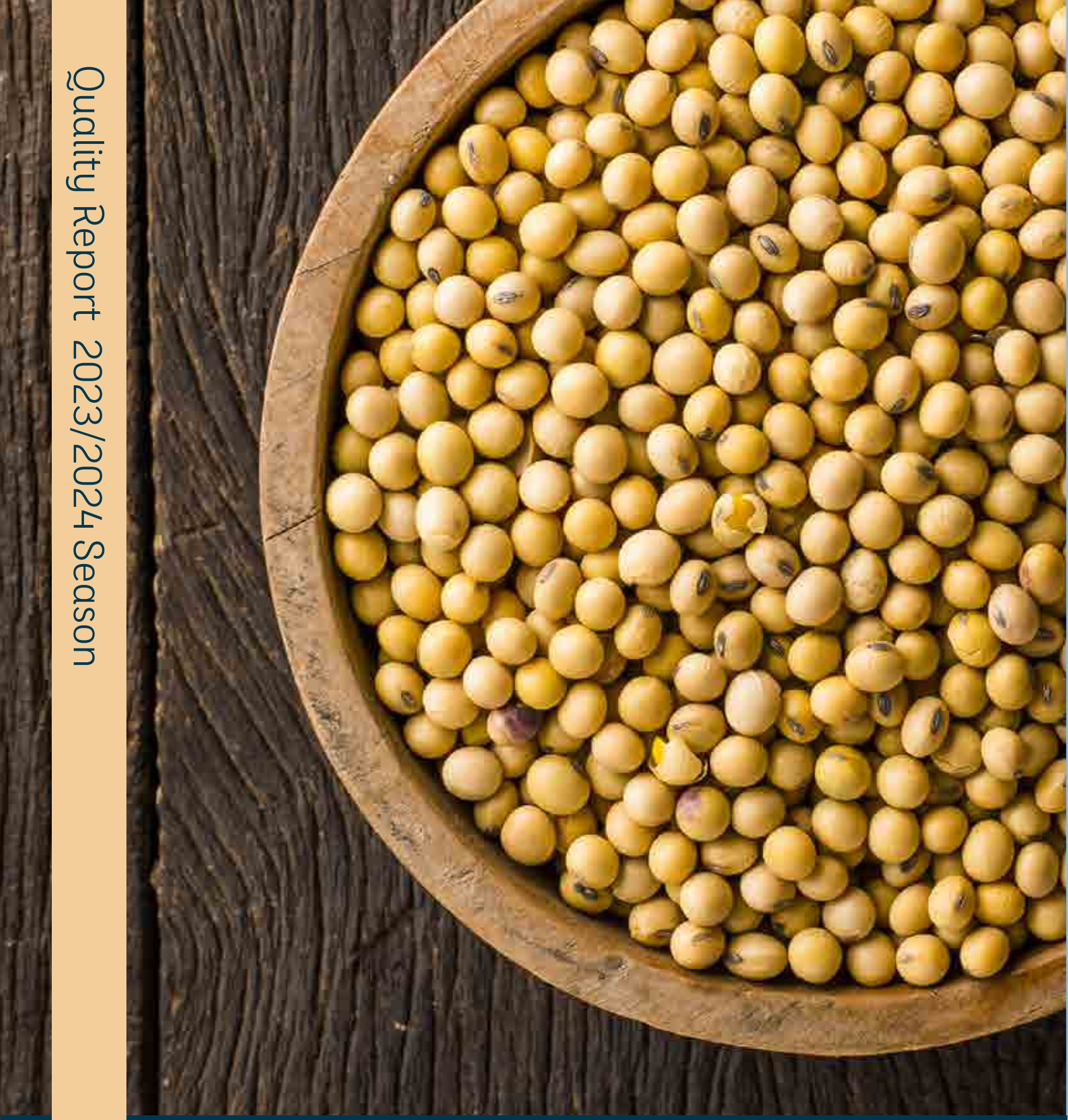
Quality Report 2023/2024 Season



South African Soybean Crop

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South African

Commercial Soybean Quality for the 2023/2024 Season

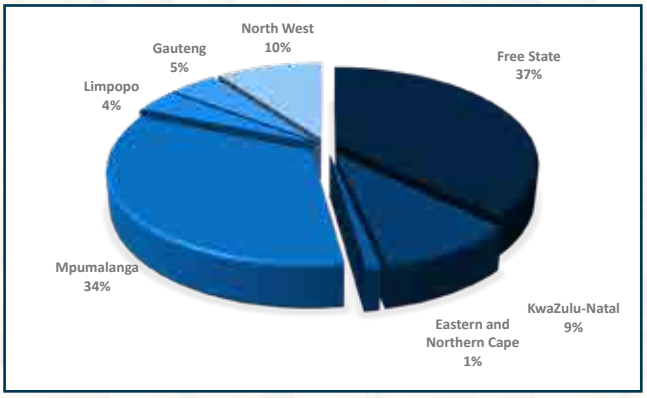
Acknowledgements
With gratitude to:

- ***The 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 their cooperation in providing samples to make the survey possible.***
- ***The Crop Estimates Committee (CEC) of the Department of Agriculture (DOA) for providing production related figures.***
- ***South African Grain Information Service (SAGIS) for providing supply and demand figures relating to soybeans.***
- ***Precision Oil Laboratories for providing Fatty Acid Profile analyses.***

Introduction

The final commercial soybean crop figure of the 2023/24 season, as overseen by the National Crop Estimates Liaison Committee (CELC), is 1 848 000 tons. This represents a year on year decrease of 33% (922 000 tons), but is however still the fourth highest soybean crop figure recorded. The major soybean producing provinces, namely the Free State and Mpumalanga, contributed 71% of the total crop.

Graph 1: Provincial contribution to the production of the 2023/24 soybean crop



Figures provided by the CEC.

During the harvesting season, a representative sample of each delivery of soybeans at the various silos was taken according to the prescribed grading regulations. The sampling procedure for the samples used in this survey is described on page 41. Two hundred composite soybean 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. Twenty samples, randomly selected to represent the different production regions, as well as 18 cultivar samples were submitted to Precision Oil Laboratories for fatty acid profile analyses.

This is the thirteenth annual soybean crop quality survey performed by The Southern African Grain Laboratory NPC (SAGL). SAGL was established in 1997 on 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 soybean crop, which is essential in assisting with decision making processes. The data reveal general tendencies, highlight quality differences in the commercial soybeans produced in different local production regions and provide important information on the quality of commercial soybeans intended for export when applicable.

The results of this survey are available on the SAGL website (www.sagl.co.za). Hard copy reports are distributed to all Directly Affected Groups and interested parties. The report is also available to read or download from the website.
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 seeds products, are also included.

The 2023/24 Report of the National Soybean Cultivar Trials conducted by the ARC-Grain Crops in Potchefstroom, is included in totality and as received, in this report. The national grading regulations as published in Government Notice NO. R. 370 of 21 April 2017 are also provided.

Production

Soybeans are the most important oilseed crop produced in South Africa, driven mainly by the demand for protein feed in the animal feed industry. Soybeans have benefits to producers in crop rotation programs, especially as part of conservation agriculture, but also due to lower input requirements compared to other commodities for example wheat and maize.
The area utilised for commercial soybean crop production showed a slight increase of 2 200 hectares

Table 1: Soybean production overview over two seasons

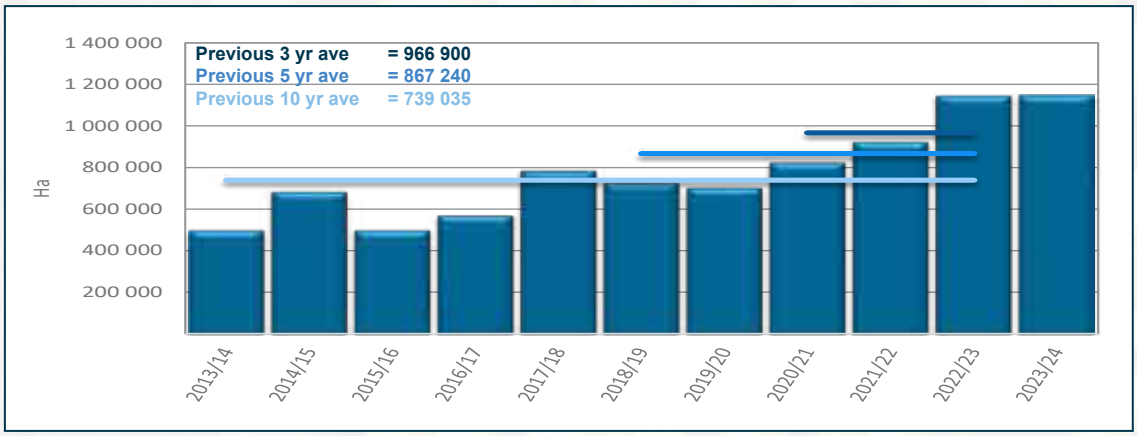
Province	Type of production	2023/24			2022/23		
		Hectares planted, ha	Production, tons	Yield, t/ha	Hectares planted, ha	Production, tons	Yield, t/ha
Western Cape	Dryland	-	-	-	-	-	-
	Irrigation	-	-	-	-	-	-
	Total	-	-	-	-	-	-
Northern Cape	Dryland	-	-	-	-	-	-
	Irrigation	1 200	4 380	3.65	1 000	3 750	3.75
	Total	1 200	4 380	3.65	1 000	3 750	3.75
Free State	Dryland	530 000	636 460	1.20	555 000	1 293 000	2.33
	Irrigation	15 000	52 500	3.50	10 000	37 000	3.70
	Total	545 000	688 960	1.26	565 000	1 330 000	2.35
Eastern Cape	Dryland	4 900	12 910	2.63	4 000	11 800	2.95
	Irrigation	400	1 400	3.50	300	1 100	3.67
	Total	5 300	14 310	2.70	4 300	12 900	3.00
KwaZulu-Natal	Dryland	36 500	128 000	3.51	32 000	112 000	3.50
	Irrigation	10 500	45 900	4.37	12 000	51 000	4.25
	Total	47 000	173 900	3.70	44 000	163 000	3.70
Mpumalanga	Dryland	314 500	604 750	1.92	294 000	632 000	2.15
	Irrigation	5 500	19 250	3.50	11 000	39 000	3.55
	Total	320 000	624 000	1.95	305 000	671 000	2.20
Limpopo	Dryland	4 000	7 850	1.96	4 000	10 400	2.60
	Irrigation	17 000	64 600	3.80	22 000	78 100	3.55
	Total	21 000	72 450	3.45	26 000	88 500	3.40
Gauteng	Dryland	54 500	78 525	1.44	46 000	98 600	2.14
	Irrigation	1 500	5 475	3.65	2 000	7 000	3.50
	Total	56 000	84 000	1.50	48 000	105 600	2.20
North West	Dryland	139 000	138 000	0.99	140 200	343 450	2.45
	Irrigation	16 000	48 000	3.00	14 800	51 800	3.50
	Total	155 000	186 000	1.20	155 000	395 250	2.55
RSA	Dryland	1 083 400	1 606 495	1.48	1 075 200	2 501 250	2.33
	Irrigation	67 100	241 505	3.60	73 100	268 750	3.68
	Total	1 150 500	1 848 000	1.61	1 148 300	2 770 000	2.41

Figures provided by the CEC.

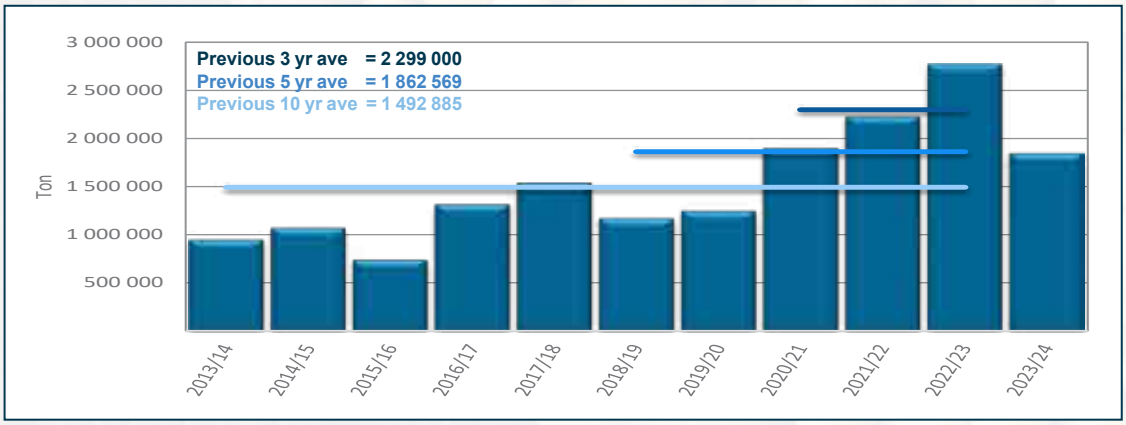
compared to the 2022/23 production season. The area planted is the highest figure on record for the fourth consecutive year. The average national yield of 1.61 t/ha decreased compared to the 2.41 t/ha of the previous season.

Soybeans account for more than half of the world's oilseed production. According to the *World Agricultural Supply and Demand Estimates Report (WASDE – 662)* an estimated 422.00 million metric tons of soybeans were produced during the 2024/25 season. Brazil (40%) and the United States (28%) are by far the largest contributors to this total. The world soybean production for the 2025/26 season is projected to be 427.68 million metric tons.

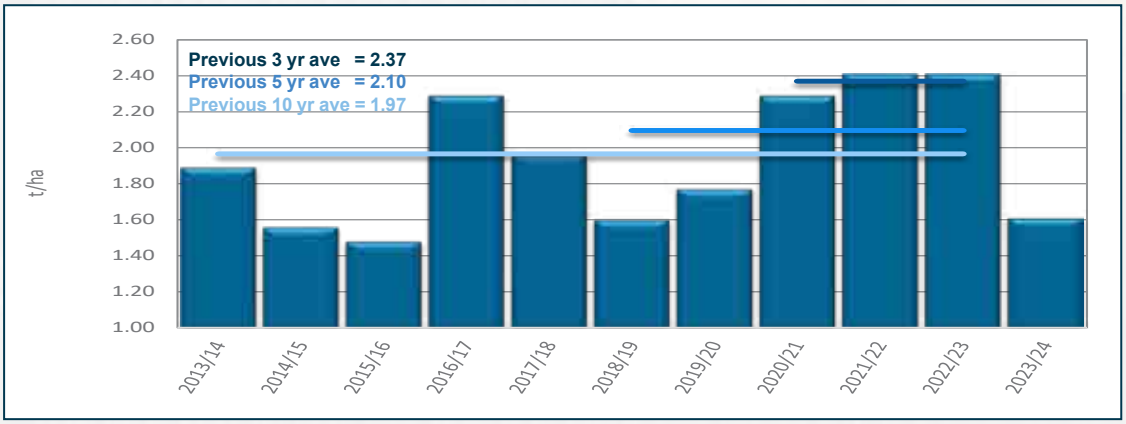
Graph 2: Total RSA area utilised for soybean production from 2013/14 to 2023/24



Graph 3: Soybean production in RSA from 2013/14 to 2023/24

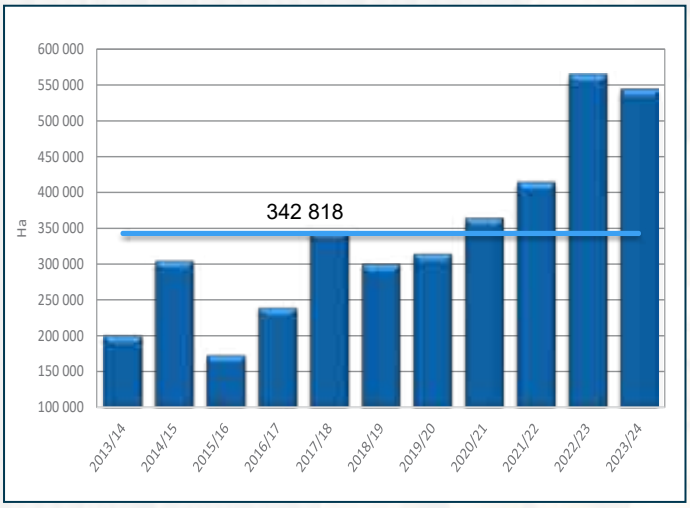


Graph 4: RSA soybean yield from 2013/14 to 2023/24

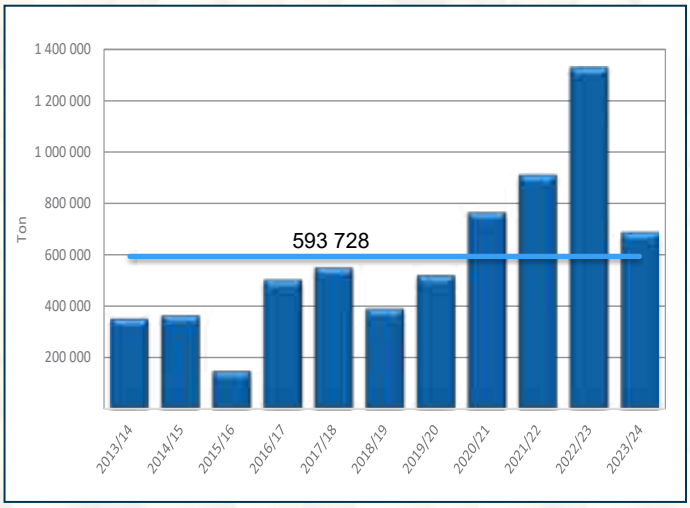


Figures provided by the CEC.

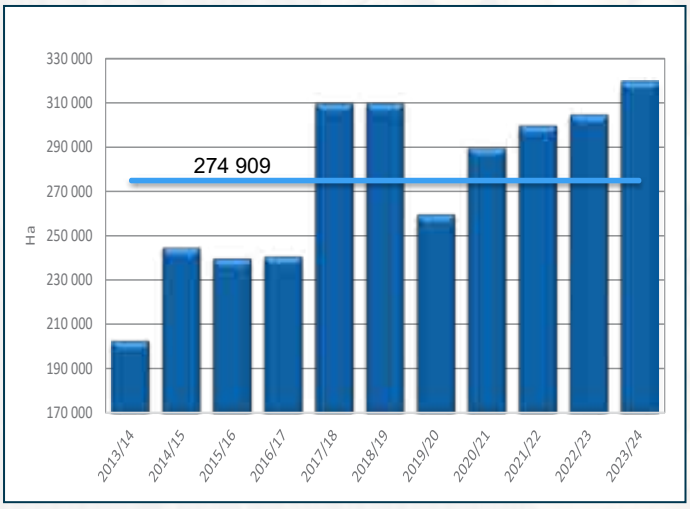
Graph 5: Area utilised for soybean production in the Free State since 2013/14



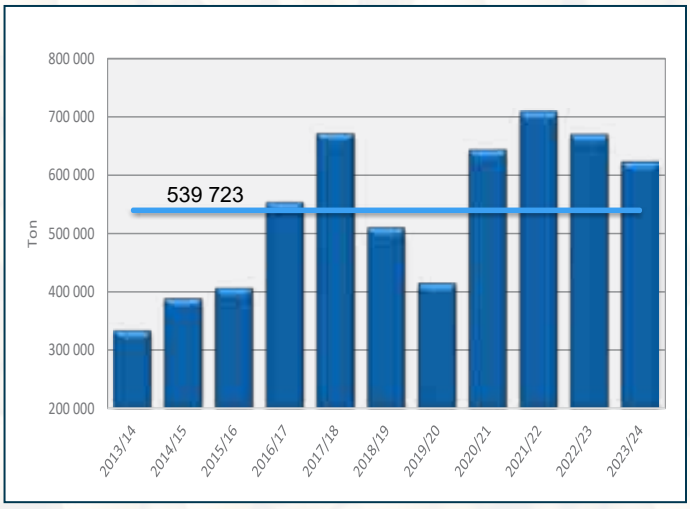
Graph 6: Soybean production in the Free State since 2013/14



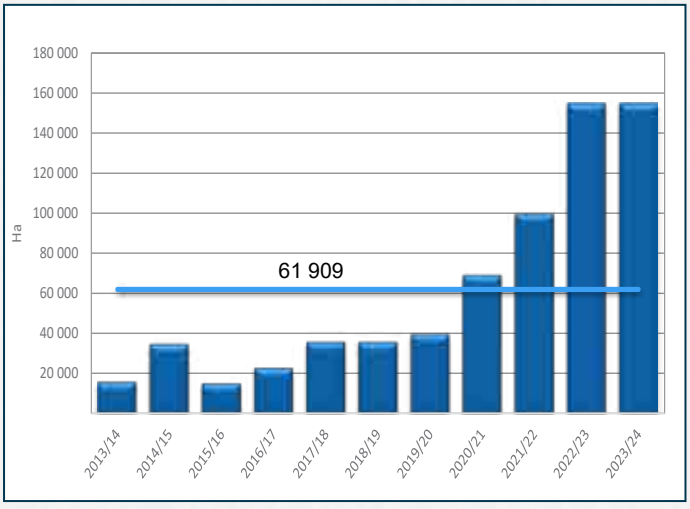
Graph 7: Area utilised for soybean production in Mpumalanga since 2013/14



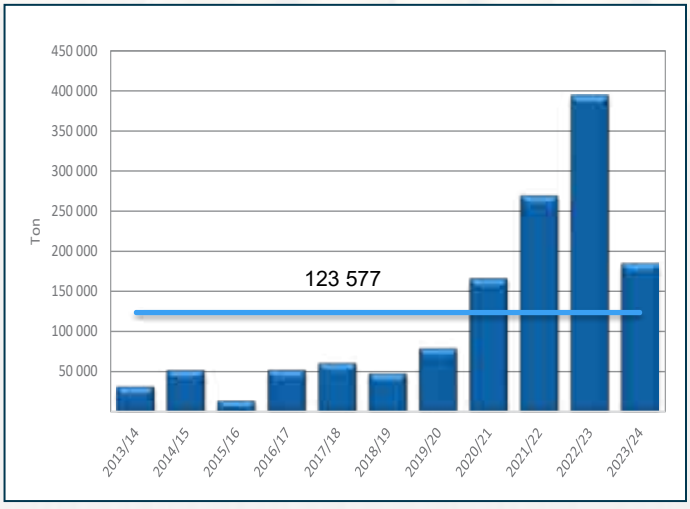
Graph 8: Soybean production in Mpumalanga since 2013/14



Graph 9: Area utilised for soybean production in North West since 2013/14



Graph 10: Soybean production in North West since 2013/14



Figures provided by the CEC.

Eleven season average

Supply and Demand

The soybean marketing season dates from March to end of February. According to SAGIS' supply and demand figures for the 2024/2025 marketing season, opening stock increased by 86% compared to the previous season and is almost double the ten-year average of 165 700 tons.

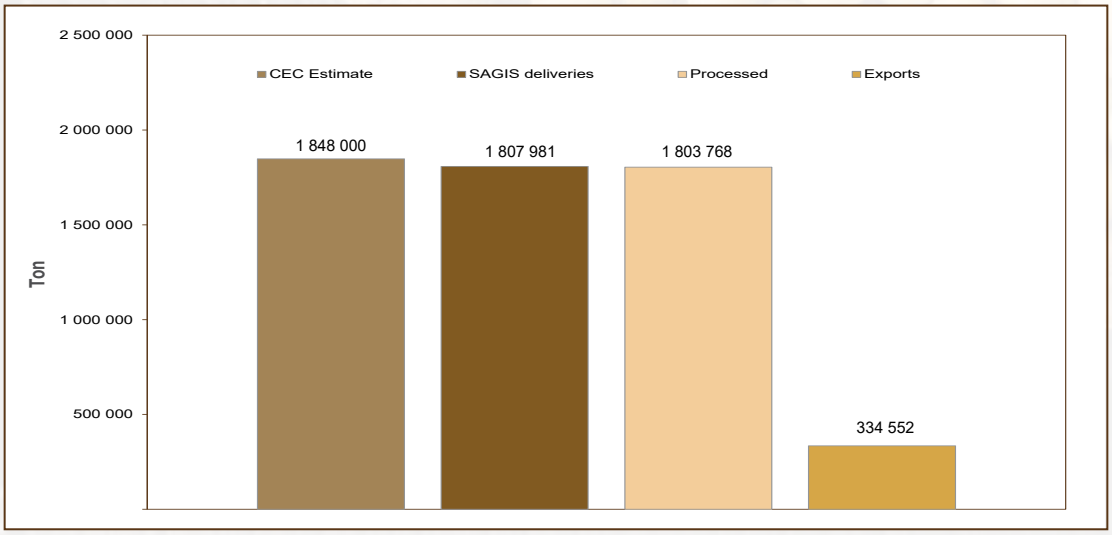
The amount of soybeans imported (154 288 tons) is significantly more than the amount imported during the previous three seasons. The ten-year import average is 67 979 tons. China remains the largest importer of soybeans worldwide by far, with 106.50 million metric tons imported during the 2024/25 season.

Please see the quality analysis results of soybeans imported during the 2024/25 marketing season (March 2024 to February 2025) on pages 10 to 12.

Oilseeds such as soybeans and sunflowers are crushed, producing both vegetable oil for human consumption and oilcake as well as protein meal for inclusion in animal feed rations. Soybeans yield more protein meal, widely used in the animal feed industry. Of the 1.80 million tons of soybeans processed locally during 2024/25, 1.2% was used for human consumption, 6.1% for animal feed as full fat soya and the bulk crushed to produce oil and oilcake. The quantity of soybeans crushed during 2024/25, is 7% less than the quantity crushed during the previous season, but 37% more than the ten-year average.

Soybean and soybean product exports decreased by 44% (262 493 tons) compared to the previous season. 334 552 tons of soybeans/products have been exported this season, the ten-year average is 96 846 tons. Whole soybeans were exported to mainly Zimbabwe (105 950 tons), Vietnam (27 658 tons) and Eswatini (13 865 tons). Globally, soybean exports during the 2024/25 season amounted to an estimated 180.73 million metric tons, with Brazil exporting 56% and the United States 28% of this total. The projected world soybean exports for the 2025/26 season currently stands at 187.63 million metric tons. Argentina and Brazil, followed by the United States are the largest exporters of soybean meal and Argentina and Brazil the largest exporters of soybean oil *(WASDE - 662).*

Graph 11: Soybean supply and demand overview for the current marketing season (Mar 2024 - Feb 2025)



Information provided by SAGIS.

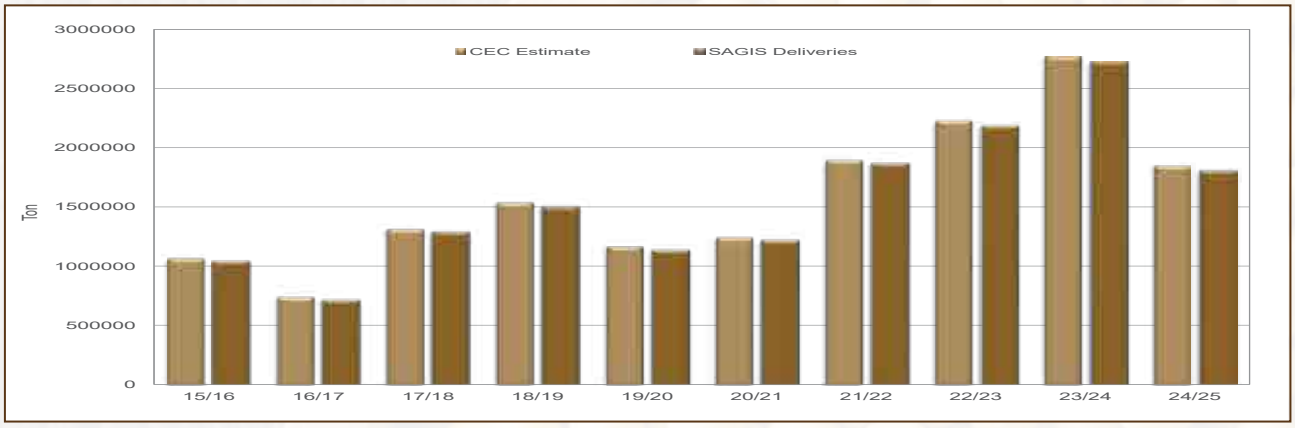
SAGIS South African Grain Information Service
Suid-Afrikaanse Graan Inligtingsdiens

SOYBEANS: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON) — **Publication date: 2025/03/26**

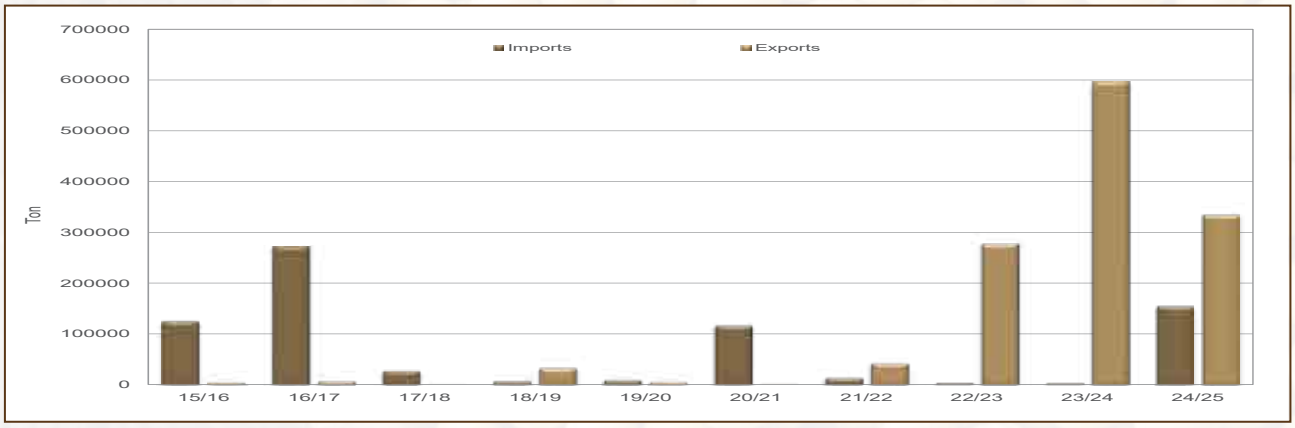
	Season (Mar - Feb)																Current Season Mar - Feb	10 Year average
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	2014/15-2023/24
																	***	
																	12	
CEC (Crop Estimate)	282 000	516 000	566 000	710 000	650 000	784 500	948 000	1 070 000	742 000	1 316 000	1 540 000	1 170 345	1 245 500	1 897 000	2 230 000	2 770 000	1 848 000	1 492 885
SUPPLY																		
Opening stock (1 Mar)	57 800	48 700	56 000	46 200	225 800	68 639	61 806	63 704	89 128	84 792	330 535	502 241	138 455	46 053	168 387	171 897	320 637	165 700
Prod deliveries	264 000	508 200	531 500	690 300	621 892	759 146	919 723	1 042 129	713 660	1 290 218	1 502 976	1 135 145	1 219 044	1 868 772	2 186 711	2 726 389	1 807 981	1 460 477
Imports	4 200	3 100	600	300	300	3 256	102 977	124 981	271 098	27 508	6 945	9 098	116 103	13 448	4 154	3 480	154 288	67 979
Surplus	900	700	1 500	1 800	1 698	2 572	0	10 526	1 122	2 519	4 497	0	1 968	4 289	7 570	10 742	7 150	4 323
Total Supply	326 900	560 700	589 600	738 600	849 690	833 613	1 084 506	1 241 340	1 075 008	1 405 037	1 844 953	1 646 484	1 475 570	1 932 562	2 366 822	2 912 508	2 290 056	1 698 479
DEMAND																		
Processed	260 300	337 400	406 900	451 300	615 272	742 104	1 005 548	1 134 110	974 901	1 063 783	1 298 544	1 484 692	1 417 165	1 710 221	1 907 982	1 984 433	1 803 768	1 398 138
-human	28 400	28 800	31 000	31 000	25 913	24 860	25 319	24 323	23 875	25 056	25 005	23 759	23 234	22 279	21 739	21 549	22 424	23 614
-animal feed (full fat soya)	109 300	181 800	191 800	150 200	137 407	155 654	118 598	121 763	98 718	147 302	218 973	191 323	144 985	167 480	189 605	158 855	109 651	155 760
-crush (oil/oilcake)	122 600	126 800	184 100	270 100	451 952	561 590	861 631	988 024	852 308	891 425	1 054 566	1 269 610	1 248 946	1 520 462	1 696 638	1 804 029	1 671 693	1 218 764
Withdrawn by producers	4 300	4 800	4 300	4 100	4 463	3 877	1 975	2 393	367	1 331	567	676	496	196	0	139	582	814
Released to end-consumers	1 200	900	3 700	3 400	2 757	2 825	2 886	2 650	1 098	608	431	367	673	123	130	69	304	904
Seed for planting purposes	3 100	5 300	4 900	5 200	5 700	5 295	5 111	7 577	5 678	8 795	10 599	7 640	9 961	11 079	8 971	10 603	7 709	8 601
Net receipts(-)/disp(+)	1 300	3 200	1 900	1 600	0	2 316	1 924	805	1 427	- 429	- 239	1 107	162	261	338	- 418	1 844	494
Deficit	0	0	0	0	0	0	2 782	0	0	0	0	8 097	0	0	0	0	0	1 088
Exports	8 000	153 100	121 700	47 200	152 616	15 390	576	4 677	6 745	414	32 810	5 336	1 060	42 295	277 504	597 045	334 552	96 846
Total Demand	278 200	504 700	543 400	512 800	780 808	771 807	1 020 802	1 152 212	990 216	1 074 502	1 342 712	1 507 915	1 429 517	1 764 175	2 194 925	2 591 871	2 148 759	1 506 885
Ending Stock (28 Feb)	48 700	56 000	46 200	225 800	68 882	61 806	63 704	89 128	84 792	330 535	502 241	138 569	46 053	168 387	171 897	320 637	141 297	191 594
- processed p/month	21 700	28 100	33 900	37 600	51 300	61 842	83 796	94 509	81 242	88 649	108 212	123 724	118 097	142 518	158 999	165 369	150 314	116 512
- months' stock	2.2	2.0	1.4	6.0	1.3	1.0	0.8	0.9	1.0	3.7	4.6	1.1	0.4	1.2	1.1	1.9	0.9	2

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

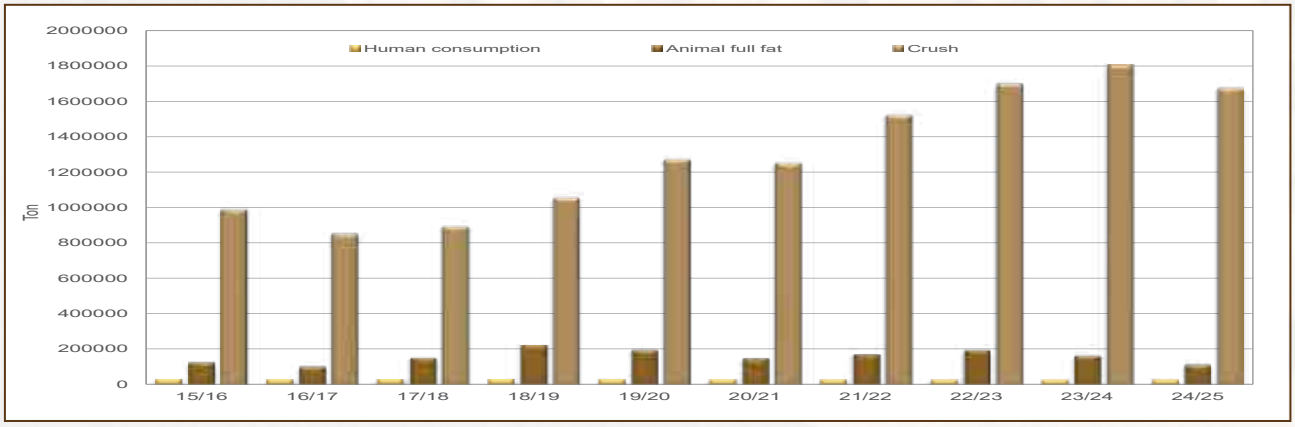
Graph 12: Soybeans: CEC Estimate vs SAGIS deliveries over 10 marketing seasons



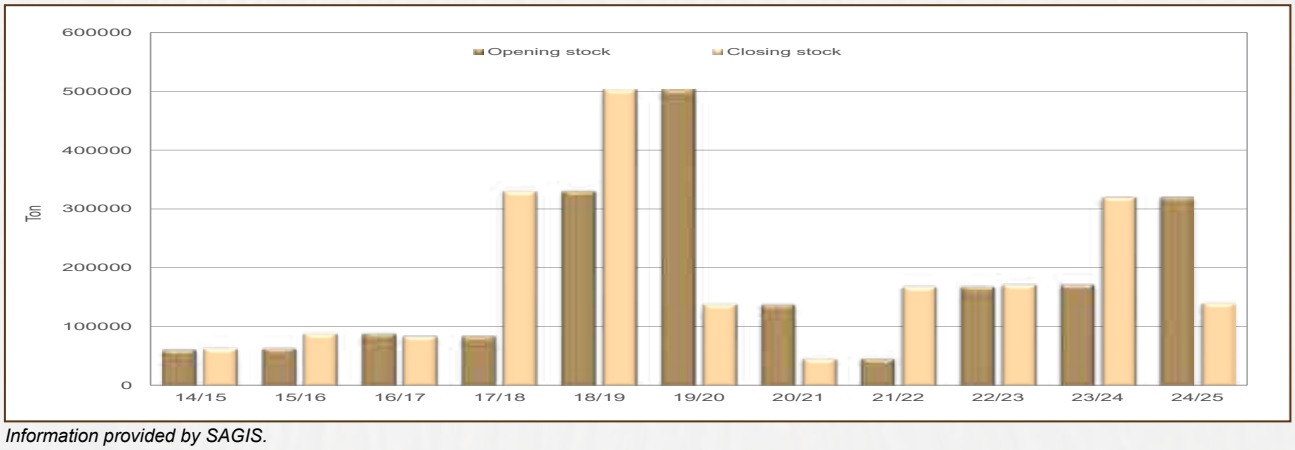
Graph 13: Soybeans: Imports and Exports over 10 marketing seasons



Graph 14: Soybeans: Consumption and Processed over 10 marketing seasons



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



Information provided by SAGIS.

