



South African Wheat Crop

Quality Report
2024/2025 Season

Index

	Page
Summary & Introduction	1 - 2
Provincial contribution to the production of the 2024/25 wheat crop (Graph 1)	1
Production	2
Wheat production in the RSA from the 2014/15 to 2024/25 seasons (Graph 2)	3
Wheat production figures per production area over ten seasons (Graph 3)	3
Area planted per production area over ten seasons (Graph 4)	3
Average yield per production area over ten seasons (Graph 5)	4
Wheat production overview over two seasons (Table 1)	4
Supply and Demand	5
Wheat import figures as a percentage of the total demand over seven seasons (Graph 6)	5
Wheat supply and demand overview 2024/25 season (Graph 7)	5
SAGIS Wheat supply and demand figures (Table S1)	6
Wheat supply and demand graphs over ten seasons (Graphs 8 - 11)	7
SAGIS Whole wheat processed per province (Table S2)	8
SAGIS Wheat Product Information (Graphs 12 - 17)	9
SAGIS Wheaten Products Manufactured, - Imported and - Exported per marketing year (Tables S3 – S5)	10
SAGIS Pan Baked Products manufactured per marketing year (Table S6)	11
SAGIS Pan Baked Products manufactured per bakery group per marketing year (Table S7a - d)	12 - 13
Assuring the quality of South African wheat	14 - 15
Wheat grades	15
Percentage of samples per class and grade in the 2021/22, 2022/23, 2023/24 and 2024/25 seasons according to the current grading regulations (Graphs 18 - 21)	16
Figures of wheat seed sold for the 2024 planting season	16

Bread Wheat Grading Table – Government Notice No. R. 1547 of 29 November 2019 (Table 2)	17
Crop quality of the 2024/25 season	18 - 21
Protein content distribution over the last three seasons (Graph 22)	18
Protein content distribution between the three production areas (Graph 23)	18
Ranges for Konica Minolta CM-5 L*, a* and b* values over ten seasons (Graphs 24a - c)	20
Weighted average protein, falling number, hectolitre mass and mixogram peak times per region for the last three seasons (Table 3)	22
Weighted average protein, falling number, hectolitre mass and mixogram peak time over ten seasons (Graph 25a - d)	23
Comparison of Flour Quality over the last four seasons (Table 4)	24
Comparison of Rheological Quality over ten seasons (Graphs 26a - h)	25
Regional quality weighted averages (Table 5)	26 - 27
RSA Production Regions	28 - 29
RSA Provinces map (Figure 1)	28
RSA Crop Production Regions map (Figure 2)	30
List of grain production regions with silo/intake stands and type of storage structure	31 - 33
Quality data plus rheological graphs per production region	34 - 55
Mycotoxins	56
Mycotoxin results for the 2024/25 season (Table 6)	57 - 58
National Mycotoxin Regulations	59
Amino Acid Profile	60
Amino acid profile of wheat samples originating from different regions (Table 7)	61 - 62
RSA wheat crop quality summary comparison of the 2022/23 and 2024/25 seasons	63 - 64
RSA wheat crop quality summary comparison of the 2023/24 and 2024/25 Seasons ⁶	65 - 66
Methods	67 - 70
SAGIS Wheat Exports/Imports per country for the 2023/24 Season (Table S8)	72

SAGIS Wheat Exports/Imports per country for the 2024/25 Season (Table S9)	73
Quantity of Wheat Imported to the RSA	74
Total wheat imports for domestic use over 10 seasons (Graph 27)	74
Wheat imports per origin for domestic use 2023/24 and 2024/25 seasons (Graphs 28 - 29)	74
Total wheat imports per country per season for use in the RSA (Table 8)	75
Quality summary of imported wheat 2023/24 season	75 - 77
Summary of imported wheat quality results of the 2023/24 season (Table 9)	78 - 79
Imported wheat quality per country compared to RSA crop quality during the 2023/24 production season	80 - 97
SANAS Certificate and Schedule of Accreditation	99 - 102
Grading Regulations for Bread Wheat, Government Notice No. R. 1547 of 29 November 2019	103 - 115

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South African

Commercial Wheat Quality of the 2024/2025 Season

Acknowledgements

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- 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 wheat and wheat products.

