	-	-	-
Northern Cape	Dryland	-	-	-	-	-	-
	Irrigation	1 000	2 300	2.30	2 000	4 600	2.30
	Total	1 000	2 300	2.30	2 000	4 600	2.30
Free State	Dryland	262 500	367 025	1.40	250 000	341 250	1.37
	Irrigation	2 000	8 200	4.10	5 000	12 750	2.55
	Total	264 500	375 225	1.42	255 000	354 000	1.39
Eastern Cape	Dryland	700	1 400	2.00	700	1 400	2.00
	Irrigation	-	-	-	-	-	-
	Total	700	1 400	2.00	700	1 400	2.00
KwaZulu-Natal	Dryland	1 000	2 000	2.00	300	600	2.00
	Irrigation	-	-	-	-	-	-
	Total	1 000	2 000	2.00	300	600	2.00
Mpumalanga	Dryland	2 500	3 625	1.45	3 500	4 900	1.40
	Irrigation	-	-	-	-	-	-
	Total	2 500	3 625	1.45	3 500	4 900	1.40
Limpopo	Dryland	88 600	87 480	0.99	89 000	61 200	0.69
	Irrigation	1 400	2 520	1.80	1 000	1 800	1.80
	Total	90 000	90 000	1.00	90 000	63 000	0.70
Gauteng	Dryland	985	1 177	1.19	2 500	3 000	1.20
	Irrigation	15	23	-	-	-	-
	Total	1 000	1 200	1.20	2 500	3 000	1.20
North West	Dryland	193 900	221 280	1.14	172 000	193 500	1.13
	Irrigation	1 100	2 970	2.70	3 000	7 000	2.33
	Total	195 000	224 250	1.15	175 000	200 500	1.15
RSA	Dryland	550 185	683 987	1.24	518 000	605 850	1.17
	Irrigation	5 515	16 013	2.90	11 000	26 150	2.38
	Total	555 700	700 000	1.26	529 000	632 000	1.19

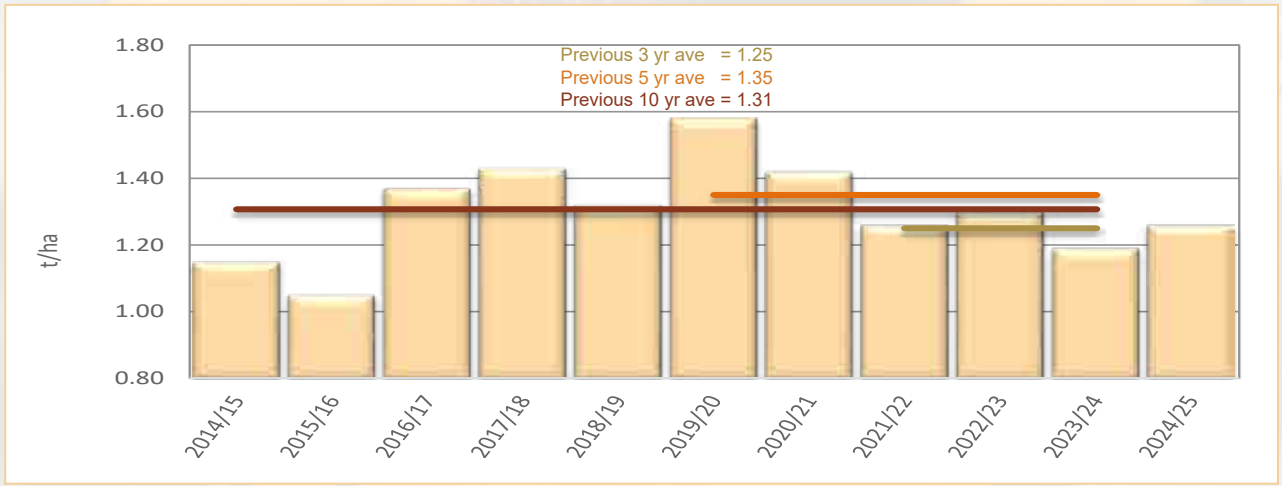
Figures provided by the CEC.



Graph 2: Total RSA area utilised for sunflower production from 2014/15 to 2024/25

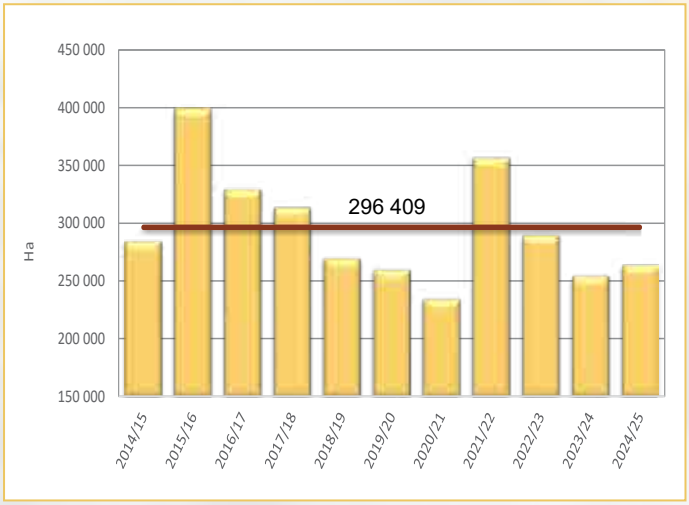


Graph 3: RSA Sunflower production from 2014/15 to 2024/25

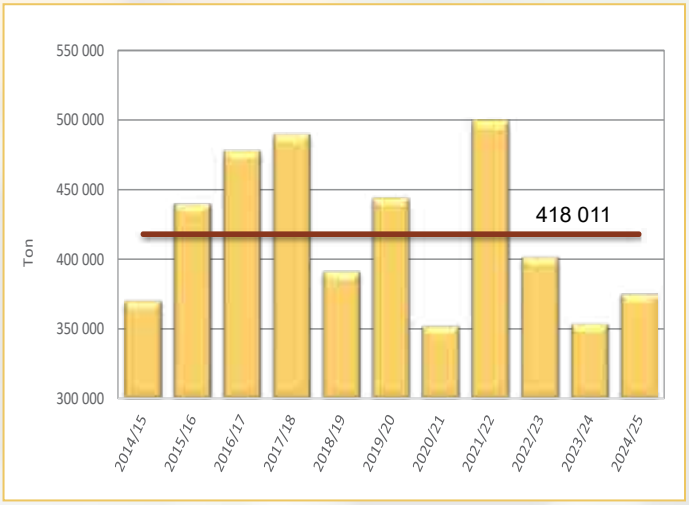


Graph 4: RSA Sunflower yield from 2014/15 to 2024/25

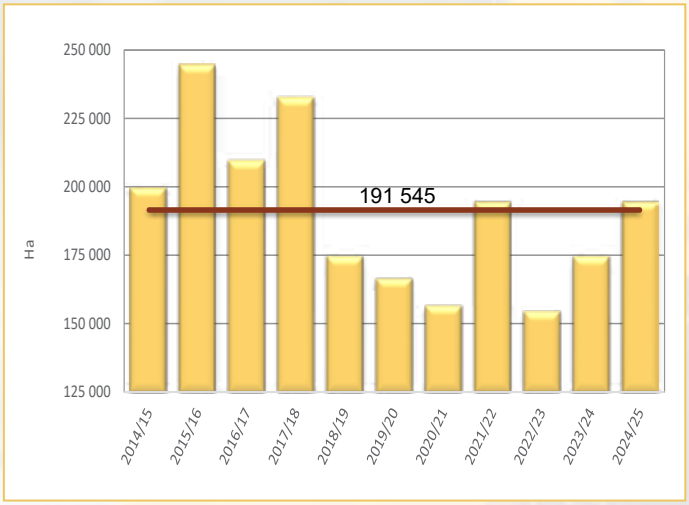
Figures provided by the CEC.



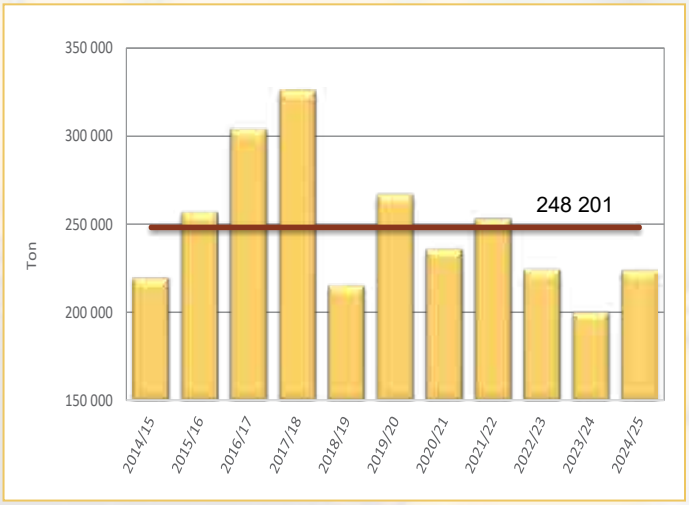
Graph 5: Area utilised for sunflower production in the Free State since 2014/15



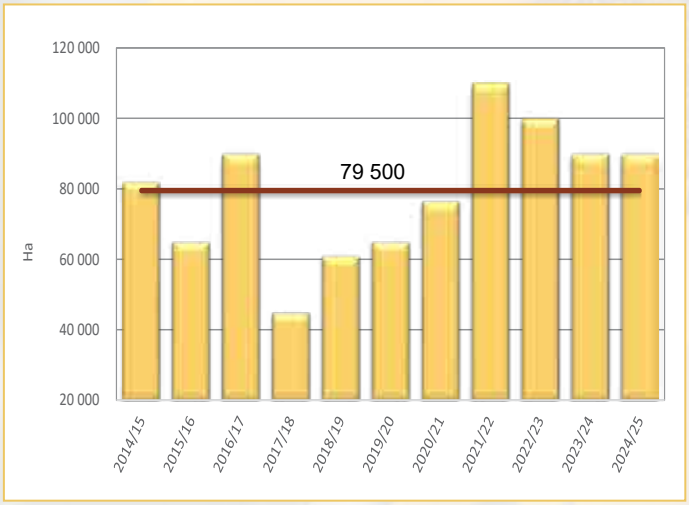
Graph 6: Sunflower production in the Free State since 2014/15



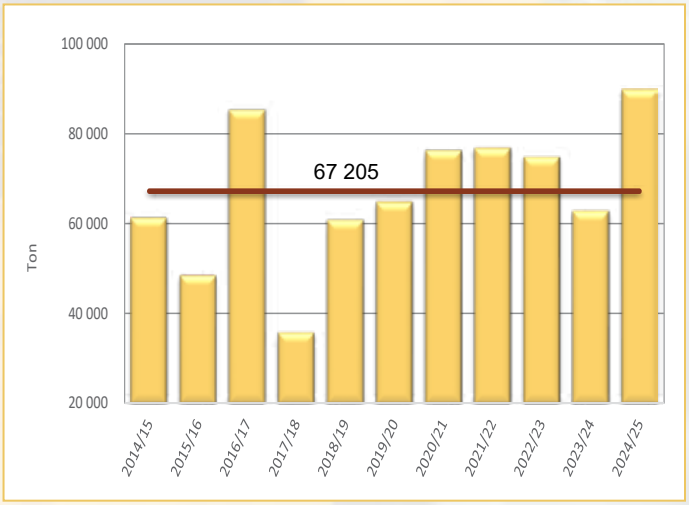
Graph 7: Area utilised for sunflower production in North West since 2014/15



Graph 8: Sunflower production in North West since 2014/15



Graph 9: Area utilised for sunflower production in Limpopo since 2014/15



Graph 10: Sunflower production in Limpopo since 2014/15

Figures provided by the CEC.

Eleven season average

Supply and Demand

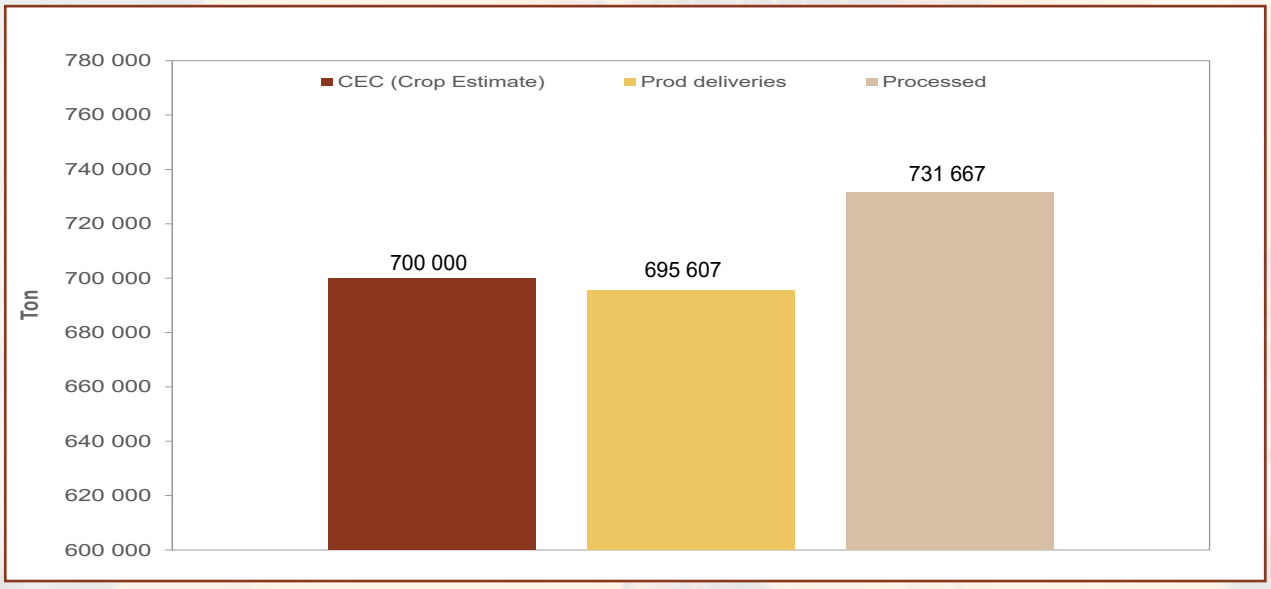
The sunflower seed marketing season dates from March to February. According to SAGIS supply and demand figures for the 2025/26 marketing season (March – January), opening stock declined by almost 43% compared to the previous marketing season. It is also 28% (27 774 tons) lower than the 10-year average.

45 619 tons of sunflower and sunflower seed products were imported compared to the 1 423 and 12 793 tons of the previous two seasons respectively. The 10-year import average is 13 179 tons. Of the 731 667 tons of sunflower seeds processed for the local market so far this season, 1 822 tons (0.2%) was used for human consumption and 5 888 tons (0.8%) for animal feed.

Sunflower and canola are crushed predominantly for the vegetable oil market to produce oil and oilcake. The quantity of sunflower seeds crushed during the season to date, namely 723 957 tons, is 7% more than during the previous season, but almost 5% (34 997 tons) lower than the 10-year average.

Exports for the 2025/26 season amounted to 15 380 tons, compared to the 7 637 and 68 tons of the previous two seasons. The 10-year export average is 1 106 tons. This year's export total is also the highest since the 79 400 tons in the 2008/09 season.

Globally, Russia, followed by Argentina, Ukraine and the United States were the largest exporters of sunflower seeds during the 2024/25 season. Ukrainian exports showed a sharp decline over the last two seasons. Russia (4.9 million metric tons) and Ukraine (4.5 million metric tons) accounted for 67% of total sunflower oil exports worldwide in the corresponding period *(National Sunflower Association website www.sunflowernsa.com, Table updated January 14, 2026; Source: Oil World & USDA).*



Graph 11: Sunflower supply and demand overview for the current marketing season (Mar 2025 - Feb 2026)

Information provided by SAGIS.

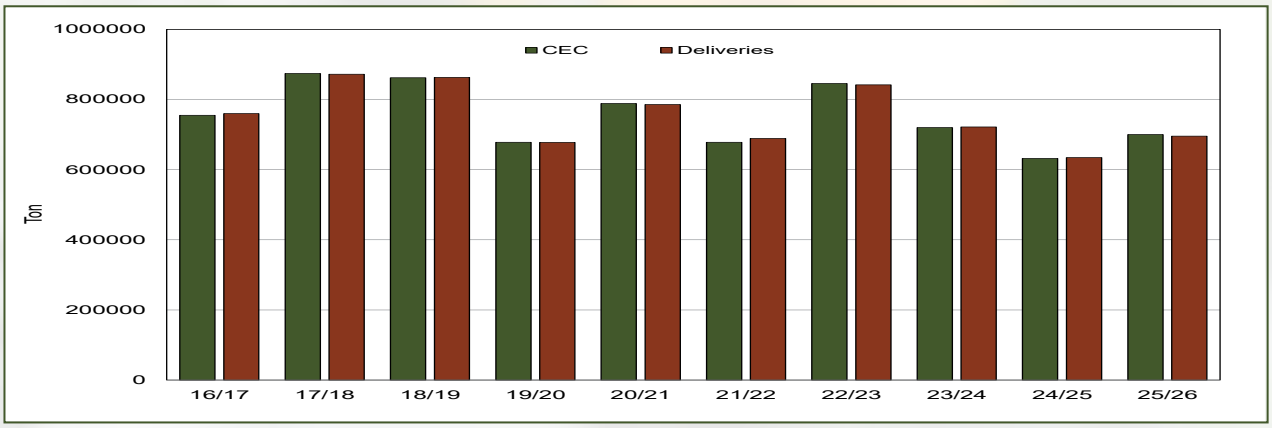
Table: S1

SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

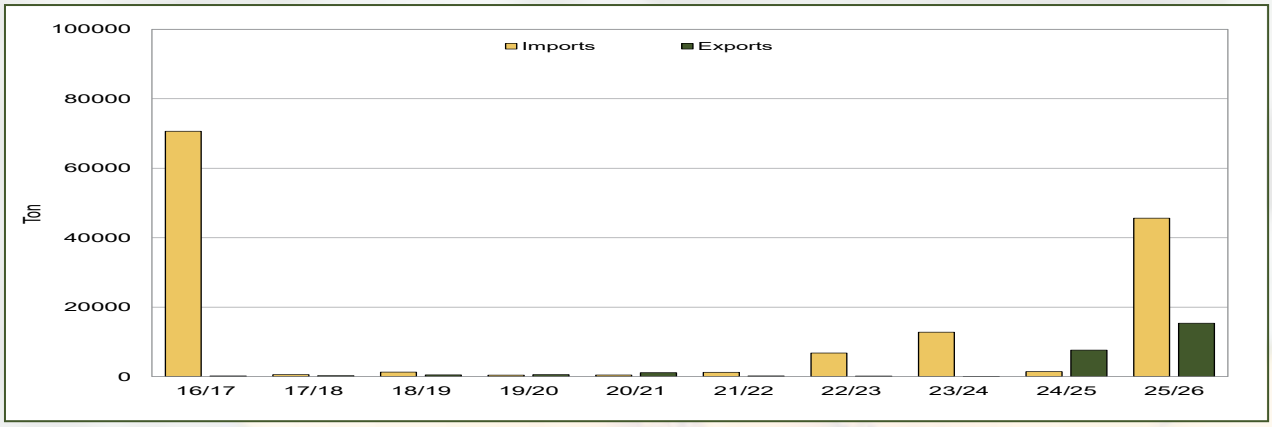
SUNFLOWERSEED: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON) — **Publication date: 2025-02-25**