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

Season	SOYBEANS: IMPORTS FOR RSA PER COUNTRY (Tons)													
	Australia	Botswana	Brazil	Eswatini	Ethiopia	Malawi	Mozambique	Nigeria	Paraguay	Ukraine	USA	Zambia	Zimbabwe	Total
2015/16	0	0	59 998	0	1 648	862	0	0	59 697	0	0	2 776	0	**124 981**
2016/17	0	0	0	0	3 314	0	0	204	263 576	0	0	4 004	0	**271 098**
2017/18	0	0	0	0	371	3 153	0	0	0	0	0	22 912	1 072	**27 508**
2018/19	0	0	0	0	160	1 953	343	0	0	645	0	3 844	0	**6 945**
2019/20	343	0	0	0	0	2 492	2 151	0	0	0	0	4 112	0	**9 098**
2020/21	0	0	55 000	0	0	2 037	1 623	0	0	0	52 534	4 909	0	**116 103**
2021/22	0	0	0	0	0	3 197	30	0	0	0	0	8 374	1 847	**13 448**
2022/23	0	0	0	0	0	0	0	0	0	0	0	4 154	0	**4 154**
2023/24	0	293	0	0	0	0	0	0	0	0	0	3 187	0	**3 480**
2024/25	0	0	0	335	0	0	0	0	0	1 956	151 590	407	0	**154 288**

Season	SOYBEANS: RSA EXPORTS PER COUNTRY (Tons)																
	Bangladesh	Botswana	China	Indonesia	Japan	Lesotho	Namibia	Malawi	Malaysia	Mozambique	Portugal	Thailand	Turkey	Eswatini	Vietnam	Zimbabwe	Total
2015/16	0	220	0	0	0	0	0	0	0	4 457	0	0	0	0	0	**0**	**4 677**
2016/17	0	0	0	0	0		0	0	0	2 614	0	0	0	0	0	**4 131**	**6 745**
2017/18	0	4	0	0	0	0	0	0	0	410	0	0	0	0	0	**0**	**414**
2018/19	0	17	0	0	0	0	0		0	160	0	0	27 660	0	0	**4 973**	**32 810**
2019/20	0	189	0	0	0	0	0	0	0	291	0	0	0	0	0	**4 856**	**5 336**
2020/21	0	744	0	0	0	9	0	0	0	298	0	0	0	7	0	**2**	**1 060**
2021/22	0	1 020	0	0	0	0	0	764	986	8 094	0	0	0	0	0	**31 431**	**42 295**
2022/23	28 978	0	0	0	0	0	71	0	144 473	4 635	0	52 393	0	0	27 531	**19 423**	**277 504**
2023/24	54 755	0	147 497	501	0	0	0	0	269 972	3 586	29 807	33 000	0	2	56 380	**1 545**	**597 045**
2024/25	0	1 514	0	0	19	0	0	0	0	1 232	0	0	0	13 865	27 658	**105 950**	**150 238**

Season	SOYBEANS IMPORTS PER HARBOUR (Tons)					
	Harbours					
	East London	Durban	Cape Town	Port Elizabeth	Richards Bay	Total
2010/11	0	0	0	0	0	**0**
2011/12	0	163	0	0	0	**163**
2012/13	0	344	0	0	0	**344**
2013/14	0	2 661	0	98	0	**2 759**
2014/15	0	61 705	0	0	0	**61 705**
2015/16	0	121 343	0	0	0	**121 343**
2016/17	0	267 094	0	0	0	**267 094**
2017/18	0	371	0	0	0	**371**
2018/19	0	805	0	0	0	**805**
2019/20	0	343	0	0	0	**343**
2020/21	0	107 534	0	0	0	**107 534**
2021/22	0	674	0	0	0	**674**
2022/23	0	0	0	0	0	**0**
2023/24	0	0	0	0	0	**0**
2024/25*	0	157 261	0	0	0	**157 261**

*Progressive March 2024 - February 2025
Note: Includes Imports for RSA and Other Countries

Season	SOYBEANS EXPORTS PER HARBOUR (Tons)					
	Harbours					
	East London	Durban	Cape	Port Elizabeth	Richards Bay	Total
2010/11	0	121 243	0	0	0	**121 243**
2011/12	0	40 633	0	0	0	**40 633**
2012/13	0	152 318	0	0	0	**152 318**
2013/14	0	15 044	0	0	0	**15 044**
2014/15	0	0	0	0	0	**0**
2015/16	0	0	0	0	0	**0**
2016/17	0	0	0	0	0	**0**
2017/18	0	0	0	0	0	**0**
2018/19	0	27 660	0	0	0	**27 660**
2019/20	0	0	0	0	0	**0**
2020/21	0	0	0	0	0	**0**
2021/22	0	986	0	0	0	**986**
2022/23	0	197 902	0	0	0	**197 902**
2023/24	91 915	413 824	0	0	0	**505 739**
2024/25*	0	27 677	0	0	0	**27 677**

*Progressive March 2024 - February 2025

Quality of soybeans imported from the USA for the period March 2024 - February 2025

Country origin	USA	USA			USA
Sampling date	2024/11/19	2025/01/02			2025/01/24
	Composite hold sample	Hold sample 1	Hold sample 2	Hold sample 3	Hold sample
Grading					
(A) Wet pods, %	0.00	0.00	0.00	0.00	0.00
seeds), %	1.52	12.50	8.80	8.30	0.30
(C) Other grain, %	0.00	0.10	0.30	0.20	0.10
(D) Sunflower seed, %	0.00	0.00	0.00	0.00	0.00
(E) Stones, %	0.00	0.00	0.00	0.00	0.00
(F) Sclerotia, %	0.00	0.00	0.00	0.00	0.00
mm slotted sieve which pass through the 4.75 mm round	2.28	5.50	4.20	4.00	0.20
sieve, %	56.12	9.30	14.00	9.10	11.40
(I) Soiled Soya beans, %	3.17	2.20	2.10	1.00	2.30
(J) Deviations in (B) and (F) collectively, %	1.52	12.50	8.80	8.30	0.30
Poisonous seeds (Crotalaria sp., Datura sp., Ricinis communis)	0	0	0	0	0
Poisonous Seeds (Argemone Mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)	0	18	13	8	3
Undesirable odour	Yes	No	No	No	No
Live insects	No	No	No	No	No
Class and grade	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans
Test weight (Kern 222), kg/hl	66.3	69.5	70.0	69.6	67.5
Nutritional Analysis (reported on a dry/moisture free basis)					
Moisture, % (17hr, 103°C)	12.1	10.1	10.2	10.2	8.9
Crude protein, % (db)	38.61	38.69	38.46	38.90	38.99
Crude fat, % (db)	23.8	22.3	22.4	22.4	22.6
Crude fibre, % (db)	6.0	6.0	5.9	6.1	7.0
Ash, % (db)	5.24	4.99	4.94	4.95	4.63
Nutritional Analysis (reported on an "as is" basis)					
Moisture, % (17hr, 103°C) (as is)	12.1	10.1	10.2	10.2	8.9
Crude protein, % (as is)	33.94	34.78	34.54	34.93	35.53
Crude fat, % (as is)	20.9	20.0	20.1	20.1	20.6
Crude fibre, % (as is)	5.20	5.4	5.3	5.5	6.4
Ash, % (as is)	4.61	4.48	4.44	4.44	4.22

Quality of soybeans imported from the USA for the period March 2024 - February 2025

Country origin	USA				
Sampling date	2025/02/07				
	Hold sample 1	**Hold sample 2**	**Hold sample 3**	**Hold sample 4**	**Hold sample 5**
Grading					
(A) Wet pods, %	0.00	0.00	0.00	0.00	0.00
seeds), %	0.69	0.93	1.17	0.86	0.79
(C) Other grain, %	0.09	0.10	0.57	0.22	0.11
(D) Sunflower seed, %	0.00	0.00	0.00	0.00	0.00
(E) Stones, %	0.00	0.00	0.00	0.00	0.00
(F) Sclerotia, %	0.00	0.00	0.00	0.00	0.00
mm slotted sieve which pass through the 4.75 mm round	1.15	1.64	1.15	1.98	1.14
sieve, %	16.77	18.79	17.25	18.59	18.21
(I) Soiled Soya beans, %	3.20	3.14	2.42	1.53	2.29
(J) Deviations in (B) and (F) collectively, %	0.69	0.93	1.17	0.86	0.79
Poisonous seeds (Crotalaria sp., Datura sp., Ricinis communis)	0	0	0	0	0
Poisonous Seeds (Argemone Mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)	3	0	0	0	0
Undesirable odour	Yes	Yes	Yes	Yes	Yes
Live insects	No	No	No	No	No
Class and grade	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans
Test weight (Kern 222), kg/hl	67.9	68.2	68.0	68.2	67.9
Nutritional Analysis (reported on a dry/moisture free basis)					
Moisture, % (17hr, 103°C)	10.0	10.1	10.1	10.1	10.0
Crude protein, % (db)	39.39	39.55	39.57	39.76	39.78
Crude fat, % (db)	22.3	22.0	21.6	22.1	21.7
Crude fibre, % (db)	6.5	6.5	6.8	6.0	6.3
Ash, % (db)	5.07	4.97	5.01	5.07	5.00
Nutritional Analysis (reported on an "as is" basis)					
Moisture, % (17hr, 103°C) (as is)	10.0	10.1	10.1	10.1	10.0
Crude protein, % (as is)	35.43	35.56	35.60	35.75	35.80
Crude fat, % (as is)	20.8	19.8	19.4	19.9	19.5
Crude fibre, % (as is)	5.8	5.9	6.1	5.4	5.6
Ash, % (as is)	4.56	4.47	4.50	4.56	4.50

Quality of soybeans imported from the Ukraine for the period March 2024 - February 2025

Country origin	Ukraine		Ukraine
Sampling date	2025/01/30		2025/01/30
	Hold sample 1	Hold sample 2	Hold sample 5
Grading			
(A) Wet pods, %	0.00	0.00	0.00
seeds), %	5.29	3.68	1.56
(C) Other grain, %	0.00	0.08	0.00
(D) Sunflower seed, %	0.00	0.00	0.00
(E) Stones, %	0.00	0.00	0.00
(F) Sclerotia, %	0.00	0.00	0.24
mm slotted sieve which pass through the 4.75 mm round	0.19	0.12	3.07
sieve, %	6.68	7.82	7.16
(I) Soiled Soya beans, %	21.42	21.96	10.99
(J) Deviations in (B) and (F) collectively, %	5.29	3.68	1.80
Poisonous seeds (Crotalaria sp., Datura sp., Ricinis communis)	0	0	0
Poisonous Seeds (Argemone Mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)	0	0	0.00
Undesirable odour	No	No	No
Live insects	No	No	No
Class and grade	Class Other Soybeans	Class Other Soybeans	Class Other Soybeans
Test weight (Kern 222), kg/hl	55.6	59.4	69.10
Nutritional Analysis (reported on a dry/moisture free basis)			
Moisture, % (17hr, 103°C)	11.0	11.2	10.6
Crude protein, % (db)	43.12	43.51	41.18
Crude fat, % (db)	20.6	19.9	21.1
Crude fibre, % (db)	5.7	6.0	6.3
Ash, % (db)	4.66	4.68	5.26
Nutritional Analysis (reported on an "as is" basis)			
Moisture, % (17hr, 103°C) (as is)	11.0	11.2	10.6
Crude protein, % (as is)	38.39	38.66	36.83
Crude fat, % (as is)	18.4	17.7	18.9
Crude fibre, % (as is)	5.1	5.4	5.6
Ash, % (as is)	4.12	4.15	4.70

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

	OIL SEEDS PRODUCTS MANUFACTURED (PER MONTH)														Date published: 2025/04/04
	Marketing year Mar 2022 - Feb 2023 Progressive: 12 Months	Marketing year Mar 2023 - Feb 2024 Progressive: 12 Months	Mar 2024 Tons	Apr 2024 Tons	May 2024 Tons	June 2024 Tons	July 2024 Tons	Aug 2024 Tons	Sep 2024 Tons	Oct 2024 Tons	Nov 2024 Tons	Dec 2024 Tons	Jan 2025 Tons	Feb 2025 Tons	Marketing year Mar 2024 - Feb 2025 Progressive: 11 Months (Mar - Feb)
Palm Oil and Derivatives	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oil	**287 762**	**311 007**	20 302	31 713	29 767	27 721	30 164	29 815	30 790	29 840	28 433	22 384	25 297	25 514	**331 740**
Sunflower Oil	**295 476**	**253 507**	17 552	22 184	26 186	22 829	25 612	24 453	29 901	27 589	27 026	17 468	13 694	10 384	**264 878**
Coconut Oil/ Groundnut Oil / Canola Oil / Corn (Maize) Oil / Blends or mixes of Oils which includes one of the above Oils / Biodiesel / Cottonseed Oil	**67 862**	**80 812**	7 586	5 364	8 117	6 846	7 633	7 435	8 394	7 890	8 405	8 060	6 489	10 111	**92 330**
Sunflower Oilcake	**319 018**	**269 302**	18 760	25 810	28 615	23 007	27 100	27 103	33 044	29 892	29 434	18 691	14 864	11 945	**288 265**
Coconut Oilcake	**0**	**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	**0**
Soybean Oilcake / Canola Oilcake / Cottonseed Oilcake	**1 379 161**	**1 476 779**	98 300	141 071	139 810	130 507	143 637	140 557	141 741	136 442	131 723	103 285	113 814	116 049	**1 536 936**
Soybean Flours and Meals / Textured Vegetable Protein	**41 726**	**50 478**	3 365	4 668	4 984	4 203	3 880	4 276	3 806	5 662	4 558	2 933	2 758	2 179	**47 272**
Soybean Fullfat	**173 986**	**153 025**	10 024	9 374	9 463	8 729	10 233	8 583	8 848	9 034	9 881	9 648	8 634	7 514	**109 965**
Peanut Butter and Paste	**30 519**	**30 744**	2 498	2 993	2 561	2 539	2 925	2 510	2 482	2 525	2 637	2 604	1 652	1 837	**29 763**
Total	**2 595 510**	**2 625 654**	**178 387**	**243 177**	**249 503**	**226 381**	**251 184**	**244 732**	**259 006**	**248 874**	**242 097**	**185 073**	**187 202**	**185 533**	**2 701 149**

South African Grain Information Service NPC
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	OIL SEEDS PRODUCTS IMPORTED (PER MONTH)														Date published: 2025/04/04
	Marketing year Mar 2022 - Feb 2023 Progressive: 12 Months	Marketing year Mar 2023 - Feb 2024 Progressive: 12 Months	Mar 2024 Tons	Apr 2024 Tons	May 2024 Tons	June 2024 Tons	July 2024 Tons	Aug 2024 Tons	Sep 2024 Tons	Oct 2024 Tons	Nov 2024 Tons	Dec 2024 Tons	Jan 2025 Tons	Feb 2025 Tons	Marketing year Mar 2025 - Feb 2025 Progressive: 11 Months (Mar - Feb)
Palm Oil and Derivatives	**495 285**	**515 904**	76 990	46 092	43 712	49 639	38 312	60 689	51 473	77 919	43 459	55 810	38 648	33 458	**616 201**
Soybean Oil	**52 125**	**41 801**	1 546	796	1 291	5 109	6 387	1 080	11 509	2 462	2 148	682	2 133	2 407	**37 550**
Sunflower Oil	**125 929**	**173 954**	10 429	1 579	16 185	15 501	8 852	1 639	25 361	12 194	22 570	15 061	1 585	1 240	**132 196**
Coconut Oil/ Groundnut Oil / Canola Oil / Corn (Maize) Oil / Blends or mixes of Oils which includes one of the above Oils / Biodiesel / Cottonseed Oil	**5 537**	**3 606**	594	525	583	517	163	268	256	435	318	269	440	140	**4 508**
Sunflower Oilcake	**0**	**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	**0**
Palmnut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oilcake / Canola Oilcake / Cottonseed Oilcake	**181 566**	**70 714**	543	0	23 152	23 832	3 439	17 028	17 327	40 166	31 264	13 643	31 817	37 437	**239 648**
Soybean Flours and Meals / Textured Vegetable Protein	**0**	**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	**0**
Peanut Butter and Paste	**1 969**	**3 566**	37	77	42	121	215	91	121	320	266	42	452	54	**1 838**
Total	**862 411**	**809 545**	**90 139**	**49 069**	**84 965**	**94 719**	**57 368**	**80 795**	**106 047**	**133 496**	**100 025**	**85 507**	**75 075**	**74 736**	**1 031 941**

South African Grain Information Service NPC
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	OIL SEEDS PRODUCTS EXPORTED (PER MONTH)														Date published: 2025/04/04
	Marketing year Mar 2022 - Feb 2023 Progressive: 12 Months	Marketing year Mar 2023 - Feb 2024 Progressive: 12 Months	Mar 2024 Tons	Apr 2024 Tons	May 2024 Tons	June 2024 Tons	July 2024 Tons	Aug 2024 Tons	Sep 2024 Tons	Oct 2024 Tons	Nov 2024 Tons	Dec 2024 Tons	Jan 2025 Tons	Feb 2025 Tons	Marketing year Mar 2024 - Feb 2025 Progressive: 11 Months (Mar - Feb)
Palm Oil and Derivatives	**11 505**	**12 734**	1 048	669	693	714	710	900	562	1 005	1 021	708	792	1 188	**10 010**
Soybean Oil	**46 201**	**75 654**	7 477	8 949	9 662	8 605	7 043	8 208	3 413	3 381	3 433	5 528	4 660	9 179	**79 538**
Sunflower Oil	**9 330**	**6 768**	583	287	642	281	100	1 813	424	198	178	231	279	143	**5 159**
Coconut Oil/ Groundnut Oil / Canola Oil / Corn (Maize) Oil / Blends or mixes of Oils which includes one of the above Oils / Biodiesel / Cottonseed Oil	**13 624**	**13 657**	908	1 290	765	331	857	495	368	622	57	227	688	575	**7 183**
Sunflower Oilcake	**0**	**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	**0**
Palmnut Oilcake	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Soybean Oilcake / Canola Oilcake / Cottonseed Oilcake	**10 404**	**10 687**	3 090	3 086	3 585	3 911	5 538	8 265	6 630	8 564	7 468	6 719	8 044	10 182	**75 082**
Soybean Flours and Meals / Textured Vegetable Protein	**23 619**	**16 959**	1 043	1 862	1 872	2 198	3 597	3 920	2 640	2 904	3 975	3 685	3 468	3 545	**34 709**
Soybean Fullfat	**0**	**0**	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Peanut Butter and Paste	**212**	**211**	14	5	17	15	14	22	13	13	15	11	13	13	**165**
Total	114 895	136 670	14 163	16 148	17 236	16 055	17 859	23 623	14 050	16 687	16 147	17 109	17 944	24 825	211 846

RSA Production Regions

Figure 1: RSA Provinces

Provincial map with gratitude to SIQ.

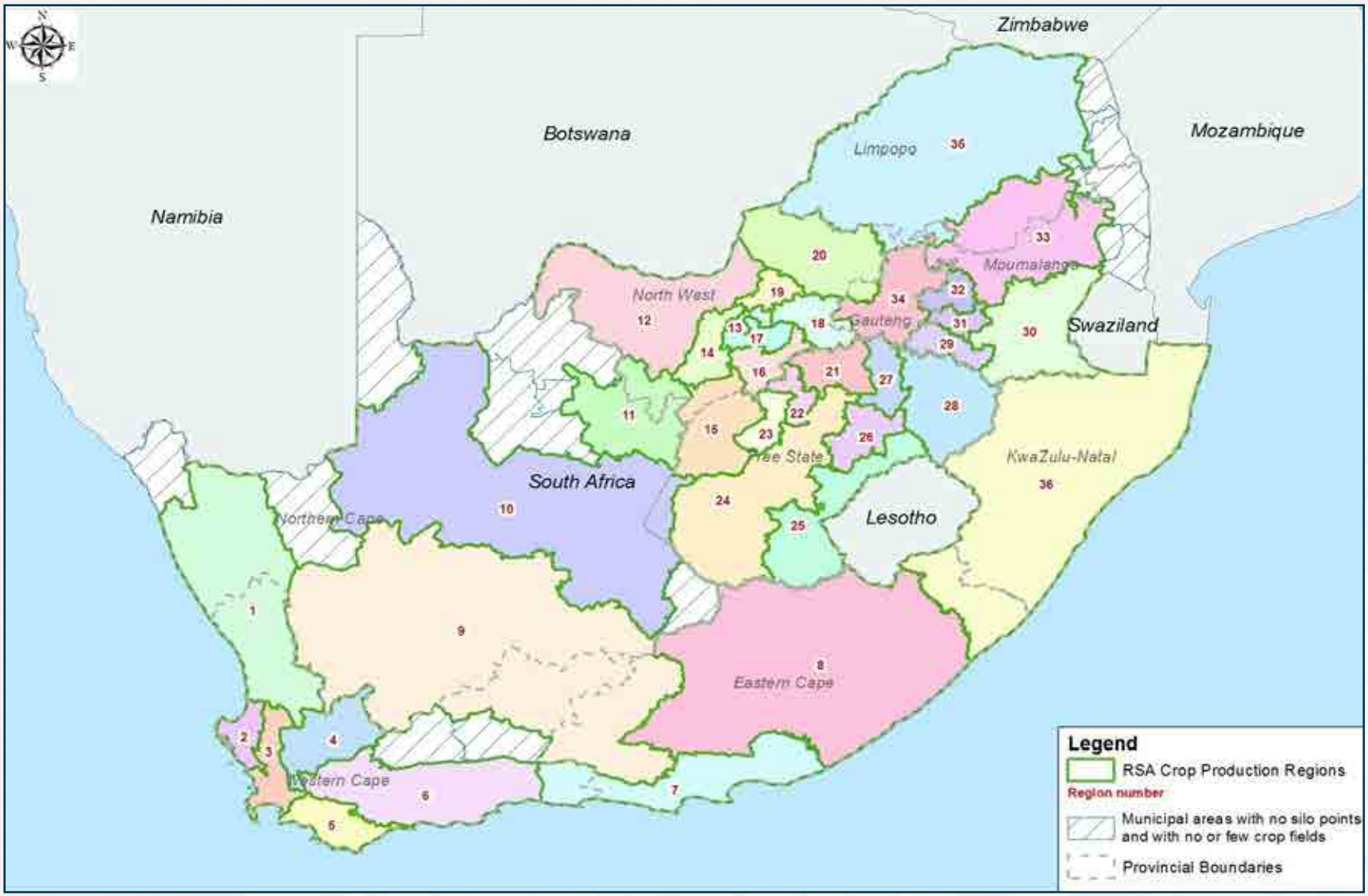
The RSA is divided into 9 provinces as illustrated in Figure 1.
The 9 provinces are divided into 36 grain production regions.

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 soybeans have been received for the crop quality survey of the 2023/24 production season, are named and described on pages 25 to 28. 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.

Soybean Crop Quality 2023/24 – Summary of results

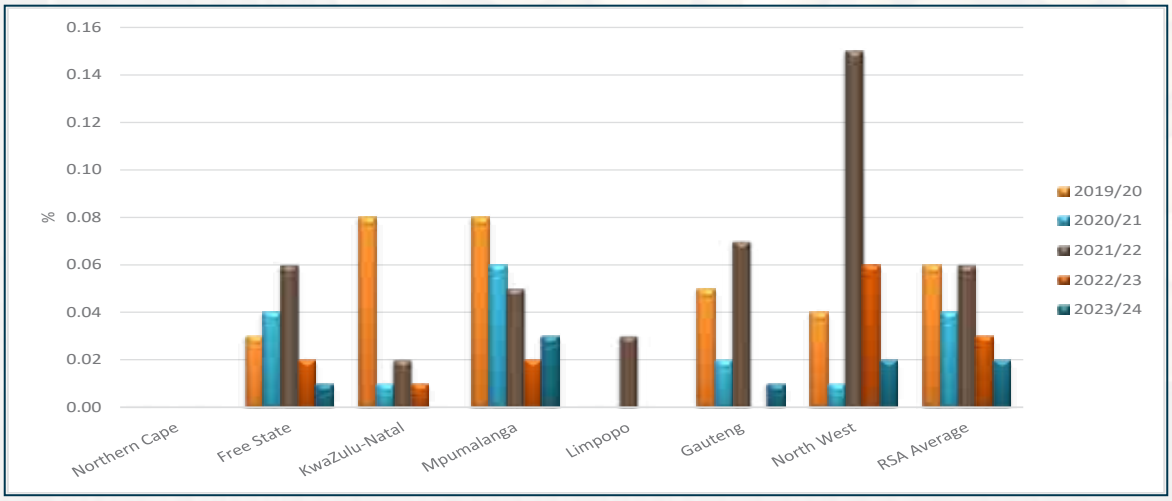
Eighty-two percent (164) of the 200 samples analysed for the purpose of this survey were graded as Grade SB1, while 36 (18%) of the samples were downgraded to COSB (Class Other Soya Beans). During the previous two seasons, 17% (2022/23) and 19% (2021/22) of the samples were downgraded to COSB.

- Three samples exceeded the maximum permissible deviation of 5% foreign matter.
- Two samples exceeding the maximum permissible deviation of 0.5% other grain.
- One sample exceeded the maximum permissible deviation of 10% for soybeans and part of soybeans above the 1.8 mm slotted screen which pass through the 4.75 mm round hole screen.
- Twenty samples exceeded the maximum permissible deviation of 10% defective soybeans on the 4.75 mm round hole screen.
- Five samples exceeded the maximum permissible deviation of 10% soiled soybeans.
- Five samples exceeded the maximum permissible number (1/1000 g) of *Crotolaria sp.* and *Datura sp.* poisonous seeds.
- Five samples exceeded the maximum permissible number (7/1000 g) of *Convolvulus sp.* and *Ipomoea purpurea Roth.* poisonous seeds.
- Four samples were downgraded to Class Other due to a combination of two or more of the above mentioned deviations.

Twenty six percent of the samples contained sclerotia from the fungus *Sclerotinia sclerotiorum*. This percentage is equal to the previous season. 81% of the samples that contained sclerotia this season originated in Mpumalanga, 10% in the Free State, 8% in North West and 2% in Gauteng.

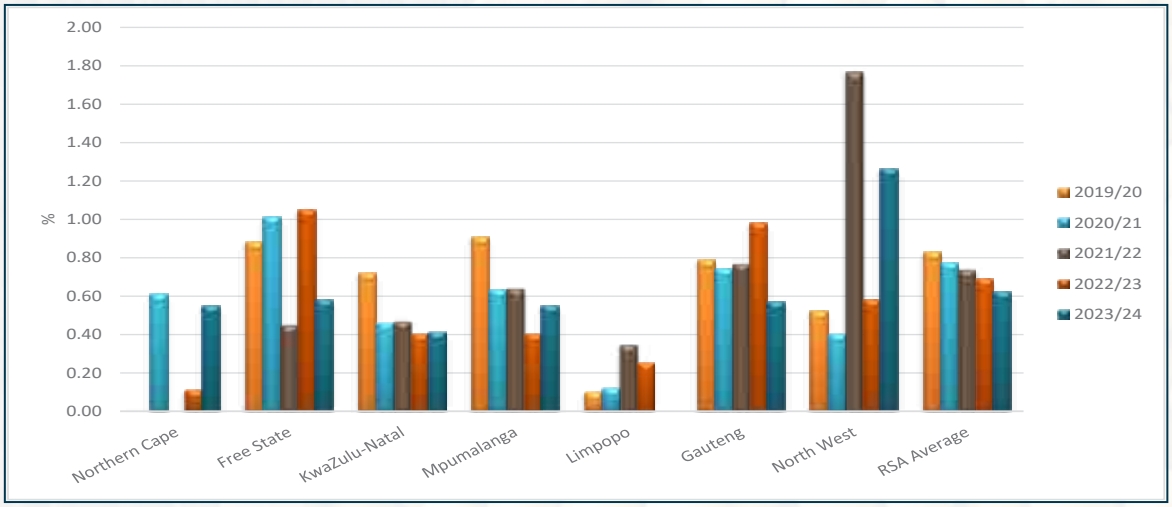
As in previous years, sclerotia was present in very low levels, ranging between 0.01% and 0.18%. The national weighted average percentage this season was 0.02%, 0.03% in the previous season. The maximum permissible level of sclerotia is 4%. See Graph 16.

Graph 16: Average percentage sclerotia per province over five seasons



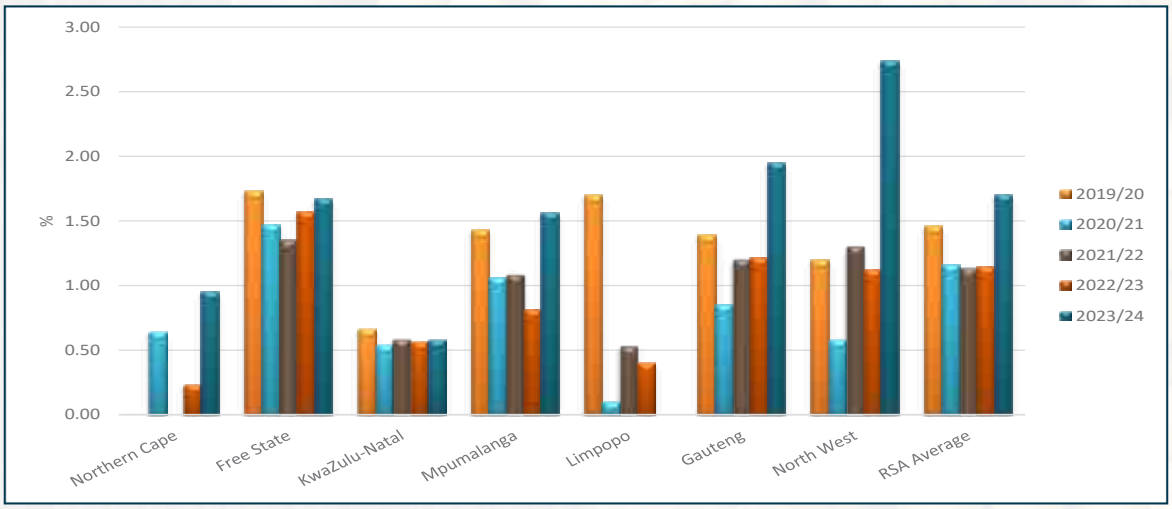
The samples received from North West province (19 samples) had the highest weighted average percentage foreign matter (1.26%) and the three samples from KwaZulu-Natal averaged the lowest with 0.41%. The averages for the Northen Cape, Free State, Mpumalanga and Gauteng ranged between 0.55 % to 0.58%. The national weighted average of 0.62% was the lowest since the 2012/13 season. Please refer to Graph 17.

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



North West reported the highest weighted average percentage soybeans and parts of soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, namely 2.74%, followed by the 1.95% and 1.67% from Gauteng (10 samples) and the Free State (44 samples) respectively. The lowest weighted average value reported was 0.58% on the samples from KwaZulu-Natal. The national weighted average percentage of 1.70% was the highest since the 2015/16 season. Please see Graph 18.

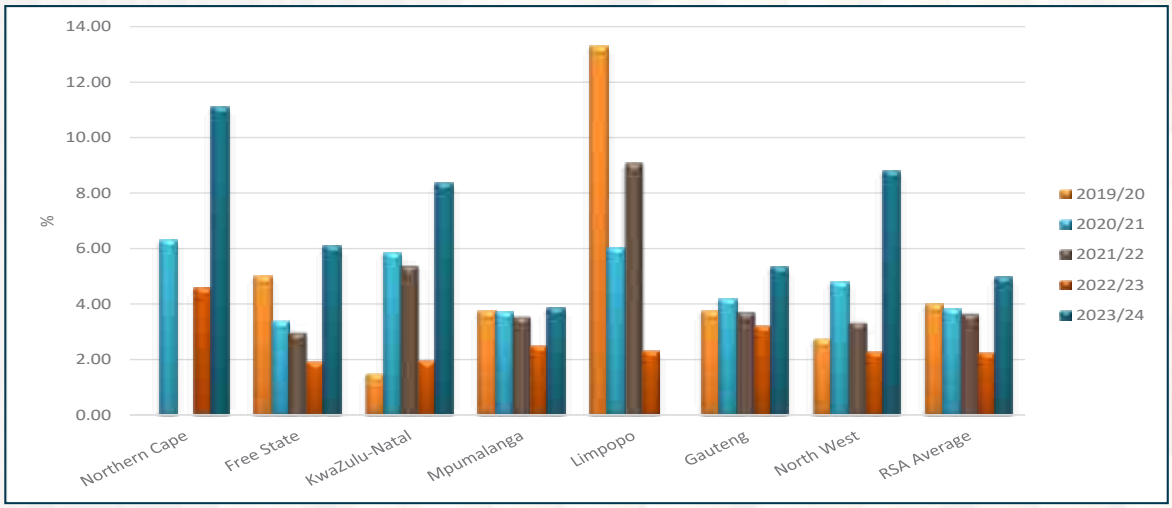
Graph 18: Average percentage soybeans and parts of soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve per province over five seasons



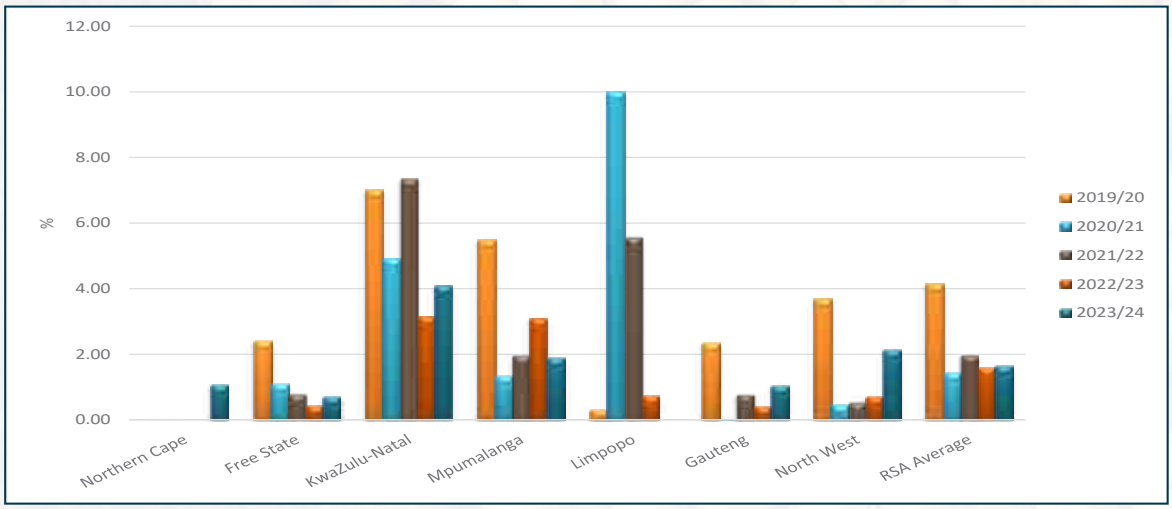
The lowest weighted average percentages defective soybeans on the 4.75 mm sieve, was reported on the 123 samples from Mpumalanga (3.85%) followed by the 5.33% from Gauteng. The highest percentage, namely 11.10% was observed on the single sample from the Northern Cape. The averages in the other provinces ranged from 6.07% to 8.78%. The national weighted average increased from 2.23% last season to 4.98% this season. Please see Graph 19.

The national weighted average percentage soiled soybeans was 1.64%. The previous two seasons averaged 1.58% and 1.98% respectively. The highest weighted average percentages were observed in KwaZulu-Natal (4.08%) and North West (2.13%). The remaining weighted averages ranged between 0.70% and 1.89%. Please see Graph 20. Sixty four percent (127) of samples graded contained soiled soybeans. Five samples exceeded the maximum permissible deviation of 10% according to the grading regulations, the same number than the previous season. The highest percentage reported was 16.44% on a sample from Mpumalanga. The rest of these samples originated in Mpumalanga and North West.

Graph 19: Average percentage defective soybeans on the 4.75 mm round hole sieve per province over five seasons



Graph 20: Average percentage soiled soybeans per province over five seasons



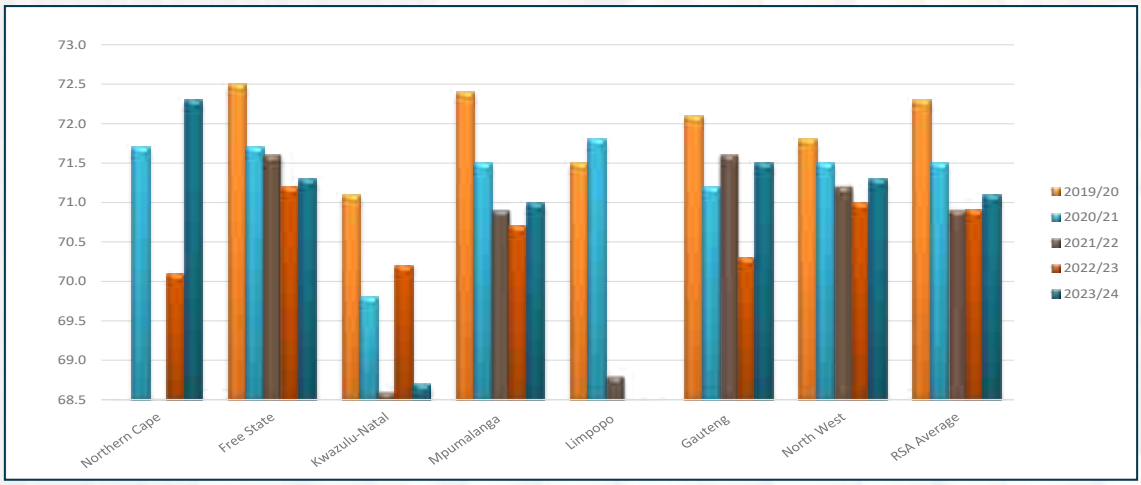
Test weight does not form part of the grading regulations for soybeans in South Africa. An approximation of the test weight of South African soybeans is provided in Table 2 for information purposes. The standard working procedure of the Kern 222 instrument, as described in ISO 7971-3:2019, was followed. The g/1 L filling mass of the soybean 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 Soybean of the Canadian Grain Commission: $y = 0.1898x + 2.2988$ (291 to 350 g/0.5 L) and $y = 0.1895x + 2.3964$ (351 to 410 g/0.5 L). Please see Graph 21 for a comparison of the test weight per province over the last five seasons.

Table 2: Approximation of test weight per province over three seasons

Province	Test weight, kg/hl								
	2023/24 Season			2022/23 Season			2021/22 Season		
	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples	Weighted average	Range	No. of samples
Northern Cape (Regions 10 - 11)	72.3	-	1	70.1	70.0 - 70.2	2	-	-	-
Free State (Regions 21 - 28)	71.3	68.4 - 74.2	44	71.2	64.3 - 73.2	65*	71.6	69.8 - 73.3	**36
KwaZulu-Natal (Region 36)	68.7	68.2 - 69.4	3	70.2	69.0 - 72.1	9	68.6	65.7 - 71.1	14
Mpumalanga (Regions 29 - 33)	71.0	68.3 - 73.0	**121	70.7	68.3 - 73.4	64	70.9	67.4 - 73.1	65
Limpopo (Region 35)	-	-	-	67.4	-	1	68.8	63.7 - 72.7	3
Gauteng (Region 34)	71.5	70.4 - 73.0	10	70.3	68.7 - 71.3	3	71.6	70.7 - 72.3	9
North West (Region 12 - 20)	71.3	66.5 - 73.1	19	71.0	68.6 - 72.8	29	71.2	68.7 - 74.2	21
RSA	***71.1***	***66.5 - 74.2***	***198***	***70.9***	***64.3 - 73.4***	***173***	***70.9***	***63.7 - 74.2***	***148***

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

Graph 21: Comparison of the test weight per province over five seasons



The nutritional component analyses, namely crude protein, - fat, - fibre and ash are reported on a dry/moisture-free basis (db) for the current as well as the previous surveys. For comparison purposes the national average 'as is' or wet basis results for the last five seasons are provided in Table 3. These 'as is' average values were calculated by converting each individual value from dry basis to 'as is'.

