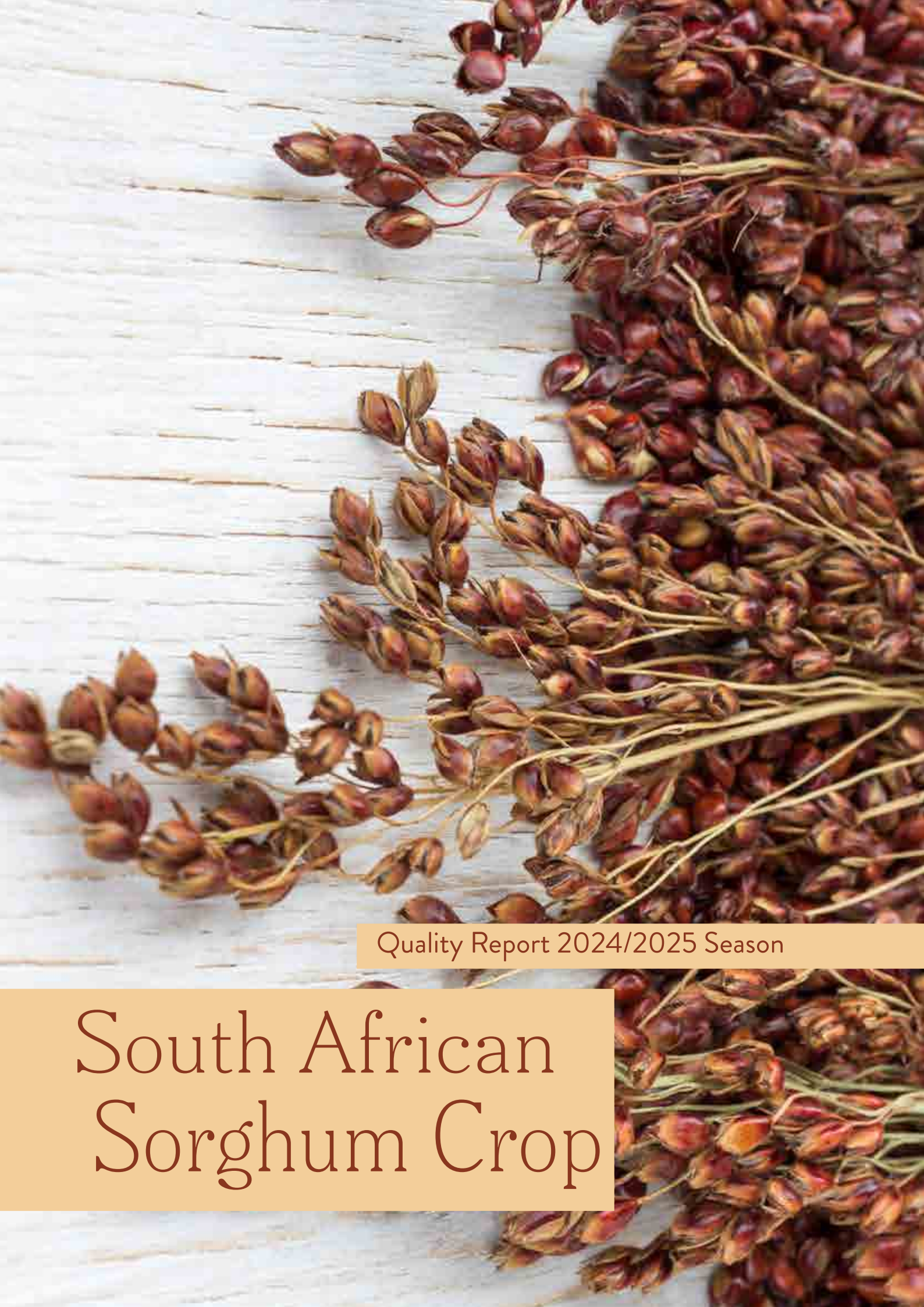

Quality Report 2024/2025 Season

South African Sorghum Crop

Index

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South African

Commercial sorghum quality for the 2024/2025 Season

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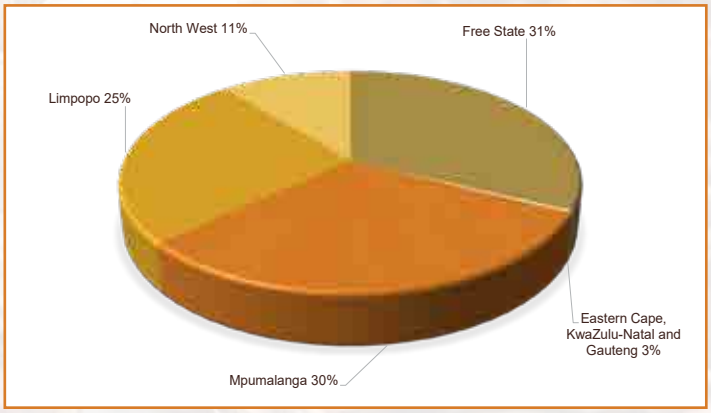
With gratitude to:
- The Sorghum Trust for its financial support in conducting this survey.
- Agbiz Grain and its members for providing to make this survey possible.
- The Crop Estimates Committee (CEC) of the Department of Agriculture (NDA) for providing production related figures.
- South African Grain Information Service (SAGIS) for providing supply and demand figures relating to sorghum.

Introduction

The final commercial sorghum crop figure of the 2024/25 production season as overseen by the National Crop Estimates Liaison Committee (CELC) was 98 000 tons. This figure represents a year-on-year increase of 53% (52 000 tons). The three major sorghum producing provinces this season, namely the Free State, Mpumalanga and Limpopo, contributed 86% to the total crop. The national yield average increased by almost 57% to 3.65 t/ha compared to the previous season.



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

Figures provided by the CEC.

During the harvesting season, a representative sample of each delivery of sorghum at the various grain intake points, was taken according to the prescribed grading regulations. The sampling procedure for the samples used in this survey is described on page 31. Fifteen (15) composite sorghum samples, representing different production regions, were received and analysed for quality. In addition, nine (9) imported sorghum samples from Brazil and one (1) from the USA were analysed and the results compared to that of the local sorghum crop.

The samples were graded, and test weight and thousand kernel mass determined. Sub-samples were milled and analysed for moisture, crude protein, crude fat and total starch content. After sieving and dehulling by means of a Barley pearler, the fraction of the sample larger than 1.8 mm were milled and Hunter Lab colour analyses conducted. Multi-mycotoxin analyses as well as Image analyses (Length, Width, Elongation (% Width/Length) and Volume/surface area (%)) were also performed on these samples.

This is the eigth annual sorghum 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 sorghum crop. The data reveal general tendencies and highlight quality differences in the commercial sorghum produced in different local production regions. A detailed database containing reliable analytical data collected over several seasons, is essential in enabling industry to comment on proposed legislative levels and to supply reliable data for targeted research projects.

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 are also included.

The national sorghum grading regulations as published in the Government Gazette of 8 January 2016 are provided as the last section of the report.

Production

Sorghum is a tropical grass grown primarily in semi-arid regions of the world. Sorghum can grow in areas too dry for maize and is deemed to be the fifth most important grain crop grown in the world (after maize, wheat, rice and barley).

World sorghum production for the 2024/25 season was almost 63.0 million tons, with 62.5 million tons for the 2025/26 season to date. The United States of America remains the largest producer, contributing 8.7 and 11.1 million tons in the 2024/25 and 2025/26 seasons, respectively. See Table 1a for the world sorghum trade (export and import) figures as well as production, consumption and stocks figures in Table 1b.

Table 1a: World Sorghum Trade
October/September Trade Year, Thousand Metric Tons

	2021/22	2022/23	2023/24	2024/25	2025/26 Apr
Trade Year Exports					
Australia	2 267	2 753	2 060	2 500	2 600
Argentina	1 800	800	1 100	1 300	1 300
Paraguay	21	38	63	153	115
Brazil	10	1	93	121	75
India	41	37	33	41	50
Nigeria	50	50	50	50	50
Ukraine	72	66	36	37	45
Others	170	85	86	88	97
Subtotal	***4 431***	***3 830***	***3 521***	***4 290***	***4 332***
United States	**7 387**	**2 965**	**5 964**	**2 295**	**5 400**
World Total	***11 818***	***6 795***	***9 485***	***6 585***	***9 732***
Trade Year Imports					
China	10 991	4 863	8 341	5 531	7 500
European Union	167	38	16	259	500
Mexico	362	176	60	562	450
Brazil	14	17	55	140	100
Ethiopia	12	35	14	303	100
Kenya	79	152	24	151	75
Saudi Arabia	7	5	7	7	70
Japan	258	241	127	73	50
Somalia	50	50	50	50	50
Sudan	75	110	60	110	50
Others	515	401	626	501	387
Subtotal	***12 530***	***6 088***	***9 380***	***7 687***	***9 332***
Unaccounted	**- 712**	**707**	**104**	**-1 103**	**399**
United States	**0**	**0**	**1**	**1**	**1**
World Total	***11 818***	***6 795***	***9 485***	***6 585***	***9 732***

Note:
Unaccounted: This term includes grain in transit, reporting discrepancies in some countries and trade to countries outside the USDA database.

All trade tables contain Trade Year (TY) data which puts all countries on a uniform, 12-month period for analytical comparisons: Sorghum Oct/Sep (TY 2025/26 corresponds to Jan - Dec 2026).

Source: United States Department of Agriculture, Foreign Agricultural Service (USDA-FAS), Grain: World Markets and Trade report, April 2026.

Table 1b: World Sorghum Production and Consumption Local Marketing Years, Thousand Metric Tons					
	2021/22	2022/23	2023/24	2024/25	2025/26 Apr
Production					
Nigeria	6 725	6 806	6 402	6 417	6 500
Brazil	3 120	4 789	4 426	6 102	5 200
India	4 150	3 814	4 737	6 000	4 300
Ethiopia	4 450	4 140	4 010	4 100	4 100
Mexico	4 840	4 892	4 540	4 200	3 800
Sudan	3 528	5 248	3 055	3 300	3 300
China	3 377	3 094	3 000	3 000	3 100
Argentina	2 883	1 610	2 496	2 853	2 900
Australia	2 648	2 638	2 215	2 685	2 500
Niger	1 207	2 100	1 700	1 900	1 907
Burkina Faso	1 644	2 014	1 772	1 900	1 900
Mali	1 248	1 603	1 528	1 640	1 500
Cameroon	1 200	1 200	1 200	1 200	1 200
Bolivia	595	886	1 771	1 000	1 000
Chad	896	967	878	720	950
Others	7 312	6 843	7 015	7 248	7 216
Subtotal	***49 823***	***52 644***	***50 745***	***54 265***	***51 373***
United States	***11 375***	***4 770***	***8 071***	***8 734***	***11 096***
World Total	***61 198***	***57 414***	***58 816***	***62 999***	***62 469***
Total Consumption					
China	14 300	7 900	11 300	8 500	10 700
Nigeria	6 650	6 750	6 400	6 400	6 425
Brazil	3 000	4 700	4 400	6 000	5 400
India	4 450	3 900	4 600	5 750	4 450
Ethiopia	4 650	4 250	4 050	4 300	4 300
Mexico	5 000	5 100	4 600	4 800	4 300
Sudan	3 700	5 200	3 250	3 400	3 350
Niger	1 400	2 000	1 800	1 850	1 950
Burkina Faso	1 650	1 950	1 800	1 900	1 900
Mali	1 400	1 550	1 500	1 600	1 600
Argentina	1 150	1 000	1 110	1 650	1 500
European Union	948	552	795	1 040	1 344
Cameroon	1 215	1 210	1 215	1 230	1 220
Bolivia	650	850	1 750	1 000	1 000
Chad	950	975	915	780	925
Others	7 394	7 131	7 060	6 824	6 875
Subtotal	***57 719***	***55 101***	***56 920***	***56 300***	***57 813***
United States	***3 175***	***2 585***	***1 912***	***6 066***	***5 463***
World Total	***60 894***	***57 686***	***58 832***	***62 366***	***63 276***

Notes:
World totals for consumption reflect total utilisation, including food, seed, industrial, feed and waste; as well as differences in local marketing year imports and local marketing year exports. Consumption statistics for regions and indivual countries, however, reflect food, seed, industrial, feed and waste only.

Source: United States Department of Agriculture, Foreign Agricultural Service (USDA-FAS), Grain: World Markets and Trade report, April 2026.

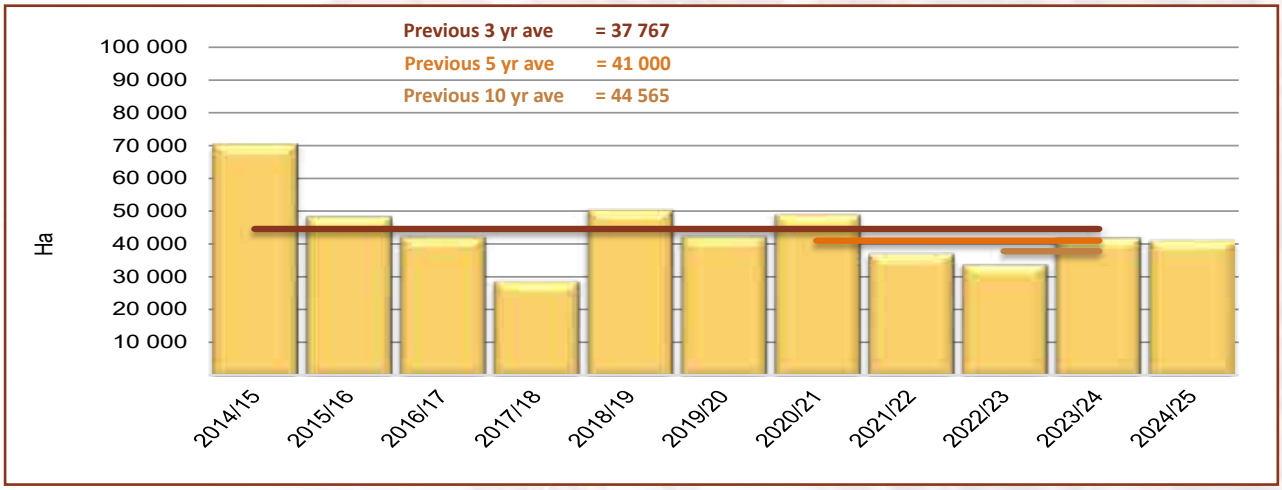
The local production figure this season is the highest since the 2020/21 season's 215 000 tons. The local area utilised for sorghum production decreased slightly by 950 ha or 2.3% to 41 150 hectares. The national yield average increase of 1.32 t/ha, however compensated for the decline in area.

See Table 2 for an overview of sorghum production under dry land conditions versus irrigation in the 2024/25 season, compared to the 2023/24 season. Graphs 2 to 4 provide national figures with regards to hectares planted, tons produced and yields obtained over the last 11 seasons. Graphs 5 to 10 on page 6 provide similar figures for the major sorghum producing provinces this season, namely the Free State, Mpumalanga and Limpopo.