Summary

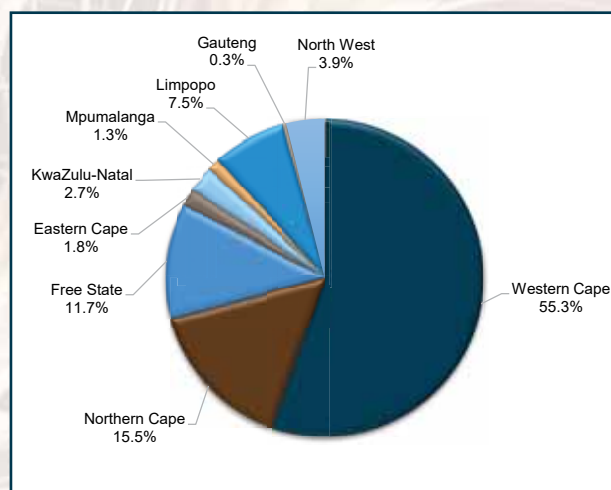
The 2024/25 season's commercial wheat crop was set at 1 930 000 tons, almost 6% lower than the previous season. A total area of 505 300 hectares was utilised for wheat production during this season and the average yield was 3.82 tons per hectare (Figures obtained from the CEC).

The whole wheat protein average of 11.6% decreased by 0.2% compared to the previous season. The percentage samples from this crop survey with a protein content equal or higher than 12.5% (minimum protein content for Super Grade) was 28% (28% and 44% during the previous two seasons respectively). The hectoliter mass averaged 80.3 kg/hl, 0.4 kg/hl lower than the previous season. 7% of the samples reported values below the minimum requirement of 76 kg/hl for Super Grade, Grade 1 and Grade 2. The ten-year national average is 80.3 kg/hl.

The average falling number this season was 371 seconds. Only 2% (5) of the samples analysed gave falling number values below 250 seconds and of these two samples were below 220 seconds. The average mixogram peak time was 3.2 minutes compared to the 3.1 minutes of the previous season. The ten-year average is 3.0 minutes.

Introduction

This report provides the results of the twenty-seventh annual wheat 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



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

participates in a number of proficiency testing schemes, both nationally and internationally as part of our ongoing quality assurance procedures to demonstrate technical competency and international comparability.

During the harvesting season (October to December for the southern production regions and November to January for the northern production regions), a representative sample of each delivery of wheat was taken according to the prescribed wheat regulation by the commercial grain storage companies.

A sub-sample of each of these grading samples was collected in a container according to class and grade per silo bin/bag/bunker/dam at each depot. This composite sample was then divided and a 3 kg sample was forwarded to SAGL for the

annual wheat crop quality survey. SAGL analysed 322 samples to provide a proportional representation of the production of wheat in all the different production regions.

The samples were graded and the thousand kernel mass determined. Sub-samples were milled on a Quadromat Junior mill for mixograph analyses. Composite samples per class and grade for each production region, 65 samples in total, were milled on a Bühler MLU 202 laboratory mill. Moisture, protein, ash and colour determinations were done and RVA analyses conducted. Rheological analyses, namely gluten, mixogram, farinogram, alveogram, extensogram and 100-gram baking tests, were then performed. Multi-mycotoxin analyses were performed on 40 samples randomly selected to represent the different production regions.

The results (as averages per region) are made available weekly on the SAGL website (www.sagl.co.za) soon after the first samples are received. The report, in an easy to page format, is available on the website. Hard copy reports are also distributed to Directly Affected Groups and interested parties.

In addition to the quality information compared over a number of seasons, production figures (provided by the CEC) relating to hectares planted, tons produced and yields obtained on a national as well as provincial basis, over a ten-season period, are provided in this report. Sales figures of seed sold by the commercial grain storage companies were requested to calculate national total quantities per cultivar.

SAGIS supply and demand figures over several seasons are presented in table and graph format. Information with regards to the processing of wheat per province, the manufacture, import and export of wheat products as well as the manufacture of pan baked products nationally and per bakery group, is incorporated into the report.

Data on wheat imported for domestic use during the 2023/24 (previous) season is included and compared to the quality of the local crop of the corresponding period.

The national bread wheat grading regulations as published in the Government Gazette of 29 November 2019 are provided as the last section of the report.