Table 3: Comparison of weighted average nutritional component values on a dry and 'as is' basis over five seasons

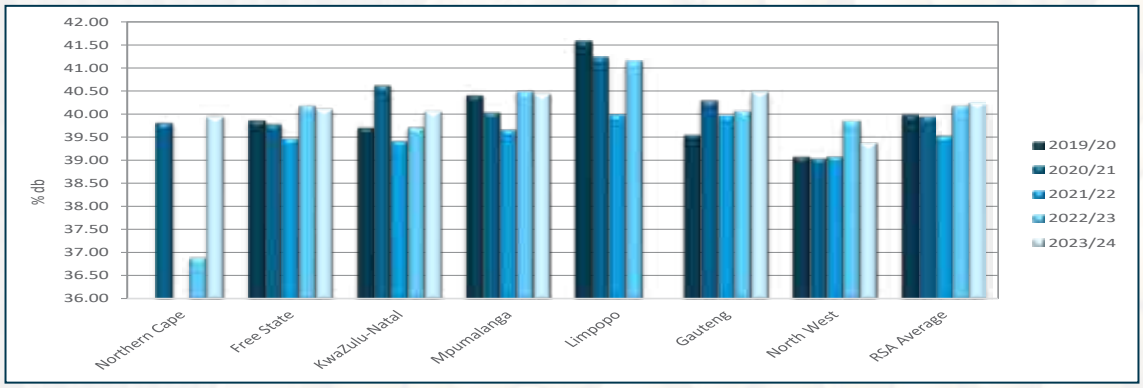
Season	2023/24		2022/23		2021/22		2020/21		2019/20	
Moisture, % (17hr, 103°C)	7.6		8.2		8.2		7.5		7.2	
Moisture basis	**Dry basis**	**As is**	**Dry basis**	**As is**	**Dry basis**	**As is**	**Dry basis**	**As is**	**Dry basis**	**As is**
Crude protein, %	40.26	37.21	40.19	36.90	39.54	36.31	39.96	36.95	39.99	37.12
Crude fat, %	20.5	19.0	19.9	18.3	19.6	18.0	19.5	18.0	18.0	16.7
Crude fibre, %	6.6	6.1	7.1	6.5	7.2	6.6	6.8	6.3	7.0	6.5
Ash, %	4.61	4.26	4.54	4.17	4.63	4.25	4.55	4.21	4.63	4.19
No. of samples	***200***		***174***		***150***		***150***		***150***	

The weighted average crude protein content this season was 40.26%, similar to the 40.19% of the previous season. The averages between provinces ranged from 39.35% in the Northen Cape to 40.49% in Gauteng. The weighted average crude fat percentage of 20.5% was the highest since the 2011/12 season when this survey commenced. The samples from KwaZulu-Natal had the highest average crude fat content, namely 22.2%. The lowest fat average was observed in Gauteng province with 20.4%.

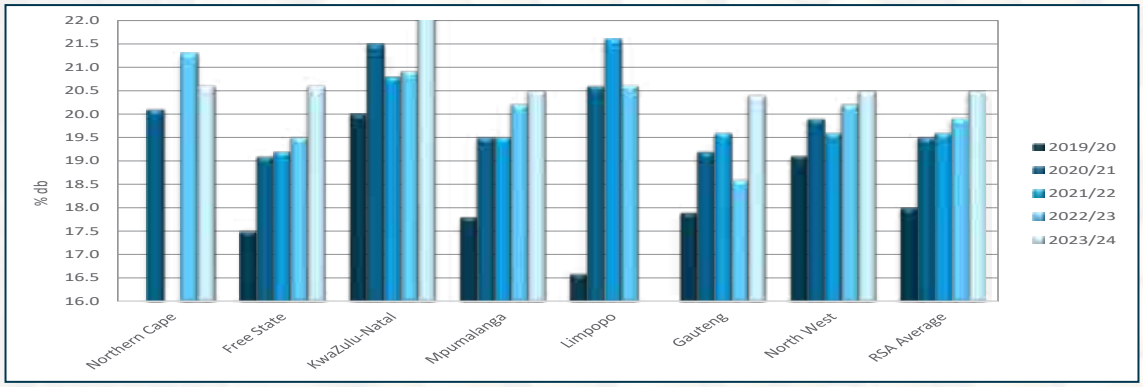
The weighted average percentage crude fibre varied from 6.2% in North West to 6.9% in the Northern Cape. The RSA weighted average was 6.6% compared to the 7.1% of the previous season. This season, the weighted average ash content was 4.61%, last season's average was 4.54%. Averages ranged from 4.57% in Mpumalanga to 4.81% in the Northern Cape.

Graphs 22 to 25 on page 22 provide comparisons between provinces over seasons for the nutritional components mentioned above.

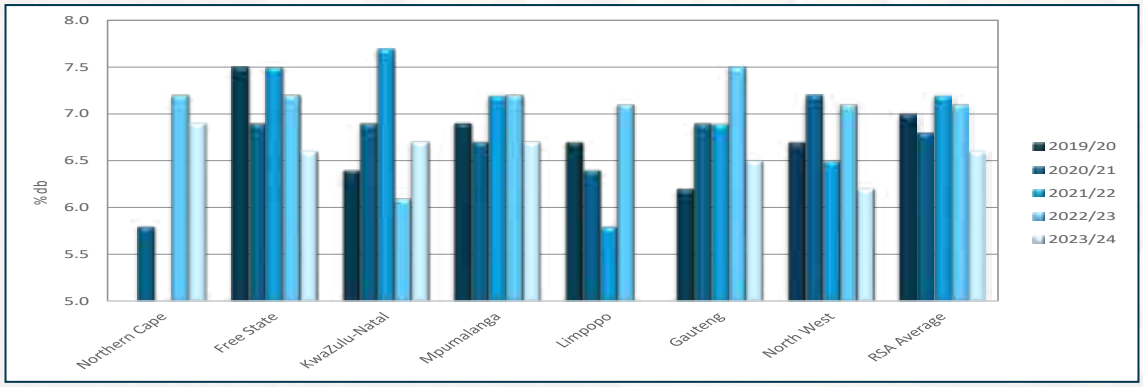
Graph 22: Average crude protein content per province over five seasons



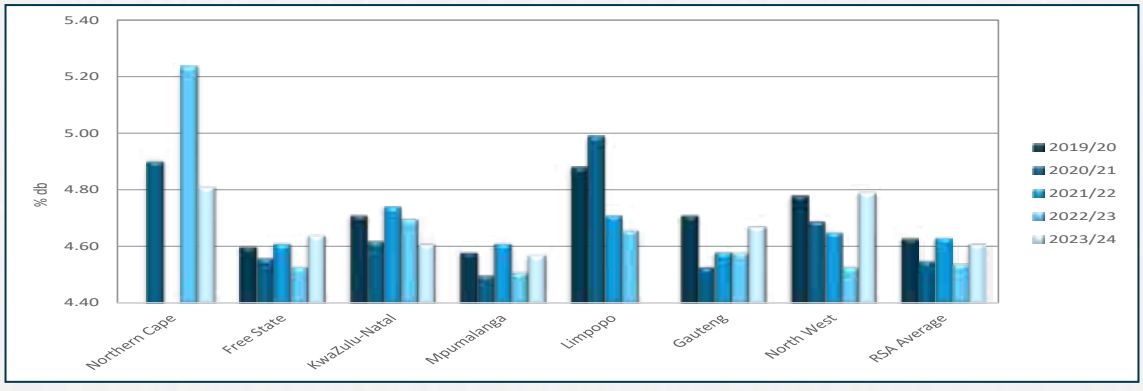
Graph 23: Average crude fat content per province over five seasons



Graph 24: Average crude fibre content per province over five seasons



Graph 25: Average ash content per province over five seasons



The 2023/24 season is the sixth season that the SAGL conducted the moisture, crude protein and crude fat analyses on the ARC Grain Crops soybean cultivar trials' samples. Please see a comparison of the results between the crop survey and cultivar samples in Table 4.

Table 4: Comparison between the moisture, crude protein and crude fat results of the soybean crop quality and ARC cultivar trial samples of the 2023/24 season

Analysis	Moisture, % (17hr, 103°C)	Crude Protein, % (db)	Crude Protein, % (as is)	Crude Fat, % (db)	Crude Fat, % (as is)
Soybean Crop Quality Survey results					
Average	**7.6**	**40.26**	**37.21**	**20.5**	**19.0**
Minimum	5.9	35.13	32.92	18.3	17.1
Maximum	11.3	44.29	41.15	23.3	21.9
Standard Deviation	0.87	1.37	1.25	0.97	0.91
No. of samples	*200*	*200*	*200*	*200*	*200*
ARC Grain Crops Cultivar trial sample results					
Average	**8.3**	**40.04**	**36.71**	**20.3**	**18.6**
Minimum	7.9	35.93	33.02	18.4	16.8
Maximum	8.7	42.66	38.94	22.5	20.7
Standard Deviation	0.25	1.54	1.41	1.09	1.02
No. of samples	*30*	*30*	*30*	*30*	*30*
% Difference between crop and cultivar samples	***-0.7***	***0.2***	***0.5***	***0.2***	***0.4***

A summary of the RSA Soybean Crop Quality averages of the 2023/24 season compared to those of the 2022/23 season, is provided in Table 5 on page 24.

Please see pages 29 to 36 for the average soybean quality per region.

Table 5: South African Soybean Crop Quality Averages 2023/24 vs 2022/23						
Class and Grade Soya	**2023/24**			**2022/23**		
	SB1	**COSB**	**Average**	**SB1**	**COSB**	**Average**
Grading:						
(A) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00
(B) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.47	1.31	0.62	0.46	1.79	0.69
(C) Other grain, %	0.02	0.11	0.04	0.05	0.71	0.16
(D) Sunflower seed, %	0.00	0.01	0.00	0.00	0.03	0.01
(E) Stones, %	0.01	0.00	0.00	0.01	0.01	0.01
(F) Sclerotia, %	0.03	0.01	0.02	0.02	0.05	0.03
(G) Soybeans and parts of soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	1.48	2.69	1.70	1.00	1.84	1.14
(H) Defective soybeans on the 4.75 mm round hole sieve, %	3.80	10.36	4.98	2.28	1.99	2.23
(I) Soiled soybeans, %	1.39	2.77	1.64	1.31	2.93	1.58
(J) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.50	1.32	0.65	0.49	1.84	0.71
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	4	1	0	9	1
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	2	0	0	1	0
Undesirable odour	No	No	No	No	No	No
Live insects	No	No	No	No	No	No
Number of samples	***164***	***36***	***200***	***145***	***29***	***174***
Test weight:						
Test weight (Kern 222), kg/hl	71.1	70.9	71.1	70.9	70.7	70.9
Number of samples	***164***	***36***	***200***	***145***	***29***	***174***
Nutritional analysis:						
Moisture, % (17 hr, 103 °C)	7.7	7.3	7.6	8.3	7.8	8.2
Crude Protein, % (db)	40.24	40.37	40.26	40.23	39.98	40.19
Crude Fat, % (db)	20.4	21.0	20.5	20.0	19.7	19.9
Crude Fibre, % (db)	6.7	6.3	6.6	7.1	7.1	7.1
Ash, % (db)	4.59	4.72	4.61	4.53	4.59	4.54
Number of samples	***164***	***36***	***200***	***145***	***29***	***174***

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 11: Vaalharts Region			
GWK	Barkly West (Bins)	Senwes	Jan Kempdorp (Bins)
GWK	Jan Kempdorp (Bags/Bunkers)	Senwes	Magogong (Bins)
Senwes	Hartswater (Bins)	Senwes	Tadcaster (Bins)

Region 12: North-West Western Region			
NWK	Blaauwbank (Bins)	NWK	Mareetsane (Bins)
NWK	Buhrmannsdrif (Bins)	Senwes	Kameel (Bins)
NWK	Kameel (Bins)	Senwes	Vryburg (Bins)

Region 15: North-West Southern-Eastern Region			
GWK	Christiana (Bins)	Senwes	Hoopstad (Bins)
Senwes	Bloemhof (Bins)	Senwes	Kingswood (Bins)
Senwes	Christiana (Bins)	Senwes	Kruising (Bunkers)
Senwes	Helpman Depot (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 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 Silo A (Bins)
Senwes	Enselspruit (Bins)	Senwes	Ventersdorp Silo B (Bins)

Region 19: North-West Central Region (Lichtenburg)			
Afgri	Lichtenburg (Bunkers)	NWK	Lottie Halte (Bins)
NWK	Grootpan 1 (Bins)	NWK	Lusthof (Bins)
NWK	Grootpan 2 (Bins)	NWK	Lichtenburg Silo 3 (Bins)
NWK	Halfpad (Bins)	NWK	Lichtenburg Silo 5 (Bins)
NWK	Hibernia (Bins)	NWK	Mafikeng (Bins)

Region 20: North-West Eastern Region			
Afgri	Battery (Bins)	NWK	Derby (Bins)
Afgri	Brits (Bins)	NWK	Koster (Bins)
Afgri	Beestekraal (Bunkers)	NWK	Swartruggens (Bins)
NWK	Boons (Bins)	NWK	Syferbult (Bins)

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 21: Free State North-Western Region (Viljoenskroon)

Afgri	Kommandonek (Bunkers)	Senwes	Rooiwal (Bins)
Senwes	Attie (Bins)	Senwes	Vierfontein (Bins)
Senwes	Groenebloem (Bins)	Senwes	Viljoenskroon (Bins) G232
Senwes	Heuningspruit (Bins)	Senwes	Viljoenskroon (Bins) G266
Senwes	Koppies (Bins)	Senwes	Vredefort (Bins)
Senwes	Rooiwal (Bins)	Senwes	Weiveld (Bins)

Region 22: Free State North-Western Region (Bothaville)

Senwes	Allanridge (Bins)	Senwes	Misgunst (Bunkers)
Senwes	Bothaville Silo A (Bins)	Senwes	Odendaalsrus (Bins)
Senwes	Bothaville Silo B (Bins)	Senwes	Schoonspruit (Bins)
Senwes	Mirage (Bins)	Senwes	Schuttesdraai (Bins)

Region 23: Free State North-Western Region (Bultfontein)

Senwes	Bultfontein (Bins)	Senwes	Tierfontein (Bins)
Senwes	Kaalplaas (Bins)	Senwes	Wesselsbron (Bins/Bunkers)
Senwes	Losdoorns (Bins)	Senwes	Willemsrus (Bins)
Senwes	Protespan (Bins)		

Region 24: Free State Central Region

Senwes	Bainsvlei (Bins)	Senwes	Kroonstad (Bins)
Senwes	Bloemfontein (Bins)	Senwes	Pietersburg (Bins)
Senwes	Brandfort (Bins)	Senwes	Theunissen (Bins)
Senwes	De Burg (Bins)	Senwes	Van Tonder (Bins)
Senwes	Geneva (Bins)	Senwes	Welgeleë (Bins)
Senwes	Hennenman (Bins)	Senwes	Winburg (Bins)

Region 25: Free State South-Western Region

Afgri	Bethlehem Silo (Bins)	OVK	Marseilles (Bins)
Afgri	Slabberts Silo (Bins)	OVKi	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)

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

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 29: Mpumalanga Southern Region

Afgri	Balfour (Bins)	Afgri	Leeuspruit (Bins)
Afgri	Greylingstad (Bins)	Afgri	Platrand (Bins)
Afgri	Grootvlei (Bins)	Afgri	Standerton (Bins)
Afgri	Harvard (Bins)	Afgri	Vaaldrift (Bunkers)
Afgri	Holmdene (Bins)	Afgri	Val (Bins)

Region 30: Mpumalanga Eastern Region

Afgri	Amersfoort (Bins)	Afgri	Morgenzon (Bins)
Afgri	Carolina (Bins)	Afgri	Overvaal (Bins)
Afgri	Davel (Bins)	Afgri	Sandspruit (Bunkers)
Afgri	Eerstelingsfontein (Bunker)	Afgri	Hendriksvallei (Bunkers)
Afgri	Ermelo (Bins)	BKB	Waterval (Bunkers)
Afgri	Estancia (Bins)	TWK	Mkondo (Bins)
Afgri	Lothair (Bins)	TWK	Panbult (Panbult)
Afgri	Maizefield (Bins)		

Region 31: Mpumalanga Central Region

Afgri	Bakenlaagte (Bunkers)	Afgri	Kortlaagte (Bunkers)
Afgri	Bethal (Bins)	Afgri	Leslie (Bins)
Afgri	Brakfontein (Bunkers)	Afgri	Palmietfontein (Bunkers)
Afgri	Devon (Bins)	Afgri	Trichardt (Bins)
Afgri	Kinross (Bins/Bunkers)	Afgri	Vaalkrantz (Bunkers)

Region 32: Mpumalanga Western Region

Afgri	Argent (Bins/Bunkers)	Afgri	Hawerklip (Bins)
Afgri	Delmas (Bunkers)	Afgri	Kendal (Bins)
Afgri	Dryden (Bins)	Afgri	Ogies (Bins)
Afgri	Eloff (Bins)	Afgri	Vlakfontein (Bunkers)
Afgri	Endicott (Bins)		

Region 33: Mpumalanga Northern Region

Afgri	Arnot (Bins)	Afgri	Middelburg (Bins)
Afgri	Driefontein (Bins)	Afgri	Pan (Bins)
Afgri	Lydenburg (Bins)	Afgri	Stoffberg (Bins)
Afgri	Marble Hall (Bins)	BKB	Wonderfontein (Bins)

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 34: Gauteng Region			
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)
Afgri	Meyerton (Bunkers)		

Region 36: KwaZulu-Natal Region			
Afgri	Bergville (Bins/Bunkers)	Afgri	Mizpah (Bins)
Afgri	Bloedrivier (Bins)	Afgri	Paulpietersburg (Bins)
Afgri	Chelmsford Dam (Bunkers)	Afgri	Pietermaritzburg (Bins)
Afgri	Dannhauser (Bins)	Afgri	Vryheid (Bins)
Afgri	Dundee (Bins)	Afgri	Winterton (Bins/Bunkers)

South African

Regional Soybean Quality

PRODUCTION REGION	(11) Vaalharts Region				(12) North-West Western Region				(15) North-West Southern Region			
Grading:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
(a) Wet pods, %	0.00	-	-	-	0.00	-	-	-	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.55	-	-	-	0.10	-	-	-	0.37	0.24	0.48	0.12
(c) Other grain, %	0.00	-	-	-	0.00	-	-	-	0.16	0.00	0.29	0.15
(d) Sunflower seed, %	0.00	-	-	-	0.00	-	-	-	0.00	0.00	0.00	0.00
(e) Stones, %	0.00	-	-	-	0.00	-	-	-	0.00	0.00	0.00	0.00
(f) Sclerotia, %	0.00	-	-	-	0.00	-	-	-	0.00	0.00	0.00	0.00
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	0.95	-	-	-	0.59	-	-	-	1.48	0.43	2.30	0.96
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	11.10	-	-	-	4.20	-	-	-	6.53	4.00	8.00	2.20
(i) Soiled Soybeans, %	1.06	-	-	-	0.32	-	-	-	0.40	0.00	1.20	0.69
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.55	-	-	-	0.10	-	-	-	0.37	0.24	0.48	0.12
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	100	-	-	-	0.00	-	-	-	0	0	0	0.00
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0.00	-	-	-	0.00	-	-	-	0	0	0	0.00
Number of samples	***1***				***1***				***3***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	6.2	-	-	-	8.6	-	-	-	6.3	6.2	6.5	0.17
Crude protein, % (db)	39.35	-	-	-	39.69	-	-	-	37.89	35.69	39.64	2.01
Crude fat, % (db)	20.6	-	-	-	21.8	-	-	-	21.0	20.5	21.8	0.68
Crude Fibre, % (db)	6.9	-	-	-	5.6	-	-	-	6.6	6.3	7.2	0.49
Ash, % (db)	4.81	-	-	-	4.80	-	-	-	4.76	4.51	5.15	0.34
Number of samples	***1***				***1***				***3***			

South African

Regional Soybean Quality

PRODUCTION REGION	(16) North-West Central Eastern Region				(17) North-West Central Northern Region (Ottosdal)				(18) North-West Central Region (Ventersdorp)			
Grading:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
(a) Wet pods, %	0.00	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.38	-	-	-	0.86	0.40	1.56	0.61	2.28	0.83	5.75	2.34
(c) Other grain, %	0.00	-	-	-	0.10	0.00	0.16	0.09	0.08	0.00	0.32	0.16
(d) Sunflower seed, %	0.00	-	-	-	0.03	0.00	0.10	0.06	0.02	0.00	0.08	0.04
(e) Stones, %	0.00	-	-	-	0.00	0.00	0.00	0.00	0.02	0.00	0.07	0.04
(f) Sclerotia, %	0.00	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	0.46	-	-	-	5.16	1.83	10.92	5.01	2.70	0.22	4.59	1.84
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	7.84	-	-	-	17.78	8.28	29.40	10.72	9.43	4.32	17.28	5.79
(i) Soiled Soybeans, %	5.20	-	-	-	1.07	0.00	1.88	0.97	4.70	1.96	12.26	5.05
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.38	-	-	-	0.86	0.40	1.56	0.61	2.27	0.83	5.72	2.33
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0.00	-	-	-	0	0	0	0.00	0	0	0	0.00
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0.00	-	-	-	5	0	15	8.66	3	0	10	5.00
Number of samples	***1***				***3***				***4***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	6.2	-	-	-	6.7	5.9	8.2	1.30	6.8	6.1	8.7	1.27
Crude protein, % (db)	39.70	-	-	-	39.44	37.55	41.23	1.84	39.18	38.08	40.65	1.16
Crude fat, % (db)	20.7	-	-	-	20.6	20.0	21.3	0.66	20.3	19.7	20.8	0.46
Crude Fibre, % (db)	6.3	-	-	-	6.4	5.8	6.8	0.53	6.1	5.5	6.5	0.43
Ash, % (db)	4.46	-	-	-	4.81	4.69	4.99	0.16	4.75	4.57	4.98	0.17
Number of samples	***1***				***3***				***4***			

South African

Regional Soybean Quality

PRODUCTION REGION	(19) North-West Central Region (Lichtenburg)				(20) North-Western Eastern Region				(21) Free State North-Western Region (Viljoenskroon)			
Grading:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
(a) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	2.09	1.28	3.28	1.05	1.18	0.07	2.59	1.17	2.00	0.20	5.05	2.66
(c) Other grain, %	0.13	0.00	0.24	0.12	0.36	0.00	1.45	0.73	0.04	0.00	0.12	0.07
(d) Sunflower seed, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(e) Stones, %	0.00	0.00	0.00	0.00	0.02	0.00	0.07	0.04	0.00	0.00	0.00	0.00
(f) Sclerotia, %	0.00	0.00	0.00	0.00	0.09	0.02	0.15	0.05	0.03	0.00	0.10	0.06
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	3.49	1.14	7.46	3.46	2.45	0.03	3.59	1.67	4.20	2.42	7.69	3.02
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	9.53	6.98	11.52	2.32	3.87	2.62	5.86	1.42	4.93	0.62	7.40	3.75
(i) Soiled Soybeans, %	0.61	0.00	1.22	0.61	2.47	0.92	3.32	1.06	0.92	0.00	2.14	1.10
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	2.09	1.28	3.28	1.05	1.27	0.09	2.70	1.21	2.03	0.20	5.15	2.71
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	3	0	10	5.00	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	***3***				***4***				***3***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	7.4	6.6	7.8	0.67	8.0	7.9	8.3	0.20	6.3	6.1	6.5	0.21
Crude protein, % (db)	38.97	35.93	40.54	2.63	40.81	39.87	42.29	1.04	40.24	39.09	41.08	1.03
Crude fat, % (db)	20.8	19.2	22.6	1.71	19.6	19.1	19.9	0.33	20.3	19.9	20.6	0.36
Crude Fibre, % (db)	5.9	5.6	6.5	0.52	6.4	6.1	6.9	0.36	6.5	6.1	7.1	0.51
Ash, % (db)	4.98	4.75	5.17	0.21	4.78	4.72	4.89	0.08	4.63	4.59	4.68	0.05
Number of samples	***3***				***4***				***3***			

South African

Regional Soybean 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**
(a) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	1.75	0.20	6.90	2.90	0.13	0.10	0.16	0.04	1.05	0.21	1.88	1.18
(c) Other grain, %	0.31	0.00	1.25	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(d) Sunflower seed, %	0.02	0.00	0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(e) Stones, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(f) Sclerotia, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	2.69	0.15	6.20	2.77	0.78	0.26	1.30	0.74	3.07	1.00	5.14	2.93
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	3.88	1.28	6.60	2.11	4.75	4.50	5.00	0.35	4.56	3.72	5.40	1.19
(i) Soiled Soybeans, %	0.00	0.00	0.00	0.00	0.40	0.00	0.80	0.57	2.21	0.42	4.00	2.53
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	1.75	0.20	6.90	2.90	0.13	0.10	0.16	0.04	1.05	0.21	1.88	1.18
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	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	***5***				***2***				***2***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	6.9	6.5	7.6	0.48	7.1	6.3	7.9	1.13	7.7	7.0	8.4	0.99
Crude protein, % (db)	39.75	36.86	42.17	2.11	37.07	35.13	39.01	2.74	38.03	37.90	38.15	0.18
Crude fat, % (db)	20.9	19.9	22.7	1.11	21.2	21.1	21.2	0.07	21.5	20.8	22.2	0.99
Crude Fibre, % (db)	6.1	4.7	7.1	0.91	7.0	6.9	7.1	0.14	6.2	5.9	6.5	0.42
Ash, % (db)	4.62	4.44	4.97	0.20	4.74	4.63	4.85	0.16	4.71	4.47	4.94	0.33
Number of samples	***5***				***2***				***2***			

South African

Regional Soybean Quality

PRODUCTION REGION	(25) Free State South-Wester 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**
(a) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.73	0.45	1.00	0.39	0.22	0.07	0.50	0.17	0.03	0.00	0.10	0.04
(c) Other grain, %	0.40	0.00	0.80	0.57	0.03	0.00	0.10	0.05	0.00	0.00	0.00	0.00
(d) Sunflower seed, %	0.00	0.00	0.00	0.00	0.01	0.00	0.06	0.02	0.00	0.00	0.00	0.00
(e) Stones, %	0.00	0.00	0.00	0.00	0.03	0.00	0.20	0.08	0.00	0.00	0.00	0.00
(f) Sclerotia, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	0.78	0.40	1.16	0.54	1.68	1.00	1.92	0.35	0.51	0.16	1.28	0.44
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	21.12	6.24	36.00	21.04	8.73	4.04	20.00	6.36	3.99	1.04	9.00	2.75
(i) Soiled Soybeans, %	0.50	0.00	1.00	0.71	0.33	0.00	1.00	0.41	0.52	0.00	2.32	0.90
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.73	0.45	1.00	0.39	0.22	0.07	0.50	0.17	0.03	0.00	0.10	0.04
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	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	***2***				***6***				***6***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	7.6	7.5	7.7	0.14	7.6	6.8	8.4	0.59	8.9	8.1	9.7	0.69
Crude protein, % (db)	39.84	39.68	40.00	0.23	39.20	36.86	41.38	1.59	41.80	40.29	42.85	0.87
Crude fat, % (db)	22.7	22.4	22.9	0.35	20.6	18.5	22.3	1.24	20.1	18.9	21.6	1.01
Crude Fibre, % (db)	6.9	6.8	7.0	0.14	6.4	5.6	7.6	0.73	6.7	6.0	7.5	0.57
Ash, % (db)	4.40	4.36	4.43	0.05	4.77	4.43	5.10	0.22	4.64	4.40	4.81	0.15
Number of samples	***2***				***6***				***6***			

South African

Regional Soybean Quality

PRODUCTION REGION	(28) Free State Eastern Region				(29) Mpumalanga Southern Region				(30) Mpumalanga Eastern Region			
Grading:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
(a) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.31	0.00	0.90	0.28	0.45	0.10	1.20	0.33	0.67	0.02	2.60	0.71
(c) Other grain, %	0.01	0.00	0.14	0.04	0.00	0.00	0.10	0.02	0.01	0.00	0.20	0.04
(d) Sunflower seed, %	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00
(e) Stones, %	0.01	0.00	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01
(f) Sclerotia, %	0.02	0.00	0.10	0.04	0.03	0.00	0.10	0.05	0.03	0.00	0.18	0.05
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	1.39	0.20	3.00	0.88	2.28	0.44	6.20	1.49	1.65	0.14	5.10	1.14
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	5.32	1.40	12.85	3.06	5.24	0.50	13.70	4.45	3.09	0.40	8.00	1.70
(i) Soiled Soybeans, %	0.92	0.00	4.00	1.28	0.10	0.00	1.00	0.25	2.31	0.00	15.08	2.86
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.33	0.00	0.90	0.28	0.48	0.10	1.20	0.34	0.70	0.02	2.60	0.71
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	0	0	0	0.00	0	0	15	2.37
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	0	0	0	0.00	0	0	0	0.00	1	0	30	4.96
Number of samples	***18***				***22***				***40***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	8.0	6.7	9.6	0.81	7.7	7.0	8.9	0.52	7.8	6.3	11.3	0.80
Crude protein, % (db)	40.56	37.88	42.36	1.06	40.96	39.17	44.29	1.14	40.41	38.45	43.40	1.34
Crude fat, % (db)	20.3	18.3	21.2	0.77	20.2	18.8	22.7	1.01	20.5	18.7	22.5	1.03
Crude Fibre, % (db)	6.7	6.0	8.2	0.52	6.5	5.3	7.8	0.74	7.0	5.7	8.3	0.54
Ash, % (db)	4.62	4.33	4.80	0.12	4.59	4.38	4.81	0.11	4.43	4.07	4.68	0.17
Number of samples	***18***				***22***				***40***			

South African

Regional Soybean Quality

PRODUCTION REGION	(31) Mpumalanga Central Region				(32) Mpumalanga Western Region				(33) Mpumalanga Northern Region			
Grading:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
(a) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	1.12	0.10	3.70	1.08	0.42	0.06	0.80	0.27	0.17	0.00	0.60	0.13
(c) Other grain, %	0.02	0.00	0.30	0.08	0.03	0.00	0.24	0.07	0.01	0.00	0.16	0.03
(d) Sunflower seed, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(e) Stones, %	0.01	0.00	0.15	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.02
(f) Sclerotia, %	0.01	0.00	0.10	0.03	0.05	0.00	0.10	0.05	0.04	0.00	0.15	0.05
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	2.28	0.30	5.50	2.12	1.24	0.25	3.10	0.77	0.56	0.10	1.40	0.33
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	4.06	1.20	8.00	2.28	3.97	0.80	6.90	1.89	3.60	0.90	13.00	3.42
(i) Soiled Soybeans, %	1.35	0.00	16.44	4.06	2.58	0.00	10.50	2.82	2.60	0.00	12.50	3.24
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	1.13	0.10	3.70	1.09	0.47	0.06	0.90	0.29	0.22	0.00	0.75	0.16
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	1	0	5	1.54	0	0	0	0.00
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	1	0	10	2.50	0	0	0	0.00	0	0	5	1.00
Number of samples	***16***				***20***				***25***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	7.1	6.5	8.9	0.59	7.6	6.6	9.3	0.74	7.4	6.6	10.0	0.84
Crude protein, % (db)	40.58	38.30	42.05	0.98	40.15	36.06	41.89	1.28	40.20	38.11	41.92	0.92
Crude fat, % (db)	20.6	19.0	21.3	0.63	20.6	19.1	23.3	1.06	20.6	18.6	22.3	1.00
Crude Fibre, % (db)	6.7	5.7	7.9	0.54	6.5	5.6	7.3	0.53	6.7	5.9	7.9	0.53
Ash, % (db)	4.58	4.34	4.83	0.14	4.66	4.41	4.94	0.14	4.69	4.16	5.22	0.25
Number of samples	***16***				***20***				***25***			

South African

Regional Soybean Quality

PRODUCTION REGION	(34) Gauteng Region				(36) KwaZulu-Natal Region			
Grading:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
(a) Wet pods, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(b) Foreign matter, including stones, other grains and sunflower seeds: Provided that such deviations are individually within the limits specified in items (c), (d), and (e), %	0.57	0.06	1.29	0.50	0.41	0.34	0.49	0.08
(c) Other grain, %	0.04	0.00	0.21	0.09	0.03	0.00	0.09	0.05
(d) Sunflower seed, %	0.01	0.00	0.05	0.02	0.00	0.00	0.00	0.00
(e) Stones, %	0.02	0.00	0.20	0.06	0.00	0.00	0.00	0.00
(f) Sclerotia, %	0.01	0.00	0.10	0.03	0.00	0.00	0.00	0.00
(g) Soybeans and parts of Soybeans above the 1.8 mm slotted sieve which pass through the 4.75 mm round hole sieve, %	1.95	0.60	4.79	1.30	0.58	0.44	0.80	0.20
(h) Defective Soybeans on the 4.75 mm round hole sieve, %	5.33	2.10	9.08	2.39	8.35	3.42	14.62	5.72
(i) Soiled Soybeans, %	1.03	0.00	4.28	1.32	4.08	2.80	6.00	1.69
(j) Deviations in (b) and (f) collectively: Provided that such deviations are individually within the limits of said items, %	0.58	0.06	1.30	0.51	0.41	0.34	0.49	0.08
Poisonous seeds *(Crotalaria sp., Datura sp., Ricinis communis)*	0	0	0	0.00	0	0	0	0.00
Poisonous seeds *(Argemone mexicana L., Convolvulus sp., Ipomoea purpurea Roth., Lolium temulentum, Xanthium sp.)*	1	0	5	1.58	0	0	0	0.00
Number of samples	***10***				***3***			
Nutritional analysis:	**ave**	**min**	**max**	**stdev**	**ave**	**min**	**max**	**stdev**
Moisture, % (17 hr, 103 °C)	8.0	6.2	9.2	0.83	7.1	6.0	9.0	1.68
Crude protein, % (db)	40.49	39.63	43.04	1.01	40.07	39.82	40.27	0.23
Crude fat, % (db)	20.4	19.4	21.1	0.54	22.2	21.1	23.3	1.10
Crude Fibre, % (db)	6.5	5.8	7.4	0.55	6.7	6.5	6.9	0.20
Ash, % (db)	4.67	4.41	5.01	0.16	4.61	4.35	4.77	0.23
Number of samples	***10***				***3***			

Fatty acid Profile

Fatty acid profiles are the most important tool for identification of authenticity of vegetable fats and oils. All types of oil have their own specific fatty acid profile which is unique to that product. Fatty acids are typically esterified to a glycerol backbone to form triglycerides (also called fats or oils). Fatty acids are either described as saturated or unsaturated, with saturated fatty acids being solid at room temperature and unsaturated fatty acids being liquid at room temperature. Unsaturated fatty acids are further subdivided into mono-unsaturated (one double bond in the carbon chain) or poly-unsaturated (more than one double bond in the carbon chain). The unique fatty acid profile of each product/crop is a combination of saturated, mono-unsaturated and poly-unsaturated oils and is specific to that type of oil.

Fatty acid profiles of every crop, however, are subject to variation. The variation or typical pattern of fatty acids in a specific oil not only influences the stability and physical properties of the oil but also aids in distinguishing one type of oil from another. Variation of fatty acids within the same product depend on climate, latitude, soil type, cultivar, rainfall as well as seasonal variation. These variations should be included when ranges for identification of authenticity are determined.

It is imperative to include ranges wherein fatty acids vary, in order to successfully validate the authenticity of a specific vegetable oil. Building of a database requires gathering of information over different seasons, areas and cultivars in order to give a true reflection of the ranges wherein fatty acids can differ. Currently, no national updated database for fatty acid composition of soybean oil is available.

It is important that South Africa, as a soybean producing country, develop and maintain a national fatty acid profile database to the benefit of the Oil Seed Industry. Annual analysis of crop and cultivar samples will ensure that the natural variation caused by different cultivars as well as the influence of climate and locality are included in the database values. Seasonal variations will also be addressed. Recording all variation applicable to the crops in the database will enable the annual review of the specified ranges.

Precision Oil Laboratories was subcontracted for the third consecutive season to perform fatty acid profile analyses on 20 composite crop samples representing different production regions as well as 18 cultivar samples from different localities. Please refer to Tables 6, 7 and 8 on pages 38 to 40 for the results.

C14:0	Myristic acid	C18:3n6	n6 Linolenic acid
C16:0	Palmitic acid	C18:3n3	n3 Linolenic acid
C16:1	Palmitoleic acid	C20:0	Arachidic acid
C17:0	Margaric acid	C20:1	Eicosenoic acid
C18:0	Stearic acid	C20:2	Eicosadienoic acid
C18:1 cis	cis Oleic acid	C22:0	Behenic acid
C18:1n7	Vaccenic acid	C24:0	Lignoceric acid
C18:2 cis	cis Linoleic acid		

References:

Accum, F., 1820. “A Treatise on Adulteration of Food and Culinary Poisons”, Longman, Hurst, Rees, Orme and Row, London.
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Rossell, J.B., Measurement of rancidity. IN: J.C. and Hamilton R.J. (Eds), Rancidity in Foods. Blackie Academic and Professional, Glasgow, pp22-53.
Van Niekerk, P.J., 1990. Determination of the component oils of edible oil blends. University of Pretoria.

The Fatty acid Profile information was supplied by Dr. Mathilda Mostert from Precision Oil Laboratories.

Table 6: Fatty acid profile results of a selection of crop quality samples from the 2023/24 season

Cultivar	Region	g Fatty acids/100 g Fatty Acids														
		C14:0	C16:0	C16:1	C17:0	C18:0	C18:1 cis	C18:1 n7*	C18:2 cis	C18:3 n6	C18:3 n3	C20:0	C20:1	C20.2	C22:0	C24:0
North West	15	LOQ	10.64	LOQ	LOQ	4.66	21.54	1.5	52.7	ND	7.5	0.429	0.171	ND	0.457	0.162
	17	LOQ	10.34	LOQ	LOQ	4.93	21.22	1.6	52.9	ND	7.5	0.445	0.156	ND	0.419	0.159
	18	LOQ	10.14	LOQ	LOQ	5.20	21.76	1.6	52.3	ND	7.4	0.480	0.165	ND	0.516	0.174
	19	LOQ	10.16	LOQ	LOQ	4.94	20.67	1.6	53.9	ND	7.2	0.439	0.160	ND	0.454	0.163
	Min	***-***	***10.14***	***-***	***-***	***4.66***	***20.67***	***1.5***	***52.3***	***-***	***7.2***	***0.429***	***0.156***	***-***	***0.419***	***0.159***
	Max	***-***	***10.64***	***-***	***-***	***5.20***	***21.76***	***1.6***	***53.9***	***-***	***7.5***	***0.480***	***0.171***	***-***	***0.516***	***0.174***
	N	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***	***4***
Free State	22	LOQ	10.60	LOQ	LOQ	5.63	21.67	1.6	51.8	ND	7.1	0.504	0.165	ND	0.496	0.163
	26	LOQ	10.61	LOQ	LOQ	5.79	22.75	1.5	51.0	ND	6.56	0.554	0.185	ND	0.553	0.212
	27	LOQ	9.79	LOQ	LOQ	6.32	22.39	1.5	51.8	ND	6.56	0.561	0.171	ND	0.516	0.182
	28	LOQ	10.32	LOQ	LOQ	7.00	22.87	1.6	50.7	ND	5.96	0.536	0.165	ND	0.439	0.181
	28	LOQ	10.28	LOQ	LOQ	5.67	22.47	1.5	51.9	ND	6.57	0.501	0.166	ND	0.490	0.163
	Min	***-***	***9.79***	***-***	***-***	***5.63***	***21.67***	***1.5***	***50.7***	***-***	***5.96***	***0.501***	***0.165***	***-***	***0.439***	***0.163***
	Max	***-***	***10.61***	***-***	***-***	***7.00***	***22.87***	***1.6***	***51.9***	***-***	***7.1***	***0.561***	***0.185***	***-***	***0.553***	***0.212***
	N	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***	***5***
Mpumalanga	29	LOQ	10.06	LOQ	LOQ	6.00	21.85	1.6	52.3	ND	6.64	0.538	0.167	ND	0.518	0.178
	29	LOQ	10.63	LOQ	LOQ	5.37	19.34	1.4	54.2	ND	7.5	0.487	0.154	ND	0.494	0.148
	30	LOQ	9.67	LOQ	LOQ	5.06	22.40	1.5	52.0	ND	8.0	0.430	LOQ	ND	0.473	LOQ
	30	LOQ	10.30	LOQ	LOQ	6.19	22.65	1.5	51.1	ND	6.7	0.492	0.175	ND	0.440	0.175
	30	LOQ	10.52	LOQ	LOQ	5.70	21.79	1.6	51.3	ND	7.6	0.484	0.151	ND	0.451	LOQ
	31	LOQ	9.58	LOQ	LOQ	6.05	21.01	1.6	53.1	ND	7.0	0.550	0.159	ND	0.531	0.194
	32	LOQ	10.50	LOQ	LOQ	5.81	20.98	1.4	52.3	ND	7.4	0.483	0.157	ND	0.441	0.148
	33	LOQ	10.03	LOQ	LOQ	5.08	21.02	1.5	52.9	ND	7.9	0.430	0.149	ND	0.444	0.142
	33	LOQ	10.46	LOQ	LOQ	4.82	22.91	1.6	51.4	ND	7.3	0.431	0.158	ND	0.465	0.140
	Min	***-***	***9.58***	***-***	***-***	***4.82***	***19.34***	***1.4***	***51.1***	***-***	***6.64***	***0.430***	***0.149***	***-***	***0.440***	***0.140***
	Max	***-***	***10.63***	***-***	***-***	***6.19***	***22.91***	***1.6***	***54.2***	***-***	***8.0***	***0.550***	***0.175***	***-***	***0.531***	***0.194***
	N	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***	***9***
Gauteng	34	***LOQ***	***10.03***	***LOQ***	***LOQ***	***5.66***	***21.82***	***1.6***	***52.4***	***ND***	***6.9***	***0.511***	***0.165***	***ND***	***0.489***	***0.175***
KwaZulu-Natal	36	***LOQ***	***10.76***	***LOQ***	***LOQ***	***4.60***	***21.68***	***1.6***	***52.8***	***ND***	***7.3***	***0.381***	***0.146***	***ND***	***0.410***	***LOQ***
RSA	***Min***	***-***	***9.58***	***-***	***-***	***4.60***	***19.34***	***1.4***	***50.7***	***-***	***5.96***	***0.381***	***0.146***	***-***	***0.410***	***0.140***
	Max	***-***	***10.76***	***-***	***-***	***7.00***	***22.91***	***1.6***	***54.2***	***-***	***8.0***	***0.561***	***0.185***	***-***	***0.553***	***0.212***
	N	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***	***20***

Note:
All fatty acids marked with an asterisk (*) are not SANAS accredited.
Limit of detection (LOD) = 0.06 g/100 g.
Values below the limit of detection are reported as ND (not detected).
Limit of quantitation (LOQ) = 0.14 g/100 g.
Values below the limit of quantitation cannot be accurately quantified.