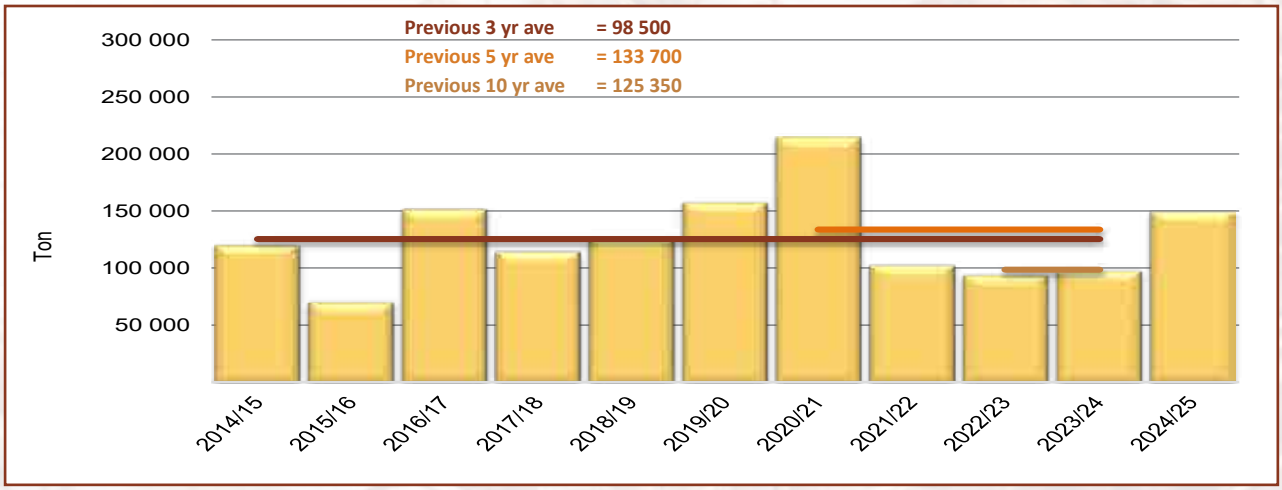
Table 2: Sorghum production over the last two seasons

Province	Type of production	2024/25			2023/24		
		Hectares planted, ha	Production, tons	Yield, t/ha	Hectares planted, ha	Production, tons	Yield, t/ha
Western Cape	Dryland	-	-	-	-	-	-
	Irrigation	-	-	-	-	-	-
	Total	-	-	-	-	-	-
Northern Cape	Dryland	-	-	-	-	-	-
	Irrigation	-	-	-	-	-	-
	Total	-	-	-	-	-	-
Free State	Dryland	12 800	46 755	3.65	11 500	19 740	1.72
	Irrigation	-	-	-	-	-	-
	Total	12 800	46 755	3.65	11 500	19 740	1.72
Eastern Cape	Dryland	-	-	-	-	-	-
	Irrigation	200	600	3.00	100	300	3.00
	Total	200	600	3.00	100	300	3.00
KwaZulu-Natal	Dryland	100	380	3.80	100	350	3.50
	Irrigation	-	-	-	-	-	-
	Total	100	380	3.80	100	350	3.50
Mpumalanga	Dryland	9 200	45 080	4.90	8 300	36 520	4.40
	Irrigation	-	-	-	-	-	-
	Total	9 200	45 080	4.90	8 300	36 520	4.40
Limpopo	Dryland	12 300	35 250	2.87	17 000	31 700	1.86
	Irrigation	700	2 450	3.50	1 000	3 400	3.40
	Total	13 000	37 700	2.90	18 000	35 100	1.95
Gauteng	Dryland	850	3 485	4.10	100	390	3.90
	Irrigation	-	-	-	-	-	-
	Total	850	3 485	4.10	100	390	3.90
North West	Dryland	4 850	15 460	3.19	3 850	5 100	1.32
	Irrigation	150	540	3.60	150	500	3.33
	Total	5 000	16 000	3.20	4 000	5 600	1.40
RSA	**Dryland**	**40 100**	**146 410**	**3.65**	**40 850**	**93 800**	**2.30**
	Irrigation	**1 050**	**3 590**	**3.42**	**1 250**	**4 200**	**3.36**
	Total	**41 150**	**150 000**	**3.65**	**42 100**	**98 000**	**2.33**

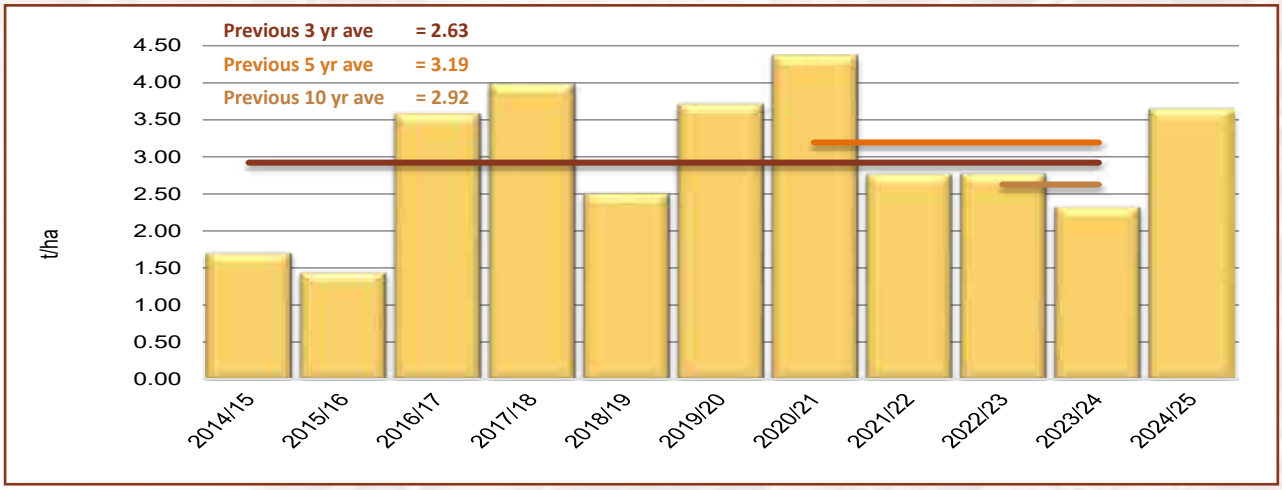
Figures provided by the CEC.



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

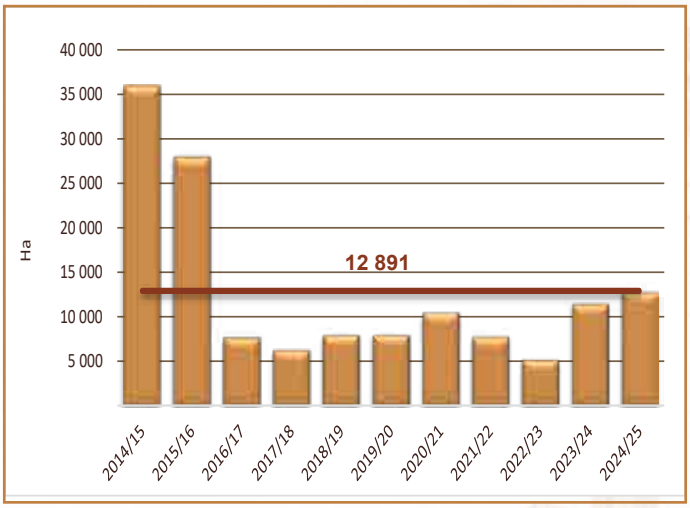


Graph 3: RSA Sorghum production from 2014/15 to 2024/25

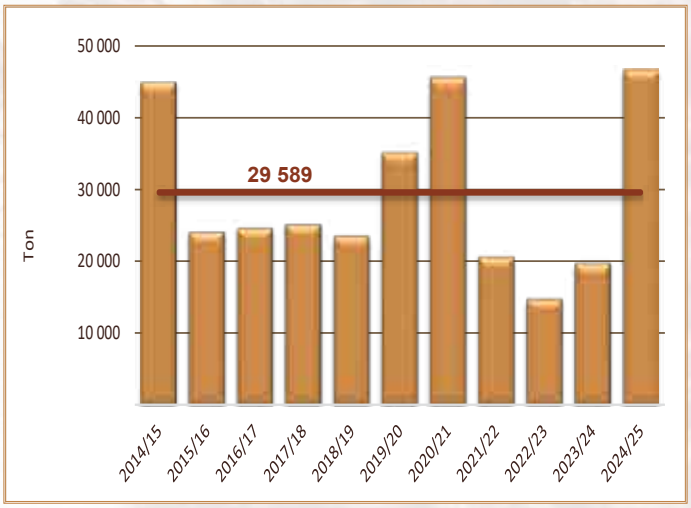


Graph 4: RSA Sorghum yield from 2014/15 to 2024/25

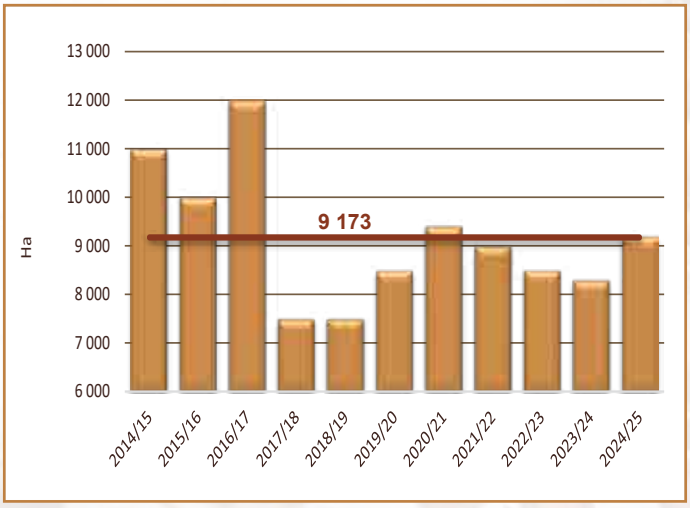
Figures provided by the CEC.



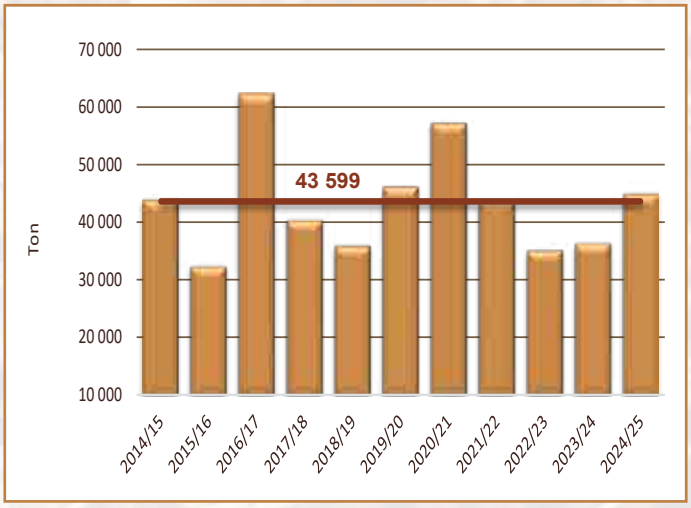
Graph 5: Area utilised for sorghum production in Free State since 2014/15



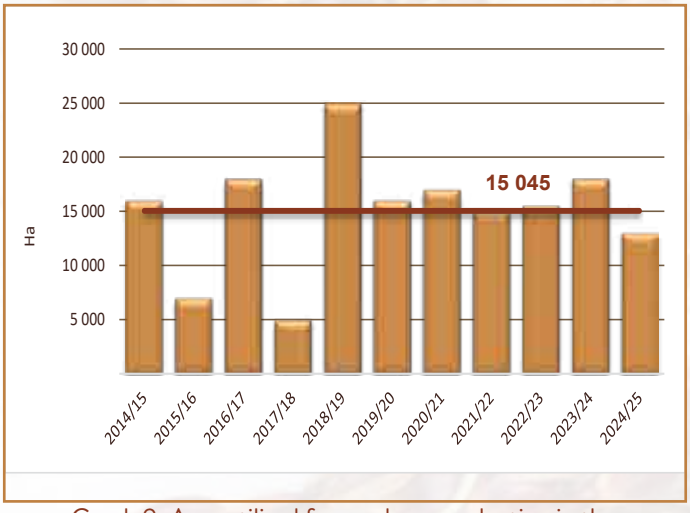
Graph 6: Sorghum production in Free State since 2014/15



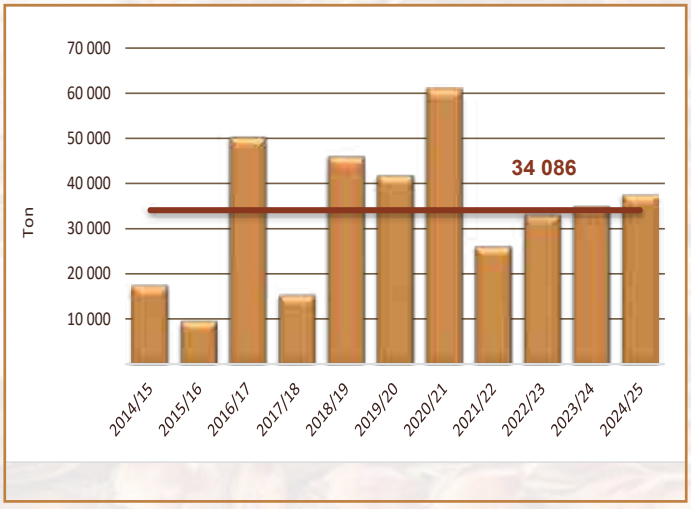
Graph 7: Area utilised for sorghum production in Mpumalanga since 2014/15



Graph 8: Sorghum production in Mpumalanga since 2014/15



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



Graph 10: Sorghum production in the Limpopo since 2014/15

Figures provided by the CEC.

Eleven season average

Supply and Demand

The sorghum marketing season dates from March to February. According to the 2025/26 marketing season figures (March 2025 to February 2026) provided in the SAGIS supply and demand table, Table S1 on page 8, opening stock increased by almost 58% compared to the previous marketing season, and is also almost 29% higher than the ten-year average.

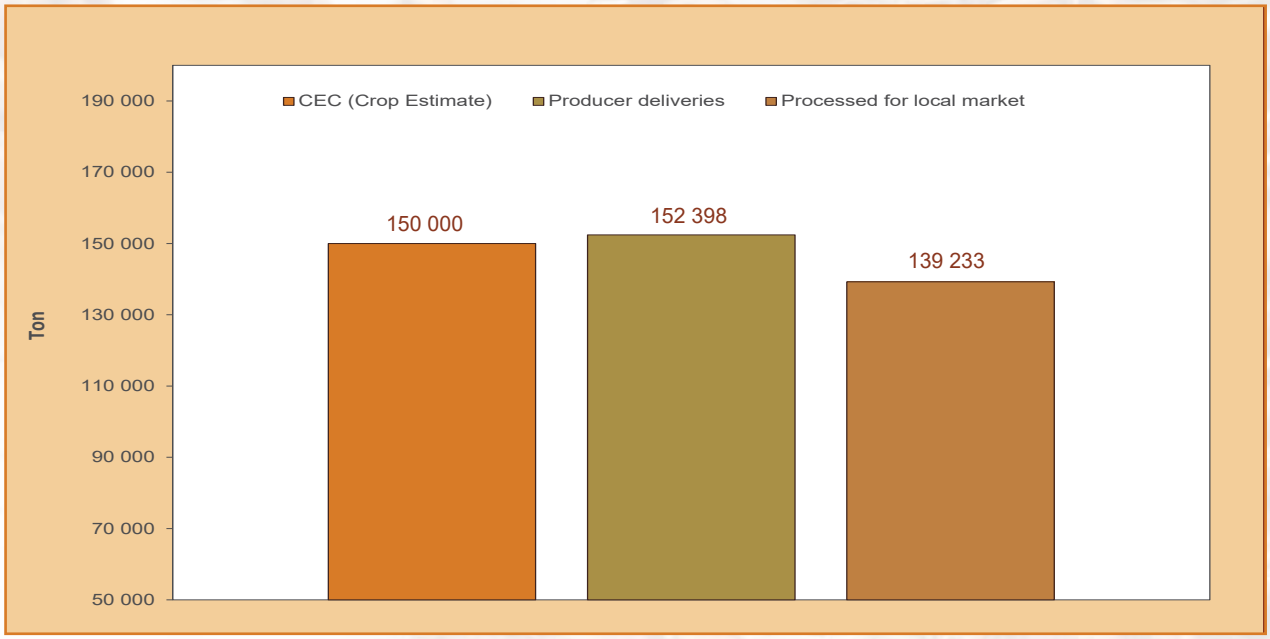
Only 24 tons of sorghum were imported during the 2025/26 season compared to the 99 146 tons and 83 049 tons imported during the previous two seasons respectively (see Graph 13). The ten-year import average is 46 375 tons. China is the main importer of sorghum in the world and imported 7.5 million tons (77% of world imports) during the 2025/26 season *(United States Department of Agriculture, Foreign Agricultural Service (USDA FAS), April 2026 report).*

Of the 139 233 tons of sorghum processed for the local market in 2025/26 season, 38% was used for malting purposes and of this 31% was indoor malting and 69% floor malting. Sorghum processed as meal, rice and grits amounted to 54%. The remainder of the sorghum was processed for pet food, as well as poultry and livestock feed. The previous season 143 478 tons of sorghum were processed. The ten-year average is 157 940 tons.

Local exports amounted to 5 797 tons, compared to 19 519 tons last season and the ten-year average of 12 961 tons. Globally, the USA was the largest exporter of sorghum with 5.4 million tons (55% of the total amount of 9.7 million tons) followed by Australia and Argentina with 2.6 and 1.3 million tons respectively *(USDA FAS, April 2026 report).*

Refer to Tables S2 – S5 on page 10 for South African imports and exports per country and harbour.

Graph 11 provides a supply and demand overview for the 2025/26 marketing season.



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

Information provided by SAGIS.