The goal of this crop quality survey the accumulation of quality data on the commercial wheat crop on a national level. This valuable data reveals general tendencies and highlights quality differences in the commercial wheat produced in different local production regions. A detailed database containing reliable analytical data collected over several seasons is essential to enable industry to comment on proposed legislative levels and to supply reliable data for targeted research projects.

Production

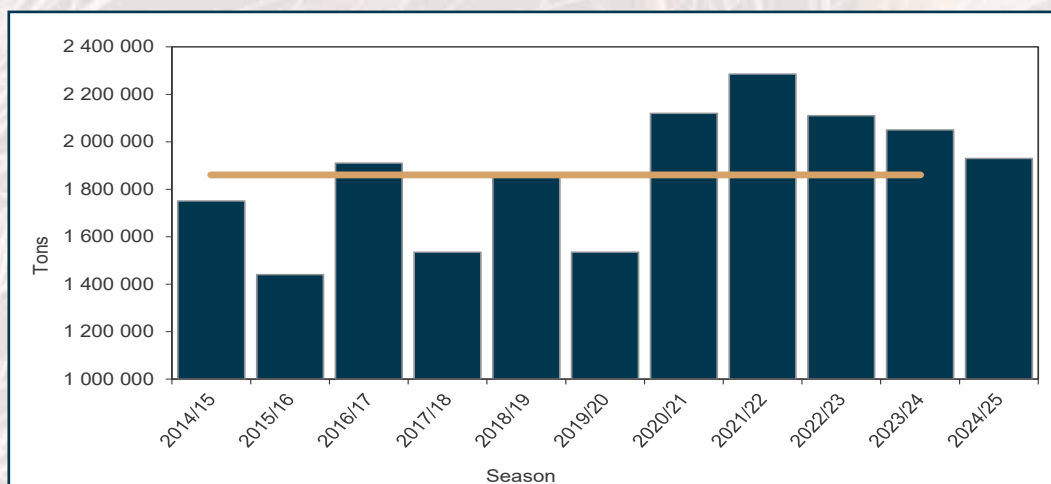
Wheat contributed 73% to the total winter cereal crop production in South Africa this season. Other winter crops produced are barley, canola and oats.

South Africa (comprising nine provinces) is divided into 36 crop production regions with wheat planted in approximately 28 of these regions. Please see Figure 1 (RSA Provinces map) and Figure 2 (RSA Crop Production Regions map) on pages 28 and 30.

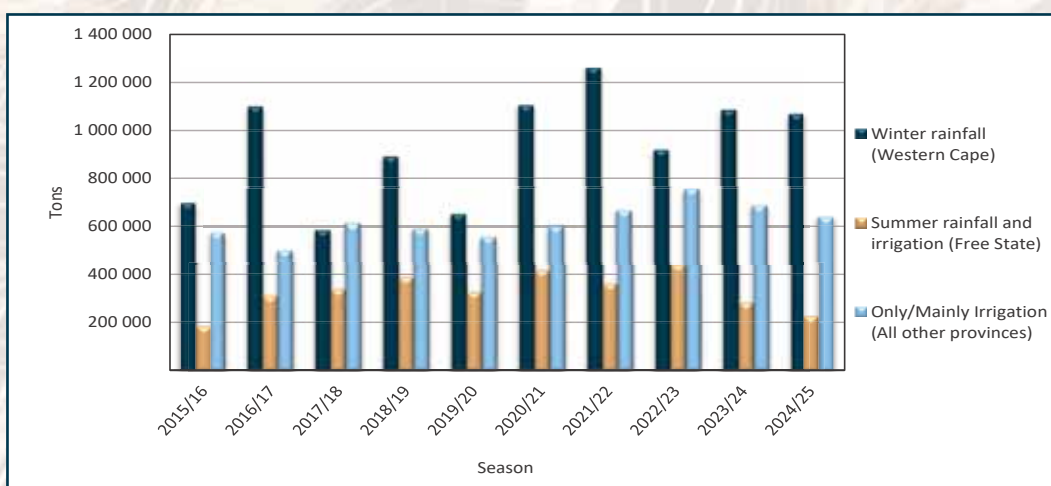
The national CEC's estimated total production figures were revised, using as basis for the calculations, SAGIS' published figures of actual deliveries. Figures to determine on-farm usage and retentions obtained from a wheat utilisation survey conducted by the NDA, were added to the SAGIS delivery figures to calculate the final crop production figures.