Table 7: Fatty acid profile results of a selection of cultivar samples from the 2023/24 season

Province	Locality	Region	Cultivar	g Fatty acids/100 g Fatty Acids														
				C14:0	C16:0	C16:1	C17:0	C18:0	C18:1 cis	C18:1 n7*	C18:2 cis	C18:3 n6	C18:3 n3	C20:0	C20:1	C20.2	C22:0	C24:0
Northern Cape	Warrenton	11	NS 5258 R	LOQ	10.49	ND	LOQ	4.90	17.89	1.2	55.4	ND	9.0	0.354	0.148	ND	0.340	LOQ
			PAN 1521 R	LOQ	10.52	LOQ	LOQ	4.57	18.49	1.4	55.7	ND	8.1	0.399	0.147	ND	0.384	LOQ
			RA660 R	LOQ	9.61	LOQ	LOQ	4.61	20.31	1.3	54.4	ND	8.5	0.385	0.144	ND	0.390	LOQ
			DM 59160 RSF IPRO	LOQ	10.29	LOQ	LOQ	3.97	18.11	1.4	55.5	ND	9.4	0.344	LOQ	ND	0.394	LOQ
			LG6026IPR	LOQ	11.0	LOQ	LOQ	4.30	18.27	1.3	53.8	ND	10.0	0.394	0.142	ND	0.415	LOQ
			Y657	LOQ	11.2	LOQ	LOQ	4.56	17.48	1.3	54.8	ND	9.3	0.405	LOQ	ND	0.453	LOQ
			Min	-	9.61	-	-	3.97	17.48	1.2	53.8	-	8.1	0.344	0.142	-	0.340	-
			Max	-	11.20	-	-	4.90	20.31	1.4	55.7	-	10.0	0.405	0.148	-	0.453	-
			N	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Free State	Bethlehem PD1	25	NS 5258 R	LOQ	9.85	LOQ	LOQ	6.07	23.30	1.4	51.5	ND	6.37	0.476	0.197	ND	0.431	0.213
			PAN 1521 R	LOQ	9.93	LOQ	LOQ	6.15	22.39	1.4	52.1	ND	6.21	0.580	0.200	ND	0.524	0.210
			RA 660 R	LOQ	9.35	LOQ	LOQ	6.03	23.80	1.3	52.2	ND	5.49	0.564	0.210	ND	0.500	0.218
			DM 59160 RSF IPRO	LOQ	9.96	LOQ	LOQ	5.43	22.04	1.5	52.9	ND	6.50	0.507	0.189	ND	0.513	0.201
			LG60261IPR	LOQ	10.32	ND	LOQ	5.61	23.10	1.3	50.8	ND	7.1	0.567	0.201	ND	0.539	0.211
			Y657	LOQ	10.75	LOQ	LOQ	5.60	22.32	1.3	51.7	ND	6.57	0.551	0.189	ND	0.555	0.206
			Min	-	9.4	-	-	5.43	22.04	1.3	50.8	-	5.49	0.476	0.189	-	0.431	0.201
			Max	-	10.8	-	-	6.15	23.80	1.5	52.9	-	7.1	0.580	0.210	-	0.555	0.218
			N	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
KwaZulu-Natal	Greytown Kranskop	36	NS 5258 R	LOQ	10.74	LOQ	LOQ	5.19	22.84	1.3	50.6	ND	8.0	0.386	0.159	ND	0.369	LOQ
			PAN 1521 R	LOQ	11.2	LOQ	LOQ	4.93	23.10	1.5	49.7	ND	8.1	0.448	0.154	ND	0.454	LOQ
			RA 660 R	LOQ	10.31	LOQ	LOQ	4.82	24.73	1.3	49.5	ND	7.9	0.427	0.155	ND	0.443	LOQ
			DM 59160 RSF IPRO	LOQ	11.2	LOQ	LOQ	5.36	23.31	1.7	49.6	ND	7.1	0.503	0.166	ND	0.577	0.168
			LG60261IPR	LOQ	11.8	LOQ	LOQ	5.61	23.26	1.4	47.6	ND	8.5	0.577	0.176	ND	0.644	0.170
			Y657	LOQ	11.7	LOQ	LOQ	5.33	22.13	1.4	49.6	ND	8.3	0.486	0.141	ND	0.506	LOQ
			Min	-	10.31	-	-	4.82	22.13	1.3	47.6	-	7.1	0.386	0.141	-	0.369	0.168
			Max	-	11.8	-	-	5.61	24.73	1.7	50.6	-	8.5	0.577	0.176	-	0.644	0.170
			N	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
RSA	Min			-	9.35	-	-	3.97	17.48	1.2	47.6	-	5.49	0.344	0.141	-	0.340	0.168
	Max			-	11.8	-	-	6.15	24.73	1.7	55.7	-	10.0	0.580	0.210	-	0.644	0.218
	N			18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

Note:
All fatty acids marked with an asterisk (*) are not SANAS accredited.
Limit of detection (LOD) = 0.06 g/100 g.
Values below the limit of detection are reported as ND (not detected).
Limit of quantitation (LOQ) = 0.14 g/100 g.
Values below the limit of quantitation cannot be accurately quantified.

Table 8: Fatty acid profile results per cultivar - 2023/24 season

Cultivar	Locality	Region	g Fatty acids/100 g Fatty Acids														
			C14:0	C16:0	C16:1	C17:0	C18:0	C18:1 cis	C18:1 n7*	C18:2 cis	C18:3 n6	C18:3 n3	C20:0	C20:1	C20.2	C22:0	C24:0
DM 59160 RSF IPRO	Warrenton	11	LOQ	10.29	LOQ	LOQ	3.97	18.11	1.4	55.5	ND	9.4	0.344	LOQ	ND	0.394	LOQ
	Bethlehem PD1	25	LOQ	9.96	LOQ	LOQ	5.43	22.04	1.5	52.9	ND	6.50	0.507	0.189	ND	0.513	0.201
	Greytown Kranskop	36	LOQ	11.2	LOQ	LOQ	5.36	23.31	1.7	49.6	ND	7.1	0.503	0.166	ND	0.577	0.168
	Min		-	*10.0*	-	-	*3.97*	*18.11*	*1.4*	*49.6*	-	*6.5*	*0.344*	*0.166*	-	*0.394*	*0.168*
	Max		-	*11.2*	-	-	*5.43*	*23.31*	*1.7*	*55.5*	-	*9.4*	*0.507*	*0.189*	-	*0.577*	*0.201*
	N		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
LG60261IPR	Warrenton	11	LOQ	11.0	LOQ	LOQ	4.30	18.27	1.3	53.8	ND	10.0	0.394	0.142	ND	0.415	LOQ
	Bethlehem PD1	25	LOQ	10.32	ND	LOQ	5.61	23.10	1.3	50.8	ND	7.1	0.567	0.201	ND	0.539	0.211
	Greytown Kranskop	36	LOQ	11.8	LOQ	LOQ	5.61	23.26	1.4	47.6	ND	8.5	0.577	0.176	ND	0.644	0.170
	Min		-	*10.3*	-	-	*4.30*	*18.27*	*1.3*	*47.6*	-	*7.1*	*0.394*	*0.142*	-	*0.415*	*0.170*
	Max		-	*11.8*	-	-	*5.61*	*23.26*	*1.4*	*53.8*	-	*10.0*	*0.577*	*0.201*	-	*0.644*	*0.211*
	N		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
NS 5258 R	Warrenton	11	LOQ	10.49	ND	LOQ	4.90	17.89	1.2	55.4	ND	9.0	0.354	0.148	ND	0.340	LOQ
	Bethlehem PD1	25	LOQ	9.85	LOQ	LOQ	6.07	23.30	1.4	51.5	ND	6.37	0.476	0.197	ND	0.431	0.213
	Greytown Kranskop	36	LOQ	10.74	LOQ	LOQ	5.19	22.84	1.3	50.6	ND	8.0	0.386	0.159	ND	0.369	LOQ
	Min		-	*9.85*	-	-	*4.90*	*17.89*	*1.2*	*50.6*	-	*6.37*	*0.354*	*0.148*	-	*0.340*	-
	Max		-	*10.74*	-	-	*6.07*	*23.30*	*1.4*	*55.4*	-	*9.0*	*0.476*	*0.197*	-	*0.431*	*0.213*
	N		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
PAN 1521 R	Warrenton	11	LOQ	10.52	LOQ	LOQ	4.57	18.49	1.4	55.7	ND	8.1	0.399	0.147	ND	0.384	LOQ
	Bethlehem PD1	25	LOQ	9.93	LOQ	LOQ	6.15	22.39	1.4	52.1	ND	6.21	0.580	0.200	ND	0.524	0.210
	Greytown Kranskop	36	LOQ	11.2	LOQ	LOQ	4.93	23.10	1.5	49.7	ND	8.1	0.448	0.154	ND	0.454	LOQ
	Min		-	*9.93*	-	-	*4.57*	*18.49*	*1.4*	*49.7*	-	*6.21*	*0.399*	*0.147*	-	*0.384*	-
	Max		-	*11.20*	-	-	*6.15*	*23.10*	*1.5*	*55.7*	-	*8.1*	*0.580*	*0.200*	-	*0.524*	*0.210*
	N		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
RA 660 R	Warrenton	11	LOQ	9.61	LOQ	LOQ	4.61	20.31	1.3	54.4	ND	8.5	0.385	0.144	ND	0.390	LOQ
	Bethlehem PD1	25	LOQ	9.35	LOQ	LOQ	6.03	23.80	1.3	52.2	ND	5.49	0.564	0.210	ND	0.500	0.218
	Greytown Kranskop	36	LOQ	10.31	LOQ	LOQ	4.82	24.73	1.3	49.5	ND	7.9	0.427	0.155	ND	0.443	LOQ
	Min		-	*9.35*	-	-	*4.61*	*20.31*	*1.3*	*49.5*	-	*5.49*	*0.385*	*0.144*	-	*0.390*	-
	Max		-	*10.3*	-	-	*6.03*	*24.73*	*1.3*	*54.4*	-	*8.5*	*0.564*	*0.210*	-	*0.500*	*0.218*
	N		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
Y657	Warrenton	11	LOQ	11.2	LOQ	LOQ	4.56	17.48	1.3	54.8	ND	9.3	0.405	LOQ	ND	0.453	LOQ
	Bethlehem PD1	25	LOQ	10.75	LOQ	LOQ	5.60	22.32	1.3	51.7	ND	6.57	0.551	0.189	ND	0.555	0.206
	Greytown Kranskop	36	LOQ	11.7	LOQ	LOQ	5.33	22.13	1.4	49.6	ND	8.3	0.486	0.141	ND	0.506	LOQ
	Min		-	*10.75*	-	-	*4.56*	*17.48*	*1.3*	*49.6*	-	*6.6*	*0.405*	*0.141*	-	*0.453*	-
	Max		-	*11.7*	-	-	*5.60*	*22.32*	*1.4*	*54.8*	-	*9.3*	*0.551*	*0.189*	-	*0.555*	*0.206*
	N		*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*3*
RSA	*Min*		-	*9.35*	-	-	*3.97*	*17.48*	*1.2*	*47.60*	-	*5.49*	*0.344*	*0.141*	-	*0.340*	*0.168*
	Max		-	*11.8*	-	-	*6.15*	*24.73*	*1.7*	*55.70*	-	*10.0*	*0.580*	*0.210*	-	*0.644*	*0.218*
	N		*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*	*18*

Note:
All fatty acids marked with an asterisk (*) are not SANAS accredited.
Limit of detection (LOD) = 0.06 g/100 g.
Values below the limit of detection are reported as ND (not detected).
Limit of quantitation (LOQ) = 0.14 g/100 g.
Values below the limit of quantitation cannot be accurately quantified.

Methods

Sampling Procedure:

A working group determined the procedure to be followed to ensure that the crop quality samples sent to the SAGL by the various grain silo owners, 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/bag/bunker 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/bag/bunker, 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 were 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 and were then forwarded to the SAGL.

Grading:

Full grading was done in accordance with the Regulations relating to the Grading, Packing and Marking of Soybeans intended for sale in the Republic of South Africa (Government Notice NO. R. 370 of 21 April 2017).

Please see pages 90 to 99 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 soybeans in South Africa. An approximation of the test weight of South African soybeans 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 soybean 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 Soybean of the Canadian Grain Commission: $y = 0.1898x + 2.2988$ (291 to 350 g/0.5 L) and $y = 0.1895x + 2.3964$ (351 to 410 g/0.5 L).

Nutritional Analysis:

Milling

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

Moisture
The method prescribed under the ISTA International Rules for Seed Testing, Section 9, latest edition was used to determine the moisture content of the soya samples. This method determines moisture content as a loss in weight of a sample when dried in an oven at 103 °C for 17 hours.

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 08-02.01 Rapid (Magnesium Acetate) method, was used for the determination. The samples were incinerated at 700 ± 10 °C in a muffle furnace for 45 minutes.

Precision Oil Laboratories' Fatty Acid Profile Methods:

Fat Extraction
In-House method POL 019 was used for the extraction of the crude fat from the samples. After sample preparation the fat is extracted by petroleum ether under reflux, followed by the removal of the solvent by evaporation. The residue obtained from the fat extraction is used for preparation of methyl esters for determination of the fatty acid profile.

Fatty Acid Profile
In-House method POL 015 was used for determination of the fatty acid composition. Extracted fat is converted to methyl esters using an alkali catalyzed method. Methyl esters are injected into a Gas Chromatograph and an external fatty acid methyl ester standard is used to identify peaks based on retention times. The fatty acid composition is expressed as a total fatty acid content of 100% with different fatty acids representing a percentage of the total fatty acids.

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:

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Ms	A de Jager (Nutrients & Contaminants Methods)
Ms	W Louw (In-house Methods 001, 002, 003, 010 & 026)
Ms	D Moleke (Rheological Methods)
Mrs	H Meyer (All Chemical, Nutrients and Contaminants & Grading Methods)
Ms	M Motlanthe (In-house Methods 001, 003 & 026)
Ms	T de Beer (Rheological Methods)
Ms	S Makhoba (In-House Method 026)
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Nominated Representative:

Ms M Motlanthe

Issue No.: 36
Date of Issue: 14 March 2025
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) (HPLC)	In-house method 001
	Thiamine Mononitrate (HPLC) Riboflavin (HPLC) Nicotinamide (HPLC) Pyridoxine Hydrochloride (HPLC)	In-house method 002
	Folic Acid (HPLC)	In-house method 003
Grain based food and feed products (fortified and unfortified) and fortification mixes	Total Sodium (Na) Total Iron (Fe) Total Zinc (Zn)	In-house method 010
Yeast and Bread	Vitamin D_2 (HPLC)	In-House method 029
Food and feed	Multi-Mycotoxin: -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

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager

Landbounavorsingsraad

Graangewasse

Potchefstroom

Agricultural Research Council

Grain Crops

Potchefstroom

Republiek van Suid Afrika

Republic of South Africa

VERSLAG VAN DIE NASIONALE SOJABOON KULTIVARPROEWE 2023/24

REPORT OF THE NATIONAL SOYBEAN CULTIVAR TRIALS

Verantwoordelike beampte:

Responsible officer:

AS de Beer

L Bronkhorst

N Cochrane

BEDANKINGS

Dank is verskuldig aan die volgende persone vir hul onderskeie bydraes in die verwesenliking van hierdie verslag:

1 Alle medewerkers en koöperateurs soos gelys op bladsy 10.

2 Mev. H. Vermeulen vir rekenarisering van data en saamstel van die verslag.

3 Me Nicolene Cochrane vir haar hulp met die verwerking en interpertering van die data.

4 Die Navorsings Bestuurder, GG, en sojaboonkultivarevaluasiekomitee, onder wie se wakende oog die proewe uitgevoer is.

5 Kollegas (Me L. Bronkhorst, Mnre N. Mogapi, C. Ramatlotlo en S. Seutwladi) en personeel van GG wie op direkte of indirekte wyse bystand verleen het.

6 Die saadmaatskappye (Tabel 1). Olie- en Proteïensade Ontwikkelingstrust (OPOT) en Landbounavorsingsraad (LNR) wie die projek finansieer.

ACKNOWLEDGEMENTS

Credit is due to the following persons for their respective contributions to this report:

1 All the collaborators and co-operators as listed on page 10.

2 Mrs. H. Vermeulen for processing of data and for compiling the report.

3 Me Nicolene Cochrane for the processing and interpretation of the data.

4 The Research Manager (GC), and the soybean cultivar evaluation committee under whose watchful eye the trials were executed.

5 Collegues (Me L. Bronkhorst, Mr's N. Mogapi, C Ramatlotlo and S. Seutwladi) and personnel of GC who rendered assistance in a direct or indirect way.

6 The Seed Companies (Table 1), Oil- and Protein Seeds Development Trust (OPDT) and Agricultural Research Council (ARC) for financing the project.

INHOUD/INDEX

TABEL **BLADSY**
TABLE **PAGE**

1 INTRODUCTION

The National Soybean Cultivar Trials (project M101/62 (P05000002) were planted for the 46th successive year this past growing season. A total of 36 trials (of the planned 37 trials) were planted at 33 localities, illustrated in the locality list.

1.1 AIM

The aim of the project was primarily the following:

(I) To compare cultivars for agronomic and economic performance.

(ii) To test the adaptability of cultivars and new releases for specific areas and cultivation practices.

2 MATERIALS AND METHODS

2.1 GENERAL

The trials were planted as randomized block designs as well as a Latinized row-column design using three replications and 35 cultivars. Cultivar characteristics are shown in Table 1.

Each trial plot consisted of four, 5 m rows. Four metres were harvested from each of the middle two rows, to avoid border effects. Soil form, fertilization and weed control are indicated together with row spacing in Table 2. All seeds were inoculated with Bradyrhizobium japonicum bacteria (UPL inoculant) at planting.

The localities where trials were planted represent a wide range of climatic conditions. Trials were carried out on the ARC and Departmental Research Stations as well as on privately owned farms. Observations were recorded by responsible officers and collaborators as indicated in the list of collaborators. Planting time and cultivation practice were executed to correspond with that of commercial plantings in the specific areas. Rainfall and irrigation are indicated in Table 3. Note that rainfall is only recorded from October to April and not for the specific growing season of a trial.

2.2 OBSERVATIONS

A brief definition of some of the observations in the trials is as follow:

2.2.1 Date of flowering: The time at which one fully open flower per plant was observed across 50% of the plot.

2.2.2 Physiological maturity: The number of days when 50% of the pods appear yellow or brown.

2.2.3 Date of harvest maturity: When 95% of the pods for a given plot had turned brown. This is an indication of length of growing season, (number of days from date of planting to date of maturity).

2.2.4 Plant height: The average height in centimetre (cm) of plants from the soil surface to the growth point at maturity.

2.2.5 Pod height: The average height in centimetre (cm) of the lowest pods on the plant from soil surface at maturity.

2.2.6 Lodging: Lodging at time of harvest was rated on the following scale:

1 = No lodging
2 = Few lodgings, will not hamper mechanical harvesting
3 = Few lodgings, lodging less than what will hamper mechanical harvesting
4 = Few lodgings, will hamper mechanical harvesting, with yield loss
5 = Fair number of plants lodged, will hamper mechanical harvesting, with yield loss
6 = Many plants lodged, will hamper mechanical harvesting, with yield loss
7 = Many plants lodged, will hamper mechanical harvesting, with yield loss
8 = Nearly all plants lodged, will hamper mechanical harvesting, yield loss

9 = All plants lodged, will hamper mechanical harvesting, yield loss

2.2.7 Green stem: The percentage green stems at harvest rated on a 1 (normally mature) to 5 (more than 80% green stems) scale.

2.2.8 Shattering: Measured at time of harvest. Shattering is reported on a scale of 1 (no shattering) to 5 (more than 91-100% pods shattered).

2.2.9 Plant count three (3) weeks after emergence: The number of plants counted on 5 m of the two inner rows. This data will be used to calculate the germination percentage and will be compared with the germination percentage of different soil types.

2.2.10 100 seeds mass: Determined on an air-dry basis from a randomly selected sample retained on a 4,75 mm standard grading screen.

2.2.11 Undesirable seed: The mass of undesirable seed was determined in a random 100 g sample with seed size greater than 4,75 mm (excluding mechanical damaged seeds).

2.2.12 Protein and oil percentage: The analysis was done by the Agricultural Research Council (ARC) using the Near-Infrared Red (NIR DA 7250 Perten) instrument. Samples are being verified by the SAGL (Southern African Grain Laboratory NPC) by using the “Soxhlet” apparatus (oil percentage) and the “Dumas” method (protein percentage).

2.2.13 Grain yield: Four metres of the two centre rows were harvested by hand at soil level and threshed. The grain moisture was determined, and yield calculated on a basis of 12,5% moisture content.

2.3 THE EVALUATION OF TRIALS

The yield data of the individual trials were subjected to analysis of variance (ANOVA) with a randomized complete block design (RCBD) as well as a Latinized row-column design.

The localities with coefficient of variance higher than 25% were rejected from the analysis. The trial means (x-axis) versus the cultivar means (y-axis) is plotted. A regression line is then fitted with the trial means as x variable and cultivar mean as predictor variable. Out of the regression estimates, the yield probability percentage above the mean for each cultivar at different yield potentials is then calculated and presented in a table as a guideline for the use of different cultivars under different circumstances.

A yield probability of more than 50% indicated above average yield and a yield probability of less than 50% indicated a below average yield.

3 DISCUSSIONS OF RESULTS

3.1 GENERAL

The rainfall and irrigation data are shown in Table 3.

Six (6) of the 36 trials planted could not be included (16.7%) in the report compared to the six (6) out of 33 trials (18.2%) in the 2022/23 season.

The following trial could not be included in the report for the following reasons:

1. Bergville – not planted
2. Chrissiesmeer – hail damage
3. Cornelia -poor emergence and hail damage.
4. Delareyville – high CV%.
5. Groblersdal (ARC) – high CV%.
6. Potchefstroom (Pannar) – poor stand due to heat wave after emergence.
7. Rietvlei – flooding just after planting.

As in the previous seasons the evaluation of the trials was based on several parameters. No conclusion can be made on a single parameter.

3.2 DISCUSSION OF TABLES

3.2.1 Days to flowering (Table 4), physiologically mature (Table 5) and length of the growing season (Table 6)

The number of days from planting to flowering (Table 4) is an effective measure for the grouping of cultivars because the relative order of rank for this characteristic is repeated to a great extent over localities and years. As expected, the average days to flowering was the shortest in the warm areas (44 days Schweizer-Reneke PD1 and the longest in the cooler areas (90 days at Kokstad).

The number of days to physiological maturity is shown in Table 5. The longest average days to maturity was experienced at Kokstad (155 days).

The number of days to harvest maturity (Table 6) was used to determine the length of the growing season of a cultivar. The number of days to harvest maturity is however, more dependent on climatic changes and planting date for soybeans and, the number of days to flowering is therefore a more reliable maturity grouping criterion.

3.2.2 Plant height (Table 7)

The indeterminate cultivar US68-12 IPRO (MG 6.8) had a mean plant height of 111 cm (highest) in the warm area compared to 49 cm (lowest) of the indeterminate cultivar Lake 253 RR (MG 5.5) in the warm region.

The average plant height between localities varied from a mean of 44 cm at Barberspan to 107 cm at Greytown Kranskop.

3.2.3 Pod height (Table 8)

The variation in pod and plant height between cultivars is linked with the length of the growing season of a cultivar. The cultivar P71T74 R (MG 7.1; indeterminate), had a mean pod height of 24 cm in the warm area, but also had an above average pod height in the cool and moderate areas.

Other cultivars with above average pod heights for all the climate areas are PAN 1555 R (MG 5.7, indeterminate), LG60261 IPR (MG 6.0; indeterminate), US63-22 IPRO (MG 6.3; indeterminate), RA6422R (MG 6.4; indeterminate), P64T39 R (MG 6.4; indeterminate), US68-12 IPRO (MG 6.8; indeterminate), Y651 IPRO (MG 6.5; indeterminate), DM 61I63RSF IPRO (MG 6.6; indeterminate) and P71T74 R (MG 7.1; indeterminate).

Lake 253 RR (MG 5.5) (indeterminate) had the lowest reading of 4 cm in the warm area. Considerable harvest losses can occur due to low pod height; thus, pod height is an important factor influencing cultivar choice. Differences in pod height between localities can mainly be attributed to differences in row width and climate. A pod height of at least 7.5 cm (combine harvesting height) is preferable.

3.2.4 Lodging (Table 9)

The highest overall lodging occurred in the trial at Delmas. The highest lodging figures was reported for US63-22 IPRO and US68-12 IPRO at Delmas in the cool area.

3.2.5 Green stem (Table 10)

A high percentage of green stem was recorded at Bethlehem PD2 while the cultivars Lake 253 RR, US63-22 IPRO, US68-12 IPRO and P71T74 R showed an above average tendency for green stem for all the climatic regions. Plants also retained their leaves that could hamper the harvesting process.

3.2.6 Shattering with harvesting (Table 11)

No significant shattering occurred at any of the localities.

3.2.7 Number of plants three (3) weeks after emergence (Table 12)

Enough certified seed was provided to establish 400 000 plants ha^{-1} for the irrigation and high rainfall areas and 350 000 for dryland. The lowest plants ha^{-1} count were recorded at Alice due to the extreme drought. The cultivars Lake 253 RR and Lake 250 RR had in general a very low plant count.

3.2.8 Percentage undesirable seed (Table 13)

The lowest mean of 1.16% undesirable seeds was recorded for the cool region. The range varied from 2.89% at Heilbron to 0.27% at Cedara.

3.2.9 Mass (g 100^{-1}) seeds (Table 14)

The variation in seed mass among localities ranged between 11.88 g 100^{-1} seeds at Bethlehem PD1 to 17.69 g 100^{-1} seeds at Warrenton. The highest average seed mass was recorded for Lake 253 RR in the warm region, while LS 6851 R, had the smallest average seed in the cool area.

3.2.10 Oil percentage (Table 15)

P52T52 R and PAN 1521 R had an above average (>23%) for the moderate area. The average oil percentages are 20.43% for the cool-, 21.51% moderate- and 21.28% for the warm areas.

3.2.11 Crude Protein percentage (Table 16)

PAN 1555 R, RA5821 and PAN 1644 R had an above average percentage of 39% for all the climate regions. The overall averages are 39.15% for the cool-, 38.36% for the moderate- and 38.03% in the warm areas.

3.2.12 Profat (Table 17)

The inclusion of this table in the report was requested by Dr Erhard Bredenham as the total value of oil and protein is a much better indicator for the selection of a cultivar than the single oil or protein factor. The cultivars PAN 1515 R and LG60353R and PAN 1588 R had the highest average profat value (>60%) for all the regions.

3.2.13 Yield (Table 18)

Due to the sensitivity of soybean cultivars to environmental conditions, it is preferable to divide the soybean production areas into cool, moderate and warm regions. A better

yield can be established by choosing a cultivar suitably adapted for a specific region. It is also necessary to use data from more than one year to select between cultivars. Due to the significant cultivar and locality interaction, conclusions on cultivar performance should not be made from average yield data alone. The mean yield over localities has therefore been omitted.

4 INTERPRETATION OF YIELD RESULTS

4.1 INTRODUCTION

A stated aim of the national soybean cultivar trials is the evaluation of cultivars for their adaptability to a potential production area, and for their yield performance. Adaptability is especially important because soybean cultivars are known to be restricted in terms of recommended production area. This fact is also demonstrated by the results discussed in this report.

Because of genotypic restriction in adaptability the statistical analysis of data over all trial entries and localities tend to demonstrate strong interaction components which confound interpretation. Interaction makes genotype rankings at one site inapplicable to another site. The larger the interaction the more information is lost if interaction is not analysed effectively. This will be a lesser problem for homogeneous areas than for non-homogeneous areas. However, a purpose of the national trials is to identify homogeneous areas or homogeneous growing conditions based on cultivar performance. Localities were therefore grouped together based on past research experience and with the assistance of photo thermal charts provided by the Institute for Soil, Climate and Water. Localities were grouped in cool, moderate and warm production areas.

4.2 YIELD PROBABILITY AND YIELD (Tables 18, 19, 20, 21, 22, 23 & 24)

A minimum number of successful trials per climatic area are needed to calculate saved yield probability values. Yield probability tables are set up for cool-, moderate and warm regions, if enough data is available.

Yield probability of a cultivar is the chance to get an above average yield at a particular yield potential. For instance, if the yield probability of a cultivar, at a particular yield potential equals 60%, the chance to get a yield above the mean of all cultivars is 60% with a 40% chance of obtaining a yield below the mean. Thus a 60% probability indicated a 10% change of an above average yield, while a 40% probability indicated a 10% change of getting a below average yield.

RA565 R showed an above average yield probability for all the yield potentials in the cool, as well as the moderate areas (Tables 19 & 21). PAN 1521 R, performed above average for both the cool and warm areas (Tables 19 & 23). Y657 performed above average for the moderate and warm area (Tables 21 & 23). RA4918R, Y540 and P62T16 R only performed above average for the moderate area (Table 21), while RA660 R and P64T39 R showed an above average yield probability in the warm area (Table 23).

Lokaliteite, medewerkers en proeflokaliteit van kultivarproewe soos beplan vir, 2023/24
Localities, co-operators and trial locality of the cultivar trials for 2023/24

Nr No	Lokaliteit Locality	Proeflokaliteit Trial locality	Verantwoordelike beampte Responsible officer
1	Alice	Fort Hare Stellenbosch	Prof P Swanepoel & C Mutengwa
2	Barberspan	J Basson	G de Beer & L Bronkhorst
3-4	Bapsfontein	Corteva Agriscience Research Centre	J Serfontein
5	Belfast	G Roos	L Bronkhorst
6	Bergville	-	A Crocker
7-8	Bethlehem	Kleingraan Instituut ARC	L Bronkhorst
9	Brits		D van Staden
10	Cedara	Department of Agriculture	T Zulu
11	Chrissiesmeer	-	D van Staden
12	Clarens	D Terblanche	L Bronkhorst
13	Cornelia	-	C Pelster
14	Delareyville	-	C Pelster
15	Delmas (Agri Seed)	-	D van Staden
16	Greytown	Pannar Proefplaas	A Jarvie
17	Greytown Kranskop	-	A Crocker
18	Groblersdal (ARC)	-	L Bronkhorst
19	Heilbron	-	D van Staden
20	Hoopstad	R Taljaard	G de Beer & L Bronkhorst
21	Kinross	Vosstoffel Boerdery	L Bronkhorst
22	Kokstad	Research Stadion	MP Skhakhane
23	Kroonstad	Hoërskool Kroonstad	L Bronkhorst
24	Kroonstad (Agricol)	Blouskool	C Pelster
25	Leeudoringstad	D Bergh	G de Beer & L Bronkhorst
26	Lichtenburg	F du Plessis	C Pelster
27	Marquard	-	K van Wyk
28	Potchefstroom	Limagrain Research Station	F Middleton
29	Potchefstroom	Pannar Research station	A Jarvie
30	Rietvlei	-	A Venter
31-32	Schweizer-Reneke	J du Plessis	G de Beer & L Bronkhorst
33	Standerton	E Buurman	C Pelster
34	Umtata	Dimanda High School	M Mtyobile
35	Warrenton	-	F Middleton
36	Winterton	Terry Muirhead	F Middleton
37	Zanyokwe	-	Prof P Swanepoel/C Mutengwa

Tabel 1 Sojaboonsaad eienskappe en inligting oor verskaffers, 2023/24
Table 1 Soybean seed characteristics and information about agents, 2023/24

Kultivar Cultivar	Volwassenheids-groeperings Maturity Group	Groeiwyse Growth habit *1	Hilum kleur Hilum colour *2	Blomkleur Flower colour *3	Haarkleur Pubescence *4	Op varieteits lys On variety list	Verskaffer Agent	Telersregte Breeding rights
RA4918 R	4.9	I	BL	P	T	JA/YES	Agri Seed & Technology	JA/YES
NS 5258 R	4.9	I	BL	W	B	JA/YES	Limagrain (K2)	NEE/NO
DM 5351RSF	5.0	I	BL	W	T	JA/YES	GDM Seeds/Agricol	JA/YES
RA5022 BR	5.0	I	LB	W	G	NEE/NO	Agri Seed & Technology	NEE/NO
PAN 1515 R	5.0	I	B	P	T	JA/YES	Pannar	JA/YES
DM 53I54RSF IPRO	5.1	I	BL	P	T	JA/YES	GDM Seeds/Agricol	JA/YES
P52T52 R	5.2	I	B	P	T	JA/YES	Pioneer	JA/YES
LG60353R	5.3	I	DB	P	G	JA/YES	Limagrain	JA/YES
Y540	5.4	I	B	W	T	JA/YES	Southern Hemisphere Seeds	NEE/NO
RA565 R	5.5	I	B	P	G	JA/YES	Agri Seed & Technology	JA/YES
LAKE 253 RR	5.5	I	B	P	G	JA/YES	LAKE Agriculture	JA/YES
LS 6851 R	5.6	D	B	P	W	JA/YES	Limagrain	JA/YES
US56-26R	5.6	I	B	P	G	JA/YES	Unitedseeds	NEE/YES
PAN 1521 R	5.7	I	IB	P	G	JA/YES	Pannar	JA/YES
PAN 1555 R	5.7	I	B	P	T	JA/YES	Pannar	JA/YES
RA5821 R	5.8	I	IB	P	G	JA/YES	Agri Seed & Technology	JA/YES
LAKE 250 RR	5.8	I	B	W	T	JA/YES	LAKE Agrigulture	JA/YES
PAN 1588 R	5.9	I	IB	P	T	JA/YES	Pannar	JA/YES
RA660 R	6.0	I	B	P	G	JA/YES	Agri Seed & Technology	JA/YES
DM59R03	6.0	I	LB	W	G	JA/YES	GDM Seeds/Agricol	JA/YES
DM 59I60RSF IPRO	6.0	I	IB	P	G	JA/YES	GDM Seeds/Agricol	JA/YES
LG60260IPR	6.0	I	IB	P	G	JA/YES	Limagrain	JA/YES
LG60259R	6.0	I	LB	W	G	JA/YES	Limagrain	JA/YES
LG60261IPR	6.1	I	LB	W	G	JA/YES	Limagrain	JA/YES
P62T16 R	6.2	I	B	W	W	JA/YES	Pioneer	JA/YES
US63-22 IPRO	6.3	I	IB	P	T	NEE/NO	Unitedseeds	NEE/NO
RA6422 R	6.4	I	IB	P	G	NEE/NO	Agri Seed & Technology	NEE/NO
P64T39 R	6.4	I	KL	W	G	JA/YES	Pioneer	JA/YES
Y 657	6.5	I	B	P	G	JA/YES	Southern Hemisphere Seeds	NEE/NO
Y651 IPRO	6.5	I	IB	P	G	JA/YES	Southern Hemisphere Seeds	-
DM 68R09RSF	6.6	I	B	W	G	JA/YES	GDM Seeds/Agricol	JA/YES
DM 61I63RSF IPRO	6.6	I	LB	W	G	JA/YES	GDM Seeds/Agricol	JA/YES
PAN 1644 R	6.7	I	IB	P	G	JA/YES	Pannar	JA/YES
US68-12 IPRO	6.8	I	B	W	G	NEE/NO	Unitedseeds	NEE/NO
P71T74 R	7.1	I	KL	W	G	JA/YES	Pioneer	JA/YES

*1 D - Bepaald/determinate; I - Onbepaald/indeterminate; SD - Semi-Bepaald/semi deteminate

*2 BL - Swart/black; IB - Onvollodig swart/imperfect black; B - Bruin/brown; LB - Ligbruin/buff; G - Grys/grey; KL - Kleurloos/buff

*3 P - Pers/purple; W - Wit/white

*4 B - Bruin/brown; G - Grys/grey; W - Wit/white; T – Taankleurig/Tawn

Tabel 2 Algemene inligting aangaande grond en verbouiingpraktyke by die onderskeie proeflokaliteite van die kultivarproewe, 2023/24
Table 2 General information in connection with soil and cultivation practices at the different trial localities, 2023/24

Lokal Locality	Plantdatum Date of planting	Spasiëring Spacing (cm)	Onkruid beheer Weed control
Alice/D	28/11/2023	76	-
Barberspan/D	15/12/2023	76	Strongarm, Alahlor
Bapsfontein PD1/B/I	23/11/2023	91	-
Bapsfontein PD2/B/	19/12/2023	91	-
Belfast/D	16/11/2023	76	Strongarm, Alahlor
Bergville	Nie geplant/Not planted		
Bethlehem PD1/D	06/11/2023	76	Strongarm, Alahlor
Bethlehem PD2/D	04/12/2023	76	Strongarm, Alahlor
Brits/B/I	17/11/2023	76	-
Cedara/D	28/11/2023	45	-
Chrissiesmeer/D	17/10/2023	76	-
Clarens/D	08/11/2023	76	Strongarm, Alahlor
Cornelia/D	17/10/2023	91	-
Delareyville/D	20/12/2023	91	-
Delmas/D	26/10/2023	76	-
Greytown/D	10/11/2023	76	Glyphosate
Greytown Kranskop/D	21/11/2023	75	-
Groblersdal ARC/B/I	12/12/2023	76	Strongarm, Alachlor
Heilbron/D	13/11/2023	76	
Hoopstad/D	14/12/2023	76	None
Kinross/D	17/11/2023	76	Farmer spray paraquat
Kokstad/D	15/11/2023	45	Metolachlor, Glyphosate powermax
Kroonstad/D	05/12/2023	76	Strongarm, Alahlor
Kroonstad (Agricol)/D	10/11/2023	91	-
Leeudoringstad/D	14/12/2023	76	None
Lichtenburg/D	24/11/2023	91	-
Marquard	15/01/2024	76	-
Potchefstroom (Limagrain)/D	23/10/2023	76	-
Potchefstroom (Pannar)/B/I	23/11/2023	90	-
Rietvlei/B/I	19/12/2023	45	-
Schweizer Reneke/ PD1/D	09/11/2023	110	Round-up
Schweizer Reneke/ PD2/D	14/12/2023	110	Round-up
Standerton (Platrand)/D	06/11/2023	91	-
Umtata/D	22/11/2023	75	Round-up
Winterton/D	22/11/2023	76	Round-up
Warrenton/B/I	08/12/2023	76	-
Zanyokwe/B/I	29/11/2023	76	-