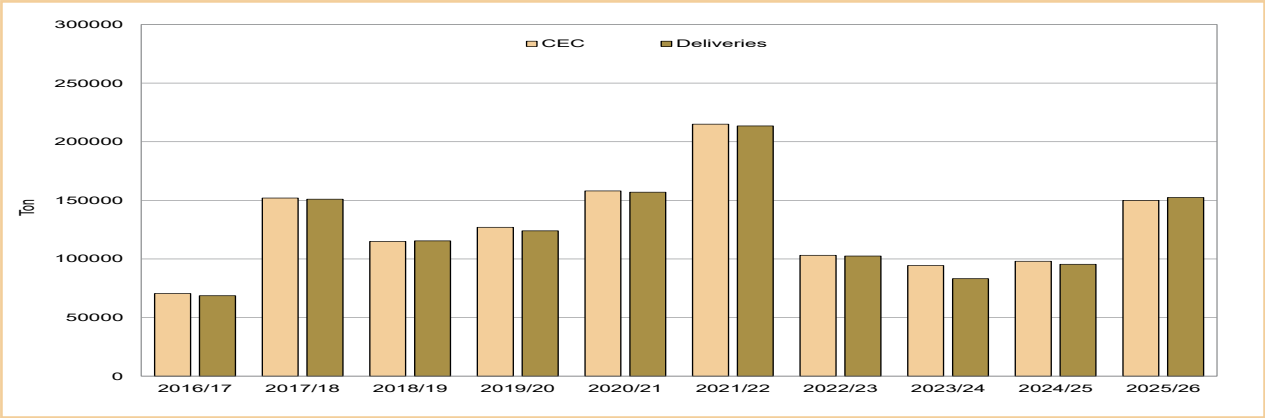
Table: S1

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

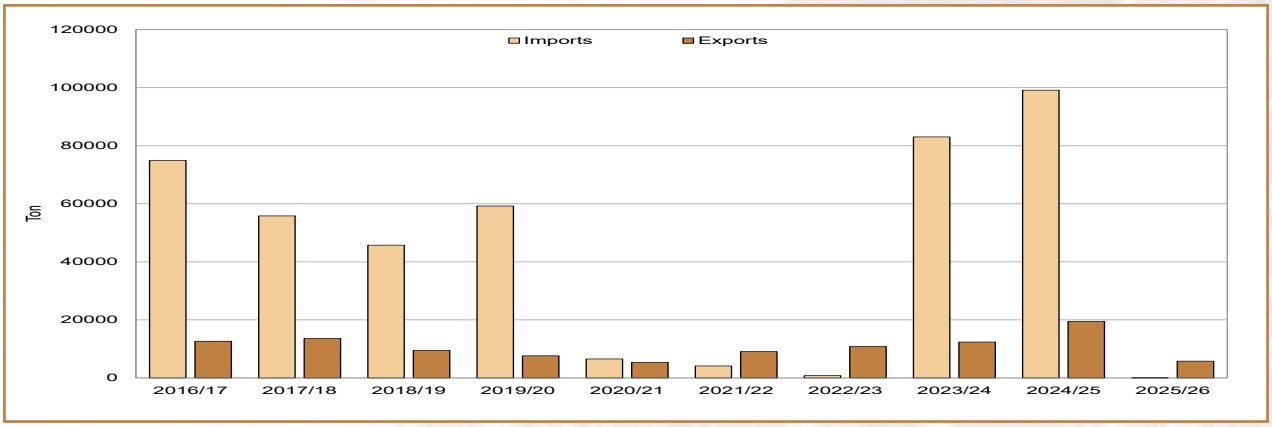
SORGHUM: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO (TON) — **Publication date: 2026-03-25**

	Season (Mar - Feb)																Current Season Mar-Feb	10 Year average
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2015/16-2024/25
																	***	
(Non-SAGIS Info)																	12	
CEC (Crop Estimate)	276 500	196 500	155 000	135 500	147 200	265 000	120 500	70 500	152 000	115 000	127 000	158 000	215 000	103 140	94 360	98 000	150 000	125 350
SUPPLY																		
Opening Stock (1 Mar)	87 300	112 400	73 400	62 500	56 015	50 069	121 812	83 142	35 238	59 246	51 860	60 423	51 795	106 157	46 956	54 775	86 397	67 140
Producer deliveries	275 900	194 000	156 800	133 000	145 604	261 507	120 231	68 578	150 967	115 394	123 925	156 966	213 458	102 465	83 164	95 397	152 398	123 055
Imports	4 000	0	57 800	54 800	50 033	8 725	34 316	74 957	55 824	45 739	59 253	6 546	4 147	768	83 049	99 146	24	46 375
Surplus	0	2 200	2 800	0	0	0	1 354	0	0	0	0	2 114	235	9 868	1 762	1 358	0	1 669
Total Supply	**367 200**	**308 600**	**290 800**	**250 300**	**251 652**	**320 301**	**277 713**	**226 677**	**242 029**	**220 379**	**235 038**	**226 049**	**269 635**	**219 258**	**214 931**	**250 676**	**238 819**	**238 239**
DEMAND																		
Processed for local market	192 400	194 300	189 900	165 000	170 536	159 364	159 824	170 315	161 422	154 744	164 130	165 908	152 058	160 241	147 283	143 478	139 233	157 940
Indoor malting	*20 400*	*18 000*	*16 900*	*13 100*	*12 093*	*13 710*	*11 105*	*11 706*	*11 404*	*9 739*	*9 524*	*9 793*	*14 104*	*12 651*	*13 275*	*13 787*	*16 332*	*11 709*
Floor malting	*71 400*	*66 400*	*64 400*	*57 600*	*56 928*	*48 504*	*50 265*	*51 026*	*48 709*	*46 613*	*50 857*	*49 285*	*50 864*	*48 968*	*40 419*	*43 702*	*36 668*	*48 071*
Meal, rice & grits	*92 500*	*101 300*	*101 400*	*88 600*	*96 409*	*90 346*	*88 041*	*97 872*	*92 719*	*87 715*	*94 286*	*94 902*	*72 492*	*72 428*	*80 572*	*74 623*	*74 939*	*85 565*
Pet Food	*900*	*1 100*	*1 200*	*800*	*924*	*1 113*	*1 029*	*1 001*	*818*	*850*	*555*	*634*	*633*	*1 734*	*576*	*537*	*913*	*837*
Poultry feed	*5 300*	*4 800*	*5 500*	*4 300*	*3 548*	*3 590*	*3 948*	*3 987*	*4 349*	*6 600*	*7 011*	*8 550*	*9 026*	*9 379*	*8 639*	*7 996*	*7 448*	*6 949*
Livestock feed	*1 900*	*2 700*	*500*	*600*	*634*	*2 101*	*5 436*	*4 723*	*3 423*	*3 227*	*1 897*	*2 744*	*4 939*	*15 081*	*3 802*	*2 833*	*2 933*	*4 811*
Bio-fuel	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Withdrawn by producers	7 400	7 600	7 800	5 800	5 577	4 683	2 569	644	2 370	1 032	957	2 055	1 937	1 005	244	831	1 850	1 364
Released to end-consumers	4 400	5 300	4 200	2 600	2 707	2 363	2 608	1 209	1 482	766	613	990	585	161	155	104	101	867
Net dispatches(+)/receipts(-)	-1 100	-300	1 600	1 600	70	932	531	1 101	94	883	1 036	-79	-160	54	79	347	402	389
Deficit	100	0	0	300	3 143	4 978	0	5 521	3 816	1 612	236	0	0	0	0	0	879	1 119
Exports	51 600	28 300	24 800	19 000	19 550	26 169	29 039	12 649	13 599	9 482	7 643	5 380	9 058	10 841	12 395	19 519	5 797	12 961
Total Demand	**254 800**	**235 200**	**228 300**	**194 300**	**201 583**	**198 489**	**194 571**	**191 439**	**182 783**	**168 519**	**174 615**	**174 254**	**163 478**	**172 302**	**160 156**	**164 279**	**148 262**	**174 640**
Unutilized Closing Stock (28 Feb)	**112 400**	**73 400**	**62 500**	**56 000**	**50 069**	**121 812**	**83 142**	**35 238**	**59 246**	**51 860**	**60 423**	**51 795**	**106 157**	**46 956**	**54 775**	**86 397**	**90 557**	**63 599**
Processed p/month	16 033	16 192	15 825	13 750	14 211	13 280	13 319	14 193	13 452	12 895	13 678	13 826	12 672	13 353	12 274	11 957	11 603	13 162
Months' stock	7.0	4.5	3.9	4.1	3.5	9.2	6.2	2.5	4.4	4.0	4.4	3.7	8.4	3.5	4.5	7.2	7.8	4.9

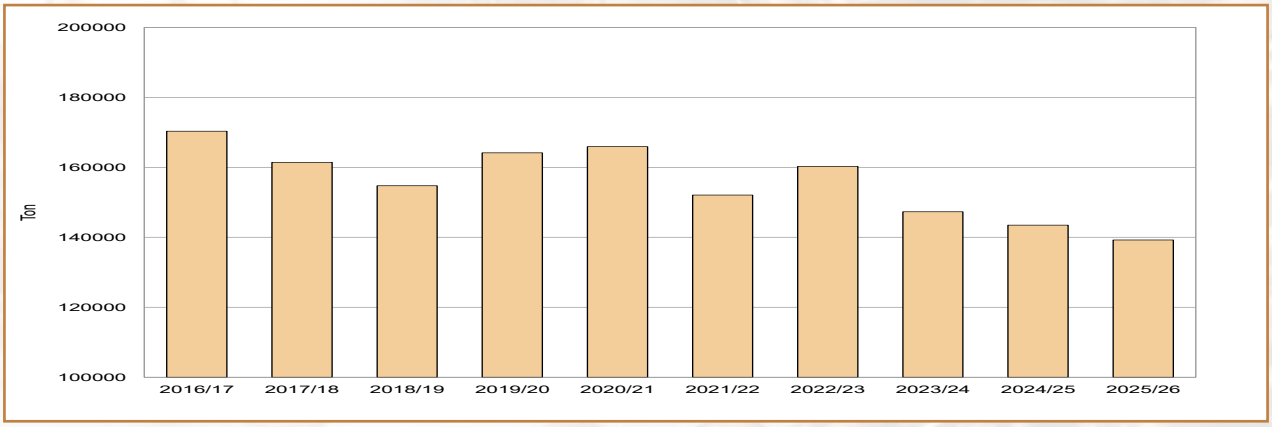
Note: *** Figures for active season up to date



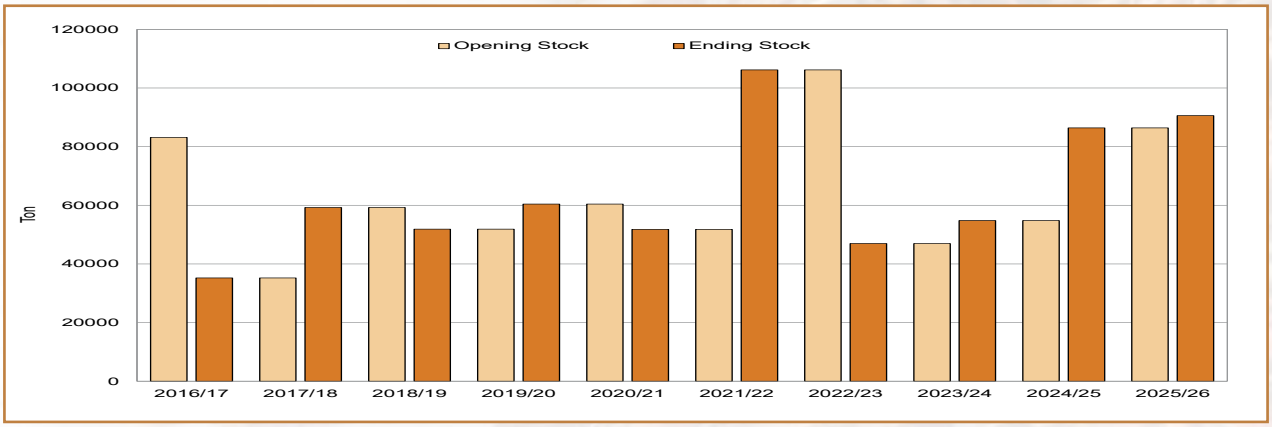
Graph 12: Sorghum: CEC Estimate vs SAGIS deliveries over 10 marketing seasons



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



Graph 14: Sorghum: Processed over 10 marketing seasons



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

Information provided by SAGIS.

Table: S2

Season	WHOLE SORGHUM: IMPORTS FOR RSA PER COUNTRY (Tons)									
	Botswana	Brazil	Lesotho	Malawi	Romania	Turkey	Ukraine	United States	Zimbabwe	Total
2016/17	0	0	0	0	0	0	280	74 677	0	74 957
2017/18	0	0	6	0	0	0	20	55 798	0	55 824
2018/19	2 093	0	0	132	0	0	187	42 525	802	45 739
2019/20	2 165	0	0	0	0	0	470	55 820	798	59 253
2020/21	6 372	0	0	0	0	0	174	0	0	6 546
2021/22	3 805	0	0	242	0	0	100	0	0	4 147
2022/23	663	0	0	40	0	23	42	0	0	768
2023/24	35	52 251	0	90	0	0	0	28 683	1 990	83 049
2024/25	0	98 937	0	30	0	0	118	0	61	99 146
2025/26	0	0	0	0	0	0	24	0	0	24

Table: S3

Season	WHOLE SORGHUM: RSA EXPORTS PER COUNTRY (Tons)							
	Botswana	Chad	Namibia	Eswatini (Swaziland)	Tanzania	Zambia	Zimbabwe	Total
2016/17	5 425	0	0	2 017	0	0	0	7 442
2017/18	6 591	0	32	1 731	912	200	0	9 466
2018/19	1 189	0	20	3 811	0	0	0	5 020
2019/20	388	0	411	3 448	0	0	0	4 247
2020/21	0	0	68	3 489	0	0	995	4 552
2021/22	4 692	0	134	3 011	0	0	0	7 837
2022/23	6 707	0	34	2 099	0	0	0	8 840
2023/24	8 443	0	0	2 007	0	0	0	10 450
2024/25	16 427	0	34	969	0	0	517	17 947
2025/26	1 038	0	0	1 193	0	0	1 974	4 205

Table: S4

Season	SORGHUM: IMPORTS PER HARBOUR (Tons)					
	Harbours					
	East London	Durban	Cape Town	Port Elizabeth	Richards Bay	Total
2016/17	230	142 629	50	0	0	142 909
2017/18	0	68 689	20	0	0	68 709
2018/19	138	47 521	49	0	0	47 708
2019/20	368	76 848	102	0	0	77 318
2020/21	0	9 284	123	0	0	9 407
2021/22	0	10 045	100	0	0	10 145
2022/23	0	14 642	0	0	0	14 642
2023/24	0	105 870	0	0	0	105 870
2024/25	0	146 274	0	0	0	146 274
2025/26*	0	24	0	0	0	24

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

Table: S5

Season	SORGHUM: EXPORTS PER HARBOUR (Tons)					
	Harbours					
	East London	Durban	Cape Town	Port Elizabeth	Richards Bay	Total
2016/17	0	35 034	0	0	0	35 034
2017/18	0	6 502	0	0	0	6 502
2018/19	0	6 944	0	0	0	6 944
2019/20	0	0	0	0	0	0
2020/21	0	0	0	0	0	0
2021/22	0	5 033	0	0	0	5 033
2022/23	0	14 570	0	0	0	14 570
2023/24	0	2 440	0	0	0	2 440
2024/25	0	7 596	0	0	0	7 596
2025/26*	0	10 189	0	0	0	10 189

* Progressive March 2025 - September 2025

Table 3a: IMPORTED SORGHUM QUALITY

Quality of sorghum imported from March 2024 to February 2025 compared to RSA crop quality of the 2024/2025 season