	Season (Mar - Jan)																Current Season Mar-Jan	10 Year average
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2015/16-2024/25
																	***	
																	11	
CEC (Crop Estimate)	801 000	490 000	860 000	522 000	557 000	832 000	663 000	755 000	874 000	862 000	678 000	788 500	678 000	845 550	720 000	632 000	700 000	749 605
SUPPLY																		
Opening stock (1 Mar)	164 300	157 200	18 800	109 000	81 302	47 116	92 927	45 867	163 086	154 841	120 165	135 325	60 964	31 790	73 517	127 144	72 789	100 563
Producer deliveries	806 900	477 300	866 300	534 251	542 165	833 165	663 669	759 614	872 171	863 184	677 674	785 567	689 083	841 784	721 752	634 451	695 607	750 895
Imports	45 300	62 400	10 800	11 737	94 475	63 180	36 064	70 643	554	1 324	457	471	1 256	6 805	12 793	1 423	45 619	13 179
Surplus	700	2 000	3 800	5 485	4 689	5 948	9 897	4 268	12 173	6 863	6 520	7 200	9 306	11 241	3 642	3 940	0	7 505
Total Supply	1 017 200	698 900	899 700	660 473	722 631	949 409	802 557	880 392	1 047 984	1 026 212	804 816	928 563	760 609	891 620	811 704	766 958	814 015	872 142
DEMAND																		
Processed for local market	847 200	671 500	782 200	572 519	666 551	847 682	747 808	707 327	885 039	900 045	664 027	861 295	724 949	815 258	680 788	683 257	731 667	766 979
Human	1 900	1 600	1 300	904	1 162	467	1 003	1 192	1 487	1 609	1 478	1 652	1 556	1 656	2 081	1 469	1 822	1 518
Animal	3 300	3 100	2 900	3 022	2 777	2 893	8 995	10 665	5 737	5 114	5 511	5 432	6 129	6 058	5 432	5 998	5 888	6 507
Crushed oil & cake	842 000	666 800	778 000	568 593	662 612	844 322	737 810	695 470	877 815	893 322	657 038	854 211	717 264	807 544	673 275	675 790	723 957	758 954
Withdrawn by producers	5 700	1 700	3 500	2 521	2 524	1 068	1 157	605	442	519	783	464	359	392	110	8	50	484
Released to end-consumers	4 800	4 100	3 700	3 154	2 923	2 799	2 936	2 867	2 592	1 764	1 023	1 144	666	106	162	39	46	1 330
Seed for planting purposes	2 700	1 700	2 500	2 700	2 903	3 804	2 824	3 474	3 026	3 582	2 447	2 493	2 495	1 775	3 286	3 023	2 889	2 843
Net dispatches(+)/receipts(-)	-400	1 000	-1 200	-1 716	606	1 081	1 709	2 828	1 770	-378	635	1 063	133	402	146	205	1 340	851
Deficit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3 002	0
Exports	0	100	0	27	8	48	256	205	274	515	576	1 140	217	170	68	7 637	15 380	1 106
Total Demand	860 000	680 100	790 700	579 205	675 515	856 482	756 690	717 306	893 143	906 047	669 491	867 599	728 819	818 103	684 560	694 169	754 374	773 593
Unutilized Closing Stock (28 Feb)	157 200	18 800	109 000	81 268	47 116	92 927	45 867	163 086	154 841	120 165	135 325	60 964	31 790	73 517	127 144	72 789	59 641	98 549
Processed p/month	70 600	65 000	65 200	47 700	55 546	70 640	62 317	58 944	73 753	75 004	55 336	71 775	60 412	67 938	56 732	56 938	66 515	63 915
Months' stock	2.2	0.3	1.7	1.7	0.8	1.3	0.7	2.8	2.1	1.6	2.4	0.8	0.5	1.1	2.2	1.3	0.9	1.6

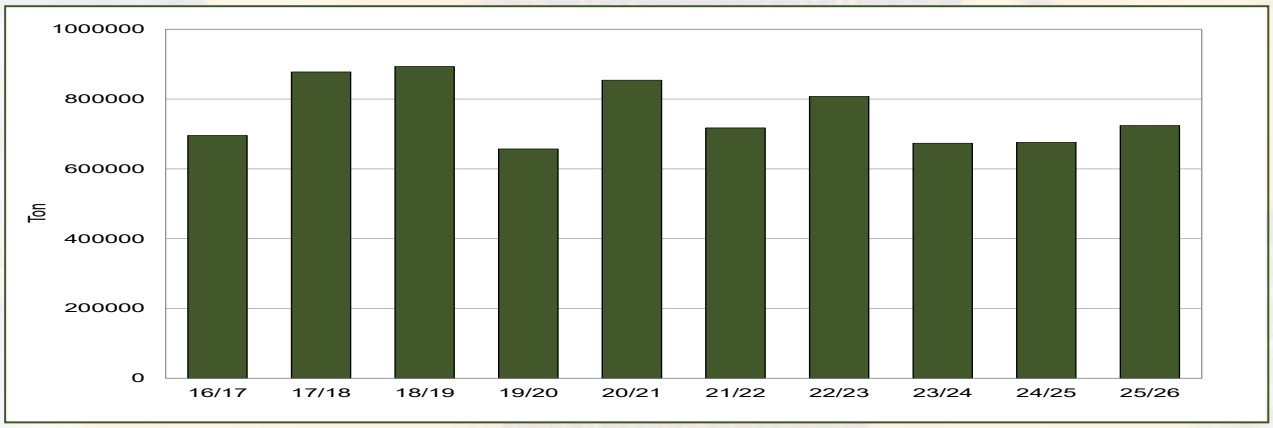
Note: *** Figures for current season up to date



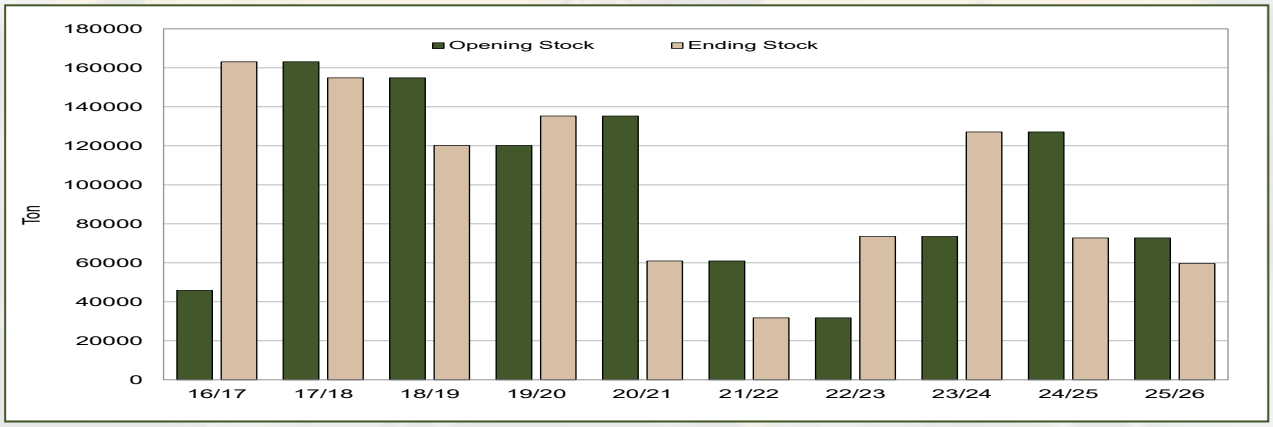
Graph 12: Sunflower: CEC Estimate vs SAGIS deliveries over 10 marketing seasons



Graph 13: Sunflower: Imports and Exports over 10 marketing seasons



Graph 14: Sunflower: Crushed over 10 marketing seasons



Graph 15: Sunflower: Opening and closing stock over 10 marketing seasons

Information provided by SAGIS.

Table: S2

Marketing Season (Mar - Feb)	WHOLE SUNFLOWER: IMPORTS FOR RSA PER COUNTRY (TONS)													
	Argentina	Botswana	Brazil	Bulgaria	China	Egypt	Malawi	Mozambique	Romania	Ukraine	United Kingdom	Zambia	Zimbabwe	Total
2016/17	42	1 424	0	38 434	0	0	686	0	30 015	19	23	0	0	70 643
2017/18	21	0	0	0	18	44	429	19	0	0	23	0	0	554
2018/19	65	381	0	0	0	23	855	0	0	0	0	0	0	1 324
2019/20	44	0	0	0	0	23	390	0	0	0	0	0	0	457
2020/21	87	0	20	0	0	90	274	0	0	0	0	0	0	471
2021/22	43	1 003	0	3	0	184	23	0	0	0	0	0	0	1 256
2022/23	66	6 564	0	0	0	0	175	0	0	0	0	0	0	6 805
2023/24	22	12 711	0	0	0	44	10	0	0	0	0	0	6	12 793
2024/25	221	1 056	0	0	0	116	30	0	0	0	0	0	0	1 423
2025/26*	43 934	1 560	0	0	0	95	30	0	0	0	0	0	0	45 619

*March 2025 - January 2026

Table: S3

Marketing Season (Mar - Feb)	WHOLE SUNFLOWER: RSA EXPORTS PER COUNTRY (TONS)									
	Australia	Botswana	Congo	Mauritius	Mozambique	Namibia	Eswatini	Uganda	Zimbabwe	Total
2016/17	0	40	0	0	0	48	107	0	10	205
2017/18	0	23	0	0	0	136	115	0	0	274
2018/19	0	10	0	0	0	360	145	0	0	515
2019/20	0	95	0	0	0	341	140	0	0	576
2020/21	0	24	0	0	0	304	192	54	566	1 140
2021/22	0	35	0	0	0	65	117	0	0	217
2022/23	0	35	0	4	0	50	81	0	0	170
2023/24	0	0	0	0	0	1	67	0	0	68
2024/25	0	0	0	0	0	0	63	0	133	196
2025/26*	0	59	15 012	0	91	34	42	0	142	15 380

*March 2025 - January 2026

Table: S4

Marketing Season (Mar - Feb)	SUNFLOWER: IMPORTS PER HARBOUR (TONS)					
	Harbours					
	East London	Durban	Cape	Port Elizabeth	Richards Bay	Total
2016/17	0	68 533	0	0	0	68 533
2017/18	0	44	62	0	0	106
2018/19	0	88	0	0	0	88
2019/20	0	67	0	0	0	67
2020/21	0	132	65	0	0	197
2021/22	0	135	95	0	0	230
2022/23	0	66	0	0	0	66
2023/24	0	66	0	0	0	66
2024/25	0	316	21	0	0	337
2025/26*	0	44 029	0	0	0	44 029

*Progressive March 2025 - January 2026
Note: Includes Imports for RSA and Other Countries

Table: S5

Marketing Season (Mar - Feb)	SUNFLOWER: EXPORTS PER HARBOUR (TONS)					
	Harbours					
	East London	Durban	Cape	Port Elizabeth	Richards Bay	Total
2016/17	0	0	0	0	0	0
2017/18	0	0	0	0	0	0
2018/19	0	0	0	0	0	0
2019/20	0	0	0	0	0	0
2020/21	0	0	0	0	0	0
2021/22	0	0	0	0	0	0
2022/23	0	4	0	0	0	4
2023/24	0	0	0	0	0	0
2024/25	0	0	0	0	0	0
2025/26*	0	15 012	0	0	0	15 012

*Progressive March 2025 - January 2026

Table: S6

South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

	OIL SEEDS PRODUCTS MANUFACTURED (PER MONTH)													Date published: 2026-03-06
	Marketing year Mar 2023 - Feb 2024 Progressive: 12 Months	Marketing year Mar 2024 - Feb 2025 Progressive: 12 Months	Mar 2025 Tons	Apr 2025 Tons	May 2025 Tons	June 2025 Tons	July 2025 Tons	Aug 2025 Tons	Sep 2025 Tons	Oct 2025 Tons	Nov 2025 Tons	Dec 2025 Tons	Jan 2026 Tons	Marketing year Mar 2025 - Feb 2026 Progressive: 11 Months (Mar - Jan)
Palm Oil and Derivatives	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oil	**311 007**	**331 740**	20 333	26 406	34 019	36 584	36 438	35 457	36 409	36 169	35 206	34 327	33 362	**364 710**
Sunflower Oil	**253 507**	**264 878**	15 370	20 816	29 618	31 471	32 752	26 577	25 839	23 017	23 282	15 420	15 503	**259 665**
Coconut Oil/ Groundnut Oil / Canola Oil / Corn (Maize) Oil / Blends or mixes of Oils which includes one of the above Oils / Biodiesel / Cottonseed Oil	**80 812**	**92 330**	10 502	8 053	8 763	3 265	7 278	9 372	8 740	10 654	12 065	7 885	8 197	**94 774**
Sunflower Oilcake	**269 302**	**288 265**	17 609	24 890	33 945	35 765	39 013	30 872	32 728	28 747	28 696	19 009	16 525	**307 799**
Coconut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Palmnut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oilcake / Canola Oil-cake / Cottonseed Oilcake	**1 476 779**	**1 536 896**	95 302	120 438	157 588	158 698	164 496	159 123	166 129	164 230	164 068	147 187	151 686	**1 648 945**
Soybean Flours and Meals / Textured Vegetable Protein	**50 478**	**47 272**	3 987	3 876	4 478	4 006	4 278	3 770	3 188	4 622	3 244	2 604	3 064	**41 117**
Soybean Fullfat	**153 025**	**110 063**	6 887	8 132	11 095	9 923	11 272	10 990	10 136	10 820	9 033	8 920	8 437	**105 645**
Peanut Butter and Paste	**30 744**	**29 763**	3 118	2 218	1 893	3 027	2 446	2 914	2 536	2 400	3 336	2 863	1 856	**28 607**
Total	**2 625 654**	**2 701 207**	**173 108**	**214 829**	**281 399**	**282 739**	**297 973**	**279 075**	**285 705**	**280 659**	**278 930**	**238 215**	**238 630**	**2 851 262**

Table: S7

South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

	OIL SEEDS PRODUCTS IMPORTED (PER MONTH)												Date published: 2026-03-06	
	Marketing year Mar 2023 - Feb 2024 Progressive: 12 Months	Marketing year Mar 2024 - Feb 2025 ogressive: 12 Months	Mar 2025 Tons	Apr 2025 Tons	May 2025 Tons	June 2025 Tons	July 2025 Tons	Aug 2025 Tons	Sep 2025 Tons	Oct 2025 Tons	Nov 2025 Tons	Dec 2025 Tons	Jan 2026 Tons	Marketing year Mar 2025 - Feb 2026 Progressive: 11 Months (Mar - Jan)
Palm Oil and Derivatives	**515 904**	**616 201**	49 591	78 521	33 248	64 706	40 174	46 893	52 601	46 567	68 035	24 710	40 598	**545 644**
Soybean Oil	**41 801**	**37 550**	7 933	1 617	1 405	1 983	2 594	2 702	2 284	8 534	11 955	1 016	6 603	**48 626**
Sunflower Oil	**173 954**	**132 196**	1 038	1 086	1 668	2 153	24 996	20 295	14 107	9 768	25 847	30 421	470	**131 849**
Coconut Oil/ Groundnut Oil / Canola Oil / Corn (Maize) Oil / Blends or mixes of Oils which includes one of the above Oils / Biodiesel / Cottonseed Oil	**3 606**	**4 508**	80	163	246	222	332	188	481	471	389	227	192	**2 991**
Sunflower Oilcake	**0**	**0**		0	0	0	0	0	0	0	0	0	0	**0**
Coconut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Palmnut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oilcake / Canola Oil-cake / Cottonseed Oilcake	**70 714**	**239 648**	23 970	18 088	29 681	1 525	1 071	828	1 178	1 380	1 384	1 183	2 037	**82 325**
Soybean Flours and Meals / Textured Vegetable Protein	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Fullfat	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Peanut Butter and Paste	**3 566**	**1 838**	138	49	0	195	3	0	1	17	1	1	13	**418**
Total	**809 545**	**1 031 941**	**82 750**	**99 524**	**66 248**	**70 784**	**69 170**	**70 906**	**70 652**	**66 737**	**107 611**	**57 558**	**49 913**	**811 853**

Table: S8

SAGIS South African Grain Information Service NPC
Suid Afrikaanse Graaninligtingsdiens NWM
Reg no. 1997/019186/08

	OIL SEEDS PRODUCTS EXPORTED (PER MONTH)												Date published: 2026-03-06	
	Marketing year Mar 2023 - Feb 2024 ogressive: 12 Months	Marketing year Mar 2024 - Feb 2025 Progressive: 12 Months	Mar 2025 Tons	Apr 2025 Tons	May 2025 Tons	June 2025 Tons	July 2025 Tons	Aug 2025 Tons	Sep 2025 Tons	Oct 2025 Tons	Nov 2025 Tons	Dec 2025 Tons	Jan 2026 Tons	Marketing year Mar 2025 - Feb 2026 Progressive: 11 Months (Mar - Jan)
Palm Oil and Derivatives	**12 734**	**10 010**	868	783	1 570	1 760	1 953	1 478	879	1 786	1 575	680	608	**13 940**
Soybean Oil	**75 654**	**79 538**	8 492	7 439	7 284	9 765	5 845	5 373	5 594	8 093	6 105	6 720	3 558	**74 268**
Sunflower Oil	**6 768**	**5 159**	64	261	26	90	165	104	215	564	218	70	356	**2 133**
Coconut Oil/ Groundnut Oil / Canola Oil / Corn (Maize) Oil / Blends or mixes of Oils which includes one of the above Oils / Biodiesel / Cottonseed Oil	**13 657**	**7 183**	787	1 553	1 494	533	882	611	1 610	1 269	1 074	1 019	530	**11 362**
Sunflower Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Coconut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Palmnut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oilcake / Canola Oil-cake / Cottonseed Oilcake	**10 687**	**75 177**	11 482	10 439	11 485	11 198	13 229	10 171	7 688	8 322	6 879	14 565	10 112	**115 570**
Soybean Flours and Meals / Textured Vegetable Protein	**16 959**	**33 741**	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Fullfat	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	**0**
Peanut Butter and Paste	**211**	**165**	19	152	2	0	0	0	0	0	0	0	0	**173**
Total	**136 670**	**210 973**	**21 712**	**20 627**	**21 861**	**23 346**	**22 074**	**17 737**	**15 986**	**20 034**	**15 851**	**23 054**	**15 164**	**217 446**

RSA Production Regions

Figure 1: RSA Provinces

Regional map with gratitude to SiQ.

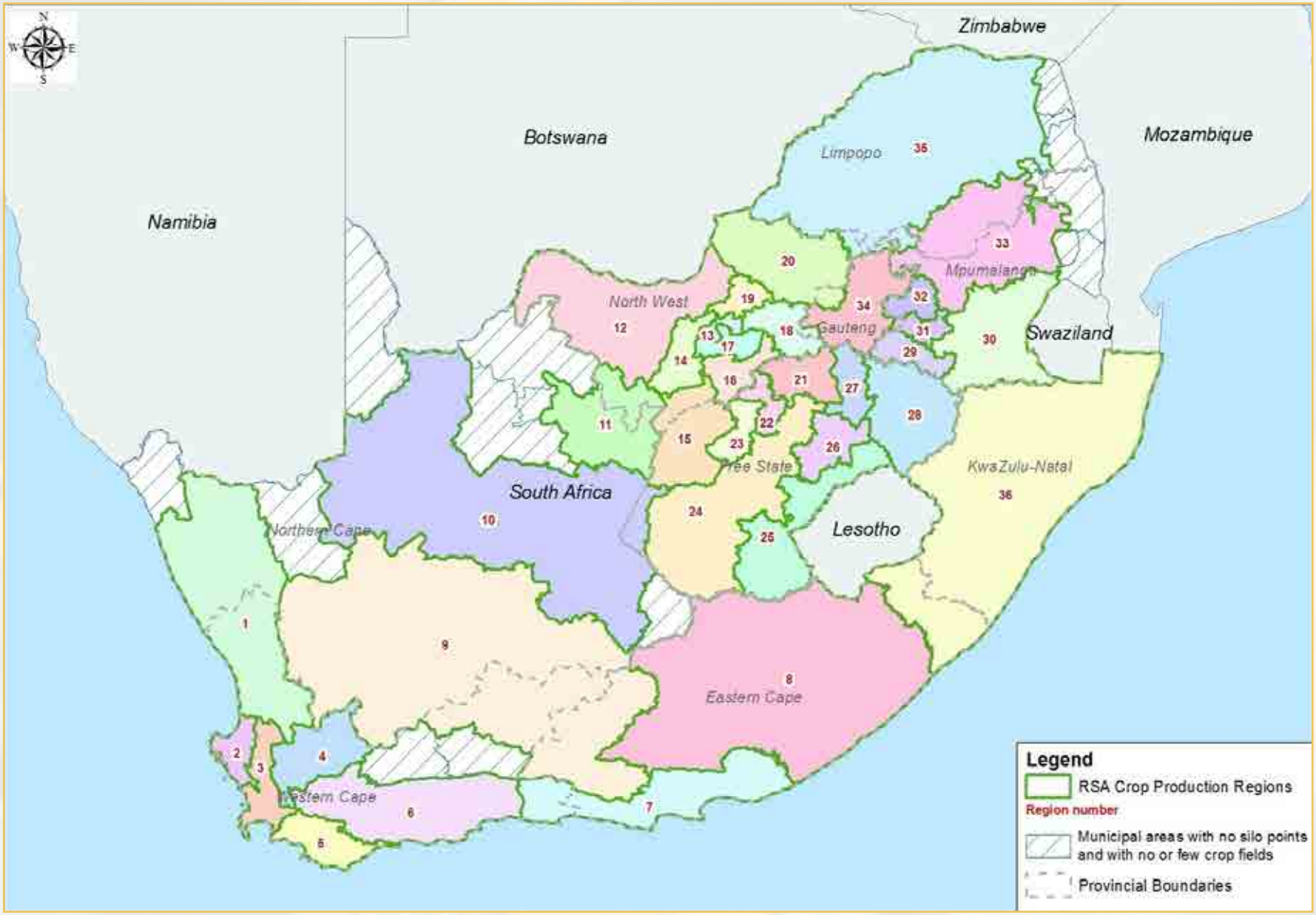
The 9 provinces are divided into 36 grain production regions.