Tabel 3 Reënval en besproeiing vir die verskillende lokaliteite (mm), 2023/24
Table 3 Rainfall and irrigation at the different localities (mm), 2023/24

Lokaliteit	Maandelikse reënval (mm)/							Totaal	Besproeiing	Totaal
Locality	Monthly rainfall (mm)							Total	Irrigation	Total
	Okt	Nov	Des	Jan	Feb	Mrt	Apr	*		**
Barberspan	1	0	72	105	14	141	25	358	0	358
Bethlehem	64.77	57.91	135.13	60.71	43.94	9.65	81.53	453.64	0	453.64
Clarens	75.95	44.45	153.67	70.1	52.83	31.75	67.56	496.31	0	496.31
Greytown	151	48	158	114	25	44	32	572	0	572
Greytown Kranskop	0	134	141	189	120	40	98	722	0	722
Groblersdal	71.63	53.08	172.97	64.01	5.33	37.84	13.97	418.83	0	418.83
Hoopstad	23	31	116	118	26	14	140	468	0	468
Kinross	33.53	63.25	92.46	107.95	56.39	30.23	114.04	497.85	0	497.85
Kroonstad	59	56.8	174.2	110.2	45.6	14.6	192.2	652.6	0	652.6
Leeudoringstad	25	33	113	108	54	10	0	343	0	343
Schweizer Reneke PD1	29	26	61	94	42	8	83	343	0	343
Schweizer Reneke PD2	29	26	61	94	42	8	83	343	0	343

* Vir reënval/For rainfall
* Vir reënval en besproeiing/For rainfall and irrigation

Tabel 4 Die aantal dae vanaf plant tot 50% blomstadium van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 4 The number of days from planting to 50% flowering stage of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool										Matig/Moderate							Warm					
	Alice	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Zanyokwe	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Kroonstad	Potchefstroom (Limagrain)	Winterton	Gem/Mean	Brits	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	70	62	49	72	57	58	39	73	71	61	38	52	48	50	56	56	50	39	33	37	42	43	39
NS 5258 R	71	62	54	74	57	58	53	74	67	63	38	51	48	50	56	56	50	39	34	37	43	43	39
DM 5351 RSF	70	62	54	64	63	58	39	82	65	62	40	51	51	50	55	57	51	43	35	36	42	44	40
RA5022BR	71	62	54	72	61	58	53	74	64	63	40	54	48	45	55	55	50	43	38	39	44	45	42
PAN 1515R	70	62	54	75	76	63	62	82	67	68	40	60	49	55	55	61	53	43	42	38	47	45	43
DM 53I54 RSF IPRO	69	62	59	72	57	58	39	73	67	62	40	58	44	50	56	57	51	39	36	39	44	45	41
P52T52R	76	65	70	86	73	74	64	91	71	74	51	67	44	64	58	71	59	49	51	44	54	56	51
LG60353R	70	62	59	76	65	63	64	82	72	68	48	61	48	53	55	61	54	43	43	41	50	48	45
Y540	71	65	59	81	73	63	64	89	71	71	49	63	59	59	55	65	58	43	44	43	52	52	47
RA 565 R	70	75	70	87	76	74	69	86	66	75	51	66	59	64	57	67	61	43	53	43	51	53	49
LAKE 253 RR	81	86	78	94	83	76	69	96	67	81	52	71	59	69	61	81	66	49	47	45	52	58	50
LS6851R	73	83	70	75	76	63	69	93	68	74	44	66	59	64	55	70	60	49	46	43	52	54	49
US56-26R	71	65	65	83	65	74	64	90	71	72	54	66	44	64	57	69	59	49	53	43	65	53	53
PAN 1521R	79	62	78	86	76	76	69	90	67	76	53	67	63	66	57	72	63	43	55	42	56	58	51
PAN 1555R	81	78	78	94	83	76	77	97	76	82	49	70	59	69	65	74	64	54	53	33	65	61	53
RA5821R	71	78	78	81	76	63	69	89	70	75	53	66	59	66	57	69	62	43	51	45	61	54	51
LAKE 250 RR	82	83	78	84	76	74	62	96	70	78	55	71	62	66	58	80	65	49	51	44	53	61	52
PAN 1588R	77	90	78	78	83	74	82	93	75	81	51	69	62	73	63	75	65	43	56	44	58	60	52
RA660 R	70	78	70	86	63	74	69	89	66	74	53	67	59	64	58	67	61	49	48	43	53	53	49
DM 59R03 RSF	79	62	65	81	73	63	69	89	76	73	51	67	59	64	41	69	59	43	50	42	54	55	49
DM 59I60 RSF IPRO	72	73	70	86	76	74	69	90	69	75	54	68	59	67	61	78	65	49	48	42	55	57	50
LG60260IPR	82	65	78	86	90	76	85	99	71	81	54	71	59	73	64	74	66	54	52	45	65	60	55
LG60259R	81	78	70	84	76	74	77	95	78	79	51	67	59	66	58	70	62	49	49	45	53	58	51
LG60261IPR	72	86	78	94	83	74	77	95	77	82	53	70	62	67	63	78	66	49	56	45	54	61	53
P62T16R	80	78	70	94	76	74	74	95	77	80	54	70	63	66	58	74	64	49	54	46	57	60	53
US63-22 IPRO	76	65	70	86	79	74	77	99	69	77	52	70	65	73	59	78	66	49	55	41	57	60	52
RA6422BR	84	83	70	94	76	74	85	95	75	82	57	70	65	73	61	77	67	54	58	46	65	64	57
P64T39 R	88	90	70	92	76	74	85	96	76	83	59	69	69	69	62	73	67	49	55	44	55	57	52
Y657	75	83	70	86	79	76	64	93	76	78	57	68	63	66	62	74	65	49	54	48	55	61	53
Y651IPRO	85	86	78	94	88	74	85	100	71	85	51	71	64	73	61	78	66	49	55	54	65	62	57
DM 68R09 RSF	86	83	70	94	83	76	74	90	79	82	58	70	65	67	65	73	66	49	58	56	66	63	58
DM 61I63 RSF IPRO	93	83	70	94	83	76	82	95	80	84	57	67	65	73	65	79	68	49	58	54	67	62	58
PAN 1644R	72	78	70	84	76	76	77	89	77	78	55	67	64	64	65	71	64	54	55	56	62	57	57
US68-12 IPRO	92	78	92	101	100	82	85	105	86	91	60	78	69	73	78	82	73	59	64	53	68	67	62
P71T74 R	90	83	78	94	79	74	82	96	79	84	58	70	65	64	65	77	66	54	58	59	68	61	60
Gem/Mean	77	74	69	85	75	71	69	90	72	76	51	66	58	64	59	71	61	47	50	44	56	56	51

Tabel 5 Die aantal dae vanaf plant tot fisiologiesrypstadium van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 5 The number of days from planting to physiological maturity of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool							Matig/Moderate							Warm				
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Gem/Mean	Barberspan	Cedara	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	Winterton	Gem/Mean	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	112	122	135	126	119	146	127	110	111	114	112	121	118	115	112	112	118	125	117
NS 5258 R	112	122	135	126	119	146	127	99	118	107	112	122	128	114	103	112	118	125	114
DM 5351 RSF	112	122	122	126	119	146	125	102	118	107	112	124	121	114	112	112	118	126	117
RA5022BR	112	122	135	126	119	146	127	102	118	107	117	120	118	114	111	112	118	122	116
PAN 1515R	112	129	128	126	119	146	127	94	118	114	115	120	121	114	102	111	118	127	115
DM 53I54 RSF IPRO	112	122	122	126	119	146	125	100	126	125	114	126	122	119	102	113	118	127	115
P52T52R	151	129	149	145	132	156	144	117	138	122	113	121	122	122	125	121	120	128	123
LG60353R	140	129	128	141	132	147	136	109	121	114	112	121	120	116	111	118	118	126	118
Y540	140	129	135	141	124	148	136	110	127	121	115	126	120	120	118	123	118	127	122
RA 565 R	146	129	138	145	132	152	140	119	133	121	115	133	123	124	125	127	120	129	125
LAKE 253 RR	160	150	149	152	152	161	154	125	142	69	130	132	134	122	118	137	131	137	131
LS6851R	151	136	138	148	146	153	145	115	142	125	120	135	126	127	128	137	131	133	132
US56-26R	146	129	138	145	124	151	139	114	135	122	118	134	124	125	125	134	126	132	129
PAN 1521R	146	136	138	145	132	153	142	123	136	125	115	130	128	126	124	135	126	130	129
PAN 1555R	146	150	149	148	146	166	151	114	142	125	118	140	129	128	128	134	126	131	130
RA5821R	140	136	132	145	132	153	140	115	126	114	113	123	122	119	114	129	119	127	122
LAKE 250 RR	146	150	149	148	132	159	147	115	145	146	125	138	141	135	123	129	128	137	129
PAN 1588R	146	143	149	148	146	155	148	115	140	125	118	140	132	128	121	135	119	133	127
RA660 R	140	136	149	141	124	150	140	119	129	122	124	130	120	124	118	136	119	129	126
DM 59R03 RSF	146	143	135	145	132	153	142	115	136	122	124	132	125	126	123	136	119	130	127
DM 59I60 RSF IPRO	146	147	135	148	132	160	145	114	142	125	118	137	131	128	128	136	121	132	129
LG60260IPR	146	150	149	148	146	159	150	119	137	125	124	138	130	129	129	136	121	131	129
LG60259R	146	147	149	148	149	155	149	123	132	125	122	138	130	128	123	137	123	131	128
LG60261IPR	151	150	149	148	146	156	150	123	142	125	124	136	128	130	132	137	123	135	132
P62T16R	146	150	149	148	146	161	150	123	145	133	127	141	134	134	134	142	123	135	134
US63-22 IPRO	161	154	149	152	150	154	153	124	143	125	127	143	147	135	122	142	123	141	132
RA6422BR	146	150	155	148	146	163	151	123	145	146	128	139	141	137	135	143	136	138	138
P64T39 R	146	147	149	152	146	160	150	125	142	125	128	136	130	131	131	142	123	135	133
Y657	146	147	122	148	132	157	142	121	139	133	125	139	131	131	129	145	123	138	134
Y651IPRO	151	150	149	152	146	162	152	123	141	133	133	140	134	134	135	145	123	136	135
DM 68R09 RSF	146	164	149	148	132	152	149	124	142	133	132	139	127	133	126	144	123	137	132
DM 61I63 RSF IPRO	151	150	138	148	146	160	149	125	141	133	133	140	133	134	133	143	123	137	134
PAN 1644R	146	147	125	148	132	156	142	125	135	125	135	138	126	131	129	145	123	138	134
US68-12 IPRO	160	150	149	148	152	167	154	124	145	146	133	147	154	141	144	148	138	142	143
P71T74 R	146	150	149	148	150	162	151	127	142	133	135	144	137	136	144	148	136	139	142
Gem/Mean	141	140	141	144	136	155	143	116	135	123	122	133	129	126	123	133	123	132	128

Tabel 6 Die aantal dae vanaf plant tot oesstadium van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 6 The number of days from planting to maturity of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool							Matig/Moderate								Warm				
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	Winterton	Gem/Mean	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	146	150	154	148	146	163	151	140	139	157	133	118	133	133	136	118	125	129	136	127
NS 5258 R	146	150	149	148	151	166	152	102	129	157	133	118	133	133	129	118	125	129	136	127
DM 5351 RSF	155	155	154	148	146	163	153	123	129	157	133	118	142	133	134	131	125	129	136	130
RA5022BR	146	150	149	148	146	180	153	123	129	157	122	131	140	133	134	118	125	129	136	127
PAN 1515R	146	150	154	148	146	176	153	102	139	157	133	131	133	133	133	118	125	129	138	128
DM 53I54 RSF IPRO	146	150	149	148	146	185	154	102	146	161	137	118	140	133	134	118	125	129	136	127
P52T52R	160	168	179	161	160	192	170	140	156	161	142	131	140	136	144	131	138	129	139	134
LG60353R	160	164	168	161	146	191	165	140	135	161	133	118	133	133	136	118	138	129	136	130
Y540	160	164	177	161	146	190	166	140	140	161	142	131	140	133	141	131	138	129	138	134
RA 565 R	160	164	164	161	160	188	166	140	146	161	146	131	142	133	143	131	138	129	138	134
LAKE 253 RR	173	164	162	174	165	195	172	140	161	161	146	144	145	144	149	144	154	142	144	146
LS6851R	169	164	168	174	175	189	173	140	161	168	146	131	139	138	146	144	154	142	144	146
US56-26R	160	164	168	161	155	186	166	140	152	157	146	131	149	138	145	131	148	142	141	141
PAN 1521R	164	164	186	161	151	195	170	140	142	168	146	131	140	138	144	144	148	142	131	141
PAN 1555R	160	177	179	174	174	195	176	140	158	168	146	131	154	143	149	144	148	142	144	145
RA5821R	160	164	186	174	155	192	172	140	140	168	133	131	140	133	141	118	138	129	136	130
LAKE 250 RR	173	173	190	174	160	195	178	140	161	168	161	144	149	154	154	144	154	142	144	146
PAN 1588R	160	168	174	170	169	191	172	140	156	168	146	131	148	144	148	131	149	129	144	138
RA660 R	160	168	168	161	155	185	166	140	142	176	142	144	140	133	145	131	149	129	138	137
DM 59R03 RSF	163	173	177	179	160	195	175	140	144	166	146	131	146	141	145	131	151	142	144	142
DM 59I60 RSF IPRO	164	177	183	179	165	188	176	140	158	176	146	131	143	143	148	144	149	142	144	145
LG60260IPR	173	173	173	174	169	195	176	140	155	176	146	131	154	141	149	144	149	142	144	145
LG60259R	164	168	167	170	174	189	172	140	149	176	146	131	148	143	148	131	151	142	144	142
LG60261IPR	173	177	183	174	174	190	179	140	156	166	161	131	149	147	150	144	149	142	144	145
P62T16R	173	177	179	174	174	195	179	140	151	176	161	144	152	151	154	144	154	142	144	146
US63-22 IPRO	173	177	186	190	174	195	183	140	161	166	166	144	162	159	157	144	154	142	153	148
RA6422BR	173	177	179	174	174	191	178	140	161	176	177	144	151	154	158	144	154	142	147	147
P64T39 R	173	173	181	179	174	190	178	140	158	176	156	144	151	144	153	144	154	142	147	147
Y657	173	164	168	174	160	193	172	140	153	181	156	131	149	144	151	144	154	142	150	148
Y651IPRO	173	177	183	190	174	190	181	140	156	171	161	144	152	149	153	144	154	135	144	144
DM 68R09 RSF	173	177	186	174	169	195	179	140	158	181	161	144	154	141	154	144	154	142	144	146
DM 61I63 RSF IPRO	193	177	183	174	174	190	182	140	156	181	166	144	155	150	156	144	154	142	147	147
PAN 1644R	167	173	174	174	160	190	173	140	149	181	151	144	148	143	151	144	154	142	147	147
US68-12 IPRO	169	191	190	190	174	195	185	140	155	181	177	144	162	168	161	154	163	151	152	155
P71T74 R	172	177	190	190	174	187	182	140	161	181	177	144	165	151	160	154	167	151	153	156
Gem/Mean	164	168	173	169	162	188	171	136	150	169	149	134	146	142	147	136	146	137	142	140

Tabel 7 Die planthoogte van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 7 The plant height of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool								Matig/Moderate									Warm				
	Alice	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	52	73	57	47	62	70	62	60	40	59	80	58	55	87	52	73	63	83	65	86	77	78
NS 5258 R	40	69	63	43	55	65	55	56	35	54	98	55	45	62	67	70	61	85	62	82	70	75
DM 5351 RSF	60	65	68	55	63	67	65	63	45	61	115	58	60	88	60	85	72	85	67	95	77	81
RA5022BR	49	72	52	53	67	58	53	58	45	49	101	58	40	70	67	63	62	76	51	82	65	69
PAN 1515R	58	75	68	57	75	75	64	67	40	71	106	67	60	92	51	87	72	53	65	75	82	69
DM 53I54 RSF IPRO	56	75	65	57	73	68	54	64	40	57	102	52	40	75	61	83	64	70	74	76	73	73
P52T52R	53	67	65	47	80	65	60	62	45	69	97	63	45	88	43	75	66	82	66	85	85	80
LG60353R	46	72	55	52	63	68	60	59	30	55	77	72	45	72	66	80	62	48	65	73	85	68
Y540	52	72	63	45	62	73	57	61	40	61	100	62	52	95	58	72	67	60	74	85	85	76
RA 565 R	61	80	58	47	75	58	62	63	40	65	106	60	55	97	33	77	66	72	68	77	88	76
LAKE 253 RR	58	40	53	52	55	55	67	54	45	58	87	48	30	68	59	68	58	50	36	40	70	49
LS6851R	58	70	62	43	70	68	65	62	30	64	91	50	35	72	47	73	58	49	22	60	75	51
US56-26R	60	80	72	58	80	73	56	68	60	75	109	67	65	117	54	92	80	105	95	100	97	99
PAN 1521R	54	73	73	67	70	77	66	68	40	74	122	75	60	97	61	92	78	91	93	93	87	91
PAN 1555R	71	72	70	55	73	70	64	68	50	72	106	72	55	93	57	92	74	90	100	95	97	95
RA5821R	59	77	58	50	72	63	55	62	50	66	106	70	40	97	48	83	70	56	92	90	87	81
LAKE 250 RR	61	42	62	55	60	63	61	58	38	64	103	68	32	70	57	55	61	55	40	50	68	53
PAN 1588R	54	82	67	47	77	73	64	66	45	80	112	72	55	102	55	93	77	95	110	85	95	96
RA660 R	50	68	53	43	62	68	65	59	40	52	107	63	42	78	69	63	64	80	83	73	73	78
DM 59R03 RSF	59	80	70	48	72	73	69	67	45	77	104	70	65	88	59	88	74	85	96	95	95	93
DM 59I60 RSF IPRO	64	82	72	60	70	67	51	66	50	75	110	73	47	103	63	90	76	90	116	90	98	99
LG60260IPR	56	72	72	65	72	75	76	70	40	66	110	73	56	107	49	90	74	115	95	85	100	99
LG60259R	62	87	77	53	68	72	66	69	50	84	127	73	70	113	59	103	85	76	82	80	105	86
LG60261IPR	55	90	68	52	72	77	64	68	42	70	107	68	70	105	60	88	76	95	110	80	87	93
P62T16R	62	75	73	57	73	68	66	68	45	74	109	65	57	82	53	85	71	102	103	80	105	98
US63-22 IPRO	66	75	72	70	75	70	67	71	45	81	116	75	46	102	61	105	79	112	110	95	87	101
RA6422BR	59	80	72	52	73	72	71	68	45	76	102	72	65	102	70	80	76	116	96	90	103	101
P64T39 R	53	78	80	53	68	78	69	69	60	72	116	75	60	95	69	85	79	95	97	85	93	93
Y657	50	85	70	52	72	67	61	65	50	80	120	57	52	97	54	82	74	115	107	75	100	99
Y651IPRO	71	75	80	67	73	83	78	75	40	85	126	67	60	117	61	95	81	110	126	90	95	105
DM 68R09 RSF	65	65	65	55	75	65	66	65	45	72	112	58	48	103	50	90	72	75	103	90	92	90
DM 61I63 RSF IPRO	64	75	73	55	82	75	80	72	45	77	125	72	60	113	52	87	79	120	110	92	95	104
PAN 1644R	58	80	60	55	67	10	70	57	40	74	80	67	50	95	61	77	68	100	112	95	97	101
US68-12 IPRO	68	87	75	77	65	70	82	75	40	91	137	88	60	113	55	103	86	125	126	95	100	111
P71T74 R	77	78	73	50	68	72	77	71	50	82	116	68	48	108	65	82	77	117	121	90	112	110
Gem/Mean	58	74	67	54	70	68	65	65	44	70	107	66	52	93	57	83	71	87	87	83	89	86

Tabel 8 Die peulhoogte van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 8 The pod height of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool							Matig/Moderate									Warm				
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	8	6	6	7	4	15	8	3	12	10	6	5	8	14	5	8	10	12	10	6	9
NS 5258 R	7	7	6	3	4	10	6	3	10	12	4	5	5	13	4	7	12	11	10	4	9
DM 5351 RSF	3	5	8	7	5	14	7	5	12	24	3	10	5	18	7	11	10	12	15	7	11
RA5022BR	8	2	8	7	4	13	7	5	11	10	6	4	6	10	5	7	12	9	9	3	8
PAN 1515R	7	7	8	6	7	15	8	4	14	13	6	4	10	13	7	9	9	11	8	9	9
DM 53I54 RSF IPRO	7	3	8	7	6	14	8	4	10	12	5	5	12	14	5	8	10	12	7	5	9
P52T52R	8	9	9	9	9	20	11	4	15	14	8	4	10	14	13	10	15	11	10	10	11
LG60353R	9	7	9	6	8	16	9	2	13	15	7	5	7	14	7	9	9	9	10	7	9
Y540	9	6	6	6	9	18	9	4	13	22	6	3	7	16	9	10	7	9	10	8	8
RA 565 R	10	8	9	8	9	19	11	3	16	14	6	4	10	14	10	10	10	12	11	12	11
LAKE 253 RR	1	5	9	4	7	18	7	4	9	16	4	2	8	12	7	8	3	3	5	6	4
LS6851R	7	7	9	8	8	18	10	2	15	21	6	3	5	14	8	9	4	2	10	10	7
US56-26R	7	7	9	8	10	19	10	5	15	31	7	5	10	11	13	12	20	16	16	18	18
PAN 1521R	10	8	13	8	10	21	12	4	16	15	8	5	7	14	10	10	15	15	14	10	14
PAN 1555R	10	14	12	10	11	25	14	10	18	26	9	3	8	12	15	13	20	20	15	17	18
RA5821R	10	7	9	8	7	18	10	5	12	15	8	4	8	13	9	9	8	14	11	7	10
LAKE 250 RR	4	4	10	6	7	21	9	2	14	24	7	2	5	12	4	9	7	4	7	6	6
PAN 1588R	10	9	9	10	9	17	11	3	19	24	8	8	9	12	15	12	12	21	9	11	13
RA660 R	9	8	6	8	9	16	9	3	13	5	6	5	11	11	7	8	11	15	7	11	11
DM 59R03 RSF	9	10	9	7	9	18	10	3	17	17	8	6	10	14	8	10	11	20	13	8	13
DM 59I60 RSF IPRO	10	11	11	9	12	16	11	5	16	24	9	4	9	15	16	12	15	26	15	19	19
LG60260IPR	9	10	12	9	12	24	13	3	14	17	8	4	8	11	14	10	25	17	13	17	18
LG60259R	12	9	8	9	11	19	11	5	19	23	9	10	18	12	15	14	12	11	12	20	14
LG60261IPR	15	11	11	11	14	21	14	8	17	25	10	10	7	15	15	13	18	19	17	18	18
P62T16R	10	11	12	10	10	19	12	4	14	17	7	4	12	16	11	10	20	20	12	16	17
US63-22 IPRO	15	12	15	10	12	19	14	4	16	35	8	4	16	11	15	14	20	19	19	16	19
RA6422BR	15	9	11	8	10	19	12	8	15	17	11	6	12	14	13	12	20	16	18	17	18
P64T39 R	12	9	10	9	12	19	12	6	15	32	8	3	10	16	12	13	20	18	14	12	16
Y657	9	8	8	8	9	16	10	5	17	15	6	5	14	16	11	11	20	21	15	14	18
Y651IPRO	14	14	14	12	15	27	16	3	18	33	10	4	18	15	17	15	25	29	20	19	23
DM 68R09 RSF	7	12	9	9	9	18	11	4	15	18	7	5	9	13	12	10	7	19	18	11	14
DM 61I63 RSF IPRO	11	11	12	11	12	27	14	4	17	41	9	6	12	13	11	14	25	24	19	16	21
PAN 1644R	8	10	9	9	10	21	11	4	15	16	8	5	9	17	7	10	20	24	20	11	19
US68-12 IPRO	11	13	15	11	12	23	14	4	19	22	11	5	12	17	22	14	28	19	20	23	23
P71T74 R	10	10	10	9	11	20	12	5	16	29	9	3	7	16	12	12	28	23	25	22	24
Gem/Mean	9	9	10	8	9	19	11	4	15	20	7	5	10	14	11	11	15	15	13	12	14

Tabel 9 Omvalwaarnemings (1-5) van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24

Table 9 Lodging dat (1-5) of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool										Matig/Moderate										Warm					
	Bapsfontein PD1	Bapsfontein PD2	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Greytown Pannar	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.00	1.00	1.00	1.00	1.07	1.00	1.00	1.00	1.00	1.00	1.00
NS 5258 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 5351 RSF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA5022BR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PAN 1515R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 53I54 RSF IPRO	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
P52T52R	1.33	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.26	1.00	1.00	1.00	4.00	1.00	1.00	1.00	1.00	1.33	1.37	1.00	1.00	1.00	1.00	1.00	1.00
LG60353R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Y540	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA 565 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LAKE 253 RR	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LS6851R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
US56-26R	1.67	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.30	1.00	1.00	1.00	2.33	1.00	1.00	1.00	1.00	1.00	1.15	3.00	1.00	1.00	1.00	1.33	1.47
PAN 1521R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.04	2.00	1.00	1.00	1.00	1.00	1.20
PAN 1555R	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA5821R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.00	1.00	1.00
LAKE 250 RR	1.33	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.04	1.00	1.00	1.00	1.00	1.00	1.00
PAN 1588R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA660 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 59R03 RSF	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.11	1.00	1.00	1.00	2.33	1.00	1.00	1.00	1.00	1.00	1.15	1.00	1.00	1.00	1.00	1.00	1.00
DM 59I60 RSF IPRO	1.33	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.15	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.04	2.00	1.00	1.00	1.00	1.00	1.20
LG60260IPR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.20
LG60259R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.33	1.00	1.00	1.00	1.00	1.00	1.15	1.00	1.00	1.00	1.00	1.00	1.00
LG60261IPR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P62T16R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.00	1.00	1.00	1.00	1.00	1.07	1.00	1.00	1.00	1.00	1.00	1.00
US63-22 IPRO	1.67	1.00	1.00	1.00	1.00	1.00	5.00	1.00	1.00	1.52	1.00	1.00	1.00	1.67	1.00	1.00	1.00	1.00	1.00	1.07	2.00	1.00	1.00	1.00	3.00	1.60
RA6422BR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P64T39 R	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.67	1.00	1.00	1.00	1.00	1.00	1.07	1.00	1.00	1.00	1.00	1.00	1.00
Y657	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Y651IPRO	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.22	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
DM 68R09 RSF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.20
DM 61I63 RSF IPRO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.20
PAN 1644R	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.22	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.33	1.27
US68-12 IPRO	1.67	1.00	1.00	1.00	1.00	1.00	5.00	1.00	1.00	1.52	1.00	1.00	1.00	1.67	1.00	1.00	1.00	1.00	1.00	1.07	4.00	1.00	1.00	1.00	3.00	2.00
P71T74 R	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.11	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.04	2.00	1.00	1.00	1.00	2.00	1.40
Gem/Mean	1.10	1.03	1.00	1.00	1.00	1.00	1.57	1.00	1.00	1.08	1.00	1.00	1.00	1.37	1.00	1.00	1.00	1.00	1.02	1.04	1.37	1.00	1.00	1.00	1.16	1.11

Tabel 10 Groenstam (1-5) van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 10 Greenstem (1-5) of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool									Matig/Moderate										Warm			
	Bapsfontein PD1	Bapsfontein PD2	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Greytown Pannar	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Gem/Mean
RA4918RR	1.00	1.00	2.33	1.00	2.00	1.00	1.00	1.00	1.29	5.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.00	1.48	2.00	1.67	1.00	1.56
NS 5258 R	1.00	1.00	1.00	1.00	3.33	2.00	1.00	1.00	1.42	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	1.00	1.00	1.00	1.00
DM 5351 RSF	1.00	1.00	4.67	2.00	3.67	2.33	1.00	1.00	2.08	2.67	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.22	1.00	1.00	3.00	1.67
RA5022BR	1.00	1.00	3.67	1.00	2.00	1.00	1.00	1.00	1.46	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	2.00	2.00	1.00	1.67
PAN 1515R	1.00	1.00	1.00	1.00	3.00	1.00	1.00	1.00	1.25	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 53I54 RSF IPRO	1.00	1.00	2.67	1.00	2.67	1.33	1.00	1.00	1.46	2.00	1.00	1.00	1.00	1.33	2.00	1.00	1.00	1.00	1.26	2.00	1.00	1.00	1.33
P52T52R	1.00	1.00	1.00	1.67	4.00	1.00	1.00	1.00	1.46	3.00	1.00	1.00	1.33	1.00	3.00	1.00	1.00	1.00	1.48	1.00	1.00	2.00	1.33
LG60353R	1.00	1.00	1.00	1.00	3.67	1.00	1.00	1.00	1.33	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.22	2.00	2.00	1.00	1.67
Y540	1.00	1.00	1.00	1.33	3.00	1.33	1.00	1.00	1.33	3.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.26	2.00	2.00	1.00	1.67
RA 565 R	1.00	1.00	1.00	1.00	4.33	1.00	1.33	1.00	1.46	4.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.00	2.67	2.00	1.89
LAKE 253 RR	1.00	1.00	4.00	1.33	3.67	1.00	1.33	1.00	1.79	4.00	1.33	1.00	1.00	4.00	1.00	1.00	1.00	1.33	1.74	5.00	4.33	4.67	4.67
LS6851R	1.00	1.00	1.00	1.33	2.33	1.00	2.00	1.00	1.33	2.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.33	5.00	5.00	4.33	4.78
US56-26R	1.33	1.00	1.00	1.00	3.33	1.33	1.00	1.00	1.38	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	2.00	1.00	1.00	1.33
PAN 1521R	1.00	1.00	1.00	1.00	3.67	2.00	1.00	1.00	1.46	3.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.33	2.00	1.00	1.00	1.33
PAN 1555R	1.00	1.00	2.33	3.67	3.00	2.33	3.67	1.00	2.25	3.00	1.00	1.00	1.00	3.33	1.00	1.00	1.00	1.33	1.52	3.00	1.33	1.00	1.78
RA5821R	1.00	1.00	1.33	1.33	2.33	1.00	1.00	1.00	1.25	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.11	2.00	2.00	1.00	1.67
LAKE 250 RR	1.33	-	2.00	1.33	3.00	1.00	1.67	1.00	1.62	5.00	1.00	1.00	1.00	2.00	3.00	1.00	1.00	1.33	1.81	5.00	5.00	5.00	5.00
PAN 1588R	1.00	1.00	1.00	1.67	3.67	1.00	1.33	1.00	1.46	2.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.22	2.00	1.00	2.00	1.67
RA660 R	1.00	1.00	1.00	1.67	4.67	1.00	1.00	1.00	1.54	5.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.44	1.00	1.33	1.00	1.11
DM 59R03 RSF	1.00	1.00	1.67	1.00	3.67	1.00	1.00	1.00	1.42	2.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.22	2.00	1.00	1.00	1.33
DM 59I60 RSF IPRO	1.00	1.00	1.00	1.33	2.67	1.00	1.33	1.00	1.29	2.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.15	1.00	1.00	1.00	1.00
LG60260IPR	1.00	1.00	1.00	2.00	2.67	1.00	2.67	1.00	1.54	2.00	1.33	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.26	1.00	2.00	1.00	1.33
LG60259R	1.00	1.67	1.33	1.67	4.00	2.00	2.00	1.00	1.83	3.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.22	2.00	2.00	2.00	2.00
LG60261IPR	1.00	1.67	5.00	1.67	4.00	2.00	2.67	1.00	2.38	4.00	1.00	1.00	1.00	3.67	3.00	1.00	1.00	1.33	1.89	2.00	1.00	1.00	1.33
P62T16R	1.00	1.33	1.33	2.33	3.33	1.67	3.00	1.00	1.88	4.00	1.00	1.00	1.00	3.33	1.00	1.00	1.00	1.67	1.67	2.00	2.00	1.00	1.67
US63-22 IPRO	1.00	2.33	2.00	2.67	3.33	2.00	2.67	1.00	2.13	3.00	1.00	1.00	2.33	2.33	1.00	1.00	1.00	3.00	1.74	3.00	3.00	1.00	2.33
RA6422BR	1.00	1.00	1.00	1.33	2.67	1.33	3.00	1.00	1.54	3.00	1.00	1.00	3.00	4.00	1.00	1.00	1.00	3.33	2.04	4.67	1.00	2.00	2.56
P64T39 R	1.00	1.33	1.00	1.67	3.33	1.33	2.00	1.00	1.58	2.00	1.00	1.00	1.67	2.33	1.00	1.00	1.00	1.33	1.37	2.00	2.00	1.00	1.67
Y657	1.00	1.00	1.00	1.00	3.67	1.00	1.00	1.00	1.33	2.00	1.00	1.00	1.00	2.00	3.00	1.00	1.00	1.00	1.44	2.00	1.00	1.00	1.33
Y651IPRO	1.00	1.33	1.00	3.33	3.00	2.00	3.33	1.00	2.00	2.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	2.00	1.26	2.00	3.00	2.33	2.44
DM 68R09 RSF	1.00	1.00	1.00	1.67	3.00	1.33	2.67	1.00	1.58	3.00	1.00	1.00	1.67	3.33	1.00	1.00	1.00	1.67	1.63	2.00	2.67	1.00	1.89
DM 61I63 RSF IPRO	1.33	1.00	1.00	3.00	3.33	1.33	2.67	1.33	1.88	2.00	1.00	1.00	1.00	3.67	1.00	1.00	1.00	1.67	1.48	1.00	3.00	1.00	1.67
PAN 1644R	1.00	1.00	1.00	2.33	3.67	1.00	1.33	1.00	1.54	4.00	1.00	1.00	1.33	3.00	2.00	1.00	1.00	1.00	1.70	1.00	3.00	2.00	2.00
US68-12 IPRO	2.33	1.00	3.33	5.00	3.33	3.00	5.00	1.67	3.08	4.00	1.00	1.00	4.00	5.00	1.00	1.00	1.00	4.00	2.44	5.00	1.00	5.00	3.67
P71T74 R	1.00	1.00	2.33	2.67	3.00	1.33	3.67	1.00	2.00	4.00	1.00	1.00	3.33	4.00	1.00	1.00	1.00	1.33	1.96	5.00	2.00	1.00	2.67
Gem/Mean	1.07	1.11	1.71	1.74	3.26	1.40	1.84	1.03	1.65	2.90	1.02	1.00	1.31	2.08	1.34	1.00	1.00	1.35	1.45	2.28	1.94	1.70	1.97

Tabel 11 Oopspring (1-5) van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 11 Shattering (1-5) of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool									Matig/Moderate								Warm				
	Bapsfontein PD1	Bapsfontein PD2	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Gem/Mean	Barberspan	Greytown Kranskop	Greytown Pannar	Kroonstad	Leeudoringstad	Potchefstroom (Limagrain)	Winterton	Gem/Mean	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NS 5258 R	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00
DM 5351 RSF	2.00	1.00	1.00	1.00	1.33	1.00	1.00	1.00	1.17	1.00	1.00	1.67	1.00	1.00	1.00	1.00	1.10	1.00	1.00	1.00	1.00	1.00
RA5022BR	1.33	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.17	1.00	1.00	1.33	1.00	1.00	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00
PAN 1515R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 53I54 RSF IPRO	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.13	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P52T52R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LG60353R	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Y540	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA 565 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LAKE 253 RR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LS6851R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
US56-26R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PAN 1521R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PAN 1555R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA5821R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LAKE 250 RR	1.00	-	1.00	1.00	1.33	1.00	1.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PAN 1588R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
RA660 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 59R03 RSF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 59I60 RSF IPRO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LG60260IPR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LG60259R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LG60261IPR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P62T16R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
US63-22 IPRO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.14	1.00	1.00	1.00	1.00	1.00
RA6422BR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P64T39 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Y657	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Y651IPRO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 68R09 RSF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
DM 61I63 RSF IPRO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PAN 1644R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
US68-12 IPRO	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P71T74 R	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Gem/Mean	1.12	1.00	1.00	1.00	1.05	1.00	1.00	1.00	1.02	1.00	1.00	1.07	1.00	1.00	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00

Tabel 12 Die planttelling drie weke na opkoms (x 1000) van die verskillende sojaboonkultivars by die verskillende proeflokaliteite, 2023/24
Table 12 The number of plants three weeks after germinations (x 1000) of the different soybean cultivars at the different trial localities, 2023/24