Country of orgin		Brazil				RSA Crop Average		
Class sorghum		GM				GM		
Grade sorghum		GM1	GM2	CO	Average	GM1	GM2	Average
Grading								
Foreign matter, %		1.29	1.51	1.12	1.29	0.26	0.37	0.28
Unthreshed sorghum, %		0.57	0.00	0.11	0.46	0.78	0.22	0.66
Defective sorghum, %		1.78	1.65	2.40	1.83	1.10	3.55	1.59
Small kernel sorghum, %		3.66	6.25	5.83	4.19	0.88	0.44	0.79
Total defective sorghum and small kernel sorghum, %		5.44	7.90	8.23	6.02	1.98	3.99	2.38
Sorghum of another group, %		0.05	0.52	0.23	0.12	0.00	0.00	0.00
White sorghum, %		0.39	0.40	0.49	0.4	0.04	0.00	0.03
Total of sorghum of another group and white sorghum, %		0.44	0.92	0.72	0.52	0.04	0.00	0.03
Weather-stained sorghum, %		0.22	0.00	0.00	0.17	0.00	0.00	0.00
Physical parameters								
Test weight, kg/hl		78.5	77.2	78.9	78.5	78.3	75.2	77.6
1000 Kernel Mass, g (14% moisture base)		22.4	20.2	20.6	22.0	23.7	26.0	24.2
# Image analysis	Length, mm	4.34	4.25	4.26	4.32	4.59	4.70	4.61
	Standard Deviation	0.37	0.32	0.35	0.36	0.37	0.37	0.37
	Width, mm	3.95	3.75	3.80	3.91	3.83	4.08	3.88
	Standard Deviation	0.30	0.23	0.25	0.29	0.35	0.33	0.35
	Elongation (% Width/Length)	91	89	90	91	84	87	84
	Standard Deviation	5.1	5.3	5.6	5.2	5.9	5.4	5.8
	Volume/surface area (%)	70	68	68	70	67	71	68
	Standard Deviation	5.4	4.4	4.7	5.2	5.6	5.3	5.5
Nutritional analysis								
Milled Sorghum moisture, %		12.9	13.1	13.2	12.9	11.9	13.1	12.2
Protein, % (db)		10.0	9.6	9.6	9.9	10.0	10.9	10.2
Total Starch, % (db)		75.2	74.5	75.0	75.1	72.7	73.0	72.7
Crude fat, % (db)		3.2	2.9	3.1	3.2	3.6	3.5	3.6
Hunterlab colour (fraction of dehulled sample above the 1.8 mm slotted sieve milled on Retch mill through 0.5 mm sieve	L	69.48	70.46	70.43	69.70	66.08	70.67	66.99
	a	5.49	5.46	5.37	5.47	5.71	4.83	5.54
	b	10.44	10.24	10.27	10.40	9.62	10.24	9.74
Number of samples		*7*	*1*	*1*	*9*	*8*	*2*	*10*
Mycotoxins (µg/kg)								
Aflatoxin B_1 [max value]		0 [0]				1 [8]		
Aflatoxin B_2 [max value]		0 [0]				0 [0]		
Aflatoxin G_1 [max value]		0 [0]				0 [0]		
Aflatoxin G_2 [max value]		0 [0]				0 [0]		
Fumonisin B_1 [max value]		5 [48]				3 [33]		
Fumonisin B_2 [max value]		0 [<20]				0 [0]		
Fumonisin B_3 [max value]		0 [0]				0 [0]		
Deoxynivalenol [max value]		0 [0]				0 [0]		
15-ADON [max value]		0 [0]				0 [0]		
Ochratoxin A [max value]		0 [0]				0 [0]		
Zearalenone [max value]		3 [30]				0 [0]		
HT2 [max value]		0 [0]				0 [0]		
T2 [max value]		0 [0]				0 [0]		
Number of samples		*9*				*10*		

Table 3b: IMPORTED SORGHUM QUALITY

Quality of sorghum imported from March 2024 to February 2025 compared to RSA crop quality of the 2024/2025 season

Country of orgin		USA		RSA Crop Average		
Class sorghum		GM		GM		
Grade sorghum		GM1	Average	GM1	GM2	Average
Grading						
Foreign matter, %		0.31	0.31	0.26	0.37	0.28
Unthreshed sorghum, %		0.06	0.06	0.78	0.22	0.66
Defective sorghum, %		1.87	1.87	1.10	3.55	1.59
Small kernel sorghum, %		0.75	0.75	0.88	0.44	0.79
Total defective sorghum and small kernel sorghum, %		2.83	2.83	1.98	3.99	2.38
Sorghum of another group, %		0.40	0.40	0.00	0.00	0.00
White sorghum, %		2.75	2.75	0.04	0.00	0.03
Total of sorghum of another group and white sorghum, %		3.15	3.15	0.04	0.00	0.03
Weather-stained sorghum, %		3.03	3.03	0.00	0.00	0.00
Physical parameters						
Test weight, kg/hl		79.9	79.9	78.3	75.2	77.6
1000 Kernel Mass, g (14% moisture base)		22.6	22.6	23.7	26	24.2
# Image analysis	Length, mm	4.23	4.23	4.59	4.70	4.61
	Standard Deviation	0.33	0.33	0.37	0.37	0.37
	Width, mm	3.75	3.75	3.83	4.08	3.88
	Standard Deviation	0.24	0.24	0.35	0.33	0.35
	Elongation (% Width/Length)	89	89	84	87	84
	Standard Deviation	5.0	5.0	5.9	5.4	5.8
	Volume/surface area (%)	67	67	67	71	68
	Standard Deviation	5.0	5.0	5.6	5.3	5.5
Nutritional analysis						
Milled Sorghum moisture, %		13.4	13.4	11.9	13.1	12.2
Protein, % (db)		11.2	11.2	10.0	10.9	10.2
Total Starch, % (db)		73.5	73.5	72.7	73.0	72.7
Crude fat, % (db)		3.1	3.1	3.6	3.5	3.6
Hunterlab colour (fraction of dehulled sample above the 1.8 mm slotted sieve milled on Retch mill through 0.5 mm sieve	L	73.41	73.41	66.08	70.67	66.99
	a	4.73	4.73	5.71	4.83	5.54
	b	10.65	10.65	9.62	10.24	9.74
Number of samples		*1*	*1*	*8*	*2*	*10*
Mycotoxins (µg/kg)						
Aflatoxin B_1 [max value]		0 [0]		1 [8]		
Aflatoxin B_2 [max value]		0 [0]		0 [0]		
Aflatoxin G_1 [max value]		0 [0]		0 [0]		
Aflatoxin G_2 [max value]		0 [0]		0 [0]		
Fumonisin B_1 [max value]		0 [0]		3 [33]		
Fumonisin B_2 [max value]		0 [0]		0 [0]		
Fumonisin B_3 [max value]		0 [0]		0 [0]		
Deoxynivalenol [max value]		0 [0]		0 [0]		
15-ADON [max value]		0 [0]		0 [0]		
Ochratoxin A [max value]		0 [0]		0 [0]		
Zearalenone [max value]		0 [0]		0 [0]		
HT2 [max value]		0 [0]		0 [0]		
T2 [max value]		0 [0]		0 [0]		
Number of samples		*1*		*10*		

RSA Production Regions

The RSA is divided into 9 provinces as illustrated in Figure 1.

Figure 1: RSA Provinces

Regional map with gratitude to SiQ.

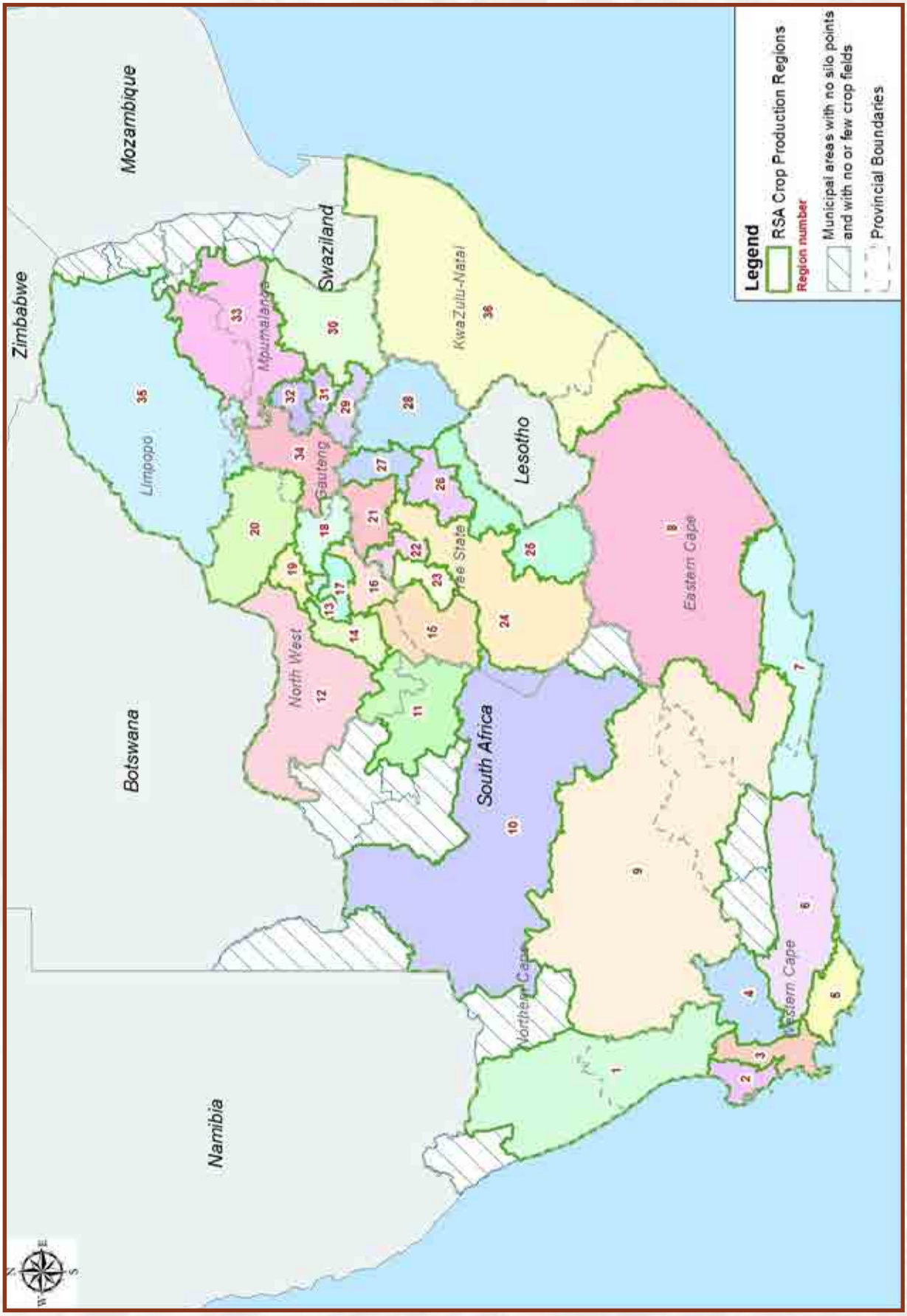
The 9 provinces are divided into 36 grain production regions.

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

Refer to the Crop Production Regions map on page 14.

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

Figure 2: RSA Crop Production Regions



Regional map with gratitude to Agbiz Grain and SIQ.

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 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 24: Free State Central Region			
Senwes	Bainsvlei (Bins)	Senwes	Kroonstad 226 (Bins)
Senwes	Bloemfontein (Bins)	Senwes	Petrusburg (Bins)
Senwes	Brandfort (Bins)	Senwes	Theunissen (Bins)
Senwes	De Brug (Bins)	Senwes	Van Tonder (Bins)
Senwes	Geneva (Bins)	Senwes	Welgeleë (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 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 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)

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

Sorghum Crop Quality 2024/25 – Summary of Results

The National Grading Regulations (Government Notice NO. R.15 of 08 January 2016, Regulation 4. Standards for classes) states that a consignment of sorghum shall be classified as Class GM Sorghum if it consists of malt sorghum that does not have a dark testa and complies with the standards for the grades. A consignment of sorghum shall be classified as Class GH Sorghum if it consists of malt sorghum that has a dark testa and complies with the standards for the grades.

Sixty-seven (67) percent of the 15 samples analysed for the purpose of this survey was determined to be class GM. Of these, 8 samples (80%) were graded as Grade GM1. The remaining two samples (20%) were graded GM2. All five of the samples determined to be class GH, were graded GH1.

No white sorghum samples were received this season for inclusion in the survey.

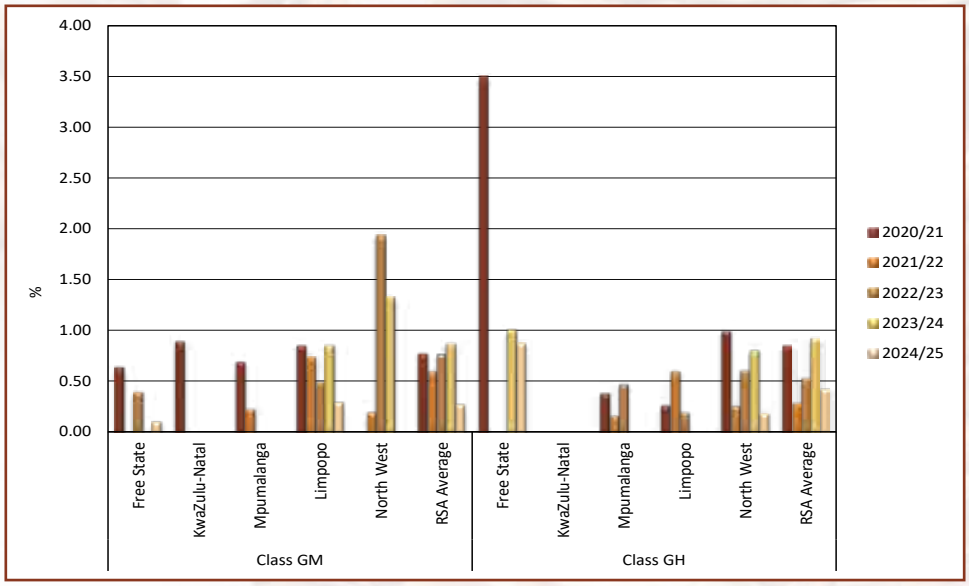
Certain varieties of sorghum contain tannins (specifically condensed tannins) in the seed coat layer beneath the pericarp (commonly referred to as the testa layer) of the grain. These varieties are variously referred to as: tannin, high-tannin, brown, bird-proof, bird-resistant, or bitter sorghums.

Varieties of sorghum not containing tannins are referred to as: non-tannin, low-tannin, condensed tannin-free, or sweet sorghums.

The detection of tannin in sorghum grain for grading purposes is done by SAGL by means of the bleach test. Please refer to the methodology followed under Methods on page 31.

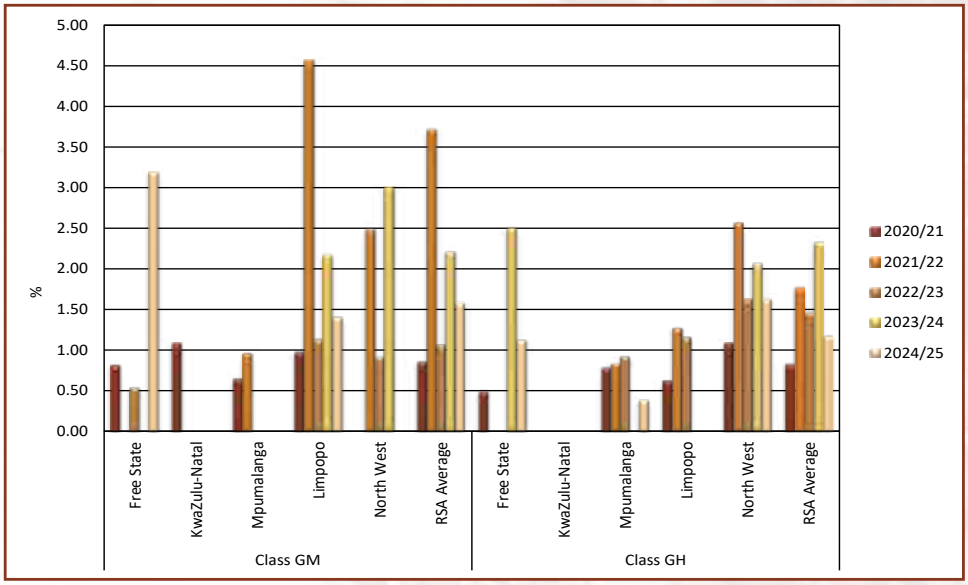
Graphs 16 to 18 present the weighted average percentages foreign matter, defective sorghum and small kernel sorghum per class per province over five seasons.

GM sorghum's foreign matter varied between 0.11% for the single sample from the Free State and 0.30% for Limpopo (9 samples). GH sorghum's foreign matter varied between 0% for the single sample from Mpumalanga to 0.88% for the two samples of the Free State. North West's two samples averaged 0.19%. The national weighted averages for GM and GH sorghum were 0.28% and 0.43% respectively.