The final production figure of 1 930 000 tons is almost 4% higher than the ten-year production average of 1 860 300 tons (2014/15 to 2023/24 seasons). The Western Cape produced 1 067 200 tons of wheat this season, representing a year-on-year decrease of 1.5% and a 55% contribution to the total crop. The irrigation areas of the Northern Cape, the second largest wheat producing area this season, produced 298 300 tons, 2% more than last season. The Free State's wheat production figure (225 260 tons) decreased by 20% year-on-year. The remainder of the local wheat was produced mainly in Limpopo with 145 550 tons, representing a 25% decline compared to the 2023/24 season and North West, where production increased by nearly 12% to 75 600 tons.

Please see Graphs 2 and 3 for national wheat production figures and wheat production figures per production area over ten seasons.

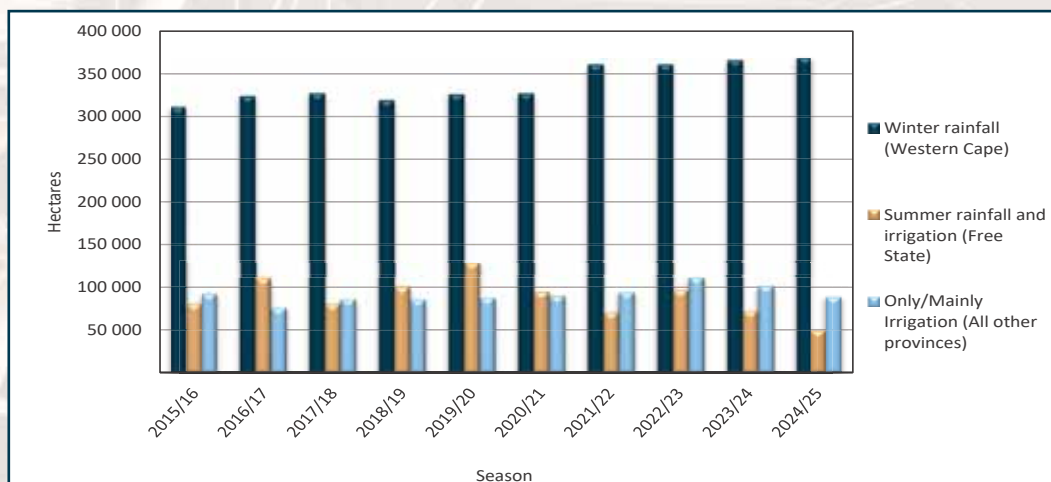


Graph 2: Wheat production in the RSA from the 2014/15 to 2024/25 seasons (Figures provided by the CEC.)



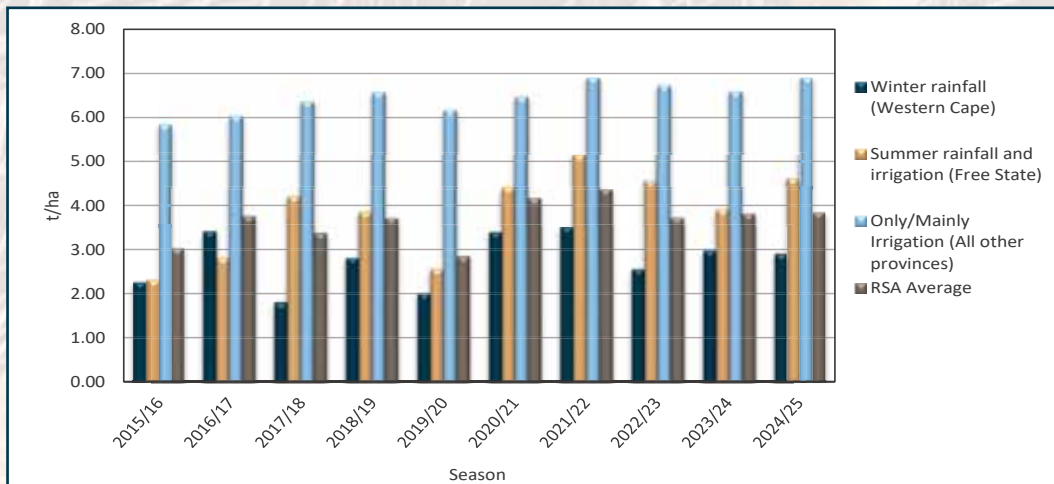
Graph 3: Wheat production figures per production area over ten seasons (Figures provided by the CEC.)