The regions are distributed as follows:
Region 1: Namakwaland
Regions 2 to 4: Swartland
Regions 5 and 6: Rûens
Regions 7 and 8: Eastern Cape
Region 9: Karoo
Region 10: Griqualand West
Region 11: Vaalharts
Regions 12 to 20: North West
Regions 21 to 28: Free State
Regions 29 to 33: Mpumalanga
Region 34: Gauteng
Region 35: Limpopo
Region 36: KwaZulu-Natal

Please see the Crop Production Regions map on the next page.

The production regions from which sunflower samples have been received for the crop quality survey of the 2024/25 production season, are named and described on pages 15 and 16. All the silo/intake stands as well as the type of storage structure, situated in a particular region, are provided.

Figure 2: RSA Crop Production Regions



Regional map with gratitude to Agbiz Grain and SiQ.

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 14: North West Southern Region			
NWK	Barberspan (Bins)	NWK	Taaibospan (Bins)
NWK	Delareyville (Bins)	Senwes	Amalia (Bins)
NWK	Excelsior (Bins)	Senwes	Hallatshope (Bins)
NWK	Geysdorp (Bins)	Senwes	Migdol (Bins)
NWK	Migdol (Bins)	Senwes	Schweizer-Reneke (Bins)
NWK	Nooitgedacht (Bins)		

Region 15: North West South-Eastern Region			
Senwes	Bloemhof (Bins)	Senwes	Hoopstad (Bins)
GWK	Christiana (Bins)	Senwes	Kingswood (Bins)
Senwes	Christiana (Bins)	Senwes	Kruising (Bins)
Senwes	Helpman (Bags)	Senwes	Poppieland (Bunkers)
Senwes	Hertzogville (Bins)		

Region 16: North West Central Eastern Region			
Senwes	Bamboesspruit (Bins)	Senwes	Regina (Bins)
Senwes	Klerksdorp (Bins)	Senwes	Strydpoort (Bins)
Senwes	Leeudoringstad (Bins)	Senwes	Wolmaranstad (Bins)
Senwes	Makwassie (Bins)		

Region 17: North West Central-Northern Region (Ottosdal)			
NWK	Boschpoort (Bags/Bins/Bulk)	NWK	Vermaas (Bins)
NWK	Kleinharts (Bins)	Senwes	Hartbeesfontein (Bins)
NWK	Ottosdal (Bins)	Senwes	Melliodora (Bins)
NWK	Rostrataville (Bins)	Senwes	Werda (Bins)

Region 18: North West Central Region (Ventersdorp)			
NWK	Bodenstein (Bins)	Senwes	Makokskraal (Bins)
NWK	Coligny (Bins)	Senwes	Potchefstroom (Bins)
Senwes	Buckingham (Bins)	Senwes	Ventersdorp (Bins)
Senwes	Enselspruit (Bins)		

Region 21: Free State North-Western Region (Viljoenskroon)			
Senwes	Attie (Bins)	Senwes	Vierfontein (Bins)
Senwes	Groenebloem (Bins)	Senwes	Viljoenskroon (Bins)
Senwes	Heuningspruit (Bins)	Senwes	Vredefort (Bins)
Senwes	Koppies (Bins)	Senwes	Weiveld (Bins)
Senwes	Rooiwal (Bins)		

Region 22: Free State North-Western Region (Bothaville)			
Senwes	Allanrigde (Bins)	Senwes	Schoonspruit (Bins)
Senwes	Bothaville (Bins)	Senwes	Schuttesdraai (Bins)
Senwes	Mirage (Bins)	Suidwes	Misgunst (Bunkers)
Senwes	Odendaalsrus (Bins)		

Region 23: Free State North-Western Region (Bultfontein)			
Senwes	Bultfontein (Bins)	Senwes	Tierfontein (Bins)
Senwes	Losdoorns (Bins)	Senwes	Wesselsbron (Bins)
Senwes	Protespan (Bins)	Senwes	Willemsrus (Bins)

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 24: Free State Central Region			
Senwes	Bloemfontein (Bins)	Senwes	Petrusburg (Bins)
Senwes	Bradfort (Bins)	Senwes	Theunissen (Bins)
Senwes	De Brug (Bins)	Senwes	Van Tonder (Bins)
Senwes	Geneva (Bins)	Senwes	Welgeleë (Bins)
Senwes	Hennenman (Bins)	Senwes	Winburg (Bins)
Senwes	Kroonstad (Bins)		

Region 25: Free State South-Western Region			
Afgri	Bethlehem (Bins)	OVK	Marseilles (Bins)
Afgri	Slabberts (Bins)	OVK	Modderpoort (Bins)
OVK	Clocolan (Bins)	OVK	Tweespruit (Bins)
OVK	Ficksburg (Bins)	OVK	Westminster (Bins)
OVK	Fouriesburg (Bins)	Senwes	Dewetsdorp (Bins)

Region 26: Free State South-Eastern Region			
Afgri	Kaallaagte (Bins)	Afgri	Monte Video (Bins)
Afgri	Libertas (Bins)	Afgri	Senekal (Bins)
Afgri	Marquard (Bins)	Senwes	Arlington (Bins)
Afgri	Meets (Bins)	Senwes	Steynsrus (Bins)

Region 27: Free State Northern Region			
Senwes	Gottenburg (Bins)	Senwes	Mooigeleë (Bins)
Senwes	Heilbron (Bins)	Senwes	Wolwehoek (Bins)
Senwes	Hoogte Grainlink (Bins)	VKB	Petrus Steyn (Bins)

Region 28: Free State Eastern Region			
Afgri	Afrikaskop (Bins/Bunkers)	VKB	Jim Fouché (Bins)
Afgri	Eeram (Bins)	VKB	Memel (Bins)
Afgri	Harrismith (Bins)	VKB	Reitz (Bins)
Afgri	Kransfontein (Bins/Bunkers)	VKB	Tweeling (Bins)
VKB	Ascent (Bins)	VKB	Villiers (Bins/Bulk)
VKB	Cornelia (Bins)	VKB	Vrede (Bins)
VKB	Daniëlsrus (Bins)	VKB	Warden (Bins)
VKB	Frankfort (Bins)	VKB	Windfield (Bins)

Region 34: Gauteng Region			
Afgri	Bapsfontein (Bunkers)	Afgri	Meyerton (Bunkers)
Afgri	Bloekomspruit (Bins)	Afgri	Nigel (Bins)
Afgri	Bronkhorstspruit (Bins)	Afgri	Pretoria Wes (Bins)
Afgri	Glenroy (Bins)	Afgri	Vogelvallei (Bunkers)
Afgri	Goeie Hoek (Bins)	Senwes	Middelvlei (Bins)
Afgri	Kaalfontein (Bins)	Senwes	Oberholzer (Bins)
Afgri	Kliprivier (Bunkers)	Senwes	Raathsvlei (Bins)

Region 35: Limpopo Region			
Afgri	Northam (Bins)	VKB	Nylstroom (Modimolle) (Bins)
VKB	Alma (Bins)	VKB	Potgietersrus (Mokopane) (Bins)
VKB	Lehau (Bins)	VKB	Roedtan (Bins)
VKB	Naboomspruit (Mookgophong) (Bins)	VKB	Settlers (Bins)
VKB	Nutfield (Bins)	VKB	Warmbad (Bela-Bela) (Bins)

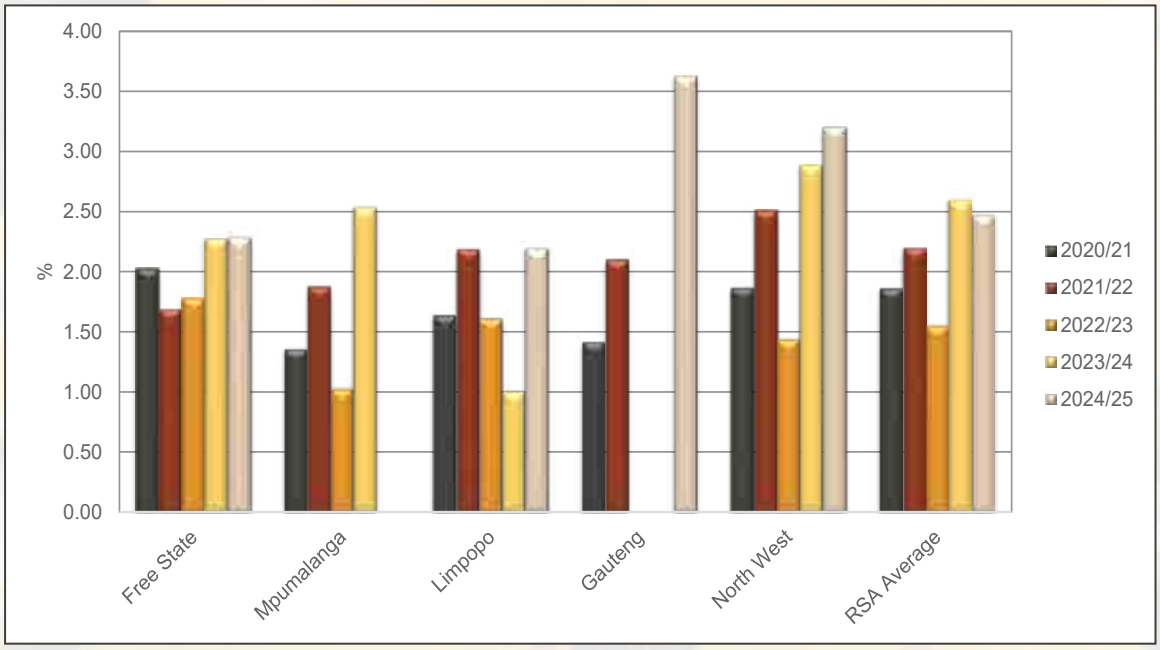
Sunflower Crop Quality 2024/25 – Summary of Results

Sixty-four percent (72) of the 113 samples analysed for the purpose of this survey were graded as Grade FH1, with 41 (36%) of the samples downgraded to COSF (Class Other Sunflower Seed). The percentage of samples graded FH1 decreased compared to the previous season's 76%. The ten-year weighted average of the percentage samples graded as FH1 is 75%.

The grading results of the 41 samples downgraded to Class Other can be summarised as follows:

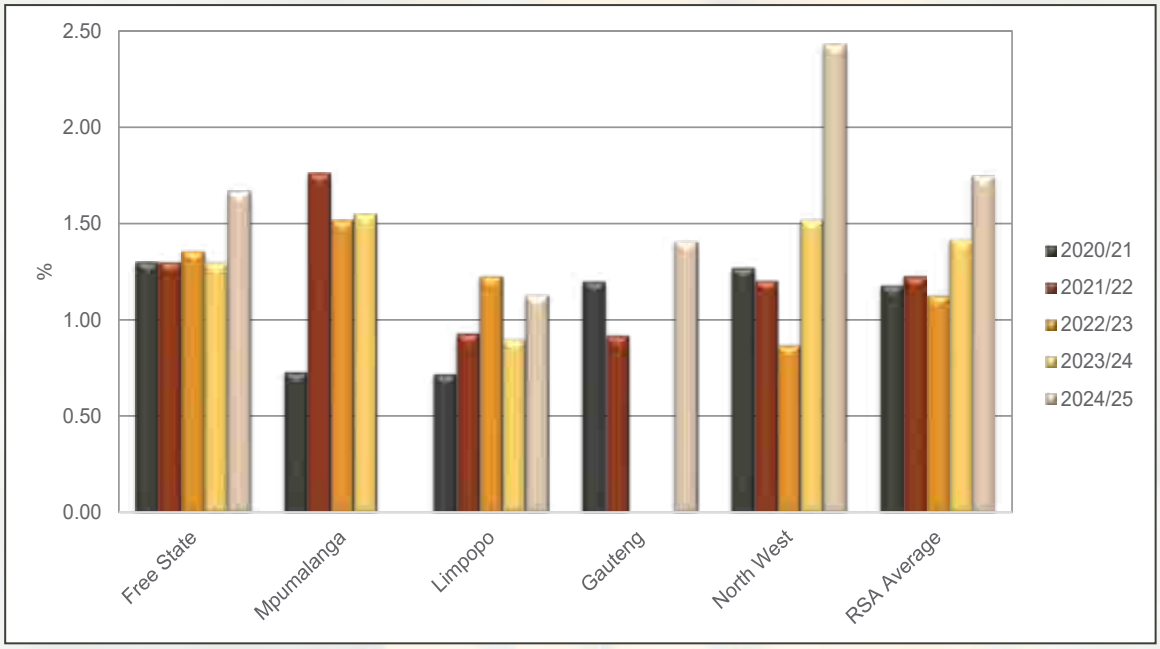
- Ten samples were downgraded as a result of the percentage collective deviations exceeding the maximum permissible deviation of 6%.
- Seven samples were downgraded as a result of poisonous seeds (*Datura* sp. and *Crotolaria* sp.) exceeding the maximum permissible number of 1 per 1000 g.
- Twenty-four of the 41 samples were downgraded to Class Other due to a combination of two or more of the percentages screenings (17 samples), foreign matter (7 samples), collective deviations (24 samples) as well as the number of poisonous seeds (5 samples – *Datura* sp. and *Convolvulus* sp.) exceeding the maximum permissible deviation.

The single sample from Gauteng province reported the highest percentage screenings namely 3.63%, followed by North West (N = 22) and the Free State (N = 76) with weighted averages of 3.24% and 2.29% respectively. Limpopo (N = 14) reported the lowest average percentage screenings of 2.20%. The weighted national average was 2.48% compared to the 2.60% of the previous season, see Graph 16.



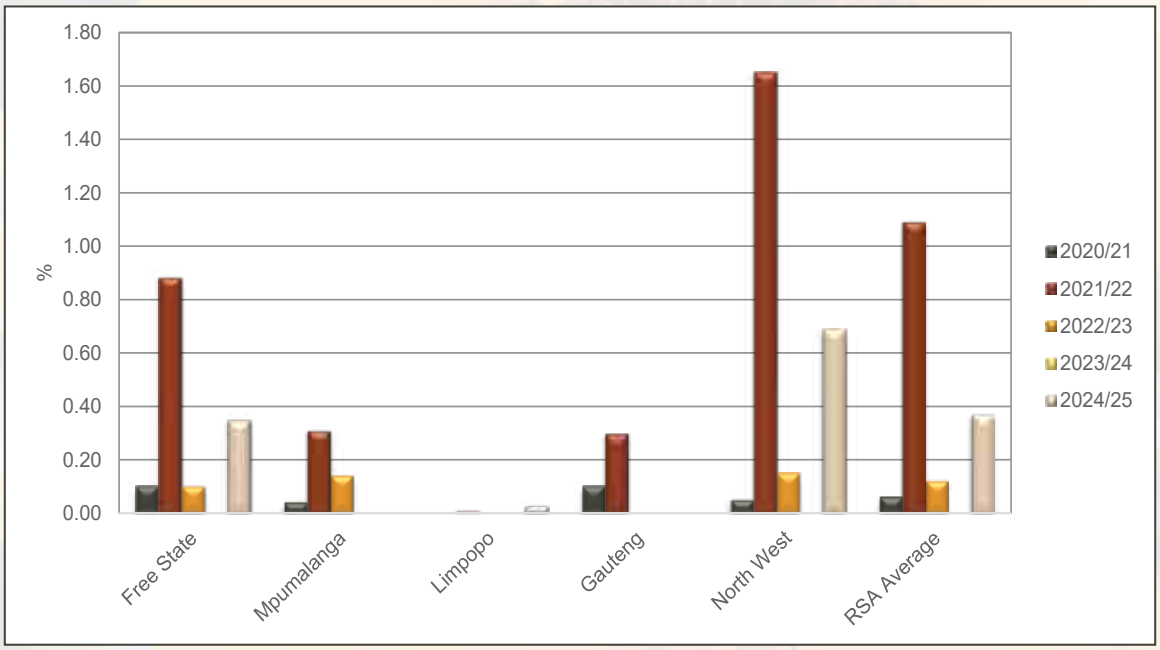
Graph 16: Average percentage screenings per province over five seasons

The highest weighted average percentage foreign matter (2.43%) was reported for the samples from the North West regions. Free State and Gauteng followed with 1.67% and 1.41% respectively. The lowest average percentage was found in Limpopo (1.13%). The national average was 1.75% compared to the 1.42% and 1.13% of the previous two seasons, see Graph 17.



Graph 17: Average percentage foreign matter per province over five seasons

Fifty-nine samples (52%) received for this survey contained sclerotia from the fungus *Sclerotinia sclerotiorum*. Last season only two samples received contained sclerotia. During the 2022/23 and 2021/22 seasons 22% and 70% of samples received contained sclerotia. 69% of samples containing sclerotia this season originated in the Free State, 27% in North West and two samples in Limpopo.



Graph 18: Average percentage sclerotia per province over five seasons

None of these samples however exceeded the maximum permissible deviation of 4% for sclerotia. Percentages ranged from a high of 3.5% to a low of 0.02%. North West reported the highest weighted average of 0.69% followed by the Free State with 0.35% and Gauteng with 0.03%. The sample from Limpopo did not contain sclerotia. The national weighted average is 0.37%.

Test weight does not form part of the grading regulations for sunflower seed in South Africa. An approximation of the test weight of South African sunflower seed is provided in Table 3 for information purposes. The standard working procedure of the Kern 222 instrument, as described in ISO 7971-3:2019, was followed. The g/1 L filling mass of the sunflower seed samples was determined and divided by two. The test weight was then

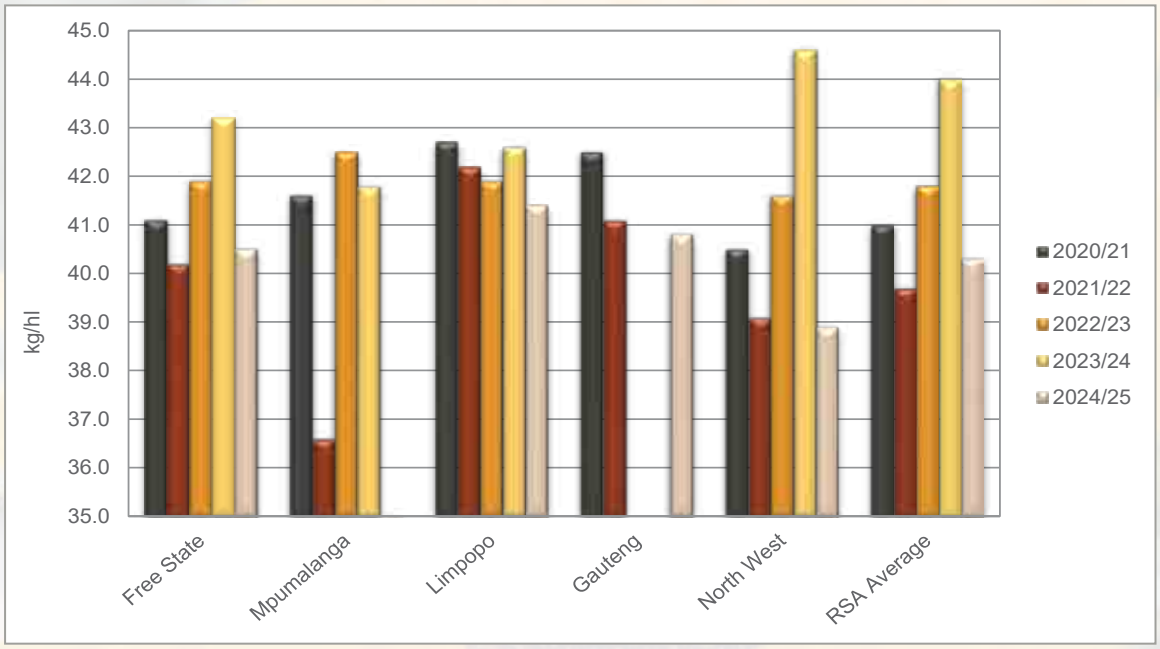
extrapolated by means of the following formulas obtained from the Test Weight Conversion Chart for Sunflower Seed, Oil of the Canadian Grain Commission: y = 0.1936x + 2.2775 (138 to 182 g/0.5 L) and y = 0.1943x + 2.1665 (183 to 227 g/0.5 L).