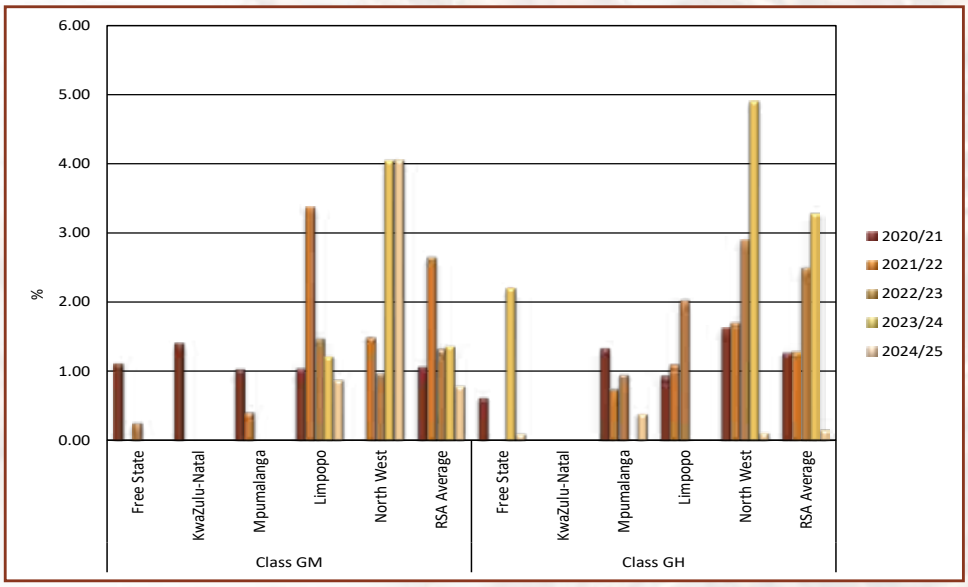
Graph 16: Average percentage foreign matter per class per province over five seasons

The percentage defective GM sorghum averaged 1.41% for Limpopo and was 3.19% on the single sample from the Free State. The average defective GH sorghum varied from 0.39% in the sample from Mpumalanga, to 1.13% and 1.63% on the two samples each from the Free State and North West respectively. The national weighted averages were 1.59% for GM and 1.18% for GH sorghum.



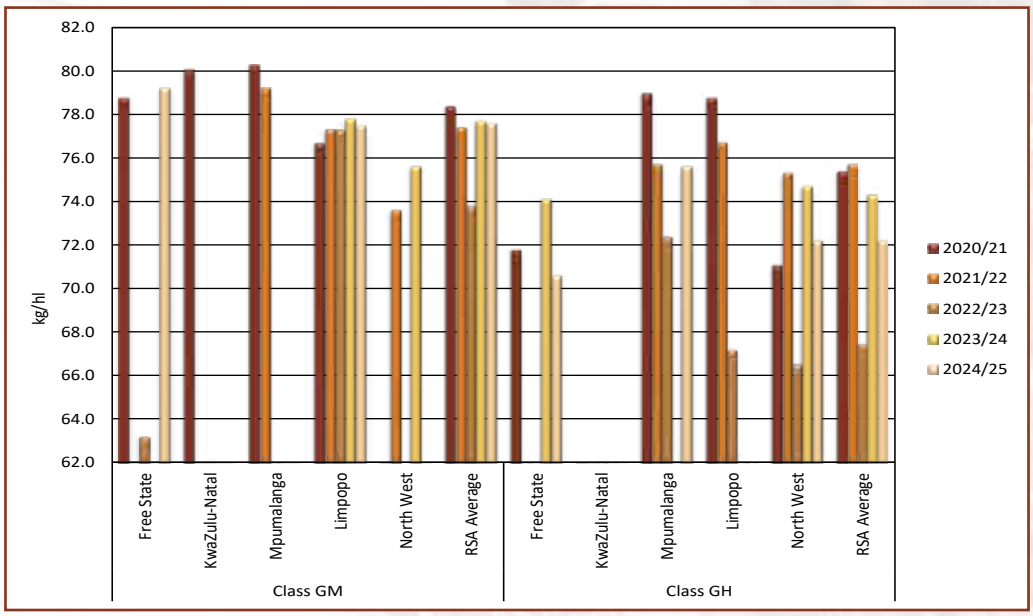
Graph 17: Average percentage defective sorghum per class per province over five seasons

This season, GH sorghum showed the lowest percentage small kernels (class average 0.16%), ranging from 0.10% in the two samples from the Free State to 0.39% in the sample from Mpumalanga. Small kernels in GM sorghum varied between 0% in the Free State sample to an average of 0.88% in Limpopo. The weighted average for class GM was 0.79%.



Graph 18: Average percentage small kernel sorghum per class per province over five seasons

As shown in Graph 19, GM sorghum had the highest weighted average test weight, namely 77.6 kg/hl, while GH sorghum averaged 72.2 kg/hl. This trend continues from previous seasons. Test weight values for GM sorghum ranged between the Limpopo average of 77.5 kg/hl to 79.2 kg/hl on the Free State sample. GH values varied from 70.6 kg/hl on the two Free State samples to 72.2 kg/hl on the two North West samples and 75.6 kg/hl on the Mpumalanga sample. Test weight was determined on unscreened samples.

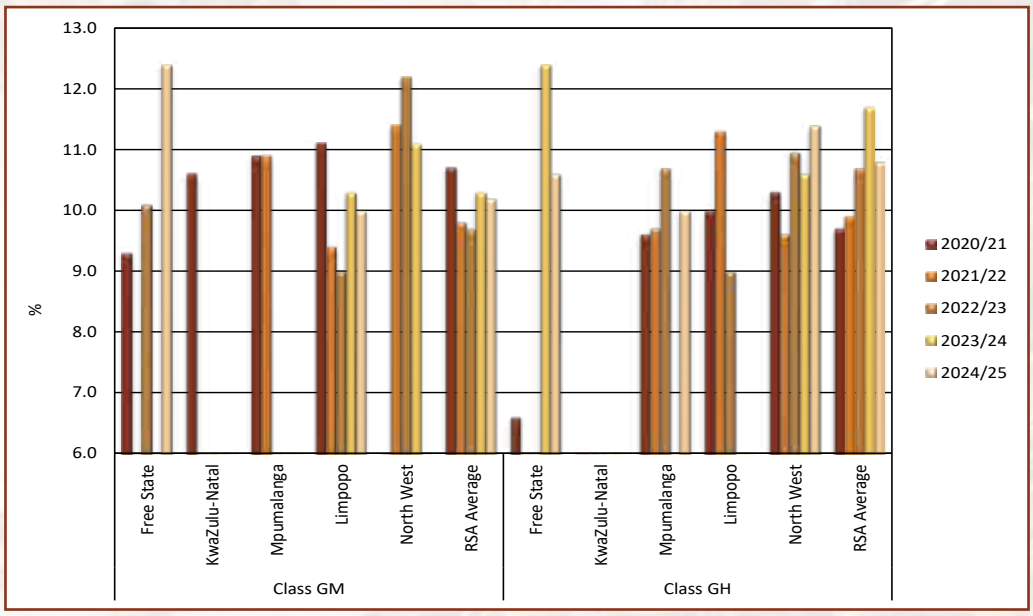


Graph 19: Average test weight per class per province over five seasons

GM sorghum also had the highest 1 000 kernel mass values, ranging between 22.2 g and 27.8 g (14% moisture basis) and averaging 24.2 g. GH sorghum averaged 22.4 g and varied between 20.7 g and 25.5 g. Last season these averages were 23.9 g and 19.0 g respectively.

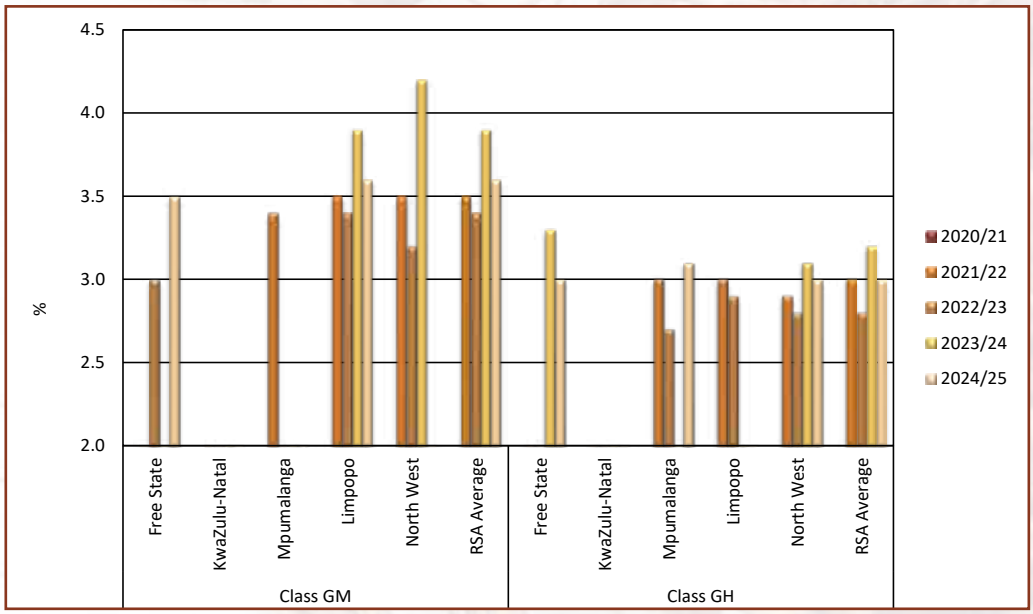
The image analysis results showed that the GM sorghum on average had slightly longer kernels, while the kernel width was similar for GM and GH sorghum. The variation (indicated by the standard deviation) in these parameters is similar for both GM and GH sorghum. Kernel elongation, defined as % Width/Length, showed a wider variation as the individual length and width parameters as can be expected, with average standard deviations of 5.8% for GM and 5.1% for GH sorghum. A totally round kernel will have a % Width/Length of 100. GM sorghum's Volume / surface area percentage was on average over the last six seasons 4% higher than that of GH sorghum.

As shown in Graph 20, the crude protein content for GM sorghum varied between an average of 10.0% in Limpopo to 12.4% on the sample from the Free State. GH sorghum's average crude protein content ranged from 10.0% on the sample from Mpumalanga to averages of 10.6% and 11.4% on the two Free State and two North West samples respectively. Nationally, GM and GH sorghum averaged 10.2% and 10.8% respectively.



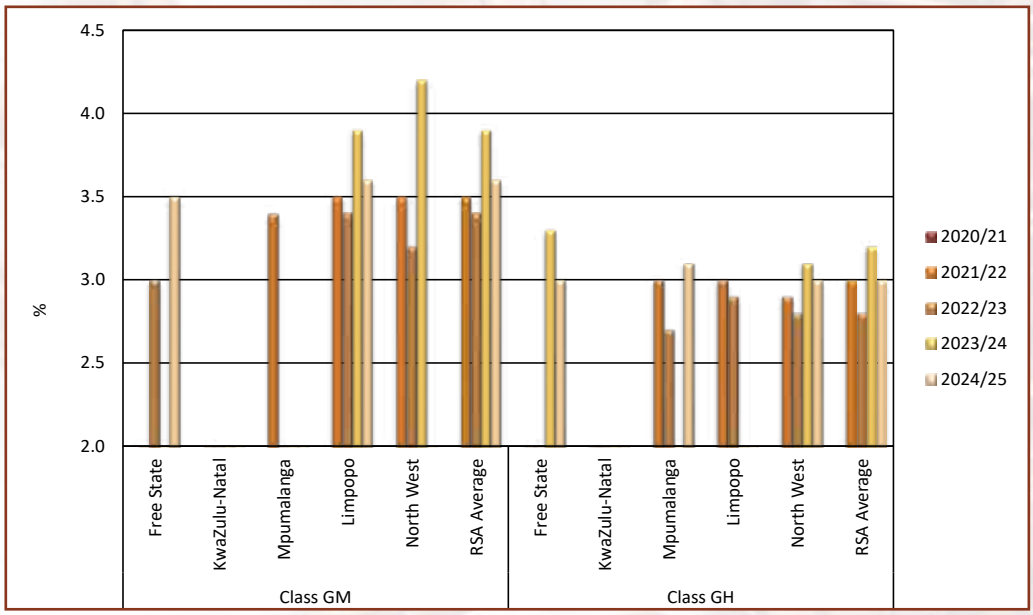
Graph 20: Average percentage crude protein per class per province over five seasons

Graph 21 shows that the average total starch content for GM sorghum ranged from 71.3% in the Free State sample to a Limpopo average of 72.9%. GH sorghum starch, varied from an average of 70.2% on the two samples from North West, to 70.5% on the sample from Mpumalanga, to an average of 70.7% on the two Free State samples. The weighted total starch content of GM sorghum was 72.7% and that of GH sorghum 70.4%.



Graph 21: Average percentage total starch per class per province over five seasons

The crude fat content of the crop samples was determined for the fourth consecutive season, see Graph 22. The national average for GM sorghum was 3.6% and that for GH sorghum 3.0%. The previous season's averages were 3.9% for GM sorghum and 3.2% for GH sorghum.



Graph 22: Average percentage total fat per class per province

The crude protein, total starch and crude fat contents of the samples were calculated and reported on a dry basis.

Hunterlab colour determinations were done on a milled fraction of dehulled sample above the 1.8 mm slotted sieve. The Hunterlab spectrophotometer separates the components of reflected colour into a threedimensional colour scale, namely the Hunter L, a, b scale where L represents lightness (100 being white and 0 being black), a represents green to red variation and b represents variation from blue to yellow.

See Graphs 23 to 28 for a comparison of the ranges in the L, a, b values obtained on GM and GH sorghum over the eight seasons since the commencement of this project. The minimum and maximum values are based on a single composite grading sample's result in a specific season.

Although there are currently no acceptable ranges for these parameters defined, the colour must be within the consumer-acceptable range, which traditionally are products with a slightly pink hue. Not only the dehulling process, but also other traits such as pigmentation differences determine the end product colour.

Mycotoxins

Mycotoxin analyses were performed on all 15 sorghum crop samples. The samples were tested by means of a SANAS ISO/IEC 17025 accredited multi-mycotoxin method using UPLC-MS/MS. With this technique simultaneous quantification and confirmation of Aflatoxin B_1; B_2; G_1; G_2, Fumonisin B_1; B_2; B_3, Deoxynivalenol, 15-ADON, HT-2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A is possible in one run.

None of the samples tested positive for any of these mycotoxins in seasons 2017/18, 2019/20, 2020/21 or 2022/23.

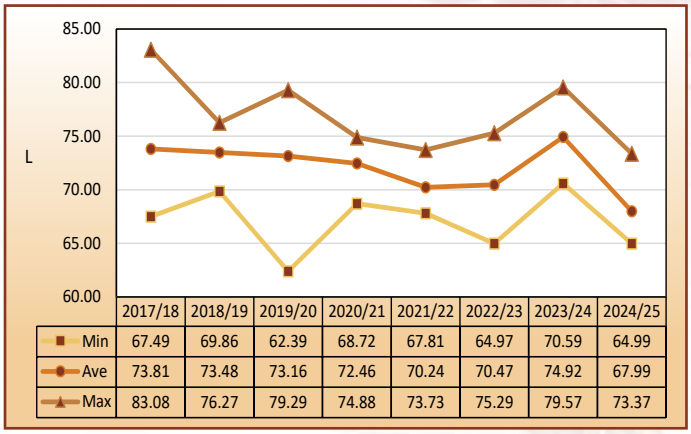
Fumonisin, Deoxynivalenol (DON) and Zearalenone residues were found on some of the samples in the 2018/19 season.

One sample from Limpopo tested positive for Fumonisin B_1 residues in the 2021/22 season.

This season, one sample from the Free State tested positive for Zearalenone residues, while two samples from Limpopo tested positive for Aflatoxin B_1 and Fumonisin B_1 residues respectively. Refer to Table 11 on page 29.

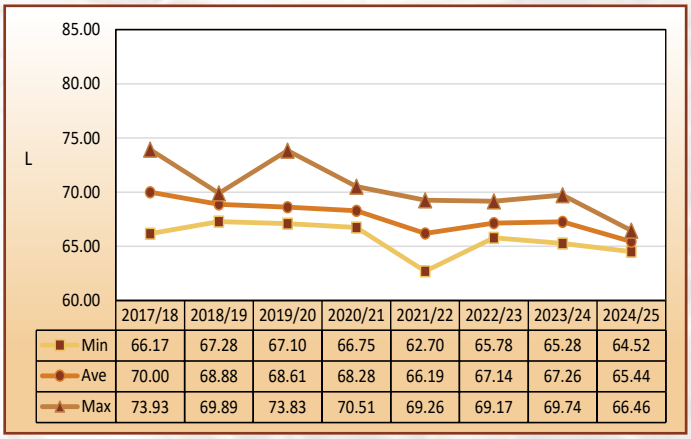
None of the levels however raised any concerns.

The Methods section of this report on pages 31 to 33 provides a description of the procedures and methodologies followed.