The area utilised for wheat production decreased by 6% to 505 300 hectares compared to the 2023/24 season. There was a slight increase (almost 1%) in the hectares cultivated under wheat in the Western Cape, while the wheat production area in the Free State decreased by 32% year-on-year. Nationally, dry land and irrigation areas decreased by 5% and 9% respectively year on year. Please see Graph 4 and Table 1.



Graph 4: Area planted per production area over ten seasons (Figures provided by the CEC.)

The yield in the main production areas ranged on average from 2.90 tons per hectare (t/ha) in the winter rainfall area of the Western Cape to 7.85 t/ha for irrigation wheat produced in the Northern Cape. The Free State (summer rainfall and irrigation areas) averaged 4.60 t/ha compared to the 3.90 t/ha of the previous season. The national yield average (3.82 t/ha) was equal to the previous season (3.81 t/ha).



Graph 5: Average yield per production area over ten seasons (Figures provided by the CEC.)

Please see Graph 5 for the average yield per production area over ten seasons.

The figures illustrated in Graphs 3 to 5 are based on the production figures per province as provided by the CEC and reported in Table 1.

Table 1 provides an overview of the dry land versus irrigation wheat production over the last two seasons.

Table 1: Wheat production overview over two seasons							
Province	Type of production	2024/25			2023/24		
		Hectares planted, ha	Production, tons	Yield, t/ha	Hectares planted, ha	Production, tons	Yield, t/ha
Western Cape	Dryland	364 000	1 048 000	2.88	361 000	1 064 000	2.95
	Irrigation	4 000	19 200	4.80	4 000	20 000	5.00
	Total	368 000	1 067 200	2.90	365 000	1 084 000	2.97
Northern Cape	Dryland	-	-	-	-	-	-
	Irrigation	38 000	298 300	7.85	40 000	292 000	7.30
	Total	38 000	298 300	7.85	40 000	292 000	7.30
Free State	Dryland	18 000	28 800	1.60	36 500	73 000	2.00
	Irrigation	31 000	196 460	6.34	35 500	207 800	6.60
	Total	49 000	225 260	4.60	72 000	280 800	3.90
Eastern Cape	Dryland	-	-	-	1 100	4 400	4.00
	Irrigation	5 000	34 500	6.90	5 200	36 155	6.95
	Total	5 000	34 500	6.90	6 300	40 555	6.44
KwaZulu-Natal	Dryland	50	250	5.00	250	850	3.40
	Irrigation	8 250	52 040	6.31	8 250	55 250	6.70
	Total	8 300	52 290	6.30	8 500	56 100	6.60
Mpumalanga	Dryland	-	-	-	-	-	-
	Irrigation	3 500	24 500	7.00	4 200	27 720	6.60
	Total	3 500	24 500	7.00	4 200	27 720	6.60
Limpopo	Dryland	1 500	6 850	4.57	5 000	18 000	3.60
	Irrigation	19 000	138 700	7.30	25 000	177 000	7.08
	Total	20 500	145 550	7.10	30 000	195 000	6.50
Gauteng	Dryland	150	640	4.27	150	600	4.00
	Irrigation	850	6 160	7.25	800	5 575	6.97
	Total	1 000	6 800	6.80	950	6 175	6.50
North West	Dryland	1 000	4 100	4.10	1 000	4 000	4.00
	Irrigation	11 000	71 500	6.50	10 000	63 650	6.37
	Total	12 000	75 600	6.30	11 000	67 650	6.15
RSA	Dryland	384 700	1 088 640	2.83	405 000	1 164 850	2.88
	Irrigation	120 600	841 360	6.98	132 950	885 150	6.66
	Total	505 300	1 930 000	3.82	537 950	2 050 000	3.81

Figures provided by the CEC.

Supply and Demand

World wheat production for the 2024/25 season is estimated at 800.79 million metric tons according to the *World Agricultural Supply and Demand Estimates (WASDE) report 665 of 14 November 2025*, world production for 2025/26 is projected to be 828.89 million metric tons.