	Koel/Cool										Matig/Moderate									Warm					
Kultivar Cultivar	Alice	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Kinross	Kokstad	Marquard	Zanyokwe	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Kroonstad	Kroonstad (Agricol)	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	52	231	191	298	189	231	264	313	277	227	153	422	335	95	209	268	356	167	251	133	198	125	84	281	164
NS 5258 R	56	272	236	325	240	254	309	315	349	262	127	432	372	149	253	212	438	168	269	148	319	152	99	307	205
DM 5351 RSF	62	283	253	313	212	177	208	298	312	235	135	369	313	147	201	261	412	184	253	115	286	145	112	270	186
RA5022BR	41	196	240	312	197	181	263	310	221	218	137	349	302	164	212	236	371	232	250	145	321	116	93	279	191
PAN 1515R	112	198	182	241	95	226	194	297	298	205	140	360	307	154	237	232	346	144	240	138	168	126	80	260	154
DM 53I54 RSF IPRO	55	134	186	287	142	136	149	265	206	173	86	237	355	69	169	171	364	145	199	148	135	133	101	213	146
P52T52R	54	254	243	300	162	236	291	324	221	232	148	413	347	186	308	264	391	208	283	196	300	125	141	288	210
LG60353R	119	222	198	282	149	244	226	352	267	229	151	375	312	168	281	228	264	174	244	191	322	114	122	293	208
Y540	92	178	209	281	162	243	224	266	235	210	153	360	345	133	253	221	343	180	249	199	176	91	136	239	168
RA 565 R	46	268	255	283	161	235	279	356	317	244	145	396	307	217	311	251	352	206	273	186	303	89	117	329	205
LAKE 253 RR	78	32	56	199	42	63	162	279	259	130	92	268	337	25	190	100	322	74	176	107	289	83	53	179	142
LS6851R	145	219	232	297	195	226	259	368	289	248	178	359	347	174	152	201	390	195	249	184	275	128	130	300	204
US56-26R	60	215	169	301	151	223	247	286	282	215	138	381	357	180	260	250	319	160	255	125	292	150	127	236	186
PAN 1521R	56	286	229	272	252	238	263	326	333	251	158	430	308	156	325	296	362	198	279	209	347	144	101	320	224
PAN 1555R	88	260	237	269	211	208	252	308	268	233	153	337	327	147	223	210	339	184	240	155	249	89	90	266	170
RA5821R	98	243	234	314	205	182	239	315	280	234	181	390	315	161	303	281	366	224	278	158	311	129	134	346	216
LAKE 250 RR	52	109	32	211	48	18	146	212	189	113	63	260	355	14	161	130	311	91	173	41	242	110	57	93	108
PAN 1588R	117	245	214	300	198	231	271	369	176	236	188	419	362	218	314	274	394	197	296	191	311	166	138	329	227
RA660 R	111	252	242	311	209	245	323	342	263	255	245	416	318	208	243	282	335	195	280	188	291	104	146	326	211
DM 59R03 RSF	54	225	223	298	217	211	286	309	334	240	105	431	352	162	245	241	361	197	262	209	289	148	144	251	208
DM 59I60 RSF IPRO	69	232	236	303	195	238	222	319	310	236	164	388	337	195	314	207	302	188	262	137	300	154	159	294	209
LG60260IPR	58	263	219	307	181	249	378	318	256	248	184	397	347	188	234	314	389	191	280	133	275	107	160	287	192
LG60259R	35	275	223	265	205	191	241	317	252	223	163	389	352	196	170	209	381	188	256	153	304	113	126	275	194
LG60261IPR	84	260	213	247	209	200	300	334	359	245	125	418	307	184	198	277	403	228	267	151	209	166	145	293	193
P62T16R	37	192	222	310	212	205	267	327	313	232	125	346	325	154	172	240	355	159	234	148	249	156	93	261	181
US63-22 IPRO	47	264	221	313	230	248	308	343	301	253	179	408	333	168	183	219	388	186	258	141	292	140	123	246	189
RA6422BR	126	263	228	314	206	186	223	354	345	249	130	396	308	207	336	222	343	159	263	169	308	115	123	296	202
P64T39 R	124	258	217	279	163	235	259	343	257	237	141	376	350	162	308	274	374	140	266	188	260	135	89	261	186
Y657	96	257	231	296	170	240	237	317	287	237	160	391	330	129	121	248	349	160	236	140	292	138	81	264	183
Y651IPRO	67	220	222	293	189	241	309	295	289	236	191	368	347	123	209	244	349	196	253	112	256	99	129	261	171
DM 68R09 RSF	37	245	212	280	184	220	248	337	254	224	112	350	333	157	150	248	373	199	240	194	220	105	143	241	180
DM 61I63 RSF IPRO	49	235	240	272	169	200	320	322	291	233	138	408	310	122	172	311	315	174	244	166	169	121	103	236	159
PAN 1644R	71	259	214	289	213	231	350	333	299	251	163	374	337	229	157	249	381	169	257	188	267	132	109	272	193
US68-12 IPRO	30	260	253	329	200	228	288	343	337	252	181	402	317	228	201	258	366	184	267	209	242	120	172	313	211
P71T74 R	97	189	188	293	191	221	272	310	306	230	163	367	338	233	238	289	363	166	270	140	267	148	120	285	192
Gem/Mean	73	228	212	288	181	210	259	318	281	228	148	377	333	160	229	241	359	177	253	158	267	126	117	271	188

Tabel 13 Persentasie ongewenste sade van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 13 Percentage undesirable seed of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool									Matig/Moderate											Warm						
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Standerton	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	0.41	0.77	0.30	0.52	0.45	0.73	0.51	2.12	0.73	2.10	0.51	0.23	0.93	1.36	1.15	1.04	0.63	0.47	0.98	0.94	1.60	0.79	2.55	1.21	0.16	0.94	1.26
NS 5258 R	0.71	1.34	0.88	0.52	0.36	0.68	0.14	0.95	0.70	8.29	0.13	0.14	2.87	0.48	0.71	1.77	0.33	0.62	0.63	1.70	1.25	1.51	2.92	1.12	0.05	2.07	1.37
DM 5351 RSF	2.46	0.34	0.90	0.53	0.39	0.52	0.30	0.88	0.79	1.52	0.26	0.38	2.36	1.40	0.55	2.86	0.00	0.60	0.64	1.10	1.34	1.14	1.12	0.65	0.23	0.20	0.90
RA5022BR	0.85	0.50	1.30	0.93	0.09	0.57	3.08	1.65	1.12	6.43	0.27	0.16	1.16	2.64	0.24	4.29	0.55	0.37	1.20	1.79	0.94	0.69	2.35	0.40	0.39	0.93	0.95
PAN 1515R	0.72	0.32	1.71	0.39	0.53	1.03	0.52	0.99	0.78	6.23	0.19	0.16	1.38	0.86	0.29	1.33	0.23	0.45	0.97	1.24	0.61	3.23	1.87	2.49	0.50	1.42	1.74
DM 53I54 RSF IPRO	2.23	0.34	1.01	0.61	0.69	0.77	0.89	1.52	1.01	1.59	0.27	0.25	1.77	0.98	0.80	1.72	0.00	0.97	0.46	0.93	4.04	1.58	1.41	1.16	0.61	0.90	1.76
P52T52R	0.77	1.05	0.84	0.42	0.65	1.24	0.51	1.11	0.82	1.77	0.41	0.31	1.47	1.05	1.04	1.63	0.29	0.06	1.19	0.89	1.24	1.32	1.01	1.16	0.54	1.08	1.05
LG60353R	0.38	1.88	0.23	0.24	0.00	1.18	0.76	1.71	0.80	3.82	0.41	0.15	2.81	2.62	0.43	2.18	0.17	0.27	0.76	1.43	0.86	1.71	1.96	0.38	1.38	0.59	1.26
Y540	0.68	1.85	1.60	0.59	0.55	3.02	0.33	1.73	1.29	1.39	0.56	0.98	1.69	2.59	1.33	1.38	1.31	0.42	0.83	1.29	0.71	1.07	1.54	0.86	1.12	0.85	1.06
RA 565 R	0.79	1.34	1.98	1.45	0.29	7.32	0.41	1.97	1.94	1.17	0.35	0.24	1.85	0.80	0.76	1.55	0.09	0.39	0.27	0.80	0.98	1.28	1.52	0.22	0.82	0.68	0.96
LAKE 253 RR	0.38	1.30	0.38	0.81	0.94	1.23	0.34	1.13	0.81	1.70	0.16	0.31	2.44	1.96	0.82	2.02	0.00	0.07	0.41	1.05	1.21	1.33	1.97	1.01	1.28	1.06	1.36
LS6851R	0.93	4.39	0.82	1.34	0.69	4.22	0.00	1.49	1.74	3.59	0.44	0.08	5.29	5.59	2.11	2.20	0.00	0.47	5.46	2.20	0.60	1.80	3.23	0.86	1.79	0.71	1.66
US56-26R	0.08	1.77	1.03	0.65	0.89	2.58	0.38	2.25	1.20	1.44	0.12	0.46	2.53	2.05	0.76	2.37	0.83	0.20	0.56	1.20	0.88	0.69	2.13	0.85	1.71	1.02	1.25
PAN 1521R	0.29	0.72	2.53	0.83	0.91	1.15	0.63	2.11	1.15	1.25	0.60	0.49	3.41	2.18	0.45	1.03	0.71	0.44	0.43	1.17	1.16	2.34	1.68	0.68	0.73	0.71	1.32
PAN 1555R	0.40	1.44	1.48	1.05	0.58	1.77	0.80	0.95	1.06	1.33	0.00	0.08	3.22	1.73	0.77	3.06	2.61	0.44	0.96	1.47	2.01	2.18	1.45	0.63	1.14	1.21	1.48
RA5821R	0.41	2.67	0.95	0.91	0.81	1.73	0.52	1.17	1.15	1.16	0.52	0.45	2.98	3.22	1.93	3.01	0.52	0.51	0.75	1.59	1.85	1.38	1.82	0.21	1.77	0.34	1.41
LAKE 250 RR	0.58	0.31	1.34	0.32	0.79	1.57	0.06	0.90	0.73	2.51	0.00	0.21	3.50	2.32	1.11	2.93	1.76	0.45	0.96	1.64	2.09	1.06	2.16	0.77	1.15	1.15	1.45
PAN 1588R	0.33	2.05	1.91	0.68	0.25	1.56	0.29	0.85	0.99	3.37	0.17	0.64	1.71	2.51	0.82	2.08	0.50	0.56	1.28	1.37	1.06	1.40	2.52	0.21	2.54	0.57	1.55
RA660 R	2.73	1.94	2.25	2.23	0.21	7.28	0.41	0.80	2.23	3.03	0.04	0.15	2.99	1.50	0.81	1.77	0.19	0.09	0.69	1.17	1.34	1.58	2.95	0.83	1.47	0.27	1.63
DM 59R03 RSF	0.41	1.01	1.97	1.85	0.39	2.43	0.13	1.35	1.19	1.95	0.30	0.28	2.96	1.42	2.04	2.54	0.72	0.67	0.75	1.43	1.09	1.05	2.62	1.44	2.37	1.07	1.71
DM 59I60 RSF IPRO	0.76	4.99	0.84	0.73	0.74	2.37	0.50	0.31	1.41	1.98	0.28	0.81	2.43	1.96	1.21	1.87	0.15	0.02	1.87	1.19	0.51	1.51	1.89	0.16	3.25	0.55	1.46
LG60260IPR	0.26	3.69	1.01	1.37	0.84	2.25	0.35	1.61	1.42	2.02	0.30	0.32	3.76	1.07	1.01	2.69	0.28	0.23	0.97	1.30	0.94	0.41	1.73	0.87	3.38	0.82	1.47
LG60259R	0.71	1.60	1.62	0.62	0.18	1.68	0.33	2.13	1.11	1.88	0.00	0.46	3.76	1.81	1.51	2.63	1.05	0.09	0.67	1.47	2.96	1.26	1.75	0.36	1.93	0.43	1.65
LG60261IPR	0.75	3.73	1.46	1.72	0.42	1.95	0.34	1.11	1.44	1.40	0.00	0.32	3.00	2.62	0.38	2.16	1.15	0.03	1.33	1.23	0.66	0.44	1.03	0.00	3.87	1.35	1.20
P62T16R	0.30	4.06	0.44	3.40	0.73	2.29	0.28	1.84	1.67	1.65	0.65	0.24	2.77	3.64	1.97	1.38	1.19	1.17	1.25	1.63	1.49	1.70	2.08	0.34	2.47	0.71	1.62
US63-22 IPRO	0.67	4.61	1.18	1.24	0.78	1.36	0.26	0.76	1.36	2.00	0.05	0.44	3.08	5.71	0.80	1.54	0.80	0.21	1.22	1.63	1.29	0.42	2.49	0.48	2.25	1.03	1.39
RA6422BR	0.35	1.21	0.72	0.95	0.59	1.48	0.42	0.56	0.79	1.03	0.25	0.67	4.53	2.58	1.41	2.03	1.13	0.08	0.74	1.52	1.09	1.28	3.57	0.76	4.00	1.16	2.14
P64T39 R	0.21	2.23	1.12	2.46	0.90	2.20	0.00	0.85	1.25	2.97	0.50	0.96	4.00	3.89	2.54	2.77	1.03	0.15	0.59	2.09	1.47	1.65	3.14	0.61	3.50	1.54	2.07
Y657	2.75	0.90	0.51	1.36	0.66	1.83	0.26	0.61	1.11	0.84	0.23	0.43	1.51	1.99	1.07	2.65	0.00	0.15	1.24	0.99	0.86	1.05	1.48	0.06	2.02	0.20	1.09
Y651IPRO	1.31	1.95	0.79	2.62	1.18	1.85	0.03	1.06	1.35	1.87	0.30	0.21	3.17	1.33	1.43	1.18	1.54	0.59	0.61	1.29	2.06	1.51	2.19	0.10	6.58	1.17	2.49
DM 68R09 RSF	0.65	1.04	0.64	2.39	0.72	1.17	0.00	0.61	0.90	0.90	0.00	0.85	5.04	2.49	0.82	1.31	0.26	0.84	1.54	1.39	0.75	0.41	1.81	0.00	6.65	0.68	1.92
DM 61I63 RSF IPRO	0.24	3.89	0.40	1.95	0.57	1.15	0.22	0.06	1.06	2.61	0.44	0.31	2.15	1.31	0.26	1.73	0.57	0.33	1.24	1.08	1.90	1.19	1.37	0.26	3.43	0.35	1.63
PAN 1644R	0.10	1.46	0.73	0.84	0.44	1.57	0.07	0.62	0.73	1.21	0.21	0.30	2.91	2.52	1.18	2.07	0.75	0.34	0.30	1.28	1.94	1.18	2.25	0.13	5.21	0.38	2.14
US68-12 IPRO	0.93	4.24	1.07	2.07	1.04	4.98	0.54	0.44	1.91	1.66	0.07	0.76	4.97	3.19	0.53	1.56	3.86	0.06	1.56	1.85	1.15	1.16	2.02	0.48	4.47	0.22	1.86
P71T74 R	0.28	1.67	1.73	1.33	1.19	1.18	0.00	0.61	1.00	1.71	0.35	0.37	4.85	1.45	1.12	1.45	0.71	0.40	0.89	1.38	1.31	0.80	2.97	0.55	1.33	1.27	1.39
Gem/Mean	0.77	1.96	1.13	1.20	0.61	2.05	0.42	1.17	1.16	2.32	0.27	0.39	2.89	2.19	1.03	2.05	0.74	0.38	1.03	1.36	1.35	1.29	2.07	0.64	2.17	0.85	1.50

Tabel 14 Massa van 100 sade (g) van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24
Table 14 Mass 100 seeds (g) of the different soybean cultivars at the different trial localities, 2023/24

	Koel/Cool									Matig/Moderate											Warm						
Kultivar Cultivar	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Standerton	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	18.06	12.42	13.70	11.81	13.88	12.32	10.76	14.51	13.43	10.13	14.34	17.24	10.91	11.95	13.47	12.87	11.90	14.21	11.74	12.88	17.21	13.80	12.36	13.47	13.40	17.78	14.67
NS 5258 R	16.81	11.39	12.84	12.10	13.41	11.48	13.07	13.91	13.13	10.67	14.11	15.56	9.76	11.29	13.47	11.67	12.07	15.28	10.85	12.47	16.42	13.40	11.45	12.53	14.00	17.46	14.21
DM 5351 RSF	17.68	12.11	12.80	12.08	15.33	12.82	12.69	14.17	13.71	10.87	15.25	18.97	10.16	12.66	15.59	12.73	14.93	13.96	11.24	13.63	15.86	12.80	13.80	12.27	15.47	17.47	14.61
RA5022BR	17.27	11.83	11.95	11.77	15.10	12.75	11.73	13.72	13.27	8.87	13.60	17.82	10.20	10.24	15.05	12.40	12.76	14.19	11.32	12.65	18.01	12.53	12.97	15.27	13.27	16.60	14.77
PAN 1515R	16.63	11.93	14.22	12.41	13.32	12.22	12.42	14.43	13.45	8.53	14.72	16.36	9.94	12.00	14.52	14.00	13.73	14.29	12.26	13.04	17.10	11.20	12.45	12.27	13.80	19.19	14.33
DM 53I54 RSF IPRO	18.58	13.45	13.97	13.40	15.89	13.15	14.18	15.35	14.75	12.80	16.15	19.55	12.32	16.47	17.13	14.87	14.98	17.06	13.34	15.47	19.10	14.47	13.63	14.67	16.00	19.73	16.27
P52T52R	14.27	11.51	13.35	11.89	13.62	12.60	14.39	13.60	13.15	13.27	15.99	16.46	12.89	10.49	13.40	12.13	11.96	15.63	9.88	13.21	15.44	14.53	11.79	12.47	12.13	16.34	13.78
LG60353R	15.18	10.65	13.94	11.19	16.15	12.23	13.68	16.19	13.65	12.87	14.36	16.84	10.98	10.42	16.03	12.00	13.75	14.39	11.16	13.28	18.31	15.53	13.61	13.40	12.40	17.67	15.15
Y540	13.88	10.85	14.18	11.47	14.61	10.98	13.99	13.92	12.99	13.80	13.62	14.02	12.75	9.83	14.06	15.07	13.05	14.77	9.38	13.03	17.32	13.53	13.31	13.27	15.27	16.91	14.93
RA 565 R	16.00	12.47	15.50	13.39	14.91	12.29	16.00	15.96	14.57	14.07	16.55	17.07	14.04	12.05	15.07	13.80	14.44	16.69	11.49	14.53	18.60	13.33	15.37	14.20	11.20	18.64	15.22
LAKE 253 RR	16.39	12.91	14.28	11.90	13.71	15.02	14.77	13.99	14.12	12.87	15.98	17.23	14.81	18.13	14.12	16.53	14.07	15.48	13.94	15.31	22.27	15.53	16.57	17.20	13.60	18.88	17.34
LS6851R	13.96	9.16	13.21	10.21	11.81	10.88	15.23	12.17	12.08	10.87	14.13	15.36	11.90	10.25	10.76	14.00	11.81	13.16	9.47	12.17	18.56	15.93	13.47	17.67	13.07	15.55	15.71
US56-26R	15.11	11.56	15.17	12.00	15.09	12.43	14.54	14.79	13.84	13.40	13.63	15.33	12.85	11.89	13.08	12.93	14.89	15.25	12.38	13.56	17.96	16.53	14.81	13.13	14.20	17.59	15.70
PAN 1521R	16.34	12.33	15.10	12.81	15.77	11.91	14.43	15.37	14.26	14.40	15.41	16.20	13.37	10.37	15.00	15.13	13.37	16.64	13.65	14.35	18.99	12.80	13.97	12.00	13.00	18.42	14.86
PAN 1555R	17.12	12.52	14.90	12.75	14.19	13.45	16.51	15.81	14.66	15.67	16.24	15.93	13.91	12.98	12.91	16.67	13.89	17.69	13.15	14.90	15.78	15.13	14.43	12.87	12.60	18.80	14.94
RA5821R	15.81	11.85	14.39	13.08	14.98	12.11	13.87	15.84	13.99	12.20	14.39	17.14	12.65	8.52	12.49	13.40	12.63	15.76	11.87	13.10	17.71	13.87	12.60	14.80	12.67	18.70	15.06
LAKE 250 RR	17.18	15.80	16.76	14.00	14.98	16.32	15.78	15.33	15.77	13.73	16.61	17.75	13.89	19.26	16.47	16.27	13.30	16.24	16.49	16.00	17.49	17.80	16.43	15.07	14.33	19.43	16.76
PAN 1588R	15.82	10.91	13.05	12.15	13.11	12.98	14.06	14.61	13.34	12.13	13.98	15.37	12.71	12.27	13.49	13.13	12.69	15.55	12.87	13.42	16.00	14.20	12.30	13.87	11.53	16.61	14.08
RA660 R	15.46	11.34	14.35	11.89	14.51	11.10	15.25	15.03	13.62	13.87	14.46	17.84	14.01	11.47	12.61	14.40	12.43	15.76	9.92	13.68	19.37	15.13	13.57	12.20	11.60	18.47	15.06
DM 59R03 RSF	17.36	12.41	14.90	13.51	17.16	12.85	16.16	16.64	15.12	12.47	16.82	17.10	13.47	12.24	14.26	15.60	14.03	17.43	13.39	14.68	17.95	15.13	15.22	13.87	8.47	20.25	15.15
DM 59I60 RSF IPRO	14.33	10.50	14.30	10.42	11.72	12.19	12.72	13.17	12.42	15.00	12.76	15.90	12.34	11.19	9.86	14.40	12.10	14.43	11.46	12.94	15.51	14.00	12.46	14.93	12.67	15.80	14.23
LG60260IPR	15.05	10.95	13.86	10.84	16.19	12.45	13.19	14.64	13.40	15.60	14.17	14.05	12.00	11.04	11.34	12.80	12.90	14.41	11.65	13.00	14.82	15.00	11.69	14.27	13.07	16.53	14.23
LG60259R	15.94	11.69	14.23	12.54	14.84	13.68	14.15	14.70	13.97	12.07	14.40	17.88	13.29	12.26	13.62	14.53	14.09	14.55	13.11	13.98	17.21	13.27	14.50	16.07	11.00	18.47	15.09
LG60261IPR	15.58	11.77	12.91	11.84	14.09	14.08	14.15	13.86	13.53	12.47	14.08	14.34	14.00	12.53	12.41	14.13	12.64	15.42	11.61	13.36	15.73	14.13	14.27	13.33	11.07	16.94	14.25
P62T16R	15.66	11.63	14.32	11.64	14.74	14.59	14.68	15.10	14.05	14.13	15.50	17.52	13.76	13.82	14.02	15.93	13.17	15.86	14.39	14.81	17.11	15.87	13.95	13.47	12.87	18.18	15.24
US63-22 IPRO	15.81	11.12	13.59	12.80	13.33	12.55	14.49	16.07	13.72	15.27	15.06	16.94	12.14	12.38	12.08	13.93	13.67	15.17	15.37	14.20	14.28	14.27	13.05	14.60	10.33	17.13	13.94
RA6422BR	15.96	12.66	14.41	11.94	14.78	14.35	14.44	15.30	14.23	14.33	15.25	17.06	14.41	13.36	12.69	15.87	13.28	16.02	15.65	14.79	14.91	14.00	16.92	15.93	10.80	17.84	15.07
P64T39 R	16.09	12.75	14.09	13.67	12.87	14.29	14.91	14.77	14.18	13.87	14.88	16.87	14.30	13.11	13.87	14.20	12.39	15.91	12.66	14.21	16.10	16.00	13.89	12.93	11.00	17.19	14.52
Y657	15.86	10.73	14.02	11.67	13.07	12.08	13.71	15.09	13.28	13.07	13.07	14.70	14.13	12.72	12.49	14.87	12.09	14.99	11.53	13.37	14.92	15.27	14.02	12.27	11.40	16.31	14.03
Y651IPRO	15.35	11.83	14.29	11.77	11.52	13.72	13.88	15.37	13.47	11.87	14.74	14.80	13.99	13.35	11.89	14.00	11.26	16.04	12.70	13.46	13.62	14.00	13.06	15.00	12.00	16.58	14.04
DM 68R09 RSF	15.60	11.31	13.93	11.85	14.90	13.16	14.12	14.40	13.66	12.80	14.55	16.50	13.80	13.49	11.69	15.40	12.58	15.50	11.57	13.79	14.93	13.87	14.11	14.53	10.87	17.20	14.25
DM 61I63 RSF IPRO	15.66	12.12	14.07	12.84	13.40	14.56	15.30	16.17	14.27	15.13	15.43	15.45	14.95	16.18	13.34	15.87	13.70	16.47	13.57	15.01	15.98	15.47	15.25	13.13	12.33	18.39	15.09
PAN 1644R	14.64	11.69	14.65	13.26	13.37	13.48	14.26	15.36	13.84	14.10	14.98	16.64	14.15	12.99	13.48	15.67	13.19	15.79	12.32	14.33	15.22	16.20	15.20	14.27	13.40	17.87	15.36
US68-12 IPRO	13.70	12.93	12.41	13.59	10.73	14.64	11.34	16.24	13.20	13.60	13.34	15.07	13.36	13.65	12.40	14.80	10.61	12.93	14.75	13.45	11.25	14.67	13.56	13.20	12.33	15.41	13.40
P71T74 R	16.13	12.71	14.66	12.93	13.69	15.65	14.64	16.01	14.55	13.27	14.27	17.87	15.16	15.21	15.15	13.47	15.94	16.80	14.48	15.16	15.16	17.80	15.63	15.40	10.33	18.85	15.53
Gem/Mean	15.89	11.88	14.07	12.27	14.14	13.07	14.10	14.90	13.79	12.97	14.77	16.48	12.95	12.63	13.52	14.27	13.15	15.42	12.47	13.86	16.63	14.60	13.88	13.99	12.50	17.69	14.88

Tabel 15 Oliepersentasie op vogvrye basis van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/ 24

Table 15 Oil percentage on moisture free basis of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool									Matig/Moderate										Warm						
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Standerton	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	21.69	19.97	21.91	22.13	21.24	21.23	22.70	22.74	21.70	21.40	21.94	23.39	21.87	22.07	21.45	22.96	20.17	23.34	21.13	21.97	21.60	24.06	22.47	21.16	23.69	21.01	22.33
NS 5258 R	20.56	20.01	21.70	18.48	21.18	19.81	22.91	22.49	20.89	19.98	21.53	23.19	19.58	19.30	21.27	20.32	21.70	22.39	21.23	21.05	21.68	23.60	22.43	19.72	24.02	21.23	22.11
DM 5351 RSF	20.95	19.92	22.25	17.30	21.45	21.29	23.77	20.97	20.99	17.14	21.61	22.79	20.62	20.87	21.73	21.06	22.16	23.14	20.40	21.15	21.28	23.67	22.02	20.08	23.45	20.40	21.82
RA5022BR	21.33	19.74	20.67	21.67	21.43	21.75	18.43	21.92	20.87	20.69	21.52	23.21	21.10	18.90	22.43	20.01	20.55	22.20	20.39	21.10	21.97	23.19	22.40	20.79	23.47	20.39	22.04
PAN 1515R	20.46	19.11	21.04	21.21	20.69	19.12	19.08	21.65	20.30	19.17	20.52	22.31	20.04	20.11	21.79	22.05	22.04	22.16	21.35	21.15	23.15	20.57	20.99	21.10	22.41	21.35	21.60
DM 53I54 RSF IPRO	20.16	19.22	21.67	17.74	20.65	19.67	19.41	19.60	19.77	20.66	21.26	22.03	20.24	20.71	21.48	20.72	20.30	22.77	20.67	21.08	21.09	21.65	21.31	20.14	22.40	20.67	21.21
P52T52R	20.93	18.87	20.64	20.02	21.81	19.30	20.11	22.33	20.50	21.75	22.72	22.96	21.90	18.71	37.03	22.27	21.50	22.81	19.43	23.11	22.45	23.41	21.79	21.17	22.54	19.43	21.80
LG60353R	21.88	19.83	21.95	21.32	21.14	19.61	20.71	22.76	21.15	23.08	22.85	23.85	21.71	21.79	22.45	22.81	23.50	23.21	21.63	22.69	23.18	24.17	22.85	23.01	22.52	21.63	22.89
Y540	21.95	19.73	21.06	20.28	22.39	19.80	19.09	22.65	20.87	22.38	22.81	23.64	22.22	21.40	22.07	23.61	21.77	24.02	20.78	22.47	23.51	23.51	23.21	22.83	21.35	20.78	22.53
RA 565 R	21.44	19.32	21.36	20.44	21.17	20.06	21.41	21.35	20.82	22.71	22.83	23.86	21.31	21.36	20.96	22.58	22.13	22.43	20.89	22.11	22.11	23.11	22.60	21.57	21.77	20.89	22.01
LAKE 253 RR	20.89	19.46	18.59	20.22	20.31	20.77	18.95	21.18	20.05	21.43	22.24	23.26	19.48	20.53	19.75	21.34	22.06	22.89	21.38	21.44	21.06	19.43	21.68	20.38	21.78	21.38	20.95
LS6851R	21.22	17.62	21.21	21.13	21.38	21.17	22.03	21.50	20.91	22.49	23.70	23.68	21.06	18.36	19.68	23.52	23.19	24.32	19.18	21.92	21.45	23.31	22.05	22.07	20.52	19.18	21.43
US56-26R	22.59	20.07	20.58	20.95	21.98	20.50	21.88	22.95	21.44	23.27	23.43	22.41	22.80	22.12	21.33	22.79	22.60	23.85	21.85	22.65	22.19	21.79	24.37	22.44	22.94	21.85	22.60
PAN 1521R	20.60	20.05	19.04	19.89	20.28	18.85	20.65	21.69	20.13	22.38	22.07	22.59	79.13	17.48	20.75	22.24	21.23	22.04	21.82	27.17	19.87	22.36	22.09	21.30	21.31	21.82	21.46
PAN 1555R	21.03	18.41	19.36	17.93	19.77	20.04	17.89	21.31	19.47	21.74	22.29	23.02	20.44	19.63	20.00	21.17	18.00	23.18	20.03	20.95	19.85	21.43	21.83	20.76	18.57	20.03	20.41
RA5821R	20.62	19.27	19.77	19.50	20.73	19.53	19.66	21.52	20.08	20.63	21.57	22.78	19.94	17.52	20.63	21.36	19.88	21.89	19.85	20.60	21.83	21.59	21.90	22.63	19.31	19.85	21.18
LAKE 250 RR	19.48	21.45	17.51	20.48	19.76	20.31	18.76	20.95	19.84	20.56	21.10	21.86	18.84	19.26	19.92	20.02	19.48	21.66	19.01	20.17	20.42	19.53	20.88	19.95	20.33	19.01	20.02
PAN 1588R	20.55	19.60	20.01	20.90	19.75	19.50	20.48	21.34	20.27	21.29	22.07	22.89	21.13	19.48	20.74	21.96	19.76	22.41	20.25	21.20	20.95	22.14	21.64	21.80	18.49	20.25	20.88
RA660 R	21.39	20.53	20.15	19.49	21.84	17.72	21.23	22.65	20.63	22.20	22.81	23.07	22.52	21.87	22.60	22.96	21.48	23.32	19.84	22.27	22.18	23.68	23.03	23.69	18.73	19.84	21.86
DM 59R03 RSF	20.65	18.98	19.92	20.52	20.36	19.33	20.82	21.17	20.22	20.99	21.73	23.00	20.64	18.49	21.18	22.07	20.17	22.58	20.38	21.12	20.79	22.48	22.20	24.46	18.17	20.38	21.41
DM 59I60 RSF IPRO	20.81	18.57	20.79	22.04	20.45	19.54	19.00	22.57	20.47	22.56	23.01	23.72	20.67	20.61	21.22	21.26	22.03	23.23	20.75	21.91	21.89	20.91	23.08	23.30	18.11	20.75	21.34
LG60260IPR	20.62	18.03	19.39	19.75	19.90	18.73	17.15	21.45	19.38	21.98	23.28	22.87	19.30	21.41	20.57	22.52	21.45	22.94	19.41	21.57	21.70	21.47	22.55	22.89	17.45	19.41	20.91
LG60259R	20.98	19.60	20.25	20.71	20.17	19.95	20.50	39.71	22.73	22.08	23.95	23.21	19.21	20.88	21.36	21.10	19.39	23.29	21.79	21.63	20.13	22.50	21.97	23.07	18.51	21.79	21.33
LG60261IPR	19.53	17.59	19.12	18.64	21.56	18.95	20.14	20.96	19.56	20.69	21.68	21.88	19.06	19.29	20.26	20.72	17.30	21.82	18.56	20.13	20.79	20.12	21.24	21.65	21.85	18.56	20.70
P62T16R	22.31	21.99	20.47	20.17	21.43	21.16	21.35	23.69	21.57	24.10	23.84	24.58	21.63	19.61	22.32	23.08	19.20	23.88	22.24	22.45	20.75	22.24	23.48	23.51	22.84	22.24	22.51
US63-22 IPRO	20.00	19.53	17.59	20.76	20.52	17.87	18.20	21.98	19.56	21.67	23.10	22.46	19.87	18.51	20.26	20.63	20.06	22.54	18.92	20.80	19.86	20.67	21.71	21.76	17.66	18.92	20.10
RA6422BR	21.10	20.68	20.33	21.17	20.84	20.55	19.77	22.59	20.88	20.44	22.95	24.03	20.46	18.53	21.35	20.92	18.92	23.61	19.55	21.08	20.74	20.27	21.59	23.54	19.79	19.55	20.91
P64T39 R	19.87	18.81	20.71	20.40	20.09	20.51	19.57	22.25	20.28	21.06	22.67	22.66	18.98	18.88	20.90	22.01	19.33	23.04	21.68	21.12	20.71	21.83	22.82	23.39	19.17	21.68	21.60
Y657	21.57	18.46	20.93	20.22	19.70	19.89	21.52	21.90	20.52	21.62	22.26	22.79	21.36	19.82	21.46	21.62	19.32	22.63	18.97	21.19	21.74	20.63	21.83	22.55	18.01	18.97	20.62
Y651IPRO	20.48	17.52	19.03	19.87	19.23	18.85	20.18	21.85	19.63	22.08	22.76	23.31	20.31	19.60	19.65	21.33	19.69	22.43	20.40	21.16	20.30	21.32	21.03	21.91	15.82	20.40	20.13
DM 68R09 RSF	20.71	19.47	18.73	19.88	19.91	19.21	20.69	21.44	20.01	22.45	23.05	23.30	19.97	19.70	20.48	21.65	18.76	23.24	19.27	21.19	21.30	21.82	22.56	23.09	18.30	19.27	21.06
DM 61I63 RSF IPRO	19.42	18.46	18.30	17.50	18.11	18.78	19.76	40.72	21.38	22.04	22.57	22.39	19.44	19.48	21.25	19.76	17.75	21.78	19.93	20.64	19.03	19.48	21.04	22.06	17.73	19.93	19.88
PAN 1644R	19.69	19.17	20.11	20.04	20.01	19.23	21.27	21.42	20.12	22.51	21.45	22.62	20.53	19.50	20.76	20.65	20.34	22.13	19.58	21.01	20.43	21.05	22.56	23.18	17.49	19.58	20.72
US68-12 IPRO	18.98	17.89	17.97	19.19	19.43	17.88	18.28	19.55	18.65	19.44	21.39	21.86	18.08	16.77	19.88	19.87	16.93	22.81	18.01	19.50	20.16	19.29	21.56	22.36	19.49	18.01	20.15
P71T74 R	19.21	18.29	19.50	19.42	18.84	19.87	18.50	21.10	19.34	21.18	21.50	21.69	18.49	17.56	19.85	20.37	19.55	21.71	19.36	20.13	18.85	19.79	21.35	22.47	20.58	19.36	20.40
Gem/Mean	20.73	19.29	20.10	20.04	20.56	19.72	20.17	22.80	20.43	21.48	22.34	22.95	22.11	19.72	21.45	21.58	20.39	22.79	20.28	21.51	21.17	21.77	22.12	22.05	20.30	20.28	21.28

Tabel 16 Ru-proteïenpersentasie op vogvrye basis van die verskillende sojaboonkultivars by die verskillende proef lokaliteite, 2023/24

Table 16 Percentage crude protein on moisture free basis of the different soybean cultivars at the different trial localities, 2023/24

Kultivar Cultivar	Koel/Cool									Matig/Moderate										Warm						
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Standerton	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	38.90	40.01	37.36	38.35	39.64	39.71	33.09	41.47	38.57	33.86	37.88	37.26	38.33	38.44	37.22	37.64	40.22	36.86	40.20	37.79	38.94	37.03	34.29	35.52	35.31	41.11	37.03
NS 5258 R	41.24	40.20	38.25	41.22	41.13	43.56	39.97	41.78	40.92	35.77	39.88	38.89	42.03	42.28	38.44	40.31	41.05	39.56	41.01	39.92	39.52	37.27	34.52	38.85	36.88	42.63	38.28
DM 5351 RSF	39.79	38.88	37.37	39.31	38.83	38.74	29.62	40.01	37.82	28.10	37.51	38.34	38.52	39.07	37.03	37.94	38.54	36.59	40.27	37.19	37.96	35.34	35.85	37.78	35.20	39.83	36.99
RA5022BR	38.92	40.03	40.81	38.86	39.90	39.64	38.10	40.57	39.60	30.21	37.36	37.91	40.61	40.44	37.52	39.74	40.11	38.37	40.15	38.24	39.03	37.70	36.40	37.80	35.39	40.19	37.75
PAN 1515R	40.54	42.19	38.88	40.43	41.02	42.66	38.28	41.60	40.70	36.00	39.65	37.53	41.98	42.04	40.10	39.65	40.87	38.89	40.86	39.76	39.36	41.50	36.75	36.02	37.49	42.78	38.98
DM 53I54 RSF IPRO	40.28	38.83	38.06	40.14	40.00	41.58	35.69	42.29	39.61	31.98	37.41	39.48	40.44	39.73	37.94	38.56	39.84	37.83	39.36	38.26	39.98	39.56	38.10	38.23	36.99	41.92	39.13
P52T52R	37.19	41.50	36.90	41.37	38.48	40.89	31.05	40.65	38.50	33.54	37.12	38.20	38.18	42.29	38.72	39.34	40.25	39.05	41.48	38.82	38.80	35.35	35.01	37.58	35.74	39.39	36.98
LG60353R	38.19	40.73	38.59	39.24	39.33	41.18	36.64	39.71	39.20	31.39	36.59	36.86	40.80	41.19	37.29	38.82	38.55	38.50	40.85	38.08	39.32	36.75	35.76	36.30	36.04	40.54	37.45
Y540	36.87	39.36	38.32	40.92	38.46	40.52	34.59	39.54	38.57	34.39	36.19	35.13	38.78	39.42	37.48	38.13	38.83	38.40	40.11	37.69	38.79	37.49	32.04	33.53	36.86	40.17	36.48
RA 565 R	37.87	40.79	37.93	40.90	40.18	40.66	30.95	41.56	38.86	30.96	36.93	37.14	40.00	39.67	38.38	39.42	39.21	39.63	40.48	38.18	39.25	36.60	35.01	36.47	36.92	41.03	37.55
LAKE 253 RR	37.05	40.72	37.78	38.32	40.70	38.81	36.15	40.72	38.78	32.05	36.55	36.45	39.79	39.82	39.70	38.66	38.37	39.25	40.43	38.11	40.18	40.09	36.58	38.45	37.68	41.23	39.03
LS6851R	38.86	39.26	36.94	38.59	39.84	39.06	31.99	40.05	38.07	33.70	36.79	39.44	38.77	40.49	36.67	37.86	37.87	38.07	41.91	38.16	40.72	38.85	36.46	37.76	39.97	40.01	38.96
US56-26R	37.06	39.25	37.35	40.00	39.64	39.90	32.25	40.20	38.21	31.10	36.28	38.92	37.22	37.35	36.50	38.64	38.70	37.96	40.42	37.31	39.31	37.66	34.12	32.99	36.41	39.52	36.67
PAN 1521R	38.82	40.57	40.70	41.65	40.75	41.53	33.22	41.50	39.84	30.17	38.10	37.91	40.79	42.53	38.68	38.16	39.34	40.07	38.99	38.47	41.40	37.24	35.15	35.75	37.22	41.25	38.00
PAN 1555R	37.78	42.72	39.99	43.81	40.47	41.28	39.12	42.65	40.98	32.83	38.27	37.58	39.96	40.36	39.47	40.12	41.53	40.88	41.45	39.25	41.35	38.38	36.29	37.95	40.75	40.42	39.19
RA5821R	40.39	41.25	39.73	42.46	41.35	41.25	31.33	41.17	39.87	34.52	38.92	38.13	42.04	42.22	39.44	40.59	41.41	40.88	42.36	40.05	40.92	40.63	35.15	35.00	41.45	41.64	39.13
LAKE 250 RR	38.85	39.60	39.28	37.79	40.90	39.77	33.22	41.61	38.88	37.23	36.10	34.93	38.51	39.96	39.96	38.47	41.13	40.52	43.50	39.03	40.50	38.84	35.52	39.14	38.38	40.30	38.78
PAN 1588R	40.14	42.04	38.91	40.83	42.62	41.89	32.21	41.59	40.03	34.41	39.77	35.51	38.25	41.68	38.47	38.88	41.29	41.96	42.17	39.24	40.53	38.58	36.19	38.33	41.98	41.12	39.46
RA660 R	39.29	40.74	40.06	42.35	41.09	42.06	32.74	40.90	39.90	30.94	36.58	39.11	38.12	40.41	37.29	38.25	40.18	38.54	42.62	38.20	40.49	37.19	33.06	34.27	41.21	41.02	37.87
DM 59R03 RSF	39.67	40.03	39.18	40.24	41.38	41.73	29.89	41.44	39.20	34.61	38.02	33.22	40.47	40.42	38.50	38.93	40.76	40.90	42.28	38.81	40.86	39.51	35.49	32.15	39.86	41.13	38.17
DM 59I60 RSF IPRO	39.00	43.15	37.62	37.28	40.29	42.75	33.29	39.39	39.10	31.51	36.50	37.32	38.39	39.56	38.38	38.86	38.48	40.16	42.25	38.14	39.82	37.88	33.93	34.58	41.94	40.45	38.10
LG60260IPR	38.44	42.33	38.57	41.63	40.44	43.01	37.33	40.50	40.28	32.64	36.89	38.12	40.68	37.65	36.90	38.58	38.08	39.01	43.34	38.19	39.40	37.41	30.55	33.48	41.51	40.38	37.12
LG60259R	38.28	40.25	37.39	39.46	39.80	40.95	30.42	40.77	38.42	30.59	35.36	37.35	39.90	38.34	36.58	39.73	40.09	38.93	39.24	37.61	39.97	35.86	36.56	35.54	40.88	41.05	38.31
LG60261IPR	39.97	42.17	39.63	41.59	38.40	41.61	32.49	40.53	39.55	33.92	37.66	39.01	40.99	40.44	37.18	39.18	40.73	40.50	43.37	39.30	39.72	37.51	37.00	36.86	35.86	41.21	38.03
P62T16R	36.34	37.63	37.15	41.16	38.68	39.28	29.00	37.96	37.15	30.85	36.20	35.54	38.44	40.78	35.58	37.84	39.50	39.26	39.81	37.38	39.46	36.43	32.07	35.50	35.90	39.25	36.44
US63-22 IPRO	38.54	39.99	39.51	39.69	38.75	42.20	31.68	39.44	38.72	27.93	35.47	34.13	37.36	41.39	37.72	38.56	38.12	40.18	43.34	37.42	39.93	37.06	32.38	37.01	41.00	39.91	37.88
RA6422BR	37.73	39.29	37.32	38.26	39.26	39.60	34.93	38.56	38.12	33.59	36.44	31.79	37.87	38.54	35.89	37.47	39.50	39.50	41.35	37.19	38.94	37.71	34.76	35.36	39.42	38.55	37.46
P64T39 R	39.21	42.40	39.29	42.11	41.58	40.79	34.50	39.90	39.97	35.50	37.21	36.46	40.68	42.46	38.89	38.80	41.48	40.06	40.15	39.17	41.83	36.28	34.32	34.93	40.30	40.59	38.04
Y657	39.68	40.38	38.09	40.47	41.50	41.49	33.96	41.60	39.65	34.66	37.25	37.15	38.79	39.60	37.78	38.96	40.85	40.66	42.72	38.84	40.64	39.24	37.13	37.00	39.91	41.19	39.19
Y651IPRO	36.40	40.00	37.07	38.53	39.46	40.28	28.89	37.98	37.33	30.19	35.14	32.87	36.78	38.09	36.92	37.24	37.62	39.60	40.17	36.46	38.94	35.16	33.24	35.24	42.08	37.69	37.06
DM 68R09 RSF	38.35	40.91	38.48	40.91	41.42	41.59	29.54	41.20	39.05	31.32	37.21	35.24	39.74	40.91	38.24	38.05	40.96	39.91	43.13	38.47	40.87	36.99	35.84	36.60	41.30	40.44	38.67
DM 61I63 RSF IPRO	39.82	42.08	38.69	43.45	41.22	41.54	31.03	38.93	39.60	31.79	36.03	34.28	39.09	39.83	36.16	38.83	40.95	40.78	41.54	37.93	41.29	39.22	36.38	35.48	40.94	40.35	38.94
PAN 1644R	40.18	41.23	38.86	41.51	42.15	41.74	30.11	41.43	39.65	30.71	38.57	38.81	39.65	40.75	38.76	40.78	40.78	41.44	42.86	39.31	41.23	39.28	34.96	36.01	41.66	42.34	39.25
US68-12 IPRO	39.16	40.73	39.76	38.33	39.39	41.93	28.08	38.21	38.20	31.52	36.84	37.51	38.39	40.37	36.54	37.45	40.61	38.45	43.70	38.14	39.06	36.48	35.94	34.47	39.20	39.45	37.43
P71T74 R	39.76	40.78	38.11	41.90	40.70	40.93	32.73	39.11	39.25	31.31	36.48	36.67	40.67	41.65	38.05	38.53	39.50	40.68	42.36	38.59	40.82	37.93	34.54	33.48	36.27	41.35	37.40
Gem/Mean	38.82	40.63	38.51	40.37	40.25	41.03	33.09	40.47	39.15	32.45	37.18	36.86	39.46	40.29	37.84	38.77	39.87	39.48	41.44	38.36	39.98	37.77	35.07	36.04	38.74	40.61	38.03