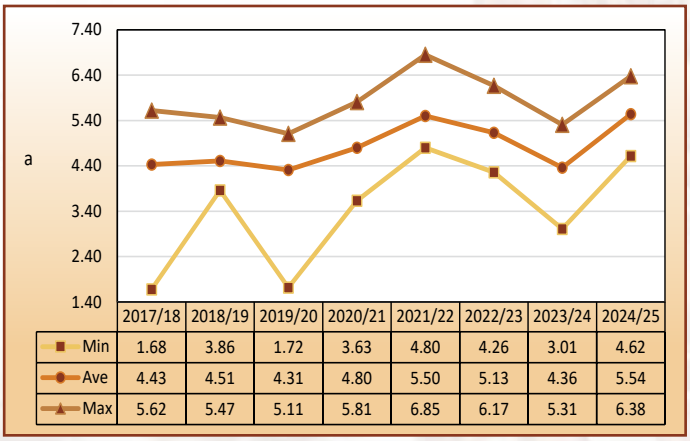
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Min	67.49	69.86	62.39	68.72	67.81	64.97	70.59	64.99
Ave	73.81	73.48	73.16	72.46	70.24	70.47	74.92	67.99
Max	83.08	76.27	79.29	74.88	73.73	75.29	79.57	73.37

Graph 23: Range of Hunterlab L values on GM sorghum over eight seasons



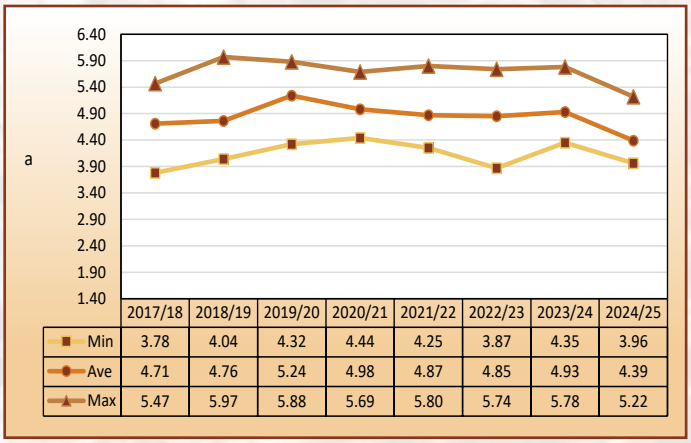
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Min	66.17	67.28	67.10	66.75	62.70	65.78	65.28	64.52
Ave	70.00	68.88	68.61	68.28	66.19	67.14	67.26	65.44
Max	73.93	69.89	73.83	70.51	69.26	69.17	69.74	66.46

Graph 24: Range of Hunterlab L values on GH sorghum over eight seasons



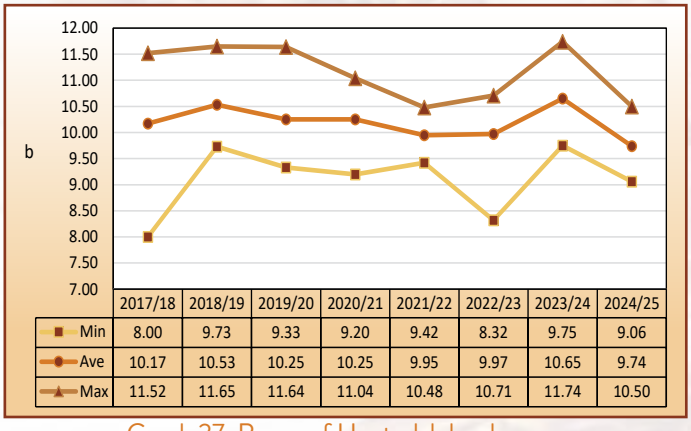
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Min	1.68	3.86	1.72	3.63	4.80	4.26	3.01	4.62
Ave	4.43	4.51	4.31	4.80	5.50	5.13	4.36	5.54
Max	5.62	5.47	5.11	5.81	6.85	6.17	5.31	6.38

Graph 25: Range of Hunterlab a values on GM sorghum over eight seasons



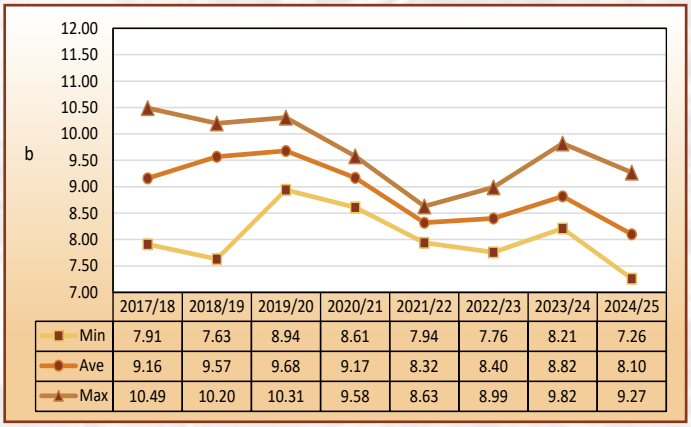
	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Min	3.78	4.04	4.32	4.44	4.25	3.87	4.35	3.96
Ave	4.71	4.76	5.24	4.98	4.87	4.85	4.93	4.39
Max	5.47	5.97	5.88	5.69	5.80	5.74	5.78	5.22

Graph 26: Range of Hunterlab a values on GH sorghum over eight seasons



	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Min	8.00	9.73	9.33	9.20	9.42	8.32	9.75	9.06
Ave	10.17	10.53	10.25	10.25	9.95	9.97	10.65	9.74
Max	11.52	11.65	11.64	11.04	10.48	10.71	11.74	10.50

Graph 27: Range of Hunterlab b values on GM sorghum over eight seasons



	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Min	7.91	7.63	8.94	8.61	7.94	7.76	8.21	7.26
Ave	9.16	9.57	9.68	9.17	8.32	8.40	8.82	8.10
Max	10.49	10.20	10.31	9.58	8.63	8.99	9.82	9.27

Graph 28: Range of Hunterlab b values on GH sorghum over eight seasons

Table 4: South African Sorghum Crop Quality Averages 2024/25 season						
Class and grade sorghum		**GM**			**GH**	
		GM1	**GM2**	**Weighted Average**	**GH1**	**Weighted Average**
Grading						
Foreign matter, %		0.26	0.37	0.28	0.43	0.43
Unthreshed sorghum, %		0.78	0.22	0.66	1.89	1.89
Defective sorghum, %		1.10	3.55	1.59	1.18	1.18
Small kernel sorghum, %		0.88	0.44	0.79	0.16	0.16
Total defective sorghum and small kernel sorghum, %		1.98	3.99	2.38	1.34	1.34
Sorghum of another group, %		0.00	0.00	0.00	0.00	0.00
White sorghum, %		0.04	0.00	0.03	0.00	0.00
Total of sorghum of another group and white sorghum, %		0.04	0.00	0.03	0.00	0.00
Weather-stained sorghum, %		0.00	0.00	0.00	0.00	0.00
Physical parameters						
Test weight, kg/hl		78.3	75.2	77.6	72.2	72.2
1000 Kernel Mass, g (14% moisture base)		23.7	26.0	24.2	22.4	22.4
# Image analysis	Length, mm	4.59	4.70	4.61	4.22	4.22
	Standard Deviation	0.37	0.37	0.37	0.31	0.31
	Width, mm	3.83	4.08	3.88	3.84	3.84
	Standard Deviation	0.35	0.33	0.35	0.30	0.30
	Elongation (% Width/Length)	84	87	84	91	91
	Standard Deviation	5.9	5.4	5.8	5.1	5.1
	Volume/surface area (%)	67	71	68	66	66
	Standard Deviation	5.6	5.3	5.5	4.8	4.8
Nutritional analysis						
Milled Sorghum Moisture, %		11.9	13.1	12.2	12.9	12.9
Crude Protein, % (db)		10.0	10.9	10.2	10.8	10.8
Total Starch, % (db)		72.7	73.0	72.7	70.4	70.4
Crude fat, % (db)		3.6	3.5	3.6	3.0	3.0
Hunterlab colour (fraction of dehulled sample above the 1.8 mm slotted sieve milled on Retch mill through 0.5 mm sieve)	L	66.08	70.67	66.99	65.44	65.44
	a	5.71	4.83	5.54	4.39	4.39
	b	9.62	10.24	9.74	8.10	8.10
Number of samples		***8***	***2***	***10***	***5***	***5***

CO = Class other

TABLE 5: GRADING RESULTS OF SORGHUM ACCORDING TO GRADE (2024/25)

Number of samples	Region	Foreign matter, %			Unthreshed sorghum, %			Defective sorghum, %			Small kernel sorghum, %			Total of defective sorghum and small kernel sorghum, %			Sorghum of another group, %			White sorghum, %			Total of Sorghum of another group and White Sorghum, %			Wheather-Stained Sorghum, %		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: GM1																												
8	Region 35	0.26	0.07	0.51	0.78	0.01	1.20	1.10	0.59	1.48	0.88	0.26	1.47	1.98	0.96	2.91	0.00	0.00	0.00	0.04	0.00	0.30	0.04	0.00	0.30	0.00	0.00	0.00
8	**Ave. GM1**	**0.26**			**0.78**			**1.10**			**0.88**			**1.98**			**0.00**			**0.04**			**0.04**			**0.00**		
	Min. GM1		**0.07**			**0.01**			**0.59**			**0.26**			**0.96**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. GM1			**0.51**			**1.20**			**1.48**			**1.47**			**2.91**			**0.00**			**0.30**			**0.30**			**0.00**
GRADE: GM2																												
1	Region 28	0.11	-	-	0.00	-	-	3.19	-	-	0.00	-	-	3.19	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
1	Region 35	0.63	-	-	0.44	-	-	3.90	-	-	0.88	-	-	4.78	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
2	**Ave. GM2**	**0.37**			**0.22**			**3.55**			**0.44**			**3.99**			**0.00**			**0.00**			**0.00**			**0.00**		
	Min. GM2		**0.11**			**0.00**			**3.19**			**0.00**			**3.19**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. GM2			**0.63**			**0.44**			**3.90**			**0.88**			**4.78**			**0.00**			**0.00**			**0.00**			**0.00**
GRADE: GH1																												
2	Region 18	0.19	0.03	0.35	1.98	1.48	2.47	1.63	0.95	2.30	0.12	0.00	0.23	1.74	0.95	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	Region 24	0.53	-	-	1.62	-	-	0.20	-	-	0.20	-	-	0.40	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
1	Region 26	1.22	-	-	3.89	-	-	2.05	-	-	0.00	-	-	2.05	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
1	Region 33	0.00	-	-	0.00	-	-	0.39	-	-	0.39	-	-	0.78	-	-	0.00	-	-	0.01	-	-	0.01	-	-	0.00	-	-
5	**Ave. GH1**	**0.43**			**1.89**			**1.18**			**0.16**			**1.34**			**0.00**			**0.00**			**0.00**			**0.00**		
	Min. GH1		**0.00**			**0.00**			**0.20**			**0.00**			**0.40**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. GH1			**1.22**			**3.89**			**2.30**			**0.39**			**2.53**			**0.00**			**0.01**			**0.01**			**0.00**
15	**Ave. Sorghum**	**0.33**			**1.07**			**1.45**			**0.58**			**2.04**			**0.00**			**0.02**			**0.02**			**0.00**		
	Min. Sorghum		**0.00**			**0.00**			**0.20**			**0.00**			**0.40**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. Sorghum			**1.22**			**3.89**			**3.90**			**1.47**			**4.78**			**0.00**			**0.30**			**0.30**			**0.00**

TABLE 6: GRADING RESULTS OF SORGHUM ACCORDING TO CLASS (2024/25)

Number of samples	Region	Foreign matter, %			Unthreshed sorghum, %			Defective sorghum, %			Small kernel sorghum, %			Total of defective sorghum and small kernel sorghum, %			Sorghum of another group, %			White sorghum, %			Total of Sorghum of another group and White Sorghum, %			Wheather-Stained Sorghum, %		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
CLASS: GM																												
1	Region 28	0.11	-	-	0.00	-	-	3.19	-	-	0.00	-	-	3.19	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
9	Region 35	0.30	0.07	0.63	0.74	0.01	1.20	1.41	0.59	3.90	0.88	0.26	1.47	2.29	0.96	4.78	0.00	0.00	0.00	0.03	0.00	0.30	0.03	0.00	0.30	0.00	0.00	0.00
10	**Ave. GM**	**0.28**			**0.66**			**1.59**			**0.79**			**2.38**			**0.00**			**0.03**			**0.03**			**0.00**		
	Min. GM		**0.07**			**0.00**			**0.59**			**0.00**			**0.96**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. GM			**0.63**			**1.20**			**3.90**			**1.47**			**4.78**			**0.00**			**0.30**			**0.30**			**0.00**
CLASS: GH																												
2	Region 18	0.19	0.03	0.35	1.98	1.48	2.47	1.63	0.95	2.30	0.12	0.00	0.23	1.74	0.95	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	Region 24	0.53	-	-	1.62	-	-	0.20	-	-	0.20	-	-	0.40	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
1	Region 26	1.22	-	-	3.89	-	-	2.05	-	-	0.00	-	-	2.05	-	-	0.00	-	-	0.00	-	-	0.00	-	-	0.00	-	-
1	Region 33	0.00	-	-	0.00	-	-	0.39	-	-	0.39	-	-	0.78	-	-	0.00	-	-	0.01	-	-	0.01	-	-	0.00	-	-
5	**Ave. GM**	**0.43**			**1.89**			**1.18**			**0.16**			**1.34**			**0.00**			**0.00**			**0.00**			**0.00**		
	Min. GM		**0.00**			**0.00**			**0.20**			**0.00**			**0.40**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. GM			**1.22**			**3.89**			**2.30**			**0.39**			**2.53**			**0.00**			**0.01**			**0.01**			**0.00**
15	**Ave. Sorghum**	**0.33**			**1.07**			**1.45**			**0.58**			**2.04**			**0.00**			**0.02**			**0.02**			**0.00**		
	Min. Sorghum		**0.00**			**0.00**			**0.20**			**0.00**			**0.40**			**0.00**			**0.00**			**0.00**			**0.00**	
	Max. Sorghum			**1.22**			**3.89**			**3.90**			**1.47**			**4.78**			**0.00**			**0.30**			**0.30**			**0.00**

TABLE 7: PHYSICAL PARAMETERS & IMAGE ANALYSIS OF SORGHUM ACCORDING TO GRADE (2024/25)

Number of samples	Region	Test weight, kg/hl			1000 Kernel mass, g			Image Analysis																				
								Length (mm) Average			Length (mm) Std Dev			Width (mm) Average			Width (mm) Std Dev			Elongation (% Width/Length) Average			Elongation (% Width/Length) Std Dev			Volume/surface area (%) Average			Volume/surface area (%) Std Dev		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: GM1																														
8	Region 35	78.3	76.6	80.0	23.7	22.2	24.5	4.59	4.31	4.79	0.37	0.32	0.42	3.83	3.69	3.95	0.35	0.32	0.37	84	81	90	5.8	5.5	6.3	67	65	70	5.6	4.9	6.2
8	**Ave. GM1**	**78.3**			**23.7**			**4.59**			**0.37**			**3.83**			**0.35**			**84**			**5.8**			**67**			**5.6**		
	Min. GM1		**76.6**			**22.2**			**4.31**			**0.32**			**3.69**			**0.32**			**81**			**5.5**			**65**			**4.9**	
	Max. GM1			**80.0**			**24.5**			**4.79**			**0.42**			**3.95**			**0.37**			**90**			**6.3**			**70**			**6.2**
GRADE: GM2																														
1	Region 28	79.2	-	-	27.8	-	-	4.60	-	-	0.32	-	-	4.18	-	-	0.26	-	-	91	-	-	5.1	-	-	72	-	-	4.3	-	-
1	Region 35	71.2	-	-	24.3	-	-	4.81	-	-	0.41	-	-	3.97	-	-	0.40	-	-	83	-	-	5.6	-	-	70	-	-	6.4	-	-
2	**Ave. GM2**	**75.2**			**26.0**			**4.70**			**0.37**			**4.08**			**0.33**			**87**			**5.4**			**71**			**5.3**		
	Min. GM2		**71.2**			**24.3**			**4.60**			**0.32**			**3.97**			**0.26**			**83**			**5.1**			**70**			**4.3**	
	Max. GM2			**79.2**			**27.8**			**4.81**			**0.41**			**4.18**			**0.40**			**91**			**5.6**			**72**			**6.4**
GRADE: GH1																														
2	Region 18	72.2	71.0	73.4	22.3	22.3	22.4	4.24	4.21	4.28	0.29	0.27	0.31	3.85	3.82	3.87	0.25	0.25	0.26	91	91	91	4.8	4.8	4.9	66	66	67	4.1	3.9	4.2
1	Region 24	71.4	-	-	21.0	-	-	4.11	-	-	0.31	-	-	3.74	-	-	0.35	-	-	91	-	-	6.2	-	-	64	-	-	5.4	-	-
1	Region 26	69.8	-	-	20.7	-	-	4.20	-	-	0.34	-	-	3.80	-	-	0.31	-	-	91	-	-	5.0	-	-	65	-	-	5.1	-	-
1	Region 33	75.6	-	-	25.5	-	-	4.32	-	-	0.33	-	-	3.98	-	-	0.33	-	-	92	-	-	4.9	-	-	68	-	-	5.3	-	-
5	**Ave. GH1**	**72.2**			**22.4**			**4.22**			**0.31**			**3.84**			**0.30**			**91**			**5.1**			**66**			**4.8**		
	Min. GH1		**69.8**			**20.7**			**4.11**			**0.27**			**3.74**			**0.25**			**91**			**4.8**			**64**			**3.9**	
	Max. GH1			**75.6**			**25.5**			**4.32**			**0.34**			**3.98**			**0.35**			**92**			**6.2**			**68**			**5.4**
15	**Ave. Sorghum**	**75.8**			**23.6**			**4.48**			**0.35**			**3.87**			**0.33**			**87**			**5.5**			**67**			**5.3**		
	Min. Sorghum		**69.8**			**20.7**			**4.11**			**0.27**			**3.69**			**0.25**			**81**			**4.8**			**64**			**3.9**	
	Max. Sorghum			**80.0**			**27.8**			**4.81**			**0.42**			**4.18**			**0.40**			**92**			**6.3**			**72**			**6.4**