Table 3: Approximation of test weight per province over three seasons

Province	Test weight, kg/hl								
	2024/25			2023/24			2022/23		
	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples
Free State (Regions 21 - 28)	40.5	31.0 - 47.3	75*	43.2	39.9 - 47.6	50	41.9	34.8 - 47.0	64
Mpumalanga (Regions 29 - 33)	-	-	-	41.8	40.4 - 43.1	2	42.5	40.9 - 45.2	11
Limpopo (Region 35)	41.4	37.4 - 44.7	14	42.6	40.2 - 42.1	5	41.9	36.4 - 47.2	17
Gauteng (Region 34)	40.8	-	1	-	-	-	-	-	-
North West (Region 12 - 20)	38.9	31.3 - 46.0	22	44.6	38.8 - 49.2	81**	41.6	32.2 - 45.4	82
RSA	***40.3***	***31.0 - 47.3***	***112***	***44.0***	***38.8 - 49.2***	***138***	***41.8***	***32.2 - 47.2***	***174***

**One sample with an outlier value was not taken into account for calculation purposes.*
***Three samples with outlier values were not taken into account for calculation purposes.*

Please also see Graph 19 for a comparison of the test weight per province over the last five seasons.



Graph 19: Comparison of the test weight per province over five seasons

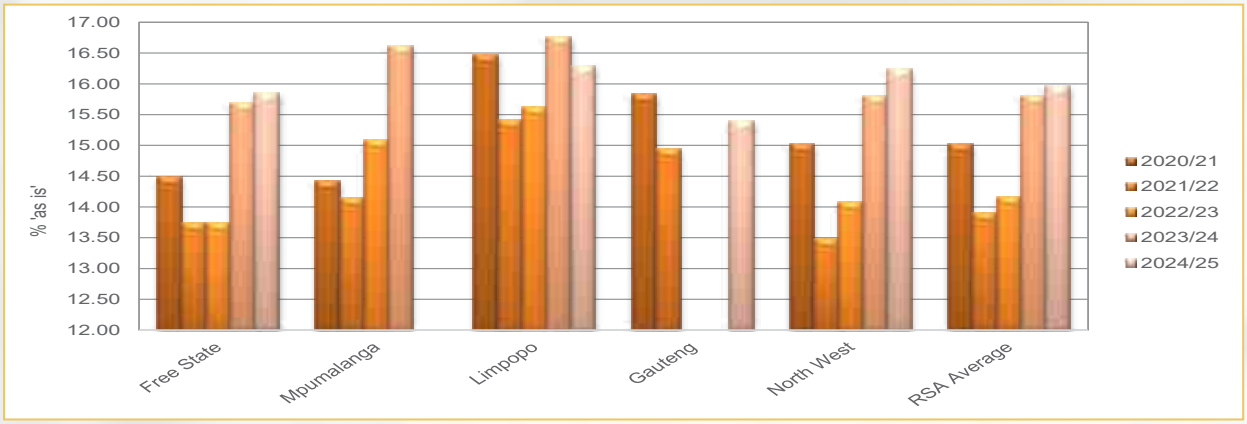
The nutritional component analyses, namely crude protein, -fat, -fibre and ash are reported as % (g/100 g) on an 'as received' or 'as is' basis.

The weighted average crude protein content this season was 15.97%. This is the highest average percentage of the last six seasons. The average results of the previous five seasons (between 2019/20 to 2023/24) ranged from 13.90% to 15.81%. Limpopo had the highest weighted average crude protein content of 16.29%, followed by North West with 16.24%, The Free State with 15.85% and the single sample from Gauteng with 15.39%.

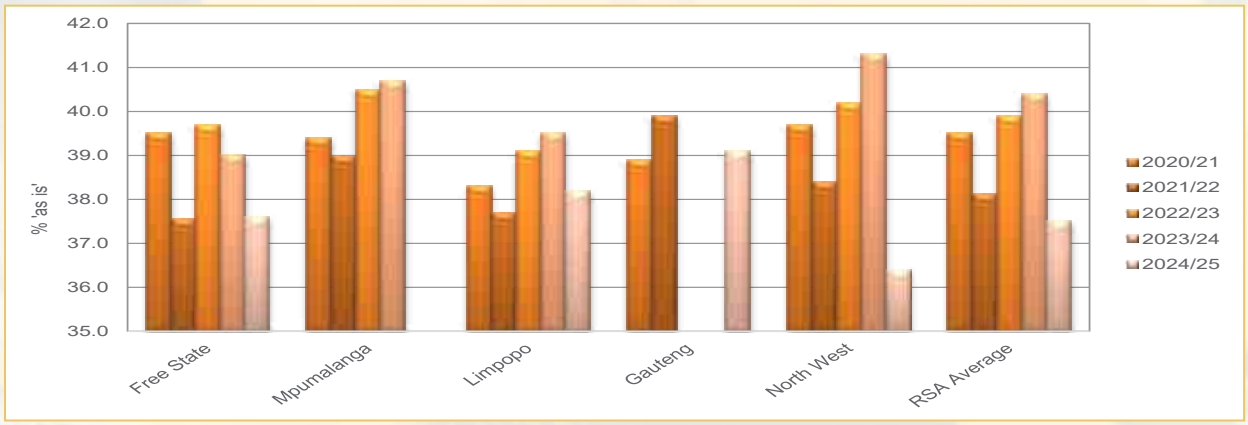
The weighted average crude fat percentage of 37.5%, is the lowest average since the 37.0% reported in the 2017/18 season and the second lowest since the start of this survey in 2012/13. The sample from Gauteng had the highest crude fat content of 39.1%, followed by Limpopo's average of 38.2%. The Free State and North West averaged 37.6% and 36.4% respectively.

The weighted average percentage crude fibre was 22.1%, compared to the 20.0% and the 22.9% of the previous two seasons respectively. Average values varied from a low of 21.2% in Limpopo to a high of 23.1% in North West. The weighted average ash content was 2.73%, the highest since this survey's commencement in 2012/13. The provincial averages ranged from 2.70% in North West to 2.89% in Gauteng.

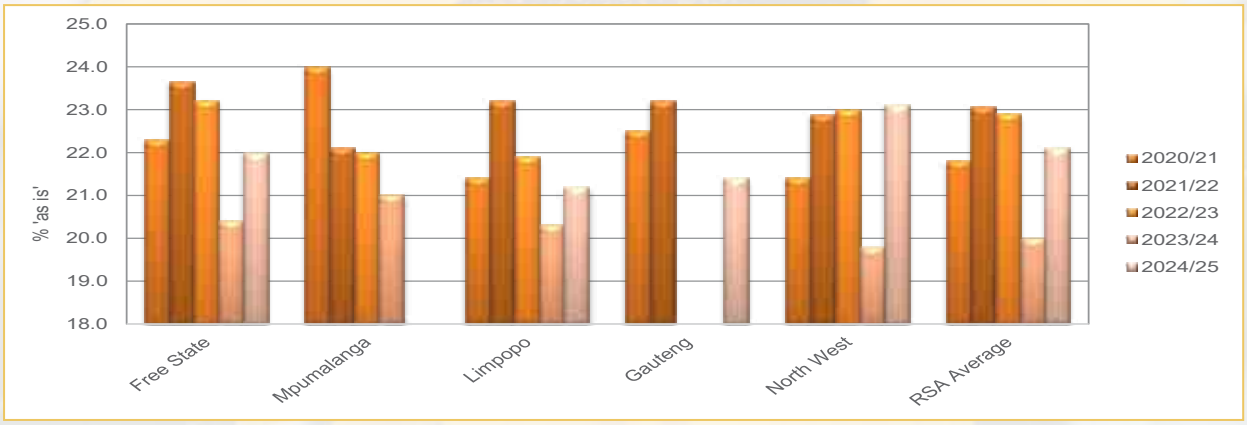
Graphs 20 to 23 provide comparisons between provinces and over seasons for the nutritional components discussed.



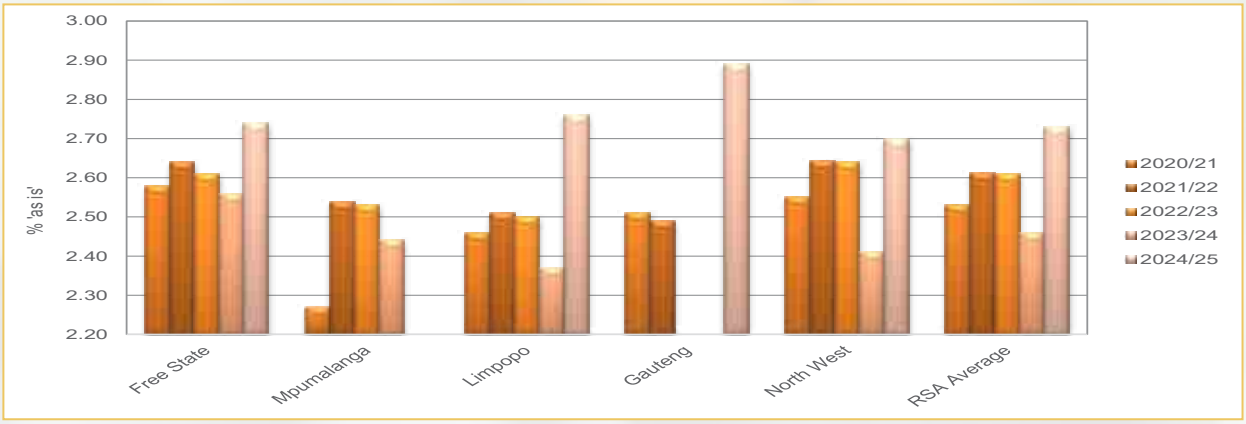
Graph 20: Average crude protein content per province over five seasons



Graph 21: Average crude fat content per province over five seasons



Graph 22: Average crude fibre content per province over five seasons



Graph 23: Average ash content per province over five seasons

A comparison of the moisture, crude protein and crude fat results between the crop survey and ARC Grain Crops sunflower cultivar trials' samples are provided in Table 4.

Table 4: Comparison between the moisture, crude protein and crude fat results of the sunflower crop quality and ARC cultivar trial samples of the 2024/25 season

Analysis	Moisture, % (5hr, 105°C)	Crude Protein, % (as is)	Crude Fat, % (as is)
Sunflower Crop Quality Survey results			
Average	4.9	15.97	37.5
Minimum	3.6	11.00	28.8
Maximum	9.2	20.11	46.7
Standard deviation	0.85	1.55	3.21
No. of samples	***113***	***113***	***113***
ARC Grains Crops Cultivar trial sample results			
Average	6.1	17.00	42.4
Minimum	3.2	10.70	32.7
Maximum	8.1	23.40	55.5
Standard deviation	0.88	3.20	4.98
No. of samples	***153***	***153***	***153***
% Difference between crop and cultivar samples	***-1.2***	***-1.03***	***-4.9***

See Table 5 on page 22 for a summary of the RSA Sunflower Crop Quality averages of the 2024/25 season compared to those of the 2023/24 season.

Please also see pages 23 to 27 for the average sunflower quality per region.

Table 5: South African Sunflower Crop Quality Averages 2024/25 vs 2023/24						
Class and Grade Sunflower	**2024/25**			**2023/24**		
	FH1	**COSF**	**Average**	**FH1**	**COSF**	**Average**
Grading:						
1. Damaged sunflower seed, %	0.07	0.20	0.12	0.00	0.01	0.01
2. Screenings, %	1.69	3.86	2.48	1.83	4.97	2.60
3. Sclerotia, %	0.21	0.66	0.37	0.00	0.00	0.00
4. Foreign Matter, %	1.18	2.75	1.75	1.03	2.63	1.42
5. Deviations in 2,3 and 4 collectively, %: Provided that such deviations are individually within the limits of said items	3.08	7.27	4.60	2.87	7.61	4.02
Musty, sour, khaki bush or other undesired smell	No	No	No	No	No	No
Substance present that renders the seed unsuitable for human or animal consumption or for processing into or utilization thereof as food or feed	No	No	No	No	No	No
Poisonous seeds (*Crotalaria sp., Datura sp., Ricinis communis*)	0	2	1	0	2	0
Poisonous seeds (*Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.*)	0	1	0	0	0	0
Number of samples	***72***	***41***	***113***	***106***	***34***	***140***
Test weight:						
Test weight (Kern 222), kg/hl	41.3	38.5	40.3	44.2	43.3	43.9
Number of samples	***72***	***41***	***113***	***106***	***34***	***140***
Nutritional analysis:						
Moisture, % (5 hr, 105 °C)	4.9	5.1	4.9	4.7	4.4	4.6
Crude Protein, % (as is)	16.01	15.91	15.97	15.82	15.80	15.81
Crude Fat, % (as is)	38.0	36.5	37.5	40.3	40.7	40.4
Crude Fibre, % (as is)	22.0	22.3	22.1	20.0	20.2	20.0
Ash, % (as is)	2.69	2.80	2.73	2.47	2.44	2.46
Number of samples	***72***	***41***	***113***	***106***	***34***	***140***

South African

Regional Sunflower Quality

PRODUCTION REGION	(14) North-West Southern Region				(15) North-West South-Eastern Region				(16) North-West Central-Eastern Region			
Grading:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
1. Damaged sunflower seed, %	0.30	-	-	-	0.09	0.00	0.35	0.15	0.37	0.00	1.75	0.70
2. Screenings, %	2.45	-	-	-	2.63	0.64	9.68	3.48	2.08	1.27	4.00	1.04
3. Sclerotia, %	0.31	-	-	-	0.14	0.00	0.39	0.16	0.99	0.00	3.50	1.30
4. Foreign Matter, %	0.55	-	-	-	3.95	1.42	7.28	2.42	1.03	0.44	1.59	0.48
5. Deviations in 2, 3 and 4 collectively, %: Provided that such deviations are individually within the limits of said items	3.31	-	-	-	6.72	2.95	15.05	4.51	4.11	2.19	9.09	2.50
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	-	-	-	0	0	0	0.00	0	0	1	0.41
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	-	-	-	0	0	0	0.00	0	0	0	0.00
Number of samples	***1***				***6***				***6***			
Nutritional analysis:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
Moisture, % (5 hr, 105 °C)	4.8	-	-	-	4.8	4.4	5.2	0.28	4.5	3.6	5.2	0.61
Crude Protein, % (as is)	18.18	-	-	-	16.64	15.22	18.25	1.29	16.54	14.88	19.37	1.50
Crude Fat, % (as is)	36.3	-	-	-	36.5	34.9	39.8	1.83	37.7	33.0	40.2	2.63
Crude Fibre, % (as is)	22.9	-	-	-	22.9	20.0	24.6	1.68	22.7	21.1	24.4	1.29
Ash, % (as is)	2.71	-	-	-	2.83	2.56	3.12	0.19	2.47	2.02	3.02	0.39
Number of samples	***1***				***6***				***6***			

South African

Regional Sunflower Quality

PRODUCTION REGION	(17) North West Central-Northern Region (Ottosdal)				(18) North-West Central Region (Ventersdorp)				(21) Free State North-Western Region (Viljoenskroon)			
Grading:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
1. Damaged sunflower seed, %	0.03	0.00	0.10	0.06	0.19	0.00	0.50	0.22	0.00	0.00	0.00	0.00
2. Screenings, %	2.44	2.01	2.72	0.38	5.55	1.28	11.42	4.51	0.91	0.41	2.03	0.64
3. Sclerotia, %	0.62	0.27	1.25	0.54	1.02	0.00	2.87	1.11	0.51	0.00	2.16	0.93
4. Foreign Matter, %	2.11	1.47	2.45	0.55	2.80	1.20	5.62	1.74	1.18	0.54	2.33	0.76
5. Deviations in 2, 3 and 4 collectively, %: Provided that such deviations are individually within the limits of said items	5.17	4.32	6.38	1.08	9.37	4.55	14.86	3.73	2.61	1.18	4.87	1.51
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	4	0	25	10.21	0	0	1	0.55
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	0	0	0.00	0	0	0	0.00	2	0	8	3.58
Number of samples	***3***				***6***				***5***			
Nutritional analysis:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
Moisture, % (5 hr, 105 °C)	4.6	4.4	4.8	0.21	4.9	3.7	5.9	0.86	4.8	4.0	5.7	0.61
Crude Protein, % (as is)	15.62	14.51	16.92	1.22	15.52	14.60	16.42	0.65	17.09	16.13	18.05	0.80
Crude Fat, % (as is)	36.1	34.4	37.7	1.65	35.0	31.4	38.6	2.43	37.7	33.1	39.7	2.65
Crude Fibre, % (as is)	23.4	22.5	24.7	1.17	23.5	20.9	25.3	1.56	20.3	16.6	22.9	2.59
Ash, % (as is)	2.77	2.58	2.98	0.20	2.76	2.66	2.96	0.12	2.83	2.61	3.05	0.18
Number of samples	***3***				***6***				***5***			

South African

Regional Sunflower Quality

PRODUCTION REGION	(22) Free State North-Western Region (Bothaville)				(23) Free State North-Western Region (Bultfontein)				(24) Free State Central Region			
Grading:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
1. Damaged sunflower seed, %	0.33	0.00	0.65	0.46	0.13	0.00	0.40	0.18	0.09	0.00	0.40	0.14
2. Screenings, %	1.09	0.40	1.77	0.97	1.68	0.79	2.99	0.78	2.53	0.20	7.78	1.74
3. Sclerotia, %	0.37	0.00	0.74	0.52	0.10	0.00	0.70	0.25	0.30	0.00	1.30	0.39
4. Foreign Matter, %	1.47	0.33	2.60	1.61	1.21	0.77	1.92	0.43	2.14	0.37	11.04	2.13
5. Deviations in 2, 3 and 4 collectively, %: Provided that such deviations are individually within the limits of said items	2.92	0.73	5.11	3.10	2.99	1.83	4.49	0.91	4.97	0.57	18.82	3.63
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	1	0	3	1.19	1	0	6	1.55
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00
Number of samples	***2***				***8***				***26***			
Nutritional analysis:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
Moisture, % (5 hr, 105 °C)	4.7	4.5	4.8	0.21	4.3	3.6	4.9	0.49	4.8	3.6	5.9	0.55
Crude Protein, % (as is)	16.14	15.19	17.08	1.34	16.47	14.73	20.11	1.57	16.37	13.88	19.22	1.50
Crude Fat, % (as is)	37.2	32.3	42.0	6.86	38.8	31.7	42.6	3.55	35.6	28.8	41.5	4.00
Crude Fibre, % (as is)	23.2	20.5	25.8	3.75	20.6	18.5	22.5	1.27	23.2	19.7	26.4	1.94
Ash, % (as is)	2.84	2.65	3.03	0.27	2.83	2.34	3.31	0.28	2.76	2.39	3.41	0.22
Number of samples	***2***				***8***				***26***			