Tabel 17 Gemiddelde van die olie-en proteïen persentasie saamgevoeg (Protolie), 2023/24
Table 17 Average of the oil and protein percentage joined (Profat), 2023/24

Kultivar Cultivar	Koel/Cool									Matig/Moderate											Warm						
	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Standerton	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	60.59	59.98	59.27	60.48	60.88	60.94	55.79	64.21	60.27	55.26	59.82	60.65	60.20	60.51	58.67	60.60	60.39	60.20	61.33	59.76	60.54	61.09	56.76	56.68	59.00	62.12	59.37
NS 5258 R	61.80	60.21	59.95	59.70	62.31	63.37	62.88	64.27	61.81	55.75	61.41	62.08	61.61	61.58	59.71	60.63	62.75	61.95	62.24	60.97	61.20	60.87	56.95	58.57	60.90	63.86	60.39
DM 5351 RSF	60.74	58.80	59.62	56.61	60.28	60.03	53.39	60.98	58.81	45.24	59.12	61.13	59.14	59.94	58.76	59.00	60.70	59.73	60.67	58.34	59.24	59.01	57.87	57.86	58.65	60.23	58.81
RA5022BR	60.25	59.77	61.48	60.53	61.33	61.39	56.53	62.49	60.47	50.90	58.88	61.12	61.71	59.34	59.95	59.75	60.66	60.57	60.54	59.34	61.00	60.89	58.80	58.59	58.86	60.58	59.79
PAN 1515R	61.00	61.30	59.92	61.64	61.71	61.78	57.36	63.25	61.00	55.17	60.17	59.84	62.02	62.15	61.89	61.70	62.91	61.05	62.21	60.91	62.51	62.07	57.74	57.12	59.90	64.13	60.58
DM 53I54 RSF IPRO	60.44	58.05	59.73	57.88	60.65	61.25	55.10	61.89	59.37	52.64	58.67	61.51	60.68	60.44	59.42	59.28	60.14	60.60	60.03	59.34	61.07	61.21	59.41	58.37	59.39	62.59	60.34
P52T52R	58.12	60.37	57.54	61.39	60.29	60.19	51.16	62.98	59.01	55.29	59.84	61.16	60.08	61.00	75.75	61.61	61.75	61.86	60.91	61.93	61.25	58.76	56.80	58.75	58.28	58.82	58.78
LG60353R	60.07	60.56	60.54	60.56	60.47	60.79	57.35	62.47	60.35	54.47	59.44	60.71	62.51	62.98	59.74	61.63	62.05	61.71	62.48	60.77	62.50	60.92	58.61	59.31	58.56	62.17	60.35
Y540	58.82	59.09	59.38	61.20	60.85	60.32	53.68	62.19	59.44	56.77	59.00	58.77	61.00	60.82	59.55	61.74	60.60	62.42	60.89	60.16	62.30	61.00	55.25	56.36	58.21	60.95	59.01
RA 565 R	59.31	60.11	59.29	61.34	61.35	60.72	52.36	62.91	59.67	53.67	59.76	61.00	61.31	61.03	59.34	62.00	61.34	62.06	61.37	60.29	61.36	59.71	57.61	58.04	58.69	61.92	59.56
LAKE 253 RR	57.94	60.18	56.37	58.54	61.01	59.58	55.10	61.90	58.83	53.48	58.79	59.71	59.27	60.35	59.45	60.00	60.43	62.14	61.81	59.54	61.24	59.52	58.26	58.83	59.46	62.61	59.99
LS6851R	60.08	56.88	58.15	59.72	61.22	60.23	54.02	61.55	58.98	56.19	60.49	63.12	59.83	58.85	56.35	61.38	61.06	62.39	61.09	60.07	62.17	62.16	58.51	59.83	60.49	59.19	60.39
US56-26R	59.65	59.32	57.93	60.95	61.62	60.40	54.13	63.15	59.64	54.37	59.71	61.33	60.02	59.47	57.83	61.43	61.30	61.81	62.27	59.95	61.50	59.45	58.49	55.43	59.35	61.37	59.27
PAN 1521R	59.42	60.62	59.74	61.54	61.03	60.38	53.87	63.19	59.97	52.55	60.17	60.50	60.25	60.01	59.43	60.40	60.57	62.11	60.81	59.68	61.27	59.60	57.24	57.05	58.53	63.07	59.46
PAN 1555R	58.81	61.13	59.35	61.74	60.24	61.32	57.01	63.96	60.45	54.57	60.56	60.60	60.40	59.99	59.47	61.29	59.53	64.06	61.48	60.20	61.20	59.81	58.12	58.71	59.32	60.45	59.60
RA5821R	61.01	60.52	59.50	61.96	62.08	60.78	50.99	62.69	59.94	55.15	60.49	60.91	61.98	59.74	60.07	61.95	61.29	62.77	62.21	60.66	62.75	62.22	57.05	57.63	60.76	61.49	60.32
LAKE 250 RR	58.33	61.05	56.79	58.27	60.66	60.08	51.98	62.56	58.72	57.79	57.20	56.79	57.35	59.22	59.88	58.49	60.61	62.18	62.51	59.20	60.92	58.37	56.40	59.09	58.71	59.31	58.80
PAN 1588R	60.69	61.64	58.92	61.73	62.37	61.39	52.69	62.93	60.29	55.70	61.84	58.40	59.38	61.16	59.21	60.84	61.05	64.37	62.42	60.44	61.48	60.72	57.83	60.13	60.47	61.37	60.33
RA660 R	60.68	61.27	60.21	61.84	62.93	59.78	53.97	63.55	60.53	53.14	59.39	62.18	60.64	62.28	59.89	61.21	61.66	61.86	62.46	60.47	62.67	60.87	56.09	57.96	59.94	60.86	59.73
DM 59R03 RSF	60.32	59.01	59.10	60.76	61.74	61.06	50.71	62.61	59.41	55.60	59.75	56.22	61.11	58.91	59.68	61.00	60.93	63.48	62.66	59.93	61.65	61.99	57.69	56.61	58.03	61.51	59.58
DM 59I60 RSF IPRO	59.81	61.72	58.41	59.32	60.74	62.29	52.29	61.96	59.57	54.07	59.51	61.04	59.06	60.17	59.60	60.12	60.51	63.39	63.00	60.05	61.71	58.79	57.01	57.88	60.05	61.20	59.44
LG60260IPR	59.06	60.36	57.96	61.38	60.34	61.74	54.48	61.95	59.66	54.62	60.17	60.99	59.98	59.06	57.47	61.10	59.53	61.95	62.75	59.76	61.10	58.88	53.10	56.37	58.96	59.79	58.03
LG60259R	59.26	59.85	57.64	60.17	59.97	60.90	50.92	80.48	61.15	52.67	59.31	60.56	59.11	59.22	57.94	60.83	59.48	62.22	61.03	59.24	60.10	58.36	58.53	58.61	59.39	62.84	59.64
LG60261IPR	59.50	59.76	58.75	60.23	59.96	60.56	52.63	61.49	59.11	54.61	59.34	60.89	60.05	59.73	57.44	59.90	58.03	62.32	61.93	59.42	60.51	57.63	58.24	58.51	57.71	59.77	58.73
P62T16R	58.65	59.62	57.62	61.33	60.11	60.44	50.35	61.65	58.72	54.95	60.04	60.12	60.07	60.39	57.90	60.92	58.70	63.14	62.05	59.83	60.21	58.67	55.55	59.01	58.74	61.49	58.95
US63-22 IPRO	58.54	59.52	57.10	60.45	59.27	60.07	49.88	61.42	58.28	49.60	58.57	56.59	57.23	59.90	57.98	59.19	58.18	62.72	62.26	58.22	59.79	57.73	54.09	58.77	58.66	58.83	57.98
RA6422BR	58.83	59.97	57.65	59.43	60.10	60.15	54.70	61.15	59.00	54.03	59.39	55.82	58.33	57.07	57.24	58.39	58.42	63.11	60.90	58.27	59.68	57.98	56.35	58.90	59.21	58.10	58.37
P64T39 R	59.08	61.21	60.00	62.51	61.67	61.30	54.07	62.15	60.25	56.56	59.88	59.12	59.66	61.34	59.79	60.81	60.81	63.10	61.83	60.29	62.54	58.11	57.14	58.32	59.47	62.27	59.64
Y657	61.25	58.84	59.02	60.69	61.20	61.38	55.48	63.50	60.17	56.28	59.51	59.94	60.15	59.42	59.24	60.58	60.17	63.29	61.69	60.03	62.38	59.87	58.96	59.55	57.92	60.16	59.81
Y651IPRO	56.88	57.52	56.10	58.40	58.69	59.13	49.07	59.83	56.95	52.27	57.90	56.18	57.09	57.69	56.57	58.57	57.31	62.03	60.57	57.62	59.24	56.48	54.27	57.15	57.90	58.09	57.19
DM 68R09 RSF	59.06	60.38	57.21	60.79	61.33	60.80	50.23	62.64	59.06	53.77	60.26	58.54	59.71	60.61	58.72	59.70	59.72	63.15	62.40	59.66	62.17	58.81	58.40	59.69	59.60	59.71	59.73
DM 61I63 RSF IPRO	59.24	60.54	56.99	60.95	59.33	60.32	50.79	79.65	60.98	53.83	58.60	56.67	58.53	59.31	57.41	58.59	58.70	62.56	61.47	58.57	60.32	58.70	57.42	57.54	58.67	60.28	58.82
PAN 1644R	59.87	60.40	58.97	61.55	62.16	60.97	51.38	62.85	59.77	53.22	60.02	61.43	60.18	60.25	59.52	61.43	61.12	63.57	62.44	60.32	61.66	60.33	57.52	59.19	59.15	61.92	59.96
US68-12 IPRO	58.14	58.62	57.73	57.52	58.82	59.81	46.36	57.76	56.85	50.96	58.23	59.37	56.47	57.14	56.42	57.32	57.54	61.26	61.71	57.64	59.22	55.77	57.50	56.83	58.69	57.46	57.58
P71T74 R	58.97	59.07	57.61	61.32	59.54	60.80	51.23	60.21	58.59	52.49	57.98	58.36	59.16	59.21	57.90	58.90	59.05	62.39	61.72	58.72	59.67	57.72	55.89	55.95	56.85	60.71	57.80
Gem/Mean	59.55	59.92	58.62	60.41	60.81	60.76	53.26	63.27	59.57	53.93	59.52	59.81	59.86	60.01	59.29	60.35	60.26	62.27	61.72	59.70	61.15	59.54	57.18	58.09	59.04	60.89	59.32

Tabel 18 Die saadopbrengs van elke kultivar by die verskillende lokaliteite, 2023/24
Table 18 The The seed yield of the cultivars at the different localities, 2023/24

Kultivar Cultivar	Koel/Cool														Matig/Moderate												Warm						
	Alice	Bapsfontein PD1	Bapsfontein PD2	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Marquard	Standerton	Zanyokwe	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Greytown Pannar	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	796	2864	2608	2989	1992	1019	1764	3487	1710	1477	2867	984	808	1951	948	3532	3765	2502	789	1420	1485	1887	3257	1796	3903	2299	4372	4183	1489	3854	2650	4475	3504
NS 5258 R	923	2540	2277	3412	1955	948	2207	3657	1407	1617	2370	779	1108	1938	865	3393	3623	2869	837	1374	1836	1154	3573	1418	3729	2243	4268	3476	947	3144	1859	3663	2893
DM 5351 RSF	743	2380	2573	2763	2019	837	2414	4034	1539	1908	2498	1122	971	1985	685	3404	3712	2498	773	1150	1183	1705	3110	1026	3554	2073	4137	5008	1408	2825	2609	3859	3308
RA5022BR	827	2760	2538	3500	2245	1048	2863	4106	1764	1859	2848	678	1153	2168	885	2889	3361	2515	1489	2209	1638	1698	3554	1714	3358	2301	4434	5088	1330	2455	2532	4094	3322
PAN 1515R	678	2887	1808	2375	1975	1001	2092	2805	1475	1303	2281	732	835	1711	555	2931	3719	2105	981	1595	1234	1401	3453	1485	3968	2130	3856	1630	1248	2069	1578	3216	2266
DM 53I54 RSF IPRO	730	2044	2622	2155	1928	1120	2659	3572	1228	1589	2301	1059	725	1826	1124	3035	2943	2326	1283	1133	1446	1923	4388	1896	3990	2317	3655	2981	1593	2720	2942	4317	3035
P52T52R	1031	2705	2885	2937	1300	906	1368	3138	1195	1924	2911	894	876	1851	881	3827	2919	1859	1009	1319	2181	1592	3747	1567	2867	2161	3773	3501	1131	2307	1995	4868	2929
LG60353R	666	2420	2722	3126	1074	1106	1456	3969	1371	1520	2507	924	924	1830	725	3223	3437	2337	1014	1503	1141	1704	3104	1444	3456	2099	3779	3147	1212	1936	1777	4563	2736
Y540	833	2820	2713	3015	1256	846	1352	3440	1438	1943	2548	722	770	1823	799	3496	3815	2606	851	1110	1316	1654	4976	1476	3292	2308	3973	3631	1089	2849	1648	4917	3018
RA 565 R	718	3684	3009	3565	1193	684	1852	3562	1011	2380	3320	649	1054	2052	853	3633	3441	2649	763	1459	1436	2133	3358	1768	3282	2252	4216	5042	1530	2604	1190	4813	3233
LAKE 253 RR	918	1548	1665	1387	1498	1132	1124	2481	669	1217	1762	653	704	1289	1205	3482	2815	2023	1147	732	1084	2469	2540	1686	2562	1977	2339	2895	775	1733	1294	4693	2288
LS6851R	740	2384	3071	2353	1230	1047	1343	3170	1483	2467	2730	668	896	1814	702	3285	2691	2256	932	1161	822	1581	3066	1591	2922	1910	2938	3735	1127	2176	1322	5440	2790
US56-26R	630	2800	3584	3067	1388	1190	1423	3470	1048	1420	2573	1041	1109	1903	933	3048	3247	2440	1130	1235	1168	2520	3067	1857	3489	2194	4642	3992	1209	3007	1720	5119	3281
PAN 1521R	560	2558	2985	2855	1714	1596	1292	3505	1207	1682	2777	913	1052	1900	855	2878	3112	2612	926	942	2309	1982	3859	1692	4197	2306	4258	3108	1447	2819	2143	5113	3148
PAN 1555R	1045	2281	2432	2426	717	914	1109	2829	580	1297	2366	685	978	1512	975	3347	3021	1844	857	1260	1918	2069	3440	1503	2747	2089	2962	5216	1197	2347	1619	4606	2991
RA5821R	881	3018	3161	3550	1139	915	1145	3345	1079	1339	2253	850	1111	1830	607	3288	3073	2558	790	937	1592	1479	3290	1769	3042	2039	3763	3233	1087	2806	1652	4530	2845
LAKE 250 RR	600	1142	2820	1271	1983	839	1650	2418	949	2188	2083	711	1047	1515	1199	3011	2813	1803	806	941	1122	1472	1527	1528	2835	1732	1571	2715	1063	1644	1109	3990	2016
PAN 1588R	769	2652	2590	2943	930	916	1561	3059	614	2006	2289	837	947	1701	793	2966	2365	2070	936	1299	1634	2088	3623	1674	2889	2031	4118	3297	1469	2926	1361	4541	2952
RA660 R	769	2667	2929	2745	895	996	1284	3365	651	2473	2325	923	1019	1773	712	3237	3086	2586	953	1211	1156	2260	3590	1848	2289	2084	4666	3411	1320	3692	1693	4541	3220
DM 59R03 RSF	1029	2425	3226	2124	1005	726	828	3291	705	1968	2456	1026	968	1675	707	3507	3037	2224	805	1254	1765	1981	2296	1796	2693	2006	3892	3638	1238	3723	1128	5549	3195
DM 59I60 RSF IPRO	700	2423	3171	3129	830	1428	1063	3555	704	991	2646	1128	1099	1759	1146	3295	2347	2733	1008	1380	1752	2786	2499	1463	3391	2164	4089	4390	1586	4339	1176	5239	3470
LG60260IPR	526	2658	3031	2836	846	1013	1065	3447	838	1628	2805	699	873	1713	1010	3225	3137	1995	1011	1507	1545	1576	4542	1824	2693	2188	3486	3964	1412	2312	1631	4781	2931
LG60259R	720	2747	2674	2347	1266	1015	1140	3057	796	1534	2430	979	943	1665	920	3312	2682	2072	763	1117	1482	1837	3187	1677	3064	2010	3513	2659	1335	2080	1386	4764	2623
LG60261IPR	657	2467	3039	2568	1751	614	870	2725	510	1721	2209	942	1016	1622	1024	3186	2387	2122	997	991	1460	1974	2259	1947	2911	1933	4263	5139	1495	3121	2150	4699	3478
P62T16R	845	2710	2292	2466	926	1036	940	2503	410	2508	2544	874	1060	1624	1158	3314	3038	2330	1081	1442	1597	2583	1915	1733	3064	2114	2716	4344	1080	2521	1468	4835	2827
US63-22 IPRO	662	2564	3066	3313	887	1385	584	3011	633	1561	2260	1024	1203	1704	1104	3088	1877	2252	1049	715	1396	1990	6619	1841	2050	2180	3780	4882	1307	2771	1250	5179	3195
RA6422BR	807	2392	3109	2355	1017	1025	1292	3010	737	2150	2054	1090	981	1694	1024	3507	2994	2555	1210	1111	1828	2584	1560	1803	3412	2144	3504	3053	1485	3038	1804	5304	3031
P64T39 R	576	2784	3189	2883	1010	911	1211	3185	708	2044	2418	1134	657	1747	746	3026	3416	2688	919	1186	1587	1823	2172	1716	2758	2003	3653	3992	1296	3368	1280	4988	3096
Y657	923	2920	3076	2867	1049	1173	1195	3369	1081	2244	2533	958	935	1871	1069	3377	2918	2348	1112	1466	1437	1784	2009	1682	2845	2004	3667	5000	1470	3509	1443	5195	3381
Y651IPRO	645	2412	2729	2361	883	1146	728	2768	671	1617	2741	819	895	1570	1105	3311	3237	2030	1138	1258	1205	2079	2894	1332	2562	2014	2246	3614	1097	3652	1547	4514	2778
DM 68R09 RSF	878	2608	2855	2220	1031	1281	1287	3393	510	2074	2648	952	1183	1763	1197	3336	2593	2240	1125	1429	1588	2552	2357	1575	2540	2048	3655	4257	1497	4078	894	4862	3207
DM 61I63 RSF IPRO	1107	2757	2915	2250	809	859	1175	2832	626	2590	2862	1253	1109	1780	1129	3300	3264	2594	1406	1768	1995	2350	4849	1970	2736	2487	3947	4357	1959	4115	997	4862	3373
PAN 1644R	950	3305	3216	3125	663	1213	1102	2994	506	2322	2532	987	921	1833	828	3685	3086	2427	963	1113	1546	2012	2027	1676	3107	2043	3445	4252	1251	3457	656	5446	3085
US68-12 IPRO	900	2171	3197	2786	629	1580	351	2838	251	1892	2305	952	1274	1625	1184	3466	3788	1962	1552	1537	1879	1594	4761	1712	1319	2250	3035	3822	1622	3657	678	4350	2861
P71T74 R	929	2653	2940	2555	841	965	867	3226	589	2189	2549	991	1024	1717	912	3172	3474	2156	891	1132	1559	1771	5395	1350	3096	2264	2812	4083	1406	3457	719	4819	2883
Gem/Mean	792	2576	2820	2703	1254	1041	1362	3218	934	1847	2503	904	978	1764	931	3286	3092	2320	1008	1268	1524	1944	3310	1652	3046	2126	3641	3850	1320	2946	1569	4707	3005
CV	23.9	14.4	10.8	14.4	24.5	24.2	20.1	10.2	23.4	24.9	11.8	17.7	25.9		21.3	12.3	18.1	13.5	24.8	22.5	18.2	23.2	18.8	16.4	18.0		13.9	6.0	16.8	5.4	5.8	11.2	

Tabel 19 Opbrengswaarskynlikheid (%) van kultivars geëvalueer in 2021/22, 2022/23 en 2023/24 vir die koeler produksiegebiede by verskillende opbrengspotensiale
Table 19 Yield probability (%) of cultivars evaluated in the 2021/22, 2022/23 and 2023/24 for the cooler production areas at different yield potentials

Kultivar	Opbrengswaarskynlikheid/Yield potential (t/ha)							Regressie lyn/regression line	
Cultivar	1.5	2.0	2.5	3.0	3.5	4.0	4.5	Fprob	R2
RA4918RR	61	59	56	55	52	51	48	<0.001	0.85
NS 5258 R	62	57	51	46	41	36	31	<0.001	0.78
DM 5351 RSF	62	60	57	54	52	49	47	<0.001	0.78
Y540	53	51	49	48	46	45	43	<0.001	0.73
RA 565 R	51	53	53	55	55	56	58	0.0008	0.66
LS6851R	51	49	45	41	38	35	32	0.0006	0.67
PAN 1521R	56	56	55	55	55	54	53	<0.001	0.97
PAN 1555R	35	36	37	39	41	42	43	<0.001	0.91
RA660 R	43	45	46	49	50	51	53	<0.001	0.95
DM 59R03 RSF	49	51	54	56	58	60	62	<0.001	0.93
P62T16R	39	37	35	32	31	29	28	<0.001	0.74
P64T39 R	46	48	50	53	55	57	59	<0.001	0.91
Y657	46	51	55	60	64	68	72	<0.001	0.93
PAN 1644R	45	48	51	53	56	59	61	<0.001	0.93
P71T74 R	43	47	51	55	59	63	67	<0.001	0.93

Tabel 20 Graanopbrengs (kg/ha^{-1}) van kultivars gedurende die 2022/23 en 2023/24 groeiseisoen ten opsigte van die verskillende lokaliteite wat in die koeler produksiegebiede geleë is
Table 20 Grain yield (kg/ha^{-1}) of cultivars during the 2022/23 and 2023/24 growing season for the various localities situated in the cooler production areas

Kultivar Cultivar	2022/23												2023/24													
	Bapsfontein PD1	Bapsfontein PD2	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas 1	Delmas 2	Kinross	Kokstad	Standerton	Gem/Mean	Alice	Bapsfontein PD1	Bapsfontein PD2	Belfast	Bethlehem PD1	Bethlehem PD2	Clarens	Delmas	Kinross	Kokstad	Marquard	Standerton	Zanyokwe	Gem/Mean
RA4918RR	1728	1741	3499	2821	2674	1437	3047	2937	2562	3041	4360	2713	796	2864	2608	2989	1992	1019	1764	3487	1710	1477	2867	984	808	1951
NS 5258 R	1558	1774	4064	2075	2429	1733	3080	3152	3180	2603	3387	2639	923	2540	2277	3412	1955	948	2207	3657	1407	1617	2370	779	1108	1938
DM 5351 RSF	1946	1692	3247	2164	2241	1871	2731	2975	3280	2861	4230	2658	743	2380	2573	2763	2019	837	2414	4034	1539	1908	2498	1122	971	1985
RA5022BR	1255	634	2881	3404	2598	2843	2407	3339	3020	3471	3296	2650	827	2760	2538	3500	2245	1048	2863	4106	1764	1859	2848	678	1153	2168
PAN 1515R	-	-	-	-	-	-	-	-	-	-	-	-	678	2887	1808	2375	1975	1001	2092	2805	1475	1303	2281	732	835	1711
DM 53I54 RSF IPRO	2369	1721	3693	2353	2652	2147	3279	2506	2691	3367	4488	2842	730	2044	2622	2155	1928	1120	2659	3572	1228	1589	2301	1059	725	1826
P52T52R	-	-	-	-	-	-	-	-	-	-	-	-	1031	2705	2885	2937	1300	906	1368	3138	1195	1924	2911	894	876	1851
LG60353R	-	-	-	-	-	-	-	-	-	-	-	-	666	2420	2722	3126	1074	1106	1456	3969	1371	1520	2507	924	924	1830
Y540	1911	1728	3183	3805	2270	1933	2471	3131	2412	2906	2988	2613	833	2820	2713	3015	1256	846	1352	3440	1438	1943	2548	722	770	1823
RA 565 R	1851	1584	2802	3798	2214	1934	2180	3370	2139	2563	3822	2569	718	3684	3009	3565	1193	684	1852	3562	1011	2380	3320	649	1054	2052
LAKE 253 RR	-	-	-	-	-	-	-	-	-	-	-	-	918	1548	1665	1387	1498	1132	1124	2481	669	1217	1762	653	704	1289
LS6851R	2213	1568	2300	3595	2118	1951	1789	3582	1692	2628	3030	2406	740	2384	3071	2353	1230	1047	1343	3170	1483	2467	2730	668	896	1814
US56-26R	-	-	-	-	-	-	-	-	-	-	-	-	630	2800	3584	3067	1388	1190	1423	3470	1048	1420	2573	1041	1109	1903
PAN 1521R	1826	1694	3071	3372	2554	3134	2009	3313	2163	2597	3727	2678	560	2558	2985	2855	1714	1596	1292	3505	1207	1682	2777	913	1052	1900
PAN 1555R	2061	1900	2867	2971	1980	2200	1303	3337	1320	2265	4412	2420	1045	2281	2432	2426	717	914	1109	2829	580	1297	2366	685	978	1512
RA5821R	1733	1423	1916	3126	2491	2693	1924	3058	1758	2667	3803	2418	881	3018	3161	3550	1139	915	1145	3345	1079	1339	2253	850	1111	1830
LAKE 250 RR	-	-	-	-	-	-	-	-	-	-	-	-	600	1142	2820	1271	1983	839	1650	2418	949	2188	2083	711	1047	1515
PAN 1588R	-	-	-	-	-	-	-	-	-	-	-	-	769	2652	2590	2943	930	916	1561	3059	614	2006	2289	837	947	1701
RA660 R	1396	1733	2916	3473	2051	1933	1438	3414	1675	3093	3677	2436	769	2667	2929	2745	895	996	1284	3365	651	2473	2325	923	1019	1773
DM 59R03 RSF	2191	1495	2308	2938	2500	2729	2010	3561	1718	2704	4023	2561	1029	2425	3226	2124	1005	726	828	3291	705	1968	2456	1026	968	1675
DM 59I60 RSF IPRO	1985	1791	2518	3093	2095	1343	1689	3659	1985	2807	4490	2496	700	2423	3171	3129	830	1428	1063	3555	704	991	2646	1128	1099	1759
LG60260IPR	1677	1438	2504	3050	2016	1962	1673	2981	1995	2359	3005	2242	526	2658	3031	2836	846	1013	1065	3447	838	1628	2805	699	873	1713
LG60259R	-	-	-	-	-	-	-	-	-	-	-	-	720	2747	2674	2347	1266	1015	1140	3057	796	1534	2430	979	943	1665
LG60261IPR	1926	1462	1139	2898	1936	2146	1390	3066	1582	2314	3918	2162	657	2467	3039	2568	1751	614	870	2725	510	1721	2209	942	1016	1622
P62T16R	1706	1676	1686	2929	2327	1987	1846	3285	1399	2056	3028	2175	845	2710	2292	2466	926	1036	940	2503	410	2508	2544	874	1060	1624
US63-22 IPRO	-	-	-	-	-	-	-	-	-	-	-	-	662	2564	3066	3313	887	1385	584	3011	633	1561	2260	1024	1203	1704
RA6422BR	2094	1526	2425	3221	2468	1657	1381	3205	1930	2687	3428	2366	807	2392	3109	2355	1017	1025	1292	3010	737	2150	2054	1090	981	1694
P64T39 R	1891	1877	2301	3397	1955	2729	1365	3863	1405	2428	3596	2437	576	2784	3189	2883	1010	911	1211	3185	708	2044	2418	1134	657	1747
Y657	2173	1875	2374	3259	2362	2010	1463	3294	1506	3231	4483	2548	923	2920	3076	2867	1049	1173	1195	3369	1081	2244	2533	958	935	1871
Y651IPRO	1770	1536	1801	2752	1385	1754	1601	3009	1321	2207	2066	1928	645	2412	2729	2361	883	1146	728	2768	671	1617	2741	819	895	1570
DM 68R09 RSF	-	-	-	-	-	-	-	-	-	-	-	-	878	2608	2855	2220	1031	1281	1287	3393	510	2074	2648	952	1183	1763
DM 61I63 RSF IPRO	1809	1592	2429	2562	2081	2496	1717	3698	1836	1851	3610	2335	1107	2757	2915	2250	809	859	1175	2832	626	2590	2862	1253	1109	1780
PAN 1644R	1690	1892	2455	3515	2402	2423	1944	3023	1683	2759	3888	2516	950	3305	3216	3125	663	1213	1102	2994	506	2322	2532	987	921	1833
US68-12 IPRO	-	-	-	-	-	-	-	-	-	-	-	-	900	2171	3197	2786	629	1580	351	2838	251	1892	2305	952	1274	1625
P71T74 R	2083	1198	2021	2932	2173	2017	1604	3446	1541	2788	3639	2313	929	2653	2940	2555	841	965	867	3226	589	2189	2549	991	1024	1717
PAN 1502 R	2398	1639	2633	3094	1811	2421	1819	2740	1593	2405	3340	2354	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAN 1507 R	2025	1930	2105	3037	2007	1584	1801	3159	1923	2089	2512	2198	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RA5722BR	898	1140	3134	3418	2238	1958	2394	3351	2197	2028	3478	2385	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P57T19 R	2018	1680	2593	2995	2568	3016	2085	3345	1789	2770	4416	2661	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NS 5909 R	1970	1931	1959	3034	1953	1719	1624	3914	1447	1837	3073	2224	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LS 6860 R	1708	1429	1806	2505	1921	1715	1091	2741	999	1906	3611	1948	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RA6521BR	921	771	1688	2605	2031	1280	1071	3145	1397	1717	4032	1878	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM 6.8i RR	1582	1341	2337	3401	2246	2124	1408	3639	1343	2459	3951	2348	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gem/Mean	1824	1575	2520	3050	2211	2090	1895	3257	1890	2546	3650	2410	792	2576	2820	2703	1254	1041	1362	3218	934	1847	2503	904	978	1764

Tabel 21 Opbrengswaarskynlikheid (%) van die kultivars geëvalueer in 2021/22, 2022/23 en 2023/24 vir die matige produksiegebiede by verskillende opbrengspotensiale
Table 21 Yield probability (%) in the 2021/22, 2022/23 and 2023/24 for the moderate production areas at different yield potentials

Kultivar	Opbrengswaarskynlikheid/Yield potensial (t/ha)							Regressie lyn/Regression line	
Cultivar	1.5	2.0	2.5	3.0	3.5	4.0	4.5	Fprob	R2
RA4918RR	54	54	55	55	55	55	56	<0.001	0.93
NS5258R	45	46	48	49	50	51	52	<0.001	0.90
DM5351RSF	36	39	42	45	49	52	56	<0.001	0.86
Y540	52	54	56	58	60	61	63	<0.001	0.91
RA565R	61	59	59	57	56	55	54	<0.001	0.95
LS6851R	43	43	43	42	42	41	41	<0.001	0.93
PAN1521R	62	60	58	55	53	51	48	<0.001	0.88
PAN1555R	50	47	45	42	39	36	34	<0.001	0.95
RA660R	46	48	50	52	54	56	58	<0.001	0.94
DM59R03RSF	52	49	46	44	41	38	35	<0.001	0.94
P62T16R	53	53	53	52	52	52	52	<0.001	0.87
P64T39R	49	48	48	48	48	47	47	<0.001	0.88
Y657	56	56	56	55	55	54	54	<0.001	0.87
PAN1644R	51	50	50	49	49	49	49	<0.001	0.92
P71T74R	50	51	52	53	54	56	57	<0.001	0.87

Tabel 22 Graanopbrengs (kg/ha^{-1}) van kultivars gedurende die 2022/23 en 2023/24 groeiseisoen ten opsigte van die verskillende lokaliteite wat in die matige produksiegebiede geleë is
Table 22 Grain yield (kg/ha^{-1}) of cultivars during the 2022/23 and 2023/24 growing season for the various localities situated in the moderate production areas