TABLE 8: PHYSICAL PARAMETERS & IMAGE ANALYSIS OF SORGHUM ACCORDING TO CLASS (2024/25)

Number of samples	Region	Test weight, kg/hl			1000 Kernel mass, g			Image Analysis																				
								Length (mm) Average			Length (mm) Std Dev			Width (mm) Average			Width (mm) Std Dev			Elongation (% Width/Length) Average			Elongation (% Width/Length) Std Dev			Volume/surface area (%) Average			Volume/surface area (%) Std Dev		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
CLASS: GM																														
1	Region 28	79.2	-	-	27.8	-	-	4.60	-	-	0.32	-	-	4.18	-	-	0.26	-	-	91	-	-	5.1	-	-	72	-	-	4.3	-	-
9	Region 35	77.5	71.2	80.0	23.8	22.2	24.5	4.62	4.31	4.81	0.37	0.32	0.42	3.85	3.69	3.97	0.35	0.32	0.40	84	81	90	5.8	5.5	6.3	68	65	70	5.6	4.9	6.4
10	**Ave. GM**	**77.6**			**24.2**			**4.61**			**0.37**			**3.88**			**0.35**			**84**			**5.8**			**68**			**5.5**		
	Min. GM		**71.2**			**22.2**			**4.31**			**0.32**			**3.69**			**0.26**			**81**			**5.1**			**65**			**4.3**	
	Max. GM			**80.0**			**27.8**			**4.81**			**0.42**			**4.18**			**0.40**			**91**			**6.3**			**72**			**6.4**
CLASS: GH																														
2	Region 18	72.2	71.0	73.4	22.3	22.3	22.4	4.24	4.21	4.28	0.29	0.27	0.31	3.85	3.82	3.87	0.25	0.25	0.26	91	91	91	4.8	4.8	4.9	66	66	67	4.1	3.9	4.2
1	Region 24	71.4	-	-	21.0	-	-	4.11	-	-	0.31	-	-	3.74	-	-	0.35	-	-	91	-	-	6.2	-	-	64	-	-	5.4	-	-
1	Region 26	69.8	-	-	20.7	-	-	4.20	-	-	0.34	-	-	3.80	-	-	0.31	-	-	91	-	-	5.0	-	-	65	-	-	5.1	-	-
1	Region 33	75.6	-	-	25.5	-	-	4.32	-	-	0.33	-	-	3.98	-	-	0.33	-	-	92	-	-	4.9	-	-	68	-	-	5.3	-	-
5	**Ave. GH**	**72.2**			**22.4**			**4.22**			**0.31**			**3.84**			**0.30**			**91**			**5.1**			**66**			**4.8**		
	Min. GH		**69.8**			**20.7**			**4.11**			**0.27**			**3.74**			**0.25**			**91**			**4.8**			**64**			**3.9**	
	Max. GH			**75.6**			**25.5**			**4.32**			**0.34**			**3.98**			**0.35**			**92**			**6.2**			**68**			**5.4**
15	**Ave. Sorghum**	**75.8**			**23.6**			**4.48**			**0.35**			**3.87**			**0.33**			**87**			**5.5**			**67**			**5.3**		
	Min. Sorghum		**69.8**			**20.7**			**4.11**			**0.27**			**3.69**			**0.25**			**81**			**4.8**			**64**			**3.9**	
	Max. Sorghum			**80.0**			**27.8**			**4.81**			**0.42**			**4.18**			**0.40**			**92**			**6.3**			**72**			**6.4**

TABLE 9: NUTRITIONAL VALUES OF SORGHUM ACCORDING TO GRADE (2024/25)

Number of samples	Region	Moisture, %			Crude Protein content, % (db)			Total Starch content, % (db)			Crude Fat content, % (db)			Hunterlab Colour								
														L			a			b		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
GRADE: GM1																						
8	Region 35	11.9	11.5	12.6	10.0	7.6	11.2	72.7	69.4	80.5	3.6	3.3	3.8	67.33	64.99	69.36	5.71	5.35	6.38	9.62	9.06	10.50
8	**Ave. GM 1**	**11.9**			**10.0**			**72.7**			**3.6**			**67.33**			**5.71**			**9.62**		
	Min. GM 1		**11.5**			**7.6**			**69.4**			**3.3**			**64.99**			**5.35**			**9.06**	
	Max. GM 1			**12.6**			**11.2**			**80.5**			**3.8**			**69.36**			**6.38**			**10.50**
GRADE: GM2																						
1	Region 28	12.5	-	-	12.4	-	-	71.3	-	-	3.5	-	-	67.96	-	-	5.04	-	-	9.98	-	-
1	Region 35	13.6	-	-	9.5	-	-	74.6	-	-	3.5	-	-	73.37	-	-	4.62	-	-	10.49	-	-
2	**Ave. GM 2**	**13.1**			**10.9**			**73.0**			**3.5**			**70.67**			**4.83**			**10.24**		
	Min. GM 2		**12.5**			**9.5**			**71.3**			**3.5**			**67.96**			**4.62**			**9.98**	
	Max. GM 2			**13.6**			**12.4**			**74.6**			**3.5**			**73.37**			**5.04**			**10.49**
GRADE: GH1																						
2	Region 18	12.8	12.8	12.8	11.4	11.0	11.7	70.2	70.1	70.2	3.0	2.7	3.2	65.75	65.04	66.46	4.11	3.96	4.25	7.53	7.26	7.79
1	Region 24	13.1	-	-	9.7	-	-	71.4	-	-	3.0	-	-	64.79	-	-	5.22	-	-	9.27	-	-
1	Region 26	12.6	-	-	11.4	-	-	69.9	-	-	3.0	-	-	64.52	-	-	4.38	-	-	7.73	-	-
1	Region 33	13.0	-	-	10.0	-	-	70.5	-	-	3.1	-	-	66.38	-	-	4.13	-	-	8.44	-	-
5	**Ave. GH 1**	**12.9**			**10.8**			**70.4**			**3.0**			**65.44**			**4.39**			**8.10**		
	Min. GH 1		**12.6**			**9.7**			**69.9**			**2.7**			**64.52**			**3.96**			**7.26**	
	Max. GH 1			**13.1**			**11.7**			**71.4**			**3.2**			**66.46**			**5.22**			**9.27**
15	**Ave. Sorghum**	**12.4**			**10.4**			**72.0**			**3.4**			**67.14**			**5.15**			**9.20**		
	Min. Sorghum		**11.5**			**7.6**			**69.4**			**2.7**			**64.52**			**3.96**			**7.26**	
	Max. Sorghum			**13.6**			**12.4**			**80.5**			**3.8**			**73.37**			**6.38**			**10.50**

TABLE 10: NUTRITIONAL VALUES OF SORGHUM ACCORDING TO CLASS (2024/25)

Number of samples	Region	Moisture, %			Crude Protein content, % (db)			Total Starch content, % (db)			Crude Fat content, % (db)			Hunterlab Colour								
														L			a			b		
		ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.	ave.	min.	max.
CLASS: GM																						
1	Region 28	12.5	-	-	12.4	-	-	71.3	-	-	3.5	-	-	67.96	-	-	5.04	-	-	9.98	-	-
9	Region 35	12.1	11.5	13.6	10.0	7.6	11.2	72.9	69.4	80.5	3.6	3.3	3.8	68.00	64.99	73.37	5.59	4.62	6.38	9.72	9.06	10.50
10	**Ave. GM**	**12.2**			**10.2**			**72.7**			**3.6**			**67.99**			**5.54**			**9.74**		
	Min. GM		**11.5**			**7.6**			**69.4**			**3.3**			**64.99**			**4.62**			**9.06**	
	Max. GM			**13.6**			**12.4**			**80.5**			**3.8**			**73.37**			**6.38**			**10.50**
CLASS: GH																						
2	Region 18	12.8	12.8	12.8	11.4	11.0	11.7	70.2	70.1	70.2	3.0	2.7	3.2	65.75	65.04	66.46	4.11	3.96	4.25	7.53	7.26	7.79
1	Region 24	13.1	-	-	9.7	-	-	71.4	-	-	3.0	-	-	64.79	-	-	5.22	-	-	9.27	-	-
1	Region 26	12.6	-	-	11.4	-	-	69.9	-	-	3.0	-	-	64.52	-	-	4.38	-	-	7.73	-	-
1	Region 33	13.0	-	-	10.0	-	-	70.5	-	-	3.1	-	-	66.38	-	-	4.13	-	-	8.44	-	-
5	**Ave. GH**	**12.9**			**10.8**			**70.4**			**3.0**			**65.44**			**4.39**			**8.10**		
	Min. GH		**12.6**			**9.7**			**69.9**			**2.7**			**64.52**			**3.96**			**7.26**	
	Max. GH			**13.1**			**11.7**			**71.4**			**3.2**			**66.46**			**5.22**			**9.27**
15	**Ave. Sorghum**	**12.4**			**10.4**			**72.0**			**3.4**			**67.14**			**5.15**			**9.20**		
	Min. Sorghum		**11.5**			**7.6**			**69.4**			**2.7**			**64.52**			**3.96**			**7.26**	
	Max. Sorghum			**13.6**			**12.4**			**80.5**			**3.8**			**73.37**			**6.38**			**10.50**

Table 11: Mycotoxin results for the 2024/25 season

Region	Class	Aflatoxin (µg/kg)					Fumonisin (µg/kg)				Deoxynivalenol (µg/kg)	15-ADON (µg/kg)	Ochratoxin A (µg/kg)	Zearalenone (µg/kg)	HT-2 Toxin (µg/kg)	T-2 Toxin (µg/kg)
		B_1	B_2	G_1	G_2	Total	B_1	B_2	B_3	Total						
		LOQ	LOQ	LOQ	LOQ		LOQ	LOQ	LOQ		LOQ	LOQ	LOQ	LOQ	LOQ	LOQ
		5 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg		20 µg/kg	20 µg/kg	20 µg/kg		100 µg/kg	100 µg/kg	5 µg/kg	20 µg/kg	20 µg/kg	20 µg/kg
18	GH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	GH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24	GH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
26	GH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31	ND	ND
28	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	GH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	8	ND	ND	ND	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	33	ND	ND	33	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35	GM	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total number of samples		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Average of total number of samples		8	-	-	-	8	33	-	-	33	-	-	-	31	-	-
Number of positive results		1	0	0	0	1	0	0	0	1	0	0	0	1	0	0
Average of positive results		8	-	-	-	8	33	-	-	33	-	-	-	31	-	-
Maximum of positive results		8	-	-	-	8	33	-	-	33	-	-	-	31	-	-

Note:

- Limit of quantitation (LOQ) means the lowest concentration level that can be quantified with acceptable presicion and accuracy by the LC-MS/MS.
- A concentration measured below the LOQ is reported as <LOQ.
- Limit of detection (LOD) is the lowest concentration level that can be detected but not quantified and is 50% of the LOQ of each mycotoxin.
- A concentration measured below the LOD is reported as not detected (ND).
- µg/kg = ppb (parts per billion)

National Mycotoxin Regulations

According to the Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972) and Regulations Relating to the Maximum Levels of Mycotoxins in Foodstuffs published in Government Notice No. 5505 of 01 November 2024, the maximum allowable levels of mycotoxins in foodstuffs, are as follows:

Mycotoxins	Foodstuff	Notes/Remarks	Maximum Level (µg/kg or µg/L)
Aflatoxins, Total (B_1+B_2+G_1+G_2)	Almonds (whole commodity)	Ready-to-eat	10
	Almonds (whole commodity)	Intended for further processing	15
	Brazil nuts (shelled)	Ready-to-eat	10
	Brazil nuts (shelled)	Intended for further processing	15
	Hazelnuts (whole commodity)	Ready-to-eat	10
	Hazelnuts (whole commodity)	Intended for further processing	15
	Peanuts	Intended for further processing	15
	Pistachios (whole commodity)	Ready-to-eat	10
	Pistachios (whole commodity)	Intended for further processing	15
	Dried figs (whole commodity)	Ready-to-eat	10
	All other foodstuffs not specified (Ready-to-eat)	Of which Aflatoxin B1 is not more than 5 µg/kg	10
	Maize grain	Destined for further processing	15
	Flour, meal, semolina and flakes erived from maize		10
	Husked rice (whole commodity)		20
	Polished rice (whole commodity)		5
	Sorghum grain (whole commodity)	Destined for further processing	10
	Cereal-based food for Infants and young children	Whole commodity as sold; not reconstituted or otherwise prepared for consumption	5
	Chilli pepper, nutmeg (dried/dry)	Whole/Powder/Crushed/Ground	20
Aflatoxin M_1	Milk		1
Deoxynivalenol (DON)	Cereal-based food for Infants and young children	As sold; not reconstituted or otherwise prepared for consumption	200
	Flour, meal, semolina and flakes erived from wheat, maize or barley		1 000
	Cereal grains (wheat, maize and barley)	Destined for further processing	2 000
Fumonisins (B_1+B_2)	Raw maize grain (whole commodity)		4 000
	Maize flour and maize meal		2 000
Ochratoxin A	Wheat (whole commodity)		5
	Raw Barley		5
	Raw Rye		5
	Chilli pepper, paprike, nutmeg (dried/dry)	Whole/Powder/Crushed/Ground	20
Patulin	Apple juice (Excludes concentrated juice)		50

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 storage companies, were representative of the total crop.

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

After grading, the grading samples were placed in separate containers according to class and grade, per silo bin/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 Sorghum intended for sale in the Republic of South Africa (Government Notice NO. R. 15 of 08 January 2016).

See pages 35 to 44 of this report.

Detection of tannin in sorghum grain by the bleach test

This method is applicable to whole grain sorghum.

Sorghum grain is immersed in a sodium hypochlorite solution (bleach) containing alkali. The solution dissolves away the outer pericarp layer of sorghum grain, revealing the presence of a black pigmented testa layer in the case of tannin sorghums, or its absence in the case of non-tannin sorghums.

Bleaching Reagent

- Prepare a 5.25% sodium hypochlorite solution by mixing 250 mL bleach (Jik) with 750 mL tap water.
- Weigh 10.0 g potassium hydroxide and dissolve this in 50 mL of 5.25% sodium hypochlorite solution.

Note: Prepare fresh when the tannin test is conducted. The 50 mL solution is enough for one sample.

Apparatus

- Glass beakers (50 mL)
- Tea strainer
- Aluminum foil
- Paper towel

Procedure

- The test must be performed in duplicate.
- Known tannin sorghum and non-tannin sorghum standards must be included each time the test is performed.
- Weigh 25.00 g sound sorghum grains of the sample in a beaker or small glass bottle.
- Add the bleaching reagent to just cover the sorghum grains and close the beaker with aluminum foil. Too much bleaching reagent will cause over bleaching and give false negative results. If in doubt repeat using less reagent.
- Incubate beaker at room temperature (20-30 °C) for 20 minutes, swirling contents of beaker every 5 minutes. White sorghum is incubated for only 5 minutes.
- Empty contents of beaker into tea strainer, discarding bleaching reagent. Rinse sorghum grains in tea strainer with tap water.