South African

Regional Sunflower Quality

PRODUCTION REGION	(25) Free State South-Western Region				(26) Free State South-Eastern Region				(27) Free State Northern Region			
Grading:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
1. Damaged sunflower seed, %	0.16	0.00	1.30	0.35	0.08	0.00	0.35	0.12	0.03	0.00	0.10	0.06
2. Screenings, %	2.16	0.48	5.21	1.44	3.12	0.56	5.17	1.96	1.39	0.52	2.87	1.29
3. Sclerotia, %	0.51	0.00	2.05	0.66	0.43	0.00	1.83	0.59	0.04	0.00	0.12	0.07
4. Foreign Matter, %	1.52	0.17	3.48	1.07	1.21	0.21	2.67	0.79	1.20	0.61	2.36	1.00
5. Deviations in 2, 3 and 4 collectively, %: Provided that such deviations are individually within the limits of said items	4.20	1.17	8.35	2.45	4.77	0.94	8.24	2.86	2.63	1.13	5.35	2.36
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	2	0	18	5.00	0	0	0	0.00	0	0	0	0.00
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	0	0	0.00	0	0	0	0.00	0	0	0	0.00
Number of samples	***16***				***11***				***3***			
Nutritional analysis:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
Moisture, % (5 hr, 105 °C)	5.4	4.0	9.2	1.32	4.8	4.4	5.2	0.24	4.6	4.0	5.0	0.51
Crude Protein, % (as is)	14.51	11.00	17.16	2.04	15.92	13.85	17.36	1.10	15.33	14.54	15.81	0.69
Crude Fat, % (as is)	38.8	36.5	41.9	1.60	37.8	33.2	40.7	2.21	40.6	37.4	43.4	3.02
Crude Fibre, % (as is)	21.7	18.1	26.0	1.71	22.5	21.6	23.5	0.56	21.3	19.6	23.8	2.23
Ash, % (as is)	2.66	2.47	2.81	0.09	2.73	2.46	3.06	0.17	2.55	2.45	2.60	0.08
Number of samples	***16***				***11***				***3***			

South African

Regional Sunflower Quality

PRODUCTION REGION	(28) Free State Eastern Region				(34) Gauteng Region				(35) Limpopo Region			
Grading:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
1. Damaged sunflower seed, %	0.10	0.00	0.20	0.09	0.00	-	-	-	0.07	0.00	0.35	0.13
2. Screenings, %	3.02	0.58	5.45	1.91	3.63	-	-	-	2.20	0.19	3.33	1.10
3. Sclerotia, %	0.32	0.00	0.82	0.42	0.00	-	-	-	0.03	0.00	0.24	0.09
4. Foreign Matter, %	2.33	1.12	3.33	1.10	1.41	-	-	-	1.13	0.16	1.98	0.56
5. Deviations in 2, 3 and 4 collectively, %: Provided that such deviations are individually within the limits of said items	5.67	2.47	8.78	2.84	5.04	-	-	-	3.36	0.35	5.00	1.47
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	1	-	-	-	1	0	12	3.21
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	0	0	0.00	0	-	-	-	3	0	46	12.29
Number of samples	5				***1***				***14***			
Nutritional analysis:	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***	***ave***	***min***	***max***	***stdev***
Moisture, % (5 hr, 105 °C)	6.5	5.4	8.3	1.10	4.2	-	-	-	5.3	4.5	7.5	0.77
Crude Protein, % (as is)	15.23	13.12	17.02	1.80	15.39	-	-	-	16.29	14.86	18.20	1.02
Crude Fat, % (as is)	40.5	35.5	46.7	4.37	39.1	-	-	-	38.2	34.3	42.0	2.09
Crude Fibre, % (as is)	18.9	11.5	21.7	4.38	21.4	-	-	-	21.2	17.8	23.2	1.43
Ash, % (as is)	2.71	2.42	3.03	0.26	2.89	-	-	-	2.76	2.40	3.27	0.26
Number of samples	***5***				***1***				***14***			

Methods

SAMPLING PROCEDURE:

A working group determined the procedure to be followed to ensure that the crop quality samples submitted to the SAGL by the various grain storage companies, were representative of the total crop.

Each delivery was sampled as per the grading regulations for grading purposes.

After grading, the grading samples were placed in separate containers according to class and grade, per silo bin at each silo.

When the container was full or at the end of each week, the content of each container was divided with a multi slot divider in order to obtain a 3 kg sample.

If there were more than one container per class and grade per silo bin, the combined contents of the containers were mixed thoroughly before dividing it with a multi slot divider to obtain the required 3 kg sample.

The samples, marked clearly with the name of the depot, the bin/bag/bunker number(s) represented by each individual sample as well as the class and grade, were then forwarded to the SAGL.

GRADING:

Full grading was done in accordance with the Regulations relating to the Grading, Packing and Marking of Sunflower Seed intended for sale in the Republic of South Africa (Government Notice NO. 45 of 22 January 2016).

See pages 56 to 63 of this report.

TEST WEIGHT:

Test weight provides a measure of the bulk density of grain and oilseeds.

Test weight does not form part of the grading regulations for sunflower seed in South Africa. An approximation of the test weight of South African sunflower seed is provided in this report for information purposes. The standard working procedure of the Kern 222 instrument, as described in ISO 7971-3:2019, was followed. The g/1 L filling mass of the sunflower seed samples was determined and divided by two. The test weight was then extrapolated by means of the following formulas obtained from the Test Weight Conversion Chart for Sunflower Seed, Oil of the Canadian Grain Commission: $y = 0.1936x + 2.2775$ (138 to 182 g/0.5 L) and $y = 0.1943x + 2.1665$ (183 to 227 g/0.5 L).

NUTRITIONAL ANALYSIS:

Milling

Prior to the nutritional analyses, the sunflower seed samples were milled on a Retch ZM 200 mill fitted with a 1.0 mm screen.

Moisture

The moisture content of the samples was determined as a loss in weight when dried in an oven at 105 °C for 5 hours according to AgriLASA method 2.1, latest edition.

Crude Protein

The Dumas combustion analysis technique was used to determine the crude protein content, according to AACCI method 46-30.01, latest edition.

This method prescribes a generic combustion method for the determination of crude protein. Combustion at high temperature in pure oxygen sets nitrogen free, which is measured by thermal conductivity detection. The total nitrogen content of the sample is determined and converted to equivalent protein by multiplication with a factor of 6.25 to obtain the crude protein content.

Crude Fat

In-House method 024 was used for the determination of the crude fat in the samples. After sample preparation the fat is extracted by petroleum ether with the aid of the Soxhlet extraction apparatus, followed by the removal of the solvent by evaporation and weighing the dried residue thus obtained. The residue is expressed as % crude fat.

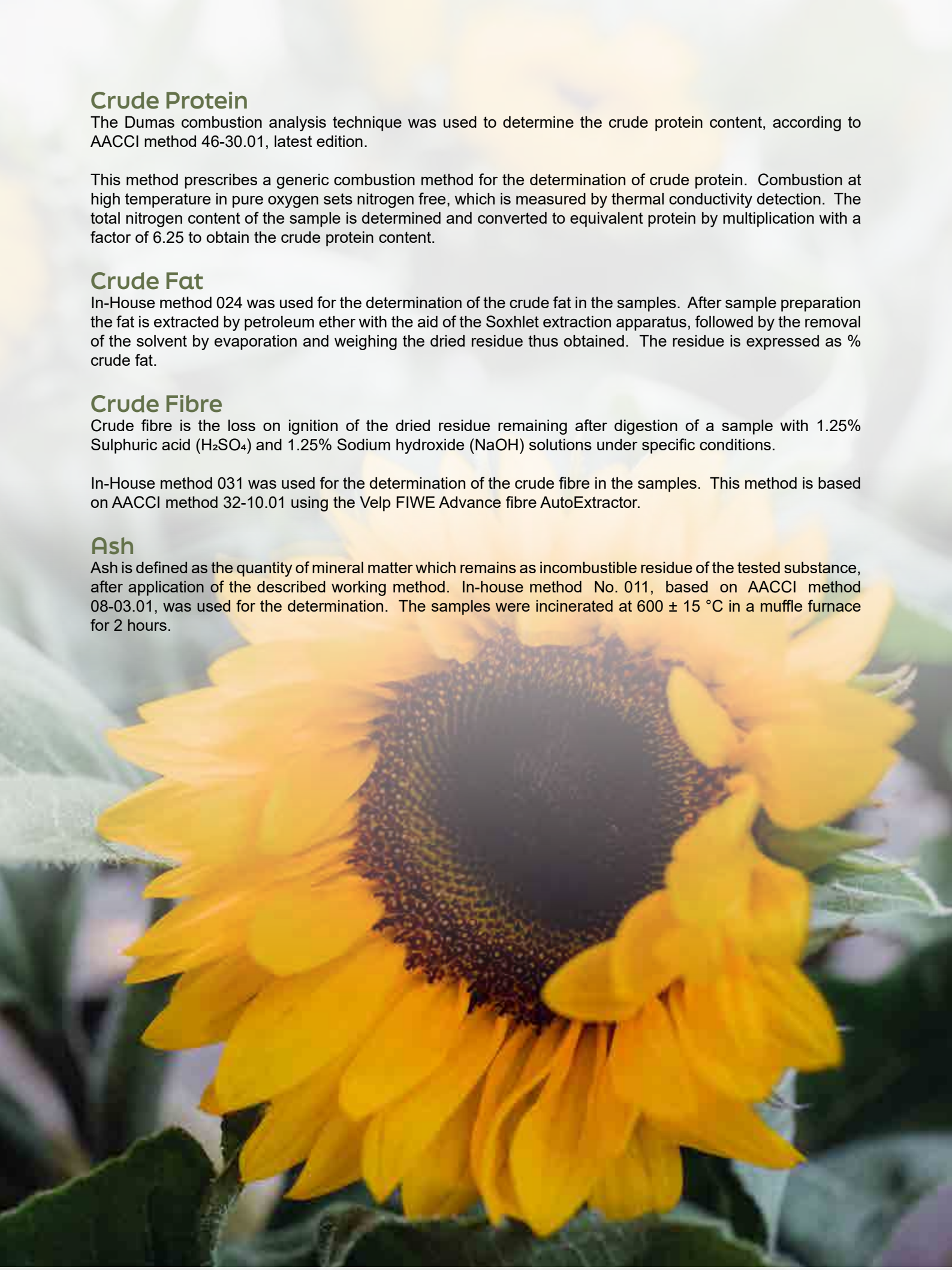
Crude Fibre

Crude fibre is the loss on ignition of the dried residue remaining after digestion of a sample with 1.25% Sulphuric acid (H_2SO_4) and 1.25% Sodium hydroxide (NaOH) solutions under specific conditions.

In-House method 031 was used for the determination of the crude fibre in the samples. This method is based on AACCI method 32-10.01 using the Velp FIWE Advance fibre AutoExtractor.

Ash

Ash is defined as the quantity of mineral matter which remains as incombustible residue of the tested substance, after application of the described working method. In-house method No. 011, based on AACCI method 08-03.01, was used for the determination. The samples were incinerated at 600 ± 15 °C in a muffle furnace for 2 hours.



sanas
South African National Accreditation System

CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

SOUTHERN AFRICAN GRAIN LABORATORY NPC

Co. Reg. No.: 1997/018518/08

Southern African Grain Laboratories NPC

Facility Accreditation Number: **T0116**

is a South African National Accreditation System accredited facility provided that all conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying schedule of accreditation, Annexure "A", bearing the above accreditation number for

CHEMICAL AND PHYSICAL ANALYSIS

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2017

The accreditation demonstrates technical competency for a defined scope and the operation of a quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant accreditation symbol to issue facility reports and/or certificates

Mrs FS Radebe
Acting Chief Executive Officer

Effective Date: 01 November 2024
Certificate Expires: 31 October 2029

ANNEXURE A

SCHEDULE OF ACCREDITATION

Facility Number: **T0116**

Permanent Address of Laboratory:

Southern African Grain Laboratory (NPC)
Agri-Hub Office Park - Grain Building
477 Witherite Road
The Willows
Pretoria
0040

Technical Signatories:

Ms J Nortje (All Chemical and Grading Methods)
Ms A de Jager (Nutrients & Contaminants Methods excl. 026)
Ms W Louw (In-house Methods 001, 002, 003, 010 & 026)
Ms D Moleke (Rheological Methods)
Ms M Motlanthe (In-house Methods 001, 003 & 026)
Ms T de Beer (Rheological Methods)
Ms S Makhoba (In-House Method 026)
Ms T Mabobo (In-House Methods 001, 002. 003, 010 & 026)
Mr J Kobola (All Grading Methods)
Ms J Ntimane (All Chemical Methods)
Mr J Geldenhuys (All Grading Methods)
Dr M Brits (All Chemical, Nutrients and Contaminants Methods)
Ms L Malahlela (All Chemical Methods)
Ms F Mokholoane (All Chemical Methods)

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Nominated Representative:

Ms M Motlanthe

Issue No.: 38
Date of Issue: 11 March 2026
Expiry Date: 31 October 2029

Material or Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Techniques / Equipment Used
CHEMICAL		
Ground Barley	Moisture (Oven Method)	Analytical EBC Method 3.2, latest Edition (2 hour; 130°C)
Cereal and cereal products specifically-wheat, rice, (hulled paddy), barley, millet, rye, and oats as grain, semolina and flour	Moisture (Oven Method)	ICC Std No.110/1, Latest Edition (90 min; 130°C) (2 hour; 130°C)

Flour, semolina, bread, all kind of grains and cereal products and food products (except those that are sugar coated)	Moisture (Oven Method)	AACCI 44-15.02, Latest Edition (1 hour; 130˚C) (72 hour; 103˚C)
Animal feed, Plant tissue and Sunflower (Milled)	Moisture (Oven Method)	AgriLASA 2.1 Latest Edition (% hours, 105°C)
All flours, cereal grains, oilseeds and animal feeds	Nitrogen and protein (Combustion method - Dumas)	AACCI 46-30.01, Latest Edition
Cereal based food stuff	Dietary fibres (Total)	In-house method 012
Food stuff and feeds	Carbohydrates (by difference) (calculation) Energy value (calculation) Total digestible nutritional value (calculation)	SOP MC 23
Food Stuff and feeds	Determination of Ash	In-house method 011
Wheat Kernels	Moisture (Oven Method)	Government Gazette Wheat Regulation, Latest Edition (72 hour, 103˚C)
Flours of grains e.g. barley, oats, triticale, maize, rye, sorghum and wheat; oilseeds like soybeans and sunflower, feeds and mixed feeds and foodstuffs	Crude fat (Ether extraction by Soxhlet)	In-house method 024
Meal and flour of wheat, rye, barley, other grains, starch containing and malted products	Falling number	ICC Std 107/1, Latest Edition
NUTRIENTS AND CONTAMINANTS		
Vitamin fortified food and feed products and fortification mixes grain based	Vitamin A as all trans Retinol (Saponification) (UPLC)	In-house method 001
	Thiamine Mononitrate (UPLC) Riboflavin (UPLC) Nicotinamide (UPLC) Pyridoxine Hydrochloride (UPLC)	In-house method 002
	Folic Acid (UPLC)	In-house method 003
Grain based food and feed products (fortified and unfortified) and fortification mixes	Total Sodium (Na) (AA) Total Iron (Fe) (AA) Total Zinc (Zn) (AA)	In-house method 010
Yeast and Bread	Vitamin D_2 (UPLC)	In-House method 029

Food and feed	Multi-Mycotoxin: (LCMSMS) -Aflatoxin G_1, B_1, G_2, B_2 and total -Deoxynivalenol (DON), 15-ADON -Fumonisin B_1, B_2, B_3 -Ochratoxin A -T2, HT-2 - Zearalenone	In-house method 026
GRADING		
Maize	Defective kernels (White maize/ yellow maize)	Government Gazette Maize Regulation, Latest Edition
Cereal as grains (Wheat, barley, rye and oats)	Hectolitre mass (Kern222)	ISO 7971-3, Latest edition
Wheat	Screenings	Government Gazette Wheat Grading Regulation, Latest Edition
RHEOLOGICAL		
Wheat flour	Alveograph (Rheological properties)	ICC Std.121, Latest Edition
Flours	Farinograph (Rheological properties)	AACCI 54.02, Latest Edition (Rheological behaviour of flour Farinograph: Constant Flour Weight procedure)
Hard, soft and durum wheat (flour and whole wheat flour)	Mixograph (Rheological properties)	Industry accepted method 020 (Based on AACCI 54-40.02, Latest Edition Mixograph Method)

Original Date of Accreditation: 01 November 1999

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Accreditation Manager

Report

Evaluation of sunflower cultivars: 2024/2025 season

ARC-Grain Crops Institute in collaboration with the following seed companies: Agricol, Corteva (Pannar & Pioneer), Syngenta, and Limagrain Field Seeds.

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INTRODUCTION

Optimisation of crop production requires, among several inputs, the selection of a well performing cultivar. Sunflower cultivar trials, which are done since the nineteen seventies in South Africa, have the aim to enable farmers to optimise sunflower production through sound cultivar selection.

In this project, commercially available cultivars are evaluated to predict their future yield performances and to assess their seed composition. This project is the only unbiased effort in South Africa that strives to evaluate important cultivars in the main areas of production. The information generated in these field trials on grain yield and seed quality is not only available to farmers but to all interested parties.

MATERIALS AND METHODS

This project was conducted during the 2024/2025 season with the voluntary collaboration of Agricol, Corteva (Pannar, Pioneer), Syngenta and Limagrain Field Seeds. Seed companies entered 17 cultivars for evaluation (Table 1) and supplied seed to the ARC-GC which planned the field trials with randomised complete-block design layouts with three replicates. Seed from cultivars were packed according to trial plans and send to co-operators before the onset of the growing season.

Eleven of the 17 cultivars were Clearfield types on which the use of the post emergence broad leaf weed controlling herbicide mixture, imazapyr + imazamox (Euro-Lightning®), is possible. In the field trials these cultivars were treated in the same way as the regular cultivars and received no Euro-Lightning®.

Each collaborating seed company had to conduct at least one trial for each cultivar entry. Agricol was supplied with seed for 20 trials, Corteva (Pannar & Pioneer) with 9 trials, Syngenta with four and Limagrain Field Seeds with one. Five trials were planted by the ARC-GC with different planting dates at Potchefstroom and one trial planted at Bethlehem. Two trials of Syngenta not harvested due to drought and bad trial quality. Eight trials of Agricol, four trials of Corteva and three trials of ARC-Grain Crops were not statistically successful and were not included in the results. Planting dates, amount of fertiliser applied, soil analyses and other agronomic details from some successful field trials are reported in Table 3. Grain yields were recorded on these trials while the period from planting to 50% flowering was recorded on 18 trials at different localities with different planting dates at northwest and Free State table 2.

Yield data and seed samples were sent by collaborators to ARC-GC for analyses. Seed from selected trials sent to SAGL for oil and protein content analyses. Yield data from 24 field trials were subjected to analyses of variance. The regression line technique as described by Loubser and Grimbeek (1984) was used to calculate yield probabilities for cultivars at different yield potentials from the 24 trials.
Yield probabilities were also calculated for 14 cultivars that were evaluated in 54 trials during 2023/2024 and 2024/2025.

RESULTS

Days from planting to flowering

The mean number of days from planting to 50% flowering of cultivars (Table 2) ranged from 64 days for LG 50745, to 72 days AGSUN 5111 CLP Calculated across cultivars and planting dates, the average period from planting to flowering was 70 days. The longest days to flowering 86 days recorded at Potchefstroom planted on 2025/02/1010 of February 2025.

Oil and protein concentration

Oil and protein concentrations of seed from ten trial localities, as analysed by the Southern African Grain Laboratory NPC, are shown in Tables 3 and 4 respectively. The oil analyses were done with a Soxhlet apparatus while the protein analyses were done according to the Dumas method.

The oil content on “as is“basis for cultivars at the various localities varied from 36.79% to 46.08% with an overall mean of 39.44%. The highest mean oil concentration among localities was at Potchefstroom (planting date on 25 November 2024) with 46.08%. The locality with the lowest mean oil content of 36.79% was Wolmaransstand2 2025/01/03 planting date was 03 January 2025. The highest oil concentration among cultivars calculated across localities, was SNK 242 CL at 46.47% followed by SNK 441 CL at 44.90%.41 % of the tested hybrids have more than 40% oil content.

The average protein content varied from 11.93 to 19.32% among cultivars at the different localities. Among localities, Coligny1 planting date was 17 January 2025, had the highest and Potchefstroom planted on 25 November 2025 the lowest protein content of 19.32 and 11.93 % respectively. Calculated across localities, AGSUN 5103CLP had the highest protein content (17.49 %) followed by PAN 7102CLP (17.25) while SNK 441 CL the lowest (15.45%).

Seed yield

The mean seed yield of cultivars at the respective localities is presented in Table 5. The highest locality mean yield of 3.42 t ha^{-1} was obtained at Boskop 1 planted on 18 of November 2024 and the lowest of 0.89 t ha^{-1}, at Baberspan planted on 9th of January 2025.