Kultivar Cultivar	2022/23											2023/24											
	Barberspan	Greytown	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	Potchefstroom (Pannar)	Rietvlei	Umtata	Winterton	Gem/Mean	Barberspan	Cedara	Greytown Kranskop	Greytown Pannar	Heilbron	Kroonstad	Kroonstad (Agricol)	Leeudoringstad	Potchefstroom (Limagrain)	umtata	Winterton	Gem/Mean
RA4918RR	2776	4941	3512	3066	4088	4357	4134	4370	4072	5504	4082	948	3532	3765	2502	789	1420	1485	1887	3257	1796	3903	2299
NS 5258 R	3028	4986	3578	2703	3643	4251	4169	3336	4112	6168	3997	865	3393	3623	2869	837	1374	1836	1154	3573	1418	3729	2243
DM 5351 RSF	2642	5015	3648	2028	2982	4081	4317	3113	4868	6161	3885	685	3404	3712	2498	773	1150	1183	1705	3110	1026	3554	2073
RA5022BR	2356	4552	4456	3251	3643	4515	3642	4509	3662	4785	3937	885	2889	3361	2515	1489	2209	1638	1698	3554	1714	3358	2301
PAN 1515R	-	-	-	-	-	-	-	-	-	-	-	555	2931	3719	2105	981	1595	1234	1401	3453	1485	3968	2130
DM 53I54 RSF IPRO	3205	5025	3865	2162	2960	4479	3967	2453	4318	5715	3815	1124	3035	2943	2326	1283	1133	1446	1923	4388	1896	3990	2317
P52T52R	-	-	-	-	-	-	-	-	-	-	-	881	3827	2919	1859	1009	1319	2181	1592	3747	1567	2867	2161
LG60353R	-	-	-	-	-	-	-	-	-	-	-	725	3223	3437	2337	1014	1503	1141	1704	3104	1444	3456	2099
Y540	3163	5804	3915	3160	3422	3917	4558	3596	3935	5825	4130	799	3496	3815	2606	851	1110	1316	1654	4976	1476	3292	2308
RA 565 R	2551	5321	3770	3262	3334	3781	3958	3922	3937	5278	3911	853	3633	3441	2649	763	1459	1436	2133	3358	1768	3282	2252
LAKE 253 RR	-	-	-	-	-	-	-	-	-	-	-	1205	3482	2815	2023	1147	732	1084	2469	2540	1686	2562	1977
LS6851R	2385	4140	3525	3495	3351	3796	3820	4291	3613	5198	3761	702	3285	2691	2256	932	1161	822	1581	3066	1591	2922	1910
US56-26R	-	-	-	-	-	-	-	-	-	-	-	933	3048	3247	2440	1130	1235	1168	2520	3067	1857	3489	2194
PAN 1521R	2469	4869	4344	4072	4331	3941	3965	3952	4081	4643	4067	855	2878	3112	2612	926	942	2309	1982	3859	1692	4197	2306
PAN 1555R	2425	4931	3374	3701	3337	3656	3514	3755	3757	5501	3795	975	3347	3021	1844	857	1260	1918	2069	3440	1503	2747	2089
RA5821R	2228	5276	4657	2996	4309	4002	4399	3708	4104	5056	4074	607	3288	3073	2558	790	937	1592	1479	3290	1769	3042	2039
LAKE 250 RR	-	-	-	-	-	-	-	-	-	-	-	1199	3011	2813	1803	806	941	1122	1472	1527	1528	2835	1732
PAN 1588R	-	-	-	-	-	-	-	-	-	-	-	793	2966	2365	2070	936	1299	1634	2088	3623	1674	2889	2031
RA660 R	2766	5626	3797	3959	3824	3704	4462	3483	3445	5806	4087	712	3237	3086	2586	953	1211	1156	2260	3590	1848	2289	2084
DM 59R03 RSF	2290	4888	3859	3093	3393	4122	4005	3502	3996	4682	3783	707	3507	3037	2224	805	1254	1765	1981	2296	1796	2693	2006
DM 59I60 RSF IPRO	3053	4611	3939	3914	4185	3501	4444	4802	3597	6144	4219	1146	3295	2347	2733	1008	1380	1752	2786	2499	1463	3391	2164
LG60260IPR	2236	4573	3841	3390	3744	3893	3619	4149	3921	4496	3786	1010	3225	3137	1995	1011	1507	1545	1576	4542	1824	2693	2188
LG60259R	-	-	-	-	-	-	-	-	-	-	-	920	3312	2682	2072	763	1117	1482	1837	3187	1677	3064	2010
LG60261IPR	2358	5041	3666	4108	2987	3213	4119	3945	4448	5428	3931	1024	3186	2387	2122	997	991	1460	1974	2259	1947	2911	1933
P62T16R	3428	5421	3601	2492	4569	3544	4004	4797	4279	5643	4178	1158	3314	3038	2330	1081	1442	1597	2583	1915	1733	3064	2114
US63-22 IPRO	-	-	-	-	-	-	-	-	-	-	-	1104	3088	1877	2252	1049	715	1396	1990	6619	1841	2050	2180
RA6422BR	3148	4807	3890	3942	4302	4160	4043	3572	3466	5154	4048	1024	3507	2994	2555	1210	1111	1828	2584	1560	1803	3412	2144
P64T39 R	2044	4908	4209	4128	3969	3470	4413	3682	4182	5431	4044	746	3026	3416	2688	919	1186	1587	1823	2172	1716	2758	2003
Y657	3236	5404	4037	3064	3262	3556	4513	3853	3732	5086	3974	1069	3377	2918	2348	1112	1466	1437	1784	2009	1682	2845	2004
Y651IPRO	2941	4874	3519	4236	3496	3805	3744	4871	3446	5561	4049	1105	3311	3237	2030	1138	1258	1205	2079	2894	1332	2562	2014
DM 68R09 RSF	-	-	-	-	-	-	-	-	-	-	-	1197	3336	2593	2240	1125	1429	1588	2552	2357	1575	2540	2048
DM 61I63 RSF IPRO	4004	4226	4098	3119	4390	3796	3502	4663	3039	4979	3982	1129	3300	3264	2594	1406	1768	1995	2350	4849	1970	2736	2487
PAN 1644R	2034	5399	3989	3036	3535	3493	4236	3803	3477	5305	3831	828	3685	3086	2427	963	1113	1546	2012	2027	1676	3107	2043
US68-12 IPRO	-	-	-	-	-	-	-	-	-	-	-	1184	3466	3788	1962	1552	1537	1879	1594	4761	1712	1319	2250
P71T74 R	2318	5563	3459	3791	3827	3434	4128	3145	4053	5499	3922	912	3172	3474	2156	891	1132	1559	1771	5395	1350	3096	2264
PAN 1502 R	2274	4595	3392	3261	3112	3429	3749	3988	4599	4988	3739	-	-	-	-	-	-	-	-	-	-	-	-
PAN 1507 R	2539	4806	3358	3596	3247	3578	4153	4790	3026	5379	3847	-	-	-	-	-	-	-	-	-	-	-	-
RA5722BR	2509	4335	3830	3051	4807	3772	3758	4197	2791	5283	3833	-	-	-	-	-	-	-	-	-	-	-	-
P57T19 R	3019	4756	3918	3239	4154	2805	3248	4304	4177	4814	3843	-	-	-	-	-	-	-	-	-	-	-	-
NS 5909 R	2285	4119	3928	3982	3741	3827	3301	4040	3511	5557	3829	-	-	-	-	-	-	-	-	-	-	-	-
LS 6860 R	2198	4085	3766	3450	3679	2771	3481	4424	3827	4425	3611	-	-	-	-	-	-	-	-	-	-	-	-
RA6521BR	3212	3979	3180	2985	4156	4381	3631	3499	3664	5274	3796	-	-	-	-	-	-	-	-	-	-	-	-
DM 6.8i RR	2951	5281	3828	4190	3892	3040	3908	4011	3338	4879	3932	-	-	-	-	-	-	-	-	-	-	-	-
Gem/Mean	2690	4880	3805	3373	3740	3752	3966	3954	3827	5301	3929	931	3286	3092	2320	1008	1268	1524	1944	3310	1652	3046	2126

Tabel 23 Opbrengswaarskynlikheid (%) van kultivars geëvalueer in 2021/22, 2022/23 en 2023/24 vir die warm produksiegebiede by verskillende opbrengspotensiale
Table 23 Yield probability (%) of cultivars evaluated in the 2021/22, 2022/23 and 2023/24 for the warm production areas at different yield potentials

Kultivar	Opbrengswaarskynlikheid/Yield potential (t/ha)								Regressielyn/Regression line	
Cultivar	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	Fprob	R2
RA4918RR	65	63	61	59	56	54	51	49	<0.001	0.83
NS5258R	47	46	44	43	42	41	40	39	<0.001	0.74
DM5351RSF	62	58	54	49	45	41	37	33	<0.001	0.79
Y540	42	43	45	47	48	50	51	53	<0.001	0.94
RA565R	41	43	46	48	51	53	55	58	<0.001	0.92
LS6851R	40	41	42	44	45	46	47	49	<0.001	0.81
PAN1521R	56	56	55	54	53	52	51	51	<0.001	0.88
PAN1555R	51	47	43	38	34	31	27	24	<0.001	0.79
RA660R	68	66	64	61	59	57	55	52	<0.001	0.86
DM59R03RSF	49	49	50	51	51	52	52	53	<0.001	0.89
P62T16R	40	40	40	41	41	41	41	42	<0.001	0.85
P64T39R	54	55	57	58	60	61	62	63	<0.001	0.96
Y657	52	56	59	63	66	69	72	74	<0.001	0.90
PAN1644R	39	44	49	54	59	63	68	72	<0.001	0.93
P71T74R	46	48	50	52	54	55	57	59	<0.001	0.91

Tabel 24 Graanopbrengs (kg/ha^{-1}) van kultivars gedurende die 2022/23 en 2023/24 groeiseisoen ten opsigte van die verskillende lokaliteite wat in die warm produksiegebiede geleë is
Table 24 Grain yield (kg/ha^{-1}) of cultivars during the 2022/23 and 2023/24 growing season for the various localities situated in the warm production areas

Kultivar Cultivar	2022/23							2023/24						
	Groblersdal (Agri-Seeds)	Groblersdal ARC	Hoopstad	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Thabazimbi	Gem/Mean	Brits	Hoopstad	Lichtenburg	Schweizer-Reneke PD1	Schweizer-Reneke PD2	Warrenton	Gem/Mean
RA4918RR	3221	4001	6110	4161	3939	4496	4321	4372	4183	1489	3854	2650	4475	3504
NS 5258 R	2684	5255	6048	3738	3805	4774	4384	4268	3476	947	3144	1859	3663	2893
DM 5351 RSF	3718	4750	4653	3971	4687	3224	4167	4137	5008	1408	2825	2609	3859	3308
RA5022BR	3314	4445	5669	3805	4165	2970	4061	4434	5088	1330	2455	2532	4094	3322
PAN 1515R	-	-	-	-	-	-	-	3856	1630	1248	2069	1578	3216	2266
DM 53I54 RSF IPRO	3727	3970	6581	4917	3890	3730	4469	3655	2981	1593	2720	2942	4317	3035
P52T52R	-	-	-	-	-	-	-	3773	3501	1131	2307	1995	4868	2929
LG60353R	-	-	-	-	-	-	-	3779	3147	1212	1936	1777	4563	2736
Y540	3385	4000	5736	4776	4705	4203	4467	3973	3631	1089	2849	1648	4917	3018
RA 565 R	3567	4785	5548	4044	4805	3202	4325	4216	5042	1530	2604	1190	4813	3233
LAKE 253 RR	-	-	-	-	-	-	-	2339	2895	775	1733	1294	4693	2288
LS6851R	3955	2986	6464	4353	4218	4003	4330	2938	3735	1127	2176	1322	5440	2790
US56-26R	-	-	-	-	-	-	-	4642	3992	1209	3007	1720	5119	3281
PAN 1521R	3720	3905	6369	4591	4492	3894	4495	4258	3108	1447	2819	2143	5113	3148
PAN 1555R	3435	3503	4183	3946	4690	2924	3780	2962	5216	1197	2347	1619	4606	2991
RA5821R	3375	3305	5853	4923	3876	3470	4134	3763	3233	1087	2806	1652	4530	2845
LAKE 250 RR	-	-	-	-	-	-	-	1571	2715	1063	1644	1109	3990	2016
PAN 1588R	-	-	-	-	-	-	-	4118	3297	1469	2926	1361	4541	2952
RA660 R	4306	4631	6085	4905	4045	4134	4684	4666	3411	1320	3692	1693	4541	3220
DM 59R03 RSF	3244	4340	5855	4548	5116	2942	4341	3892	3638	1238	3723	1128	5549	3195
DM 59I60 RSF IPRO	4253	4290	5802	5078	4166	3826	4569	4089	4390	1586	4339	1176	5239	3470
LG60260IPR	3732	3919	6016	4774	3990	4113	4424	3486	3964	1412	2312	1631	4781	2931
LG60259R	-	-	-	-	-	-	-	3513	2659	1335	2080	1386	4764	2623
LG60261IPR	4090	4025	5260	5142	4988	3655	4527	4263	5139	1495	3121	2150	4699	3478
P62T16R	3315	4347	5305	4455	4430	1811	3944	2716	4344	1080	2521	1468	4835	2827
US63-22 IPRO	-	-	-	-	-	-	-	3780	4882	1307	2771	1250	5179	3195
RA6422BR	3898	3826	4524	4959	4827	3736	4295	3504	3053	1485	3038	1804	5304	3031
P64T39 R	3452	3844	5556	5066	4751	3526	4366	3653	3992	1296	3368	1280	4988	3096
Y657	3326	4190	5517	5506	5043	3239	4470	3667	5000	1470	3509	1443	5195	3381
Y651IPRO	3285	3381	4460	4776	4944	3031	3979	2246	3614	1097	3652	1547	4514	2778
DM 68R09 RSF	-	-	-	-	-	-	-	3655	4257	1497	4078	894	4862	3207
DM 61I63 RSF IPRO	3714	4049	5849	5029	4389	3794	4471	3947	4357	1959	4115	997	4862	3373
PAN 1644R	3322	4595	5642	5261	4604	2905	4388	3445	4252	1251	3457	656	5446	3085
US68-12 IPRO	-	-	-	-	-	-	-	3035	3822	1622	3657	678	4350	2861
P71T74 R	3307	4746	5604	5003	4173	3273	4351	2812	4083	1406	3457	719	4819	2883
PAN 1502 R	3355	3887	5962	4368	4478	3414	4244	-	-	-	-	-	-	-
PAN 1507 R	3747	3880	4433	4419	4076	3532	4014	-	-	-	-	-	-	-
RA5722BR	3844	3899	6275	4515	3784	3679	4333	-	-	-	-	-	-	-
P57T19 R	2995	3796	4413	3609	4225	2568	3601	-	-	-	-	-	-	-
NS 5909 R	3649	3716	5830	4900	4425	4097	4436	-	-	-	-	-	-	-
LS 6860 R	3557	2937	4687	4271	4294	2318	3677	-	-	-	-	-	-	-
RA6521BR	3696	2623	4906	4493	3732	3733	3864	-	-	-	-	-	-	-
DM 6.8i RR	2799	4397	4981	4653	3450	3548	3971	-	-	-	-	-	-	-
Gem/Mean	3531	4007	5506	4592	4350	3493	4246	3641	3850	1320	2946	1569	4707	3005

Tabel 25 Saamgevatte inligting van al die lokaliteite in die koel produksiegebiede, 2023/24
Table 25 Summerised information for all the localities in the cool production areas, 2023/24

Kultivar/Cultivar	Dae tot blom/ Days to flowe-ring	Fisiologies ryp/ Physological mature	Oes datum/ Harvest date	Planthoogte/ Plant height	Peulhoogte/ Pod height	Omval/ Lod-ging	Groenstam/ Green stem	Oopspring/ Shattering	Planttelling/ Number of plants	Persentasie ongewenste sade/Percentage undesirable seed	Massa 100 sade/ Mass 100 seeds	Olie persen-tasie/Oil percentage	Ru-proteïen-persentasie/ Crude protein percentage	Opbrengs/ Yield
RA4918RR	61	127	151	60	8	1.00	1.29	1.08	227	0.73	13.43	21.70	38.57	1951
NS 5258 R	63	127	152	56	6	1.00	1.42	1.04	262	0.70	13.13	20.89	40.92	1938
DM 5351 RSF	62	125	153	63	7	1.00	2.08	1.17	235	0.79	13.71	20.99	37.82	1985
RA5022BR	63	127	153	58	7	1.00	1.46	1.17	218	1.12	13.27	20.87	39.60	2168
PAN 1515R	68	127	153	67	8	1.00	1.25	1.00	205	0.78	13.45	20.30	40.70	1711
DM 53I54 RSF IPRO	62	125	154	64	8	1.04	1.46	1.13	173	1.01	14.75	19.77	39.61	1826
P52T52R	74	144	170	62	11	1.26	1.46	1.00	232	0.82	13.15	20.50	38.50	1851
LG60353R	68	136	165	59	9	1.00	1.33	1.08	229	0.80	13.65	21.15	39.20	1830
Y540	71	136	166	61	9	1.00	1.33	1.04	210	1.29	12.99	20.87	38.57	1823
RA 565 R	75	140	166	63	11	1.00	1.46	1.00	244	1.94	14.57	20.82	38.86	2052
LAKE 253 RR	81	154	172	54	7	1.11	1.79	1.00	130	0.81	14.12	20.05	38.78	1289
LS6851R	74	145	173	62	10	1.00	1.33	1.00	248	1.74	12.08	20.91	38.07	1814
US56-26R	72	139	166	68	10	1.30	1.38	1.00	215	1.20	13.84	21.44	38.21	1903
PAN 1521R	76	142	170	68	12	1.00	1.46	1.00	251	1.15	14.26	20.13	39.84	1900
PAN 1555R	82	151	176	68	14	1.11	2.25	1.00	233	1.06	14.66	19.47	40.98	1512
RA5821R	75	140	172	62	10	1.00	1.25	1.00	234	1.15	13.99	20.08	39.87	1830
LAKE 250 RR	78	147	178	58	9	1.04	1.62	1.05	113	0.73	15.77	19.84	38.88	1515
PAN 1588R	81	148	172	66	11	1.00	1.46	1.00	236	0.99	13.34	20.27	40.03	1701
RA660 R	74	140	166	59	9	1.00	1.54	1.00	255	2.23	13.62	20.63	39.90	1773
DM 59R03 RSF	73	142	175	67	10	1.11	1.42	1.00	240	1.19	15.12	20.22	39.20	1675
DM 59I60 RSF IPRO	75	145	176	66	11	1.15	1.29	1.00	236	1.41	12.42	20.47	39.10	1759
LG60260IPR	81	150	176	70	13	1.00	1.54	1.00	248	1.42	13.40	19.38	40.28	1713
LG60259R	79	149	172	69	11	1.00	1.83	1.00	223	1.11	13.97	22.73	38.42	1665
LG60261IPR	82	150	179	68	14	1.00	2.38	1.00	245	1.44	13.53	19.56	39.55	1622
P62T16R	80	150	179	68	12	1.00	1.88	1.00	232	1.67	14.05	21.57	37.15	1624
US63-22 IPRO	77	153	183	71	14	1.52	2.13	1.00	253	1.36	13.72	19.56	38.72	1704
RA6422BR	82	151	178	68	12	1.00	1.54	1.00	249	0.79	14.23	20.88	38.12	1694
P64T39 R	83	150	178	69	12	1.04	1.58	1.00	237	1.25	14.18	20.28	39.97	1747
Y657	78	142	172	65	10	1.00	1.33	1.00	237	1.11	13.28	20.52	39.65	1871
Y651IPRO	85	152	181	75	16	1.22	2.00	1.00	236	1.35	13.47	19.63	37.33	1570
DM 68R09 RSF	82	149	179	65	11	1.00	1.58	1.00	224	0.90	13.66	20.01	39.05	1763
DM 61I63 RSF IPRO	84	149	182	72	14	1.00	1.88	1.00	233	1.06	14.27	21.38	39.60	1780
PAN 1644R	78	142	173	57	11	1.22	1.54	1.00	251	0.73	13.84	20.12	39.65	1833
US68-12 IPRO	91	154	185	75	14	1.52	3.08	1.00	252	1.91	13.20	18.65	38.20	1625
P71T74 R	84	151	182	71	12	1.11	2.00	1.00	230	1.00	14.55	19.34	39.25	1717
Gem/Mean	76	143	171	65	11	1.08	1.65	1.02	228	1.16	13.79	20.43	39.15	1764

Tabel 26 Saamgevatte inligting van al die lokaliteite in die matige produksiegebiede, 2023/24
Table 26 Summerised information for all the localities in the moderate production areas, 2023/24

Kultivar/Cultivar	Dae tot blom/ Days to flowe-ring	Fisiologies ryp/ Physological mature	Oes datum/ Harvest date	Planthoogte/ Plant height	Peulhoogte/ Pod height	Omval/ Lod-ging	Groenstam/ Green stem	Oopspring/ Shattering	Planttelling/ Number of plants	Persentasie ongewenste sade/Percentage undesirable seed	Massa 100 sade/ Mass 100 seeds	Olie persen-tasie/Oil percentage	Ru-proteïen-persentasie/ Crude protein percentage	Opbrengs/ Yield
RA4918RR	50	115	136	63	8	1.07	1.48	1.00	251	0.94	12.88	21.97	37.79	2299
NS 5258 R	50	114	129	61	7	1.00	1.11	1.05	269	1.70	12.47	21.05	39.92	2243
DM 5351 RSF	51	114	134	72	11	1.00	1.22	1.10	253	1.10	13.63	21.15	37.19	2073
RA5022BR	50	114	134	62	7	1.00	1.11	1.05	250	1.79	12.65	21.10	38.24	2301
PAN 1515R	53	114	133	72	9	1.00	1.00	1.00	240	1.24	13.04	21.15	39.76	2130
DM 53I54 RSF IPRO	51	119	134	64	8	1.04	1.26	1.00	199	0.93	15.47	21.08	38.26	2317
P52T52R	59	122	144	66	10	1.37	1.48	1.00	283	0.89	13.21	23.11	38.82	2161
LG60353R	54	116	136	62	9	1.00	1.22	1.00	244	1.43	13.28	22.69	38.08	2099
Y540	58	120	141	67	10	1.00	1.26	1.00	249	1.29	13.03	22.47	37.69	2308
RA 565 R	61	124	143	66	10	1.00	1.33	1.00	273	0.80	14.53	22.11	38.18	2252
LAKE 253 RR	66	122	149	58	8	1.00	1.74	1.00	176	1.05	15.31	21.44	38.11	1977
LS6851R	60	127	146	58	9	1.00	1.33	1.00	249	2.20	12.17	21.92	38.16	1910
US56-26R	59	125	145	80	12	1.15	1.11	1.00	255	1.20	13.56	22.65	37.31	2194
PAN 1521R	63	126	144	78	10	1.04	1.33	1.00	279	1.17	14.35	21.21	38.47	2306
PAN 1555R	64	128	149	74	13	1.00	1.52	1.00	240	1.47	14.90	20.95	39.25	2089
RA5821R	62	119	141	70	9	1.11	1.11	1.00	278	1.59	13.10	20.60	40.05	2039
LAKE 250 RR	65	135	154	61	9	1.04	1.81	1.00	173	1.64	16.00	20.17	39.03	1732
PAN 1588R	65	128	148	77	12	1.00	1.22	1.00	296	1.37	13.42	21.20	39.24	2031
RA660 R	61	124	145	64	8	1.00	1.44	1.00	280	1.17	13.68	22.27	38.20	2084
DM 59R03 RSF	59	126	145	74	10	1.15	1.22	1.00	262	1.43	14.68	21.12	38.81	2006
DM 59I60 RSF IPRO	65	128	148	76	12	1.04	1.15	1.00	262	1.19	12.94	21.91	38.14	2164
LG60260IPR	66	129	149	74	10	1.00	1.26	1.00	280	1.30	13.00	21.57	38.19	2188
LG60259R	62	128	148	85	14	1.15	1.22	1.00	256	1.47	13.98	21.63	37.61	2010
LG60261IPR	66	130	150	76	13	1.00	1.89	1.00	267	1.23	13.36	20.13	39.30	1933
P62T16R	64	134	154	71	10	1.07	1.67	1.00	234	1.63	14.81	22.45	37.38	2114
US63-22 IPRO	66	135	157	79	14	1.07	1.74	1.14	258	1.63	14.20	20.80	37.42	2180
RA6422BR	67	137	158	76	12	1.00	2.04	1.00	263	1.52	14.79	21.08	37.19	2144
P64T39 R	67	131	153	79	13	1.07	1.37	1.00	266	2.09	14.21	21.12	39.17	2003
Y657	65	131	151	74	11	1.00	1.44	1.00	236	0.99	13.37	21.19	38.84	2004
Y651IPRO	66	134	153	81	15	1.04	1.26	1.00	253	1.29	13.46	21.16	36.46	2014
DM 68R09 RSF	66	133	154	72	10	1.00	1.63	1.00	240	1.39	13.79	21.19	38.47	2048
DM 61I63 RSF IPRO	68	134	156	79	14	1.00	1.48	1.00	244	1.08	15.01	20.64	37.93	2487
PAN 1644R	64	131	151	68	10	1.00	1.70	1.00	257	1.28	14.33	21.01	39.31	2043
US68-12 IPRO	73	141	161	86	14	1.07	2.44	1.00	267	1.85	13.45	19.50	38.14	2250
P71T74 R	66	136	160	77	12	1.04	1.96	1.00	270	1.38	15.16	20.13	38.59	2264
Gem/Mean	61	126	147	71	11	1.04	1.45	1.01	253	1.36	13.86	21.34	38.36	2126

Tabel 27 Saamgevatte inligting van al die lokaliteite in die warmer produksiegebiede, 2023/24
Table 27 Summerised information for all the localities in the warmer production areas, 2023/24

Kultivar/Cultivar	Dae tot blom/ Days to flowe-ring	Fisiologies ryp/ Physological mature	Oes datum/ Harvest date	Planthoogte/ Plant height	Peulhoogte/ Pod height	Omval/ Lod-ging	Groenstam/ Green stem	Oopspring/ Shattering	Planttelling/ Number of plants	Persentasie ongewenste sade/Percentage undesirable seed	Massa 100 sade/ Mass 100 seeds	Olie persen-tasie/Oil percentage	Ru-proteïen-persentasie/ Crude protein percentage	Opbrengs/ Yield
RA4918RR	39	117	127	78	9	1.00	1.56	1.00	164	1.26	14.67	22.33	37.03	3504
NS 5258 R	39	114	127	75	9	1.00	1.00	1.00	205	1.37	14.21	22.11	38.28	2893
DM 5351 RSF	40	117	130	81	11	1.00	1.67	1.00	186	0.90	14.61	21.82	36.99	3308
RA5022BR	42	116	127	69	8	1.00	1.67	1.00	191	0.95	14.77	22.04	37.75	3322
PAN 1515R	43	115	128	69	9	1.00	1.00	1.00	154	1.74	14.33	21.60	38.98	2266
DM 53I54 RSF IPRO	41	115	127	73	9	1.00	1.33	1.00	146	1.76	16.27	21.21	39.13	3035
P52T52R	51	123	134	80	11	1.00	1.33	1.00	210	1.05	13.78	21.80	36.98	2929
LG60353R	45	118	130	68	9	1.00	1.67	1.00	208	1.26	15.15	22.89	37.45	2736
Y540	47	122	134	76	8	1.00	1.67	1.00	168	1.06	14.93	22.53	36.48	3018
RA 565 R	49	125	134	76	11	1.00	1.89	1.00	205	0.96	15.22	22.01	37.55	3233
LAKE 253 RR	50	131	146	49	4	1.00	4.67	1.00	142	1.36	17.34	20.95	39.03	2288
LS6851R	49	132	146	51	7	1.00	4.78	1.00	204	1.66	15.71	21.43	38.96	2790
US56-26R	53	129	141	99	18	1.47	1.33	1.00	186	1.25	15.70	22.60	36.67	3281
PAN 1521R	51	129	141	91	14	1.20	1.33	1.00	224	1.32	14.86	21.46	38.00	3148
PAN 1555R	53	130	145	95	18	1.00	1.78	1.00	170	1.48	14.94	20.41	39.19	2991
RA5821R	51	122	130	81	10	1.00	1.67	1.00	216	1.41	15.06	21.18	39.13	2845
LAKE 250 RR	52	129	146	53	6	1.00	5.00	1.00	108	1.45	16.76	20.02	38.78	2016
PAN 1588R	52	127	138	96	13	1.00	1.67	1.00	227	1.55	14.08	20.88	39.46	2952
RA660 R	49	126	137	78	11	1.00	1.11	1.00	211	1.63	15.06	21.86	37.87	3220
DM 59R03 RSF	49	127	142	93	13	1.00	1.33	1.00	208	1.71	15.15	21.41	38.17	3195
DM 59I60 RSF IPRO	50	129	145	99	19	1.20	1.00	1.00	209	1.46	14.23	21.34	38.10	3470
LG60260IPR	55	129	145	99	18	1.20	1.33	1.00	192	1.47	14.23	20.91	37.12	2931
LG60259R	51	128	142	86	14	1.00	2.00	1.00	194	1.65	15.09	21.33	38.31	2623
LG60261IPR	53	132	145	93	18	1.00	1.33	1.00	193	1.20	14.25	20.70	38.03	3478
P62T16R	53	134	146	98	17	1.00	1.67	1.00	181	1.62	15.24	22.51	36.44	2827
US63-22 IPRO	52	132	148	101	19	1.60	2.33	1.00	189	1.39	13.94	20.10	37.88	3195
RA6422BR	57	138	147	101	18	1.00	2.56	1.00	202	2.14	15.07	20.91	37.46	3031
P64T39 R	52	133	147	93	16	1.00	1.67	1.00	186	2.07	14.52	21.60	38.04	3096
Y657	53	134	148	99	18	1.00	1.33	1.00	183	1.09	14.03	20.62	39.19	3381
Y651IPRO	57	135	144	105	23	1.00	2.44	1.00	171	2.49	14.04	20.13	37.06	2778
DM 68R09 RSF	58	132	146	90	14	1.20	1.89	1.00	180	1.92	14.25	21.06	38.67	3207
DM 61I63 RSF IPRO	58	134	147	104	21	1.20	1.67	1.00	159	1.63	15.09	19.88	38.94	3373
PAN 1644R	57	134	147	101	19	1.27	2.00	1.00	193	2.14	15.36	20.72	39.25	3085
US68-12 IPRO	62	143	155	111	23	2.00	3.67	1.00	211	1.86	13.40	20.15	37.43	2861
P71T74 R	60	142	156	110	24	1.40	2.67	1.00	192	1.39	15.53	20.40	37.40	2883
Gem/Mean	51	128	140	86	14	1.11	1.97	1.00	188	1.50	14.88	21.28	38.03	3005

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. R. 370 **21 APRIL 2017**

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

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

The Minister of Agriculture, Forestry and Fisheries has under section 15 of the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990) --

(a) made the regulations in the Schedule;

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

(c) read together with section 3(2) of the said Act, repealed the Regulations published by Government Notice No. R478 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 bag manufactured from --

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

(b) polypropylene that complies with SABS specification CKS632 1246: 2012;

"bulk container" means any vehicle or container in which bulk soya beans is transported or stored;

"consignment" means --

(a) a quantity of soya beans of the same class, which belongs to the same owner, delivered at any one time under cover of the same consignment note, delivery note or receipt note, or delivered by the same vehicle or bulk container, or loaded from the same bin of a grain elevator or from a ship's hold; or

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

"container" means a bag or a bulk container;

"defective soya beans" means soya beans and pieces of beans which --

(a) have been damaged by frost, heat or weather conditions;

(b) have been visibly damaged by insects;

(c) are contaminated by moulds or infected by plant diseases;

(d) have a distinctly immature form or which are covered with a whitish membrane or where the testa have a green discolouration; and

(e) when the testa is removed, display discolouration, excluding green discolouration:

Provided that soya beans which were damaged by insects in the green pod stage and of which the discolouration as a result of the damaged is not larger half of the surface of the soya beans, shall not be deemed as defective soya beans;

"foreign matter" means all matter that --

(a) pass through the 1,8 mm slotted screen during the sieving process (including soya beans and pieces of soya beans);

(b) that do not pass through the 1,8 mm slotted screen other than soya beans, glass, coal, dung, sclerotia or metal (including loose seed coats of soya bean as well as pods and parts of pods);

"frost damaged" soya beans with green to green brown seed-lobes with a waxy appearance;

"heat damaged" soya beans with light to dark brown seed-lobes in a cross section;

"insect" in relation to soya beans, means any live insect which is injurious to stored soya beans, irrespective of the stage of development of the insect;

"mould infected soya beans " means soya beans that is shrivelled and deformed in appearance with a colour that varies from medium to dark brown, whereby the parts of infected beans covered in mould;

"other grains" grains or pieces of grains of wheat, barley, oats, triticate, maize, rye and sorghum;

"pods" all whole or damaged soya bean pods;

"poisonous seeds" mean seeds or part of seeds of plant species that in terms of the foodstuffs, cosmetics and disinfectants Act No. 54 of 1972, may present 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**" *Sclerotinia sclerotiorum* is a fungus that produces hard masses of fungi tissue, known as sclerotia. The sclerotia vary in size and form and consist of dark exterior, a white interior and rough surface texture;

"soiled soya beans" means whole soya beans which do not pass through the 4,75 mm screen and which are discoloured by soil or any other substances: Provided that if the discolouration is caused by plant material such as soya beans shall not be regarded as soiled soya beans;

"soya beans" means the threshed seed or pieces of seeds of the plant *Glycine max* and where the word "soya beans" is used in conjunction with the word "consignment", it includes matter other than soya beans that is included in a consignment;

"the Act" means the Agricultural Product Standards Act No. 119 of 1990;

"the 1,8 mm slotted screen" means a 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. 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 between 300 mm and 310 mm maximum 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 the bottom of the tray.

"the 4,75 mm round-hole screen" means a sieve --

(a) with a flat metal sheet of 1,0 mm thickness perforated with round holes of 4,75 mm in diameter that are arranged with the centres of holes at the points of intersection of an equilateral triangular grid with a pitch of 8 mm;

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

(c) the frame of which is at least 40 mm high;

(d) with the inner width of at least 200 mm and the inner length of at least 300 mm. or, in the case of a circular sieve, the inner diameter of at least 278 mm; and

(e) that fits into a tray with a solid bottom; and not less than 20 mm above the bottom of the tray.

"wet pods" all whole or damaged soya bean pods with a moisture content higher than the permissible moisture content.

Restriction on sale of soya beans

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

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

(b) unless the soya beans comply with the standards for the class concerned set out in regulation 4;

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

d) unless the soya beans 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 soya beans contain a substance that renders it unfit for human or animal consumption or for processing into or 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 provision of subregulation (1): Provided that such exemption is done in terms of section 3(1) (c) of the Act.

PART I

QUALITY STANDARDS

Classes of soya beans

3. There are two classes of soya beans, namely Class SB and Class Other soya beans.

Standards for classes of soya beans

4. (1) A consignment of soya beans shall --

(a) be free from a musty, sour, khaki bush or other undesirable smell or 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) contain not more poisonous seeds than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act No. 54 of 1972;

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

(e) with the exception of Class Other soya beans, be free from insects;

(f) be free from animal filth;

(g) with the exception of Class Other soya beans, have a moisture content of not more than 13 percent; and

(h) shall not exceed the maximum percentage of permissible deviation as determined in the Table in the Annexure for the grade.

(2) A consignment of soya beans is classified as Class SB if it --

(a) consists of any seeds of soya beans; and

(b) complies with the standards for the grade of Class SB soya beans as set out in regulation 5.

(3) A consignment of soya beans is classified as Class Other soya beans if it does not comply with the standards for Class SB.

Grades for soya beans

5. (1) Soya beans of Class SB shall be graded as Grade SB1.

(2) No grades are determined for Class Other soya beans.

Standards for grades of soya beans

6. A consignment of soya beans shall be graded as--

Grade SB1 soya beans if the nature of the 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. Soya beans of different classes and grades shall be packed in different containers or stored separately.

Marking requirements

8. Each container or the accompanying sales documents of a consignment of soya beans shall be marked or endorsed with the class and grade of the soya beans.

PART III

SAMPLING

Obtaining sample

9. (1) A representative sample of a consignment of soya beans shall --

(a) in the case of soya beans delivered in bags and subject to regulation 10, be obtained by sampling at least ten per cent 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 soya beans 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 subregulation (1) (a) or (b) shall --

(a) have a total mass of at least 10 kg; and

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

(3) If it is suspected that the sample referred to in subregulation (1)(a) is not representative of that consignment, an additional five per cent 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 subregulation (1)(b).

(4) If it is suspected that sample referred to in subregulation (1)(b) is not representative of that consignment, an additional representative sample shall be obtained by using an alternative sampling patter, 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 soya beans taken from different bags in a consignment in terms of regulation 9(1), it appears that the contents of those bags differ substantially --

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

(b) the bags concerned shall be placed separately; and

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

(2) If, after the discharge of a consignment of soya beans in bulk has commenced, it is suspected that the consignment could be of a grade other than that determined by means of that initial sampling, the discharge shall immediately be stopped and the part of the consignment remaining in the bulk container, as well as the soya beans that are 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 grain that is flowing in bulk.

Working sample

11. A working sample shall be obtained by dividing the representative sample of the consignment according to the ICC (International Association of Cereal Chemistry) 101/1 method.

PART IV

INSPECTION METHODS

Determination of undesirable odours, harmful substances, poisonous seeds, glass, metal, coal, dung, insects and animal filth

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

(a) whether it has musty, sour, khaki bush or other undesirable odour;

(b) whether it contains soya beans in which or on which a substance is found, that renders it unfit for human or animal consumption or for processing into or for utilisation as food or feed;

(c) whether it contains poisonous seeds;

(d) whether it contains glass, metal, coal or dung;

(e) whether it contains any insects; and

(f) whether it contains animal filth.

Determination of moisture content

13. The moisture content of a consignment of soya beans may be determined according to any suitable method: Provided that the result thus obtained is in accordance with the maximum permitted for a class 1 moisture meter as detailed in ISO 7700/2 based on result of the 72 hour, 103°C oven dried method [the latest revision of the AACCI ("American Association of Cereal Chemists International) Method 44 - 15A].

Determination of percentage of wet pods

14. The percentage of wet pods in a consignment of soya beans shall be determined as follows:

(a) Obtain a working sample of at least 10 kg of soya beans from a representative sample of the consignment.

(b) Remove all wet pods by hands from the working sample and determine the mass thereof.

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

(d) Such percentage represents the percentage of wet pods in the consignment concerned.

Determination of percentage of other grain, sunflower seed, stones, sclerotia and foreign matter

15. The percentage of other grain, sunflower seed, stones, sclerotia and foreign matter in a consignment of soya beans shall be determined as follows:

(a) Obtain working samples of at least 200 g from a representative sample of the consignment.

(b) Place the 1,8 mm slotted screen in the pan and the 4,75 mm round-hole screen on top of the 1,8 mm slotted screen. Place the sample on the 4,75 mm round-hole screen and sieve the sample by moving the sieve 30 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 1,8 mm screen, which rests on a table or other suitable smooth surface, 250 mm to 460 mm away and towards the operator with each stroke. The prescribed 30 strokes must be completed within 30 to 35 seconds: Provided that the screening process may also be performed in some or other container or an automatic sieving apparatus.

(c) Remove the foreign matter from both sieves by hand and add it to the foreign matter below the 1,8 mm screen in the pan and determine the mass of the foreign matter. Remove all other grain, sunflower seed, stones and sclerotia by hand from the working samples and determine the mass of the other grain, sunflower seed, stones and sclerotia separately.

(d) Express the respective masses thus determined as a percentage of the total mass of the working sample concerned.

(e) Such percentages represent the percentages of other grain, sunflower seed, stones, sclerotia and that of foreign matter in the consignment concerned.

Determination of the percentage defective soya beans

16. The percentage of defective soya beans shall be determined as follows:

(a) Obtain a working sample of at least 100 g soya beans that remain on top of the 4,75 mm round-hole screen after sieving action, which is free of other grain, sunflower, stones, sclerotia and foreign matter, from the representative sample of the consignment.

(b) Sieve the working sample with the 4,75 mm round-hole screen by moving the screen 20 strokes to and fro, alternately away from and towards the operator of the sieve for 20 seconds.

(c) Remove all defective soya beans from the other soya beans on the 4,75 mm round-hole screen by hand.

(d) Determine the mass of the defective soya beans on the 4,75 mm round-hole screen and express it as a percentage of the mass of the working samples concerned.

(e) Such percentage represents the percentage of defective soya beans in the consignment.

Determination of the soya beans and pieces of beans which pass through the 4,75 mm round-hole screen

17. The percentage of soya beans and pieces of soya beans which pass through the 4,75 mm round-hole screen shall be determined as follows:

(a) Determine the mass of the soya beans and pieces of soya beans that pass through the 4,75 mm round-hole screen and remain on top of the 1,8 mm slotted screen from which the other grain, sunflower seed, stones, sclerotia and foreign matter have been removed and express as percentage of the mass of the working sample.

(b) Such percentage represents the percentage soya beans and pieces of soya beans in the consignment which passes through the 4,75 mm round-hole screen and not through a 1,8 mm slotted screen.

Determination of percentage of soiled beans

18. The percentage of soiled soya beans in a consignment of soya beans shall be determined as follows:

(a) Remove all soiled soya beans from the working sample obtained in regulation 17(a) by hand and determine the mass thereof.

(b) Express the mass thus determined, as a percentage of the mass of the working sample obtained in regulation 17(a).

(c) Such percentage represents the percentage of soiled soya beans in the consignment concerned.

PART V

MASS DETERMINATION

19. The mass of soya beans shall be determined by deducting the actual percentage sclerotia, screenings and foreign material 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 Legal Metrology Act No. 09 of 2014 for the specific class of instrument.

PART VI

OFFENCES AND PENALTIES

20. Any person who 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 accordance with section 11 of the Act.

ANNEXURE

TABLE

STANDARDS FOR GRADES OF SOYA BEANS

Nature of deviation	*Maximum percentage permissible deviation (m/m)*
	Grade/Graad SB1
1	2
(a) Wet pods	0,2%
(b) Foreign matter, including stones, other grain and sunflower seeds: Provided that such deviations are individually within the limits specified in itmes (c), (d) and (e)	5%
(c) Other grain	0,5%
(d) Sunflower seed	0,1%
(e) Stones	1%
(f) Sclerotia	4%
(g) Soya beans and parts of soya beans above the 1,8 mm slotted screen which pass through the 4,75 mm round-hole screen	10%
(h) Defective soya beans on the 4,75 mm round-hole screen	10%
(i) Soiled soya beans	10%
(j) Deviation in (b) and (f) collectively: Providedthat such deviations are individually within the limits of said items	7%