- Empty contents of tea strainer onto sheet of paper towel. Spread grains out into a single layer and gently blot them dry with another piece of paper towel.
- Remove the tannin sorghum grains in the sample and weigh them. **Tannin sorghum grains are those grains that are black over the entire surface of the grain.**
- Weigh the non-tannin sorghum grain (remainder of the sample after removing the tannin sorghum grains). **Non-tannin sorghum grains are those which are either completely white or are brown over part of the surface of the grain.**

Calculation of results

Calculate tannin sorghum grains as percentage of total sorghum grains as follows:

- Percentage tannin sorghum = (Mass of tannin sorghum / mass total sample) x 100
  Example: % tannin sorghum = (23.85 g tannin/25.00 g sample) x 100
  = 95.4% tannin sorghum
- Duplicate determinations should not differ by more than 5% (1.25 g), for example first determination 90%, second determination 85%, or 95%. The mean of the duplicate determinations should be calculated.

Reporting of results

Results should be expressed as: Percentage tannin sorghum, e.g. 90% tannin sorghum.
Classification:

- Sample containing ≥ 95% tannin sorghum is classified as Tannin sorghum
- Sample containing ≥ 95% non-tannin sorghum classified as Non-tannin sorghum.
- Sample containing < 95% tannin sorghum and > 5% non-tannin sorghum, the sample is classified as Mixed Tannin
- Sample containing < 95% non-tannin sorghum and > 5% tannin sorghum, the sample is classified as Mixed Tannin

Test weight

Test weight, providing a measure of the bulk density of grain and oilseeds, was determined according to ISO 7971-3:2019, by means of the Kern 222 instrument.

To calculate the bulk density p, expressed in kilogram per hectolitre (kg/hl), the following equation was applied: $p = 0.1002\ m + 0.53$. This is the equation used for wheat, since an equation for sorghum is not available.

The test weight analyses were done on unscreened sorghum samples.

Thousand kernel mass

This is the weight in grams of one thousand kernels of grain and provides a measure of grain size and density. This determination does not include kernels that are broken or chipped and is done according to Industry Accepted Method 008 using a seed counter. Thousand kernel mass is reported on a 14% moisture basis.

Determination of sorghum kernel size by means of image analysis

Sorghum kernels were photographed with a Panasonic Lumix digital camera (DNC-LX3). Photos were analysed afterwards, using Digimizer version 4.0 software supplied by Medcalc (www.digimizer.com), to measure the size of the sorghum kernels. Photos of the samples are stored in a database. The following measurements were taken:

- Length, measured in millimeters (mm)
- Width, calculated at a 90% angle from the maximum length of an object, measured in millimeters (mm)
- Elongation (% Width/Length)
- Volume/surface area (%) - calculated from length and width data

Milling

All samples requiring milling were milled on a Retch ZM 200 mill fitted with a 0.5 mm screen.

Moisture

The moisture content of the milled grain was determined using ICC Standard 110/1 (latest edition). This method determines moisture content as a loss in weight of a sample when dried in a hot air ventilation oven at 130 °C for 2 hours. Moisture content results were used to report % starch, % protein and % fat content on a dry basis (db).

Crude Protein Content

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.

Total Starch Content

Determination of the total starch content was according to the SAGL In-house method 019, a polarimetric method based on the modified Ewers method. The starch content is released from the sample by boiling in diluted hydrochloric acid. The acid helps to break down the endosperm tissue, ensuring complete release of the starch granules from the protein matrix. Substances, which may interfere with the measurement, are removed by filtration. The starch solution in the filtrate is determined by measuring the angle of polarisation or optical rotation of the filtrate with a polarimeter.

Crude fat Content

In-House method 024 was used for the determination of the crude fat content 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.

Mycotoxin analyses

Mycotoxins are fungal metabolites, toxic to animals and humans, that are produced by moulds commonly found in almost all types of grain. Aside from health risks, mycotoxin contamination can also reduce the value of the crops. Environmental factors such as temperature, humidity, soil and storage conditions influence toxin production.

SAGL implements a validated SAGL In-house multi-mycotoxin screening method using UPLC - MS/MS. A sub-sample of each sorghum sample was milled and tested for Aflatoxin B_1; B_2; G_1; G_2, Fumonisin B_1; B_2; B_3, Deoxynivalenol, 15-ADON, HT2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A.

Dehulling of samples

Each sorghum sample was sieved by means of 3.55 mm, 3.35 mm and 3.15 mm woven wire mesh sieves. The largest fraction, selected to obtain an indication of comparative hardness and to eliminate difference due to kernels size, was dehulled by means of a Barley pearler. This season, the fraction below the 3.15 mm sieve was dehulled.

Tests were conducted using 150 g of sample with a dehulling time of 70 seconds. These parameters are based on results obtained on the outcomes of a processing application project funded by the Sorghum Trust. Barley pearler fractions are sieved into three fractions:
> 1.8 mm slotted sieve
< 1.8 mm slotted sieve and > 2.38 mm round hole sieve, and
< 2.38 mm round hole sieve.
The colour determinations for this project were done on the first fraction (> 1.8 mm).

Determination of colour

- The Barley pearler fraction above the 1.8 mm slotted sieve was milled on a Retch mill through a 0.5 mm sieve. The milled samples' colour was determined with the Hunterlab ColorFlex EZ 45°/0° spectrophotometer with key parameters set on a 10° observer angle and daylight illuminant D65 according to SAGL Industry accepted method 004. The spectrophotometer operates in the Hunter L, a, b scale where:
- L measures lightness and varies from 100 for perfect white to zero for black, approximately as it would be evaluated by the eye. The chromaticity dimensions (a and b) give understandable designations of colour as follows:
- a measures redness when positive, grey when zero, and greenness when negative.
- b measures yellowness when positive, grey when zero, and blueness when negative.

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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Technical Signatories:

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

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

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

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

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

Original Date of Accreditation: 01 November 1999

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager

Government Gazette, No. 10546 8 January 2016

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REPUBLIC OF SOUTH AFRICA
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DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. R. 15 **08 JANUARY 2016**

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

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

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

(a) made the regulations in the Schedule;

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

(c) read together with section 3(1) of the said Act, repealed the Regulations published by Government Notice No.R.532 of 16 May 2008.

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;

"another group" in relation to --

(a) sorghum of Class GM means sorghum that has a dark testa; and

(b) sorghum of Class GH means sorghum that does not have a dark testa;

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

"consignment" means --

(a) a quantity of sorghum 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;

"dark testa" means the testa layer of the sorghum that contains tannins of the condensed type;

"defective sorghum" means --

(a) pieces of broken sorghum kernels; or

(b) sorghum kernels --

(i) that are affected by fungi or diseases;

(ii) of which the embryo skin is cracked due to germination;

(iii) that have a green colour or shows other signs of immaturity; and

(iv) that have been damaged by insects, rodents, cold, heat or in any other manner, but does not include weather-stained sorghum;

"foreign matter" means any matter or substance other than sorghum. Coal, dung and metal shall not be present in the consignment concerned;

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

"poisonous seeds" mean seeds or part of seeds of plant species that in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 64 of 1972), may represent a hazard to human or animal health when consumed, including seeds of *Argemone mexicana L, Convolvulus spp., Crotalaria spp., Datura spp., Ipomoea spp., Lolium temulentum, Ricinus communis or Xanthium spp;*

"small kernel sorghum" means whole sorghum kernels that pass through a standard sieve;

"**sorghum**" means the threshed, ripe seed of plants of *Sorghum bicolor (L.)* Moench, but excludes broom sorghum, hay sorghum or cane sorghum;

"standard sieve" means is a slotted sieve --

(a) with a flat bottom of metal sheet of 1,00 mm thickness with rectangular slots of 12, 7 mm in length and 1, 8 mm in width 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 orientated, with a slot directly opposite the solid inter segment of the adjacent row of slots;

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

(c) with a circular frame of suitable material with an inner diameter of at least 300 mm and maximum 310 mm and at least 50 mm high;

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

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

"unthreshed sorghum" means sorghum or pieces of sorghum still partially covered by glumes;

"weather-stained sorghum" means sorghum kernels of which more than one-third of the surface of the pericarp is distinctly discoloured by the weather, but does not include sorghum kernels with purple anthocyanic blotches in or on the pericarp; and

"white sorghum" means sorghum of which the pericarp does not display any of the shades of brown, red or yellow irrespective of any purple anthocyanic blotches in or on the pericarp.

Restriction on sale of sorghum

2. (1) No person shall sell a consignment of sorghum in the Republic of South Africa --

(a) unless the sorghum is sold according to the classes set out in regulation 3;

(b) unless the sorghum complies with the standards for the class concerned as set out in regulation 4;

(c) unless the sorghum complies with the grades of sorghum and the standards for grades set out in regulations 5 and 6 respectively;

(d) unless the sorghum is packed in accordance with the packing requirements set out in regulation 7;

(e) unless the containers 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 sorghum contains a substance that renders it unfit for human consumption or for processing into or utilisation thereof as food or feed.

(2) The Executive Officer may grant written exemption, entirely or partially, to any person on such conditions as he or she may deem necessary, from the provisions of sub-regulation (1).

PART I

QUALITY STANDARDS

Classes of sorghum

3. Sorghum shall be classified as --

(a) Class GM;

(b) Class GH; and

(c) Class Other.

Standards for classes

4. (1) A consignment of sorghum shall be classified as Class GM Sorghum if it --

(a) consists of malt sorghum that does not have a dark testa; and

(b) complies with the standards for the grade of Class GM sorghum as set out in regulation 6.

(2) A consignment of sorghum shall be classified as Class GH sorghum if it --

(a) consists of malt sorghum that has a dark testa; and

(b) complies with the standards for grades for Class GH Sorghum as set out in regulation 6.

(3) A consignment of sorghum shall be classified as Class Other if it does not comply with the standards for Class GM, and GH Sorghum

Grades of sorghum

5. Sorghum shall be graded as --

(a)	Class GM	(i)	Grade GM1
		(ii)	Grade GM2
		(iii)	Grade GM3

(b) Class GH (i) Grade GH1
(ii) Grade GH2

(c) No grades are determined for Class Other.

Standards for grades

6. (1) All grades of sorghum shall --

(a) be free from black smearing as a result of smut;

(b) not contain 10 or more smut balls or portions of smut balls which are collectively equivalent to 10 or more smut balls, per 100 g of sorghum;

(c) be free from a musty, sour or other undesirable smell;

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

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

(f) not contain more poisonous seeds than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972);

(g) with the exception of Class Other, be free from grain insects;

(h) with the exception of Class Other, have a moisture content of not more than 14 percent; and

(i) be free from animal filth.

(2) Grades GM1, GM2, GM3, GH1 and GH2 shall not exceed the permissible deviations specified in columns 2, 3, 4, 5, and 6 of the Table in the Annexure, respectively, with regard to the nature of deviation specified in column 1 of the said table.

(3) The presence of purple anthocyanic blotches in or on the pericarp shall not be taken into consideration when determining the grade of a consignment of sorghum.

PART II

PACKING AND MARKING REQUIREMENTS

Packing requirements

7. Sorghum of different classes and grades shall be packed in different containers.

Marking requirements

8. (1) Each container or the accompanying sales documents of a consignment shall be marked or endorsed with the applicable class or grade of the sorghum or, in the case of sorghum that have been imported, the common name and the name of the country of origin thereof.

PART III

SAMPLING

Obtaining of sample

9. (1) A sample of a consignment of sorghum shall --

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

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

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

(b) be thoroughly mixed before further examination.

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

(4) 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 sorghum taken from different bags in a consignment in terms of regulation 9(1) (a), it appears that the contents of those bags differ substantially --

(a) the bags concerned shall be placed separately;

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

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

(2) If, after the discharge of a consignment of sorghum in bulk has commenced, it is suspected that the consignment could be of a class or grade other than that determined by means of the initial sampling, the discharge shall immediately be stopped and the part of the consignment remaining in the bulk container as well as the sorghum already in the hopper shall be sampled anew with a bulk sampling apparatus or by catching, by means of a suitable container, at regular intervals quantities from the stream of sorghum flowing in bulk.

Working sample

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

PART IV

INSPECTION METHODS

Determination of class and presence of smut, undesirable smells, harmful substances, poisonous seeds, insects and animal filth

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

(a) the class thereof;

(b) whether it is smeared black by smut;

(c) whether it contains smut balls;

(d) whether it has a musty, sour or other undesirable smell;

(e) whether it contains any substance that renders it unsuitable for human consumption or for processing into or utilisation as food or feed;

(f) whether it contains any poisonous seeds;

(g) whether it contains any grain insects; and

(h) whether it contains any animal filth.

Determination of percentage foreign matter

13. The percentage of foreign matter in a consignment of sorghum shall be determined as follows:

(a) Obtain a working sample of at least 100 g of material from the sample of the consignment.

(b) Remove all foreign matter by hand 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.

(d) Such percentage shall represent the percentage of foreign matter in the consignment concerned.

Determination of percentage unthreshed sorghum

14. The percentage of unthreshed sorghum in a consignment of sorghum shall be determined as follows:

(a) Obtain a working sample of at least 50 g of material from the sample from which all foreign matter has been removed.

(b) Remove all unthreshed sorghum by hand 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.

(d) Such percentage shall represent the percentage of unthreshed sorghum in the consignment concerned.

Determination of percentage defective sorghum content and percentage small kernel sorghum

15. The percentages of defective sorghum and small kernel sorghum in a consignment of sorghum shall be determined as follows:

(a) Obtain a working sample of at least 50 g of material from a sample from which all foreign matter and unthreshed sorghum have been removed.

(b) Place the working sample on a standard sieve.

(c) Screen the working sample for 25 to 30 seconds by performing 30 movements of the standard sieve and collecting tray on an even horizontal surface and along the longitudinal axis of the slots of the sieve: Provided that each such movement shall consist of a to-and-fro movement of between 200 mm and 300 mm each.

(d) Remove all defective grain sorghum kernels from those portions of the working sample that respectively remained in or on the standard sieve and were collected in the collecting tray and determine the joint mass thereof.

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

(f) Such percentage shall represent the percentage of defective grain sorghum in the consignment concerned.

(g) Determine the mass of the material that remained in the collecting tray after the removal of the defective sorghum kernels in terms of paragraph (d).

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

(i) Such percentage shall represent the percentage of small kernel sorghum in the consignment concerned.

Determination of percentage sorghum of another group

16. The percentage of sorghum of another group in a consignment of sorghum shall be determined as follows:

(a) Obtain a working sample of at least 25 g of material from the sample from which all foreign matter, unthreshed sorghum, defective grain sorghum and small kernel sorghum have been removed.

(b) Remove all sorghum of another group by hand 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.

(d) Such percentage shall represent the percentage of sorghum of another group in the consignment concerned.

Determination of percentage white sorghum

17. The percentage of white sorghum in a consignment of sorghum shall be determined as follows:

(a) Obtain a working sample of at least 25 g of material from the sample from which all foreign matter, unthreshed sorghum, defective sorghum and small kernel sorghum have been removed.

(b) Remove all the white sorghum by hand 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.

(d) Such percentage shall represent the percentage of white sorghum in the consignment concerned.

Determination of percentage weather-stained sorghum

18. The percentage of weather-stained sorghum in a consignment shall be determined as follows:

(a) Obtain a working sample of at least 10 g of material from the sample from which all foreign matter, unthreshed sorghum, defective sorghum and small kernel sorghum have been removed.

(b) Remove all the weather-stained sorghum by hand 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.

(d) Such percentage shall represent the percentage of weather-stained sorghum in the consignment concerned.

Determination of moisture content

19. The moisture content of a consignment of sorghum may be determined according to any suitable method: Provided that the results thus obtained complies with the maximum permitted errors for a class 1 moisture meter as detailed in ISO 7700/1-1984(E), based upon 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]

PART V

OFFENCES AND PENALTIES

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

ANNEXURE A
TABLE

PERMISSIBLE DEVIATIONS SORGHUM

1	2	3	4	5	6
Nature of deviation	**Maximum extent to which defects are permissible in percentages**				
	Grade GM1	**Grade GM2**	**Grade GM3**	**Grade GH1**	**Grade GH2**
1. Foreign matter (Reg 13)	1,5	2,0	3,0	1,5	3,0
2. Unthreshed sorghum (Reg14)	4,0	6,0	12,0	4,0	20,0
3. Defective sorghum (Reg 15)	3,0	10,0	20,0	3,0	20,0
4. Small kernel sorghum (Reg 15)	8,0	10,0	20,0	8,0	20,0
5. Total of defective sorghum and small kernel sorghum	10,0	10,0	20,0	10,0	20,0
6. Sorghum of another group (Reg 16)	4,0	6,0	10,0	4,0	*
7. White sorghum (Reg 17)	4,0	6,0	*	4,0	*
8. Total of Sorghum of another group and White Sorghum	6,0	10,0	*	6,0	*
9. Weather-Stained Sorghum	50,0	50,0	75,0	50,0	75,0

* No specification