The five best performing cultivars, in terms of average yield calculated over localities, were PAN 7180CLP, AGSUN 5111CLP, PAN 7090, P 65 LP65 and LG 50745. The overall mean yield for 2024/25 was 2.04 t ha^{-1}, 8.01% lower than the mean yield of the last year.

Elven Clearfield and Clearfield Plus cultivars AGSUN 5103CLP, AGSUN 5106CLP, CLP AGSUN 5111CLP, P 65LP54, P 65LP65, PAN 7102CLP, PAN 7160CLP, PAN 7180CLP, SNK 270 CL, SNK 242 CL, SNK 441CL and SY 3970 CL were entered. Three of these cultivars namely PAN 7180CLP, AGSUN 5111CLP and P 65LP65 have yields even or higher than the overall mean yield of all cultivars.

Oil yield

Oil yield per unit area is the product of grain yield and seed oil content and is resented in Table 8. The oil yield for cultivars at the ten localities varied from 0.63 to 1.14 t ha^{-1} with an overall mean of 0.88 t ha^{-1}. The locality with the highest mean oil yield was Boskop 1 planted on 18 November 2024 at 1.31 t ha^{-1}. PAN 7180CLP has the highest oil yield of 0.97 t ha^{-1} followed by PAN 7090 with 0.96 t ha^{-1}

Parameters calculated from the analysis of variance

The trial mean yield, standard error of the trial mean and other parameters, calculated for each locality, are shown in Table 7. These parameters are presented for the evaluation of individual trials.

Regression line coordinates at different yield targets

Regression line coordinates at different yield targets, the overall mean yield, the intercept and slope from the regression line and yield stability (R^2 - parameter) are shown in Table 10. The coordinate values of a particular cultivar are estimates of the mean expected yield at corresponding yield potentials. These values take the cultivar X environment interaction into account but not the yield stability. These values are accordingly not reliable for cultivar selection. Individual cultivar regression lines for 2024/2025 are shown in Figure 1 and for the 14 cultivars

evaluated in 2022/2023 and 2024/2025 in Figure 2.
The yield stability of cultivars varied up to 21-fold among cultivars (Table 9). Cultivars which had exceptionally high stabilities (R-parameter =1) were, AGSUN 58251, P 65 LP 65 and PAN 7160 CLP

Yield probability

The yield probability of a cultivar is the probability of exceeding the mean yield of all cultivars, at a particular yield potential. The yield probabilities of all 17 cultivars for 2024/2025 are shown in Table 9. It takes account of both the cultivar X environment interaction and the yield stability and is therefore a reliable measure for cultivar choice. Yield probabilities higher than or equal to 60% in Table 10 indicates which cultivars would be sensible choices at the various yield potentials
The yield probabilities of 14 cultivars evaluated in 54 trials in 2023/2024 and 2024/2025, and yield probabilities for the 12 cultivars evaluated in 81 trials are shown in Tables 11 and 12 respectively. Tables 10, 11 and 12 should be used jointly for cultivar selection.

Acknowledgements

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References

LOUBSER, H.L. & GRIMBEEK, C.L., 1984. Kultivarevaluasie: ‘n vergelyking tussen verskillende tegnieke. In: Notule van vergadering gehou deur die ondersoekkomitee na kultivarprogramme by die NIGG te Potchefstroom.

Table 1: Collaborating company, trial localities and responsible co-workers 2024/2025

Company	Localities	Planting dates	Co-workers	E-mail address of co-worker
Agricol	Rysmierbult	2024/11/13	Joubert Swanepoel	JSwanepoel@agricol.co.za
	Arlington	2024/11/20		
	Boskop 1	2024/11/18		
	Heilbron	2024/11/19		
	Hoopstad	2024/11/21		
	Lindley	2024/11/22		
	Boskop 2	2024/12/04		
	Koster	2024/12/04		
	Ventersdorp	2024/12/19		
	Lichtenburg	2024/12/26		
	Wolmaranstad	2024/12/27		
	Coligny 1	2024/12/27		
	Wolmaranstad 2	2025/01/03		
	Viljoenskroon	2025/01/03		
	Baberspan	2025/01/09		
	Delareyville	2025/01/13		
	Coligny 2	2025/01/17		
	Kroondal	2025/01/21		
	Boskop 3	2025/01/22		
	Petrusburg-	2025/01/30		
	Rysmierbult	2024/11/13		
ARC-GCI	Potchefstroom	2024/11/15	William Makgoga & Jan Erasmus	Makgogamw@arc.agric.za Erasmusj@arc.agric.za
	Potchefstroom	2024/11/25		
	Potchefstroom	2025/02/10		
	Potchefstroom	2025/01/24		
	Potchefstroom	2024/11/20		
	Bethlehem	2024/11/20		
Corteva	Coligny	24/11/20	Abre Pretorius, Phillip Fourie & Louis Schoonraad	abre.pretorius@pannar.co.za phillip.fourie@pioneer.com louis.schoonraad@corteva.com
	Vredefort	24/12/09		
	Putfontein	24/12/12		
	Koster	24/12/19		
	Gerdau	24/12/08		
	Biesiesvlei	25/01/17		
	Lichtenburg	25/01/15		
	Excelsio	25/01/10		
	Coligny	2024/11/20		
Lima Grain	Putfontein	2025/01/14	Anita Janeke	anita.janeke@limagrain.com
Syngenta	Bethlehem	2024/11/06	PieterTaljaard	Pieter.Taljaard@syngenta.com
	Bethlehem	2024/11/14		
	Bethlehem	2024/12/04		
	Bethlehem	2024/12/17		

Table 2: Number of days from planting to 50 percent flowering of cultivars at selected localities and planting dates 2024/2025

Cultivar's name	Bethlehem 2024/11/14	Potchefstroom 2024/11/25	Potchefstroom 2025/02/10	Putfontein 2025-01-14	Wolmaransstand1 2024/12/27	Coligny1 2024/12/27	Wolmaransstand 22025/01/03	Baberspan 2025/01/09	Delareyville 2025/01/13	Boskop 3 2025/01/22	Boskop1 2024/11/18	Heilbron 2024/11/19	Hoopstand 2024/11/21	Coligny 2024/11/20	Excelcior 2025/01/10	Gerdau 2024/12/28	Koster 2024/12/19	Putfontein 2024/12/12	Mean
AGSUN 5103CLP	70	76	85	76	66	64	68	68	69	68	65	71	68	73	66	68	69	67	70
AGSUN 5106CLP	69	70	85	76	66	66	69	68	69	68	65	71	67	71	64	69	70	67	69
AGSUN 5111CLP	74	72	89	79	67	69	72	71	71	71	67	71	70	71	68	72	74	73	72
AGSUN 5270	72	70	84	75	63	65	69	66	68	66	62	70	68	70	63	70	70	74	69
AGSUN 5280	65	70	83	73	64	63	66	67	67	67	66	71	65	71	61	66	66	65	68
LG 50745	64	67	83	48	61	61	64	65	65	65	61	68	64	70	60	62	66	65	64
P 65LL25	72	74	87	79	65	66	71	68	69	68	65	70	69	69	68	71	73	71	71
P 65 LP 54	72	70	89	75	65	67	68	67	69	67	61	69	67	73	63	68	70	73	70
P 65 LP 65	74	71	86	80	68	69	71	68	69	68	64	71	70	71	66	70	73	71	71
PAN 7090	72	73	85	78	66	69	71	66	69	66	65	71	70	69	66	68	70	73	70
PAN 7102CLP	65	72	87	76	64	68	69	65	69	65	61	69	67	71	61	70	68	72	69
PAN 7160CLP	74	73	90	81	64	69	70	67	68	67	62	70	68	70	64	71	72	72	71
PAN 7180CLP	74	74	89	55	67	69	71	67	70	67	66	71	69	71	67	70	73	70	70
SNK 242 CL	65	67	83	76	64	66	69	67	67	67	66	69	69	69	61	65	67	70	68
SNK 270 CL	69	71	83	74	65	66	69	68	68	68	67	70	69	71	66	67	67	70	69
SNK 441 CL	75	74	84	80	68	68	71	70	69	70	71	71	70	76	68	71	72	72	72
SY 3970 CL	72	73	83	76	66	67	70	68	68	68	69	70	70	70	67	69	69	68	70
Mean	71	72	86	74	65	67	69	67	68	67	65	70	68	71	65	68	70	70	70

Table 3: The “as is” seed oil concentration (%) of cultivars at selected localities 2024/2025

Cultivar Name	Coligny1 2024/12/27	Coligny2 2025/01/17	Potchefstroom 2024-11-25	Potchefstroom 2025/02/10	Wolmaransstand1 2024/12/27	Wolmaransstad 2 2025/01/03	Boskop1 2024/11/18	Putfontein Lim 2025/01/14	Mean
AGSUN5103CLP	35.26	36.10	41.51	35.23	33.58	35.01	36.04	36.01	36.09
AGSUN5106CLP	36.56	36.17	42.67	36.89	36.85	39.21	36.41	35.70	37.56
AGSUN5111CLP	37.94	36.45	42.59	32.13	39.66	35.59	38.83	35.42	37.32
AGSUN5270	38.72	39.59	46.89	37.04	38.77	38.37	40.11	41.87	40.17
AGSUN5280	36.84	35.77	43.00	36.77	36.07	33.14	37.80	36.22	36.95
LG50745	39.32	41.66	47.89	42.96	44.03	33.19	42.85	40.98	41.61
P65LL25	37.27	40.35	47.17	37.99	36.11	38.45	42.76	43.04	40.39
P65LP54	33.02	33.76	40.74	33.00	33.67	30.67	36.76	35.53	34.64
P65LP65	37.07	36.78	45.50	34.02	32.21	36.10	38.95	40.56	37.65
PAN7090	38.76	37.99	46.70	37.49	35.78	37.67	37.55	40.48	39.05
PAN7102CLP	33.30	31.52	40.20	33.55	36.13	30.54	36.21	46.20	35.96
PAN7160CLP	37.03	37.68	45.84	33.89	35.74	34.72	37.67	37.37	37.49
PAN7180CLP	36.34	35.57	43.61	32.64	32.61	35.59	35.12	35.90	35.92
SNK242CL	46.57	45.48	53.06	47.84	45.41	42.19	42.57	48.67	46.47
SNK270CL	44.75	42.49	50.36	45.50	44.23	38.49	38.47	44.60	43.61
SNK441CL	45.92	45.92	52.27	44.23	43.85	44.65	37.49	44.89	44.90
SY3970CL	44.46	44.32	53.34	45.12	45.64	41.85	37.41	45.03	44.65
Mean	38.77	38.68	46.08	38.02	38.26	36.79	38.41	40.50	39.44

Table 4: The “as is” seed protein concentration (%) of cultivars at selected localities 2024/2025

Cultivar Name	Coligny-1 2024/12/27	Coligny-2 2025/01/17	Potchefstroom 2024-11-25	Potchefstroom 2025/02/10	Wolmaransstand-1 2024/12/27	Wolmaransstad-2 2025/01/03	Boskop1 2024/11/18	Putfontein Lim 2025/01/14	Mean
AGSUN 5103CLP	19.65	19.53	13.89	14.34	20.96	18.52	18.02	15.02	17.49
AGSUN 5106CLP	17.95	20.26	10.85	14.67	19.86	16.27	18.84	16.38	16.89
AGSUN 5111CLP	15.51	19.77	10.89	14.01	16.89	19.94	17.74	13.89	16.08
AGSUN 5270	16.46	19.06	11.16	13.57	18.51	16.10	19.47	12.59	15.86
AGSUN 5280	18.58	18.86	12.27	13.64	18.37	19.41	17.42	15.45	16.75
LG 50745	17.95	18.52	10.15	13.90	16.90	21.17	15.96	14.61	16.15
P 65LL25	18.85	21.14	12.74	13.16	18.82	19.10	16.79	15.69	17.04
P 65LP54	17.97	20.30	11.64	11.60	18.88	19.94	18.11	13.50	16.49
P 65LP65	15.53	20.11	10.47	12.88	18.65	18.50	17.87	14.04	16.01
PAN 7090	15.68	19.56	10.79	12.52	18.60	18.18	18.04	13.87	15.91
PAN 7102CLP	17.51	21.54	14.99	11.72	17.34	20.02	19.22	15.63	17.25
PAN 7160CLP	16.94	19.82	12.16	11.19	17.87	18.13	18.86	15.49	16.31
PAN 7180CLP	15.40	18.45	12.04	12.36	18.47	17.38	19.03	13.68	15.85
SNK 242 CL	16.24	18.28	12.67	15.31	16.76	19.27	16.84	15.67	16.38
SNK 270 CL	14.53	17.04	12.10	15.70	16.09	19.37	16.49	17.89	16.15
SNK 441 CL	15.17	17.73	10.76	14.78	16.81	16.64	16.83	14.84	15.45
SY 3970 CL	15.98	18.53	13.24	15.26	16.99	18.03	17.67	17.77	16.68
Mean	16.82	19.32	11.93	13.57	18.05	18.59	17.84	15.06	16.40

Table 5: Mean seed yield (t ha^{-1}) of cultivars at each locality 2024/2025

Cultivar's name	Baberspan 2025/01/09	Bethlehem 2024/11/14	Bethlehem 2024/12/04	Biesiesvlei Pio 2025-01-17	Boskop1 2024/11/18	Boskop 3 2025/01/22	Coligny1 2024/12/27	Coligny Pan 2024/11/20	Coligny2 2025/01/17Ag	Delareyville 2025/01/13Ag	Excelcior Pio 2025/01/10	Gerdau Pio 2024/12/08	Heilbron AG 2024/11/19	Hoopstand Ag 2024/11/21	KosterPan 2024-12-19	Lindley Ag 2024/11/22	Potchestroom 2024-11-15	Potchestroom 2024-11-25	Potchefstroom 2025/02/10	Putfontein Pan 2024-12-12	Putfontein Lim 2025/01/14	Ventersdorp Ag 2024/12/19	Wolmaransstand1 Ag 2024/12/27	Wolmaransstand2 Ag 2025/01/03	mean
AGSUN 5103CLP	0.88	2.91	2.30	1.36	3.58	0.54	2.62	3.01	1.63	1.70	1.80	2.78	1.53	2.97	0.61	2.92	1.96	2.18	1.09	0.84	1.75	2.10	2.66	2.71	2.02
AGSUN 5106CLP	0.65	2.89	2.56	1.09	3.79	0.91	2.54	2.69	1.91	1.35	1.61	1.99	1.65	2.99	0.66	3.04	2.34	2.27	0.99	0.90	1.77	2.16	2.90	2.92	2.02
AGSUN 5111CLP	1.12	2.65	1.71	1.17	3.98	1.87	3.64	3.29	2.31	1.78	2.73	1.88	2.33	3.24	0.98	2.74	2.29	2.37	1.10	0.85	1.31	2.44	2.83	3.12	2.24
AGSUN 5270	0.92	2.38	1.91	1.12	3.12	1.14	2.61	2.31	2.31	1.22	2.10	2.81	1.94	2.33	0.90	3.18	2.09	2.67	1.32	0.84	1.89	2.71	2.59	2.36	2.03
AGSUN 5280	0.93	3.09	2.60	1.17	3.95	1.00	2.28	3.40	1.83	1.76	1.80	2.86	1.50	2.73	0.97	2.86	2.23	2.07	1.28	0.86	1.62	1.92	2.54	0.83	2.00
LG 50745	1.47	2.93	2.12	1.56	4.03	0.96	2.34	2.55	1.99	1.50	2.22	2.43	1.19	2.63	1.48	2.71	2.45	2.42	1.52	0.68	1.53	2.07	3.08	1.94	2.08
P 65 LL25	0.54	2.73	2.63	1.11	3.54	1.00	2.76	3.29	1.55	1.20	1.89	1.75	1.88	3.16	0.78	2.93	2.36	2.69	1.06	1.25	1.59	2.23	2.26	1.98	2.01
P 65 LP54	0.59	2.39	1.87	0.91	3.29	0.47	2.74	2.11	1.29	1.11	1.64	1.90	2.14	2.56	2.01	2.86	2.50	2.53	0.92	0.96	1.50	2.51	2.17	2.06	1.88
P 65 LP65	0.74	2.57	2.74	1.36	3.47	1.35	2.89	3.02	1.99	1.47	3.21	2.15	2.10	2.87	1.22	2.51	2.35	2.43	0.94	1.12	1.75	2.02	2.70	2.50	2.14
PAN 7090	1.11	2.89	2.52	1.11	3.76	1.28	3.14	3.07	2.01	1.71	1.99	2.30	1.82	3.18	0.99	3.02	2.13	2.57	1.26	1.21	1.97	2.28	2.80	2.16	2.18
PAN 7102CLP	0.72	2.25	2.12	1.02	3.98	0.69	2.69	3.01	1.52	1.28	1.96	2.37	1.64	2.51	1.43	2.41	3.73	2.80	1.08	0.99	1.43	2.28	2.69	1.82	2.02
PAN 7160CLP	0.86	2.98	2.17	1.05	3.37	0.81	2.68	2.61	1.74	1.22	2.23	2.63	1.82	2.47	1.21	2.38	3.17	2.64	0.95	1.35	1.48	2.23	2.44	2.27	2.03
PAN 7180CLP	0.83	2.84	2.70	1.43	3.36	1.32	2.89	3.10	1.66	1.39	3.56	3.00	2.43	2.92	2.19	2.56	2.18	2.68	1.01	1.23	1.91	2.50	2.70	2.46	2.29
SNK 242CL	1.02	3.25	1.73	1.53	2.86	0.54	2.40	3.37	1.38	1.79	2.51	2.90	1.66	3.14	1.37	2.52	2.19	2.43	0.86	0.70	1.00	2.12	2.58	2.17	2.00
SNK 270CL	0.94	2.97	2.66	1.21	2.76	0.60	2.19	2.64	1.55	1.32	2.98	2.59	1.44	3.32	0.60	2.29	2.34	2.77	0.97	1.12	1.50	1.95	2.83	2.14	1.96
SNK 441CL	0.86	2.77	2.32	1.08	2.59	0.72	2.41	3.06	1.46	1.63	3.12	2.44	1.84	2.91	0.81	2.47	2.36	2.45	0.72	0.99	1.53	1.86	2.36	2.24	1.96
SY 3970CL	0.88	2.84	1.90	1.31	2.72	0.47	1.94	2.66	1.37	1.41	2.79	2.72	1.66	3.09	0.82	2.30	2.42	2.22	0.91	0.74	1.06	2.15	2.55	1.82	1.86
mean	0.89	2.78	2.27	1.21	3.42	0.92	2.63	2.89	1.74	1.46	2.36	2.44	1.80	2.88	1.12	2.69	2.42	2.48	1.06	0.98	1.56	2.21	2.63	2.21	**2.04**
cv%	18.50	4.80	5.60	18.10	10.50	19.70	16.30	18.10	19.20	17.30	14.60	17.10	19.40	13.90	17.20	14.60	16.70	11.10	14.60	19.70	14.60	19.10	17.80	19.00	**16.08**

Table 6: Oil yield (t ha^{-1}) of cultivars at selected localities 2024/2025

Cultivar Name	Coligny-1 2024/12/27	Coligny-2 2025/01/17	Potchefstroom 2024-11-25	Potchefstroom 2025/02/10	Wolmaransstand-1 2024/12/27	Wolmaransstad- 2 2025/01/03	Boskop1 2024/11/18	Puffontein Lim 2025/01/14	Mean
AGSUN 5103CLP	0.92	0.59	0.90	0.38	0.89	0.95	1.29	0.63	0.82
AGSUN 5106CLP	0.93	0.69	0.97	0.37	1.07	1.14	1.38	0.63	0.90
AGSUN 5111CLP	1.38	0.84	1.01	0.35	1.12	1.11	1.55	0.46	0.98
AGSUN 5270	1.01	0.91	1.25	0.49	1.00	0.91	1.25	0.79	0.95
AGSUN 5280	0.84	0.65	0.89	0.47	0.92	0.28	1.49	0.59	0.77
LG 50745	0.92	0.83	1.16	0.65	1.36	0.64	1.73	0.63	0.99
P 65LL25	1.03	0.63	1.27	0.40	0.82	0.76	1.51	0.68	0.89
P 65LP54	0.90	0.44	1.03	0.30	0.73	0.63	1.21	0.53	0.72
P 65LP65	1.07	0.73	1.11	0.32	0.87	0.90	1.35	0.71	0.88
PAN 7090	1.22	0.76	1.20	0.47	1.00	0.81	1.41	0.80	0.96
PAN 7102CLP	0.90	0.48	1.13	0.36	0.97	0.56	1.44	0.66	0.81
PAN 7160CLP	0.99	0.66	1.21	0.32	0.87	0.79	1.27	0.55	0.83
PAN 7180CLP	1.05	0.59	1.17	0.33	0.88	0.88	1.18	0.69	0.85
SNK 242 CL	1.12	0.63	1.29	0.41	1.17	0.92	1.22	0.49	0.90
SNK 270 CL	0.98	0.66	1.39	0.44	1.25	0.82	1.06	0.67	0.91
SNK 441 CL	1.11	0.67	1.28	0.32	1.03	1.00	0.97	0.69	0.88
SY 3970 CL	0.86	0.61	1.18	0.41	1.16	0.76	1.02	0.48	0.81
Mean	1.02	0.67	1.14	0.40	1.01	0.81	1.31	0.63	0.88

Table 7: Parameters calculated from the analysis of variance for yield data at each locality

Locality	Mean (t/ha)	SE	CV (%)	GCV	t	SE(t)	tn
Baberspan2025/01/09Ag	0.89	0.09	18.5	22.7	0.6	0.127	0.82
Bethlehem2024/11/14Sy	2.78	0.08	4.8	9.1	0.78	0.081	0.91
Bethlehem2024/12/04Sy	2.27	0.07	5.6	15.4	0.88	0.048	0.96
Biesiesvlei2025-01-17 Pioneer	1.21	0.13	18.1	11	0.27	0.162	0.53
Boskop12024/11/18Ag	3.42	0.21	10.5	12.5	0.59	0.129	0.81
Boskop32025/01/22Ag	0.92	0.1	19.7	39.9	0.8	0.075	0.92
Coligny112024/12/27Ag	2.63	0.25	16.3	11.5	0.33	0.161	0.6
Coligny2024-11-20Pan	2.89	0.3	18.1	7.7	0.15	0.159	0.35
Coligny22025/01/17Ag	1.74	0.19	19.2	14.3	0.36	0.159	0.63
Delareyville2025/01/13Ag	1.46	0.15	17.3	11.9	0.32	0.161	0.59
Excelcior2025-01-10Pioneer	2.36	0.2	14.6	24.1	0.73	0.096	0.89
Gerdau2024-12-08Pioneer	2.44	0.24	17.1	12.8	0.36	0.159	0.63
Heilbron2024/11/19Ag	1.80	0.2	19.4	14	0.34	0.16	0.61
Hoopstad2024/11/21Ag	2.84	0.29	17.9	.	-0.02	0.141	-0.06
Koster2024/12/18Ag	1.44	0.31	37.5	10.3	0.07	0.153	0.18
Koster2024-12-19Pan	1.12	0.11	17.2	40	0.84	0.062	0.94
Lindley2024/11/22Ag	2.69	0.23	14.6	6.1	0.15	0.159	0.35
Potchefstroom2025/01/24	1.43	0.2	24.1	3.1	0.02	0.147	0.06
Potchefstroom2025/02/10	1.06	0.09	14.6	16.4	0.56	0.135	0.79
Potchestroom2024-11-15GC	2.42	0.23	16.7	14.7	0.44	0.152	0.7
Potchestroom2024-11-25GC	2.48	0.16	11.1	5.7	0.21	0.162	0.44
Putfontein2024-12-12Pan	0.98	0.11	19.7	17.3	0.44	0.152	0.7
Putfontein2025-01-14Lim	1.56	0.13	14.6	15.2	0.52	0.141	0.76
Senekal2025-01-09Pioneer	1.10	0.14	22.9	15.1	0.3	0.162	0.56
Ventersdorp2024/12/19Ag	2.21	0.24	19.1	.	-0.04	0.138	-0.13
Vredefort2024-12-10Pan	1.18	0.16	23.2	10.5	0.17	0.161	0.38
Wolmaransstad12024/12/27Ag	2.63	0.27	17.8	.	-0.09	0.129	-0.33
Wolmaransstad22025/01/03Ag	2.21	0.24	19	20.3	0.53	0.14	0.77

Table 8: Regression line coordinates at different yield potentials 2024/2025

	Yield potential (t ha^{-1})						Mean (t ha^{-1})	Intercept	Slope	Fprob	R^2
Cultivar	1	1,5	2	2,5	3	3,5					
AGSUN 5103CLP	0.9	1.4	2.0	2.5	3.1	3.6	2.0	-0.21	1.09	<0.001	0.90
AGSUN 5106CLP	0.9	1.4	2.0	2.5	3.1	3.7	2.0	-0.24	1.11	<0.001	0.88
AGSUN 5111CLP	1.2	1.7	2.2	2.7	3.2	3.8	2.2	0.12	1.04	<0.001	0.77
AGSUN 5270	1.1	1.6	2.0	2.4	2.9	3.3	2.0	0.26	0.87	<0.001	0.80
AGSUN 5280	0.9	1.4	2.0	2.5	3.0	3.5	2.0	-0.11	1.03	<0.001	0.78
LG 50745	1.1	1.6	2.0	2.5	3.0	3.4	2.1	0.20	0.92	<0.001	0.83
P 65 LL25	0.9	1.4	2.0	2.5	3.0	3.6	2.0	-0.20	1.08	<0.001	0.89
P 65 LP54	0.9	1.4	1.8	2.3	2.7	3.2	1.9	0.03	0.90	<0.001	0.77
P 65 LP65	1.1	1.6	2.1	2.6	3.1	3.5	2.1	0.18	0.96	<0.001	0.89
PAN 7090	1.1	1.6	2.1	2.6	3.1	3.6	2.2	0.13	1.00	<0.001	0.92
PAN 7102CLP	0.9	1.4	2.0	2.5	3.1	3.6	2.0	-0.19	1.08	<0.001	0.82
PAN 7160CLP	1.0	1.5	2.0	2.5	3.0	3.4	2.0	0.04	0.97	<0.001	0.90
PAN 7180CLP	1.3	1.8	2.2	2.7	3.2	3.6	2.3	0.40	0.92	<0.001	0.80
SNK 242CL	0.9	1.4	2.0	2.5	3.0	3.5	2.0	-0.11	1.03	<0.001	0.85
SNK 270CL	0.9	1.4	2.0	2.5	3.0	3.5	2.0	-0.11	1.03	<0.001	0.85
SNK 441CL	0.9	1.4	1.9	2.4	2.9	3.4	2.0	-0.04	0.98	<0.001	0.87
SY 3970CL	0.8	1.3	1.8	2.3	2.8	3.3	1.9	-0.16	0.99	<0.001	0.87

Table 10: Yield probability (%) of cultivars for 2024/2025 at different yield potentials

Cultivar	Yield potential (t ha^{-1})						Regression line	
	1	1,5	2	2,5	3	3,5	F prob	R^2
AGSUN 5103CLP	34	40	46	53	58	64	<0.001	0.90
AGSUN 5106CLP	34	41	47	55	61	67	<0.001	0.88
AGSUN 5111CLP	63	66	67	69	70	71	<0.001	0.77
AGSUN 5270	65	58	50	43	35	30	<0.001	0.80
AGSUN 5280	43	44	45	47	48	50	<0.001	0.78
LG 50745	64	60	55	50	45	41	<0.001	0.83
P 65 LL25	34	39	44	50	55	60	<0.001	0.89
P 65 LP54	43	38	33	28	25	22	<0.001	0.77
P 65 LP65	69	67	65	62	59	56	<0.001	0.89
PAN 7090	71	71	71	71	71	70	<0.001	0.92
PAN 7102CLP	39	43	47	51	55	58	<0.001	0.82
PAN 7160CLP	52	50	47	45	42	41	<0.001	0.90
PAN 7180CLP	41	43	44	46	48	50	<0.001	0.80
SNK 242CL	42	41	39	38	37	36	<0.001	0.85
SNK 270CL	29	29	27	27	27	28	<0.001	0.85
SNK 441CL	40	42	43	46	47	50	<0.001	0.87
SY 3970CL	42	41	39	38	37	37	<0.001	0.87

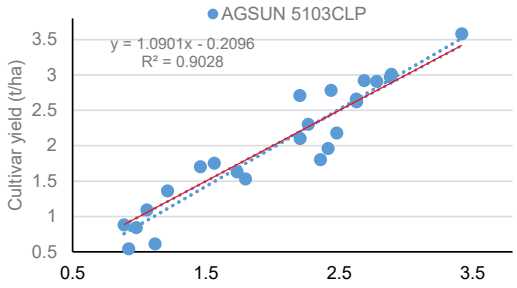
Table 11: Yield probability (%) of cultivars 2022/2023 and 2024/2025 at different yield potentials

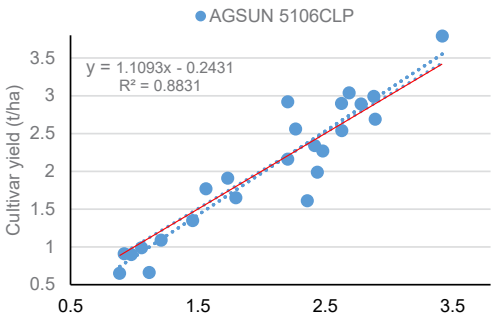
Cultivar	Yield potential (t ha^{-1})						Regression line	
	1	1,5	2	2,5	3	3,5	F prob	R^2
AGSUN 5103CLP	36	41	44	48	52	56	<0.001	0.89
AGSUN 5106CLP	36	42	48	55	61	67	<0.001	0.90
AGSUN 5111CLP	58	61	63	66	68	69	<0.001	0.82
AGSUN 5270	69	61	52	42	34	26	<0.001	0.85
LG 50745	54	49	42	36	30	26	<0.001	0.83
P 65 LL25	35	42	50	58	66	72	<0.001	0.91
P 65 LP54	42	40	39	38	36	35	<0.001	0.84
P 65 LP65	65	64	60	59	55	53	<0.001	0.89
PAN 7090	59	59	59	59	59	58	<0.001	0.89
PAN 7102CLP	45	49	51	55	58	61	<0.001	0.85
PAN 7160CLP	55	55	54	54	52	52	<0.001	0.90
PAN 7180CLP	75	72	67	64	58	54	<0.001	0.82
SNK 270 CL	39	41	42	43	45	46	<0.001	0.84
SY 3970 CL	27	27	26	26	25	25	<0.001	0.85

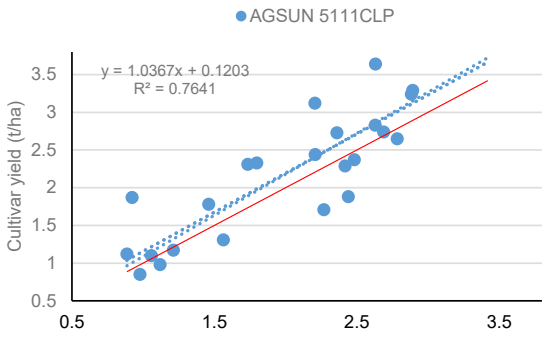
Table 12: Yield probability (%) of cultivars for three years' data 2021/2022 to 2024/2025 at different yield potentials

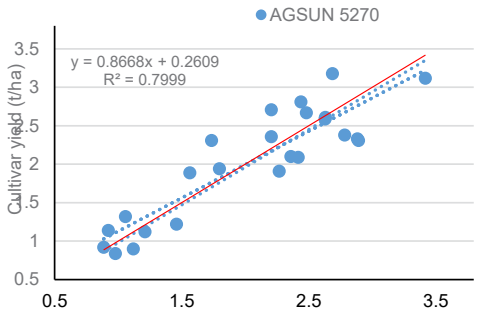
	Yield potential (t/ha)						Regression line	
	1	1,5	2	2,5	3	3,5	Fprob	R^2
AGSUN 5103CLP	29	33	37	42	47	52	<0.001	0.88
AGSUN 5106CLP	39	43	48	53	58	63	<0.001	0.89
AGSUN 5111CLP	55	57	60	62	64	67	<0.001	0.81
AGSUN 5270	68	64	58	53	47	42	<0.001	0.86
LG 50745	51	46	40	35	30	26	<0.001	0.82
P 65 LP54	44	44	43	43	41	41	<0.001	0.86
P 65 LP65	65	63	60	58	55	53	<0.001	0.88
PAN 7090	59	59	59	59	59	59	<0.001	0.90
PAN 7102CLP	38	43	49	54	59	64	<0.001	0.85
PAN 7160CLP	54	55	55	57	57	59	<0.001	0.90
PAN 7180CLP	67	66	65	64	62	61	<0.001	0.85
SY 3970 CL	35	32	28	26	23	16	<0.001	0.81

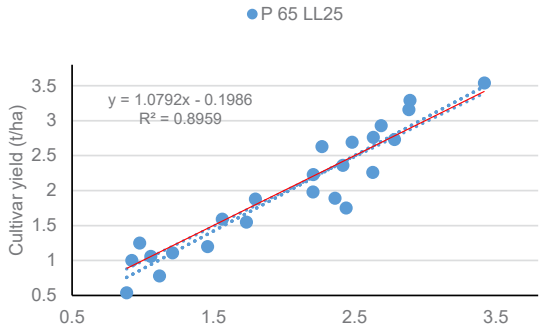
Figure 1: Regression lines for cultivars 2024/2025

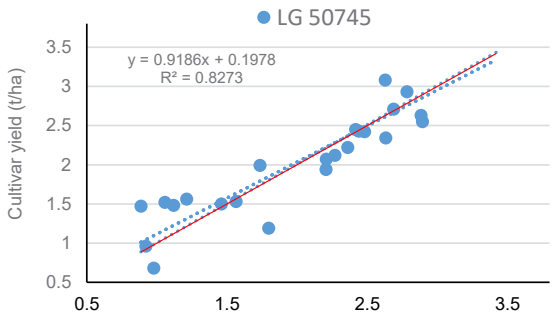


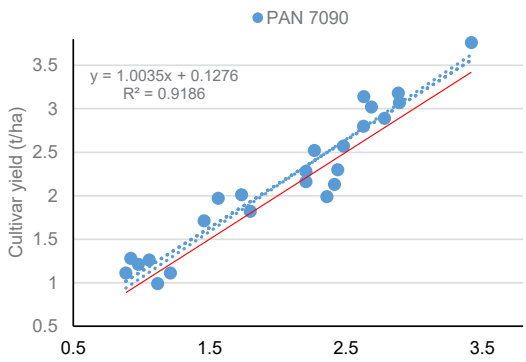


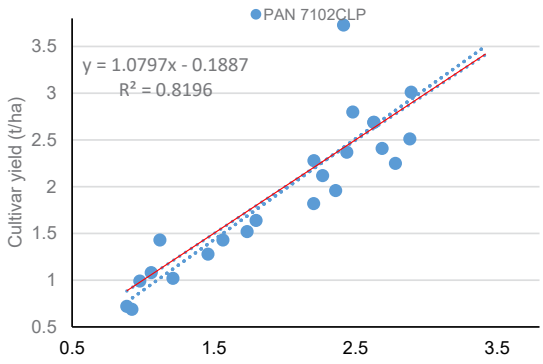


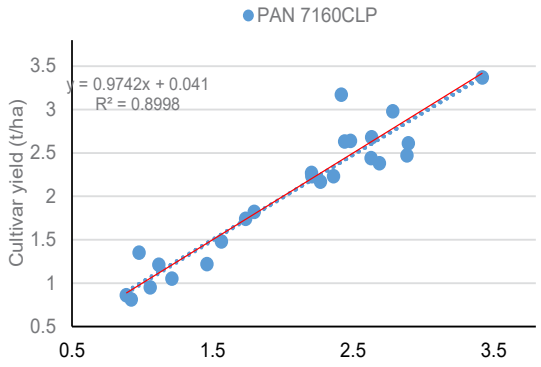


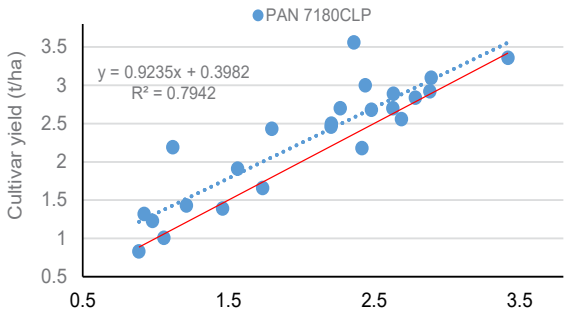


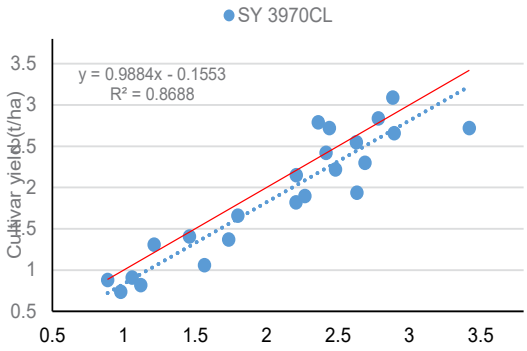


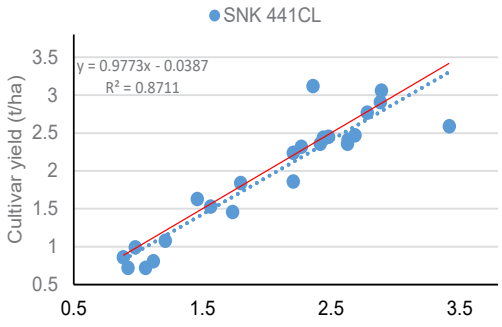


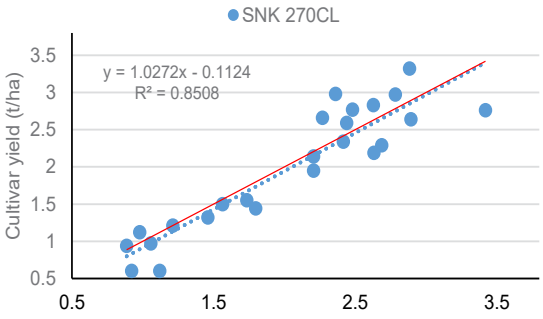



PAN 7160CLP
y = 0.9742x + 0.041
R² = 0.8998
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


PAN 7180CLP
y = 0.9235x + 0.3982
R² = 0.7942
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


SY 3970CL
y = 0.9884x - 0.1553
R² = 0.8688
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1
1.5
2
2.5
3
3.5


SNK 441CL
y = 0.9773x - 0.0387
R² = 0.8711
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


SNK 270CL
y = 1.0272x - 0.1124
R² = 0.8508
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5

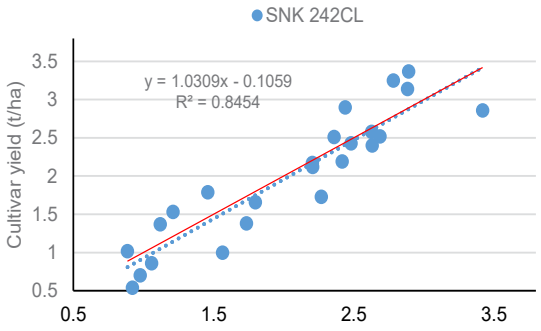
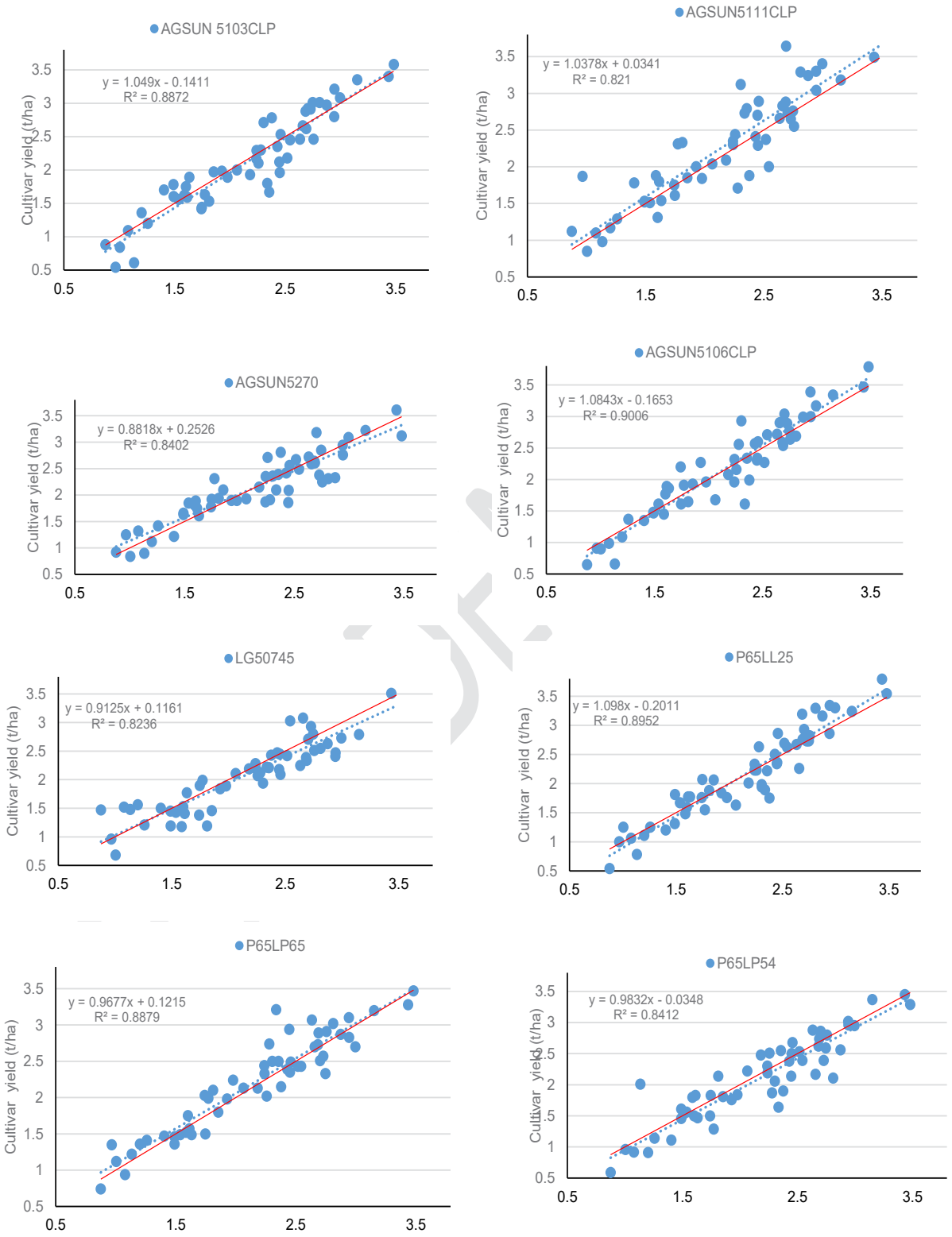
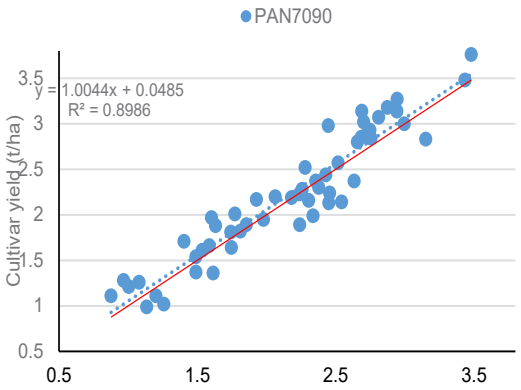
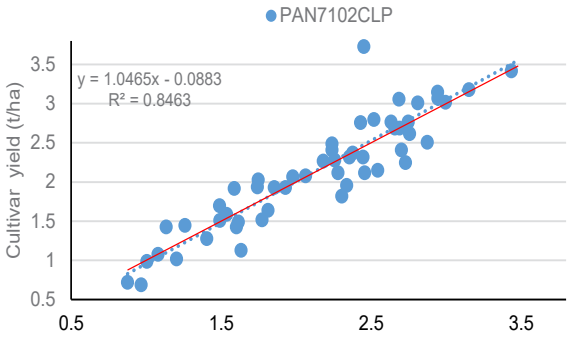
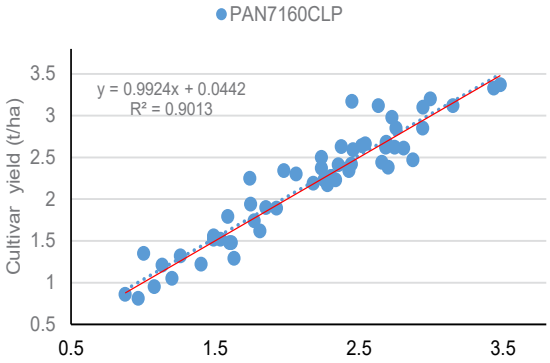

SNK 242CL
y = 1.0309x - 0.1059
R² = 0.8454
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5

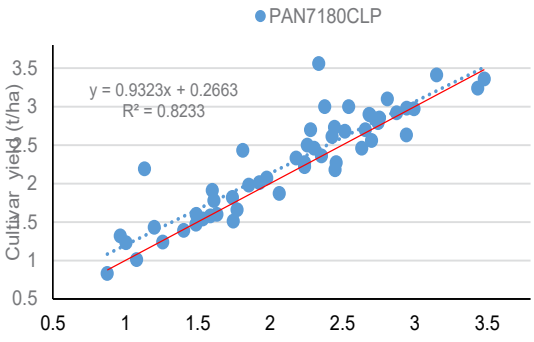
Figure 2: Regression lines for cultivars 2023/2024 & 2024/2025

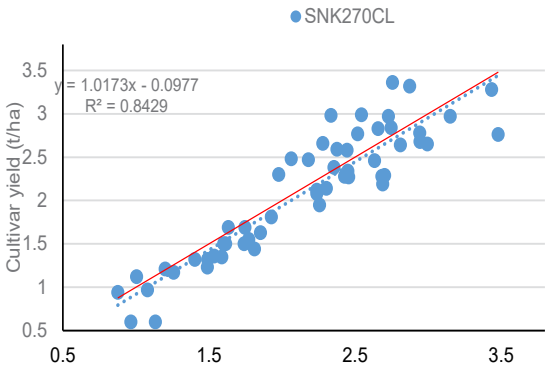


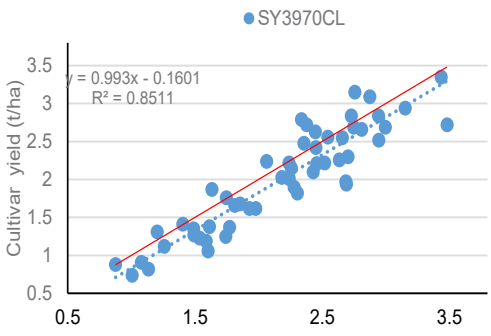

PAN7090
y = 1.0044x + 0.0485
R² = 0.8986
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


PAN7102CLP
y = 1.0465x - 0.0883
R² = 0.8463
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


PAN7160CLP
y = 0.9924x + 0.0442
R² = 0.9013
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


PAN7180CLP
y = 0.9323x + 0.2663
R² = 0.8233
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1
1.5
2
2.5
3
3.5


SNK270CL
y = 1.0173x - 0.0977
R² = 0.8429
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5


SY3970CL
y = 0.993x - 0.1601
R² = 0.8511
Cultivar yield (t/ha)
0.5
1
1.5
2
2.5
3
3.5
0.5
1.5
2.5
3.5

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. 45 **22 JANUARY 2016**

AGRICULTURAL PRODUCT STANDARDS ACT, 1990
(ACT No.119 OF 1990)

REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF SUNFLOWER SEED INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA

The Minister of Agriculture, Forestry and Fisheries under section 15 of the Agricultural Product Standards Act 119 of 1990, has

(a) made the regulations in the Schedule;

(b) determined that the said regulations shall come into operation on the date of publication thereof; and

(c) read together with section 3(1) of the said Act, repealed the Regulations published by Government Notice No. R 477 of 20 June 2014.

SCHEDULE

Definitions

1. In these regulations any word or expression to which a meaning has been assigned in the Act, shall have that meaning and, unless the context otherwise indicates--

"animal filth" means dead rodents, dead birds and dung;

"bag" means a bag manufactured from--

(a) jute or phormium or a mixture of jute and phormium; or

(b) polypropylene that compiles with SANS specification CKS632 1246: 2012;

"bulk container" means any vehicle or container in which bulk sunflower seed is transported or stored;

"consignment" means--

(a) a quantity of sunflower seed of the same class, which belongs to the same owner, delivered at any one time under the same consignment note, delivery note or receipt note, or delivered by the same vehicle or bulk container, or loaded from the same bulk storage structure or from a ship's hold; or

(b) in the case where a quantity referred to in paragraph (a), is subdivided into a grade, each such quality of such grade.

"container" means a bag or a bulk container;

"damaged sunflower seed" means sunflower seed or portion thereof which is visibly discoloured as a result of external heat or heating due to internal fermentation;

"foreign matter" means--

(a) loose and empty shells above the sieve that occur in the consignment concerned; and

(b) all matter other than sunflower seed and the achene of sunflower seed above the standard sieve. Coal, dung, glass and metal shall not be present in the consignment at all.

"insect" means any live grain insect that is injurious to stored sunflower seed as well as other grain, irrespective of the stage of development of that insect;

"poisonous seeds" mean seeds or part of seeds of plant species that in terms of the Foodstuffs Cosmetics and Disinfectants Act 64 of 1972, may represent a hazard to human or animal health when consumed, including seeds of *Argemone mexicana L, Convolvulus spp., Crotalaria spp., Datura spp., Ipomoea spp., Lolium temulentum, Ricinus communis or Xanthium spp;*

"sclerotia" means hard masses of fungal tissue produced by fungus *Sclerotinia sclerotiorum*. The sclerotia vary in size and form and consist of a dark black exterior, a white interior and a rough surface texture;

"screenings" means all material that passes through a standard sieve;

"standard sieve" means a slotted sieve--

(a) with a flat bottom of metal sheet of 1,0 mm thickness with apertures 12.7 mm long and 1.8 mm wide with rounded ends (±0.03 mm). The spacing between the slots in the same row must be 2.43 mm wide and the spacing between the rows of slots must be 2.0 mm wide. The slots must be alternately oriented with a slot always opposite the solid inter segment of the next row of slots;

(b) of which the upper surface of the sieve is smooth;

(c) with a round frame of suitable material with an inner diameter of at least 300 mm and at least 50 mm high; and

(d) that fits onto a tray with a solid bottom and must be at least 20 mm above bottom of the tray.

"sunflower seed" means the seed of the plant species of *Helianthus annuus (L); and*

"the Act" means the Agricultural Product Standards Act 119 of 1990.

Restrictions on sale of sunflower seed

2. (1) No person shall sell sunflower seed in the Republic of South Africa--

(a) unless the sunflower seed are sold according to the classes set out in regulation 3;

(b) unless the sunflower seed comply with the standards for the classes concerned set out in regulation 4;

(c) unless the sunflower seed, where applicable, comply with the grades of sunflower seed and the standards for grades set out in regulation 5 and 6 respectively;

(d) unless the sunflower seed are packed in accordance with the packing requirements set out in regulation 7;

(e) unless the container or sale documents, as the case may be, are marked in accordance with the marking requirements set out in regulation 8; and

(f) if such sunflower seed contains a substance that renders it unfit for human or animal consumption or for processing into or utilisation thereof as food or feed.

(2) The Executive Officer may grant written exemption, entirely or partially, to any person on such conditions as he or she may deem necessary, from the provisions of sub-regulation (1): Provided that such exemption is done in terms of section 3(1) (c) of the Act.

PART I

QUALITY STANDARDS

Classes of sunflower seed

3. Sunflower seed shall be classified as--

(a) Class FH;

(b) Class FS; and

(c) Class Other Sunflower Seed.

Standards for classes of sunflower seed

4. (1) A consignment of sunflower seed shall --

(a) be free from a musty, sour, khaki bush or other undesired odour;

(b) be free from any substance that renders it unsuitable for human or animal consumption or for processing into or utilisation as food or feed;

(c) not contain more poisonous seeds than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972;

(d) shall be free from stones, glass, metal, coal or dung;

(e) with the exception of Class Other Sunflower seed, be free from insects;

(f) with the exception of Class Other Sunflower seed, have a moisture content of not more than 10 percent; and

(g) be free from animal filth.

(2) A consignment of sunflower seed shall be classified as --

(a) Class FH if it--

(i) consist of at least 80 percent (m/m) sunflower seed of a cultivar with a high oil content; and

(ii) complies with the standard for Grade 1 set out in regulation 6.

(b) Class FS if it--

(i) consist of at least 80 percent (m/m) sunflower seed of a cultivar with a low oil content; and

(ii) complies with the standards for Grade 1 set out in regulation 6.

(c) Class Other Sunflower Seed if it does not comply with the requirements for Class FH or Class FS.

Grades for sunflower seed

5. (1) There is only one grade for the Classes FH and FS Sunflower Seed, namely Grade 1.

(2) No grades are determined for Class Other Sunflower seed.

Standards for grades of sunflower seed

6. A consignment of Grade 1 sunflower seed shall be graded as Grade 1 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 2 of the said table opposite the deviation concerned.

PART II

PACKING AND MARKING REQUIREMENTS

Packing requirements

7. Sunflower seed of different classes and grades shall be packed in different containers or stored separately.

Marking requirements

8. Every container or the accompanying sale documents of a sunflower seed shall be marked or endorsed with the class and, where applicable, the grade of the sunflower seed.

PART III

SAMPLING

Obtaining a sample

9. (1) A representative sample of a consignment of sunflower seed shall--

(a) in the case of sunflower seed delivered in bags and subject to regulation 10, be obtained by sampling at least 10 percent of the bags, chosen from that consignment at random, with a bag probe: Provided that at least 25 bags in a consignment shall be sampled and where a consignment consists of less than 25 bags, all the bags in that consignment shall be sampled; and

(b) in the case of sunflower seed delivered in bulk and subject to regulation 10, be obtained by sampling that consignment throughout the whole depth of the layer, in at least six different places, chosen at random in that bulk quantity, with a bulk sampling apparatus.

(2) The collective sample obtained in sub-regulation (1) (a) or (b) shall--

(a) have a total mass of at least 5 kg; and

(b) be thoroughly mixed by means of dividing before further examination.

(3) If it is suspected that the sample referred to in sub regulation (1)(a) is not representative of that consignment, an additional five percent of the remaining bags, chosen from that consignment at random, shall be emptied into a suitable bulk container and sampled in the manner contemplated in sub regulation(1)(b).

(4) If it is suspected that the sample referred to in sub-regulation (1) (b) is not representative of that consignment, an additional representative sample shall be obtained by using an alternative sampling pattern, apparatus or method.

(5) A sample taken in terms of these regulations shall be deemed to be representative of the consignment from which it was taken.

Sampling if contents differ

10. (1) If, after an examination of the sunflower seed taken from different bags in a consignment in terms of regulation 9(1), it appears that the contents of those bags differ substantially--

(a) the bags concerned shall be separated from each other;

(b) all the bags in the consignment concerned shall be sampled in order to do such separation; and

(c) each group of bags with similar contents in that consignment shall for the purpose of these regulations be deemed to be separate consignment.

(2) If, after the discharge of a consignment of sunflower seed in bulk has commenced, it is suspected that the consignment could be of a class or grade other than that determined by means of the initial sampling, the discharge shall immediately be stopped and that part of the consignment remaining in the bulk container, as well as the sunflower seed already in the collecting tray, shall be sampled anew with a bulk sampling apparatus or by catching at least 20 samples at regular intervals throughout the whole off loading period with a suitable container from the stream of sunflower seed that is flowing in bulk.

Working sample

11. (1) A working sample of sunflower seed shall be obtained by dividing the representative sample of the consignment according to the latest revision of the ICC (International Association for Science and Technology) 101/1 method.

PART IV

INSPECTION METHODS

Determination of undesired odour, harmful substances, poisonous seeds, stones, glass, metal, coal, dung, insect and animal filth

12. A consignment or sample of a consignment shall be assessed sensorially or chemically analysed in order to determine whether it--

(a) has a musty, sour, khaki bush or other undesired odour;

(b) contains a substance that renders it unsuitable for human or animal consumption or processing into or utilization thereof as food or feed;

(c) contains poisonous seeds;

(d) contains stones, glass, metal, coal or dung;

(e) contains any insects; and

(f) contains animal filth.

Determination of moisture content

13. The moisture content of a consignment of sunflower seed may be determined according to any suitable method: Provided that the result thus obtained is in accordance with the maximum permissible deviation for a class 1 moisture meter as detailed in ISO 7700/2, based upon result of the 3 hour, 103°C oven dried method [the latest revision of the AACCI ("American Association of Cereal Chemists International") Method 44-15].

Determination of percentage screenings

14. The percentage screenings in a consignment of sunflower seed is determined as follows:

(a) Obtain a working sample of at least 50g from a representative sample of the consignment.

(b) Place the sample on a standard sieve; screen the sample by moving the sieve 50 strokes to and fro, alternately away from and towards the operator of the sieve, in the same direction as the long axes of the slots of the sieve. Move the sieve, which rests on a table or other suitable smooth surface, 250 mm to 460 mm away from and towards the operator with each stroke. The prescribed 50 strokes must be completed within 50 to 60 seconds: Provided that the screening process may also be performed in some or other container or an automatic sieving apparatus.

(c) Determine the mass of the material that has passed through the sieve and express it that as a percentage of the mass of the working sample.

(d) Such percentage represents the percentage screenings in the consignment.

Determination of percentage foreign matter

15. The percentage foreign matter in a consignment of sunflower seed shall be determined as follows:

(a) Obtain a working sample of at least 20g of a screened sample.

(b) Remove all foreign matter by hand and determine the mass thereof.

(c) Express the mass thus determined as a percentage of the mass of the working sample.

(d) Such a percentage represents the percentage foreign matter in the consignment.

Determination of percentage sclerotia

16. The percentage sclerotia in a consignment of sunflower seed is determined as follows:

(a) Remove all sclerotia in the working sample in 15(a) obtained by hand and determine the mass thereof.

(b) Express the mass thus determined as a percentage of the working sample in regulation 15(a) obtained.

(c) Such a percentage represents the percentage sclerotia in the consignment.

Determination of percentage sunflower seed of another class

17. The percentage sunflower seed of another class in a consignment of sunflower seed shall be determined as follows:

(a) Obtain a working sample of at least 20g from a screened sample free of foreign matter and sclerotia.

(b) Remove all sunflower seeds of another class from the working sample by hand and determine the mass thereof.

(c) Express the mass thus determined as a percentage of the working sample.

(d) Such a percentage represents the percentage sunflower seed of another class in the consignment.

Determination of the percentage damaged sunflower seed

18. The percentage damaged sunflower seed in a consignment of sunflower seed, shall be determined as follows:

(a) Obtain a working sample of at least 20 g from a screened sample free of foreign matter and sclerotia.

(b) Shell the seed in the working sample by hand or with a machine so that nucleus portions thereof are retained.

(c) Remove all damaged sunflower seed from the quantity thus shelled and determine the mass thereof.

(d) Express the mass thus determined as a percentage of the working sample.

(e) Such a percentage represents the percentage damaged sunflower seed in the consignment.

PART V

MASS DETERMINATION

19. The mass of sunflower seed shall be determined by deducting the actual percentage sclerotia, screenings and foreign matter found during the inspection process from the total mass of the consignment: Provided that the weighing instruments used for the determination of mass shall comply with the requirements of SANS 1649:2001 published in terms of the Trade Metrology Act 77 of 1973 for the specific class of instrument.

PART VI

OFFENCE AND PENALTIES

20. Any person who contravenes or fails to comply with any provision of these regulations shall be guilty of an offence and upon conviction be liable to a fine or imprisonment in terms of section 11 of the Act.

ANNEXURE

TABLE 1

STANDARDS FOR GRADES OF SUNFLOWER SEED

DEVIATIONS		**Maximum permissible deviations**	
		Class FH	**Class FS**
		Grade1	
1.	Damaged sunflower seed	10%	
2.	Screenings	4%	
3.	Sclerotia	4%	
4.	Foreign Matter	4%	
5.	Deviation in 2,3 and 4 collectively: Provided that such deviations are individually within the limits of said items.	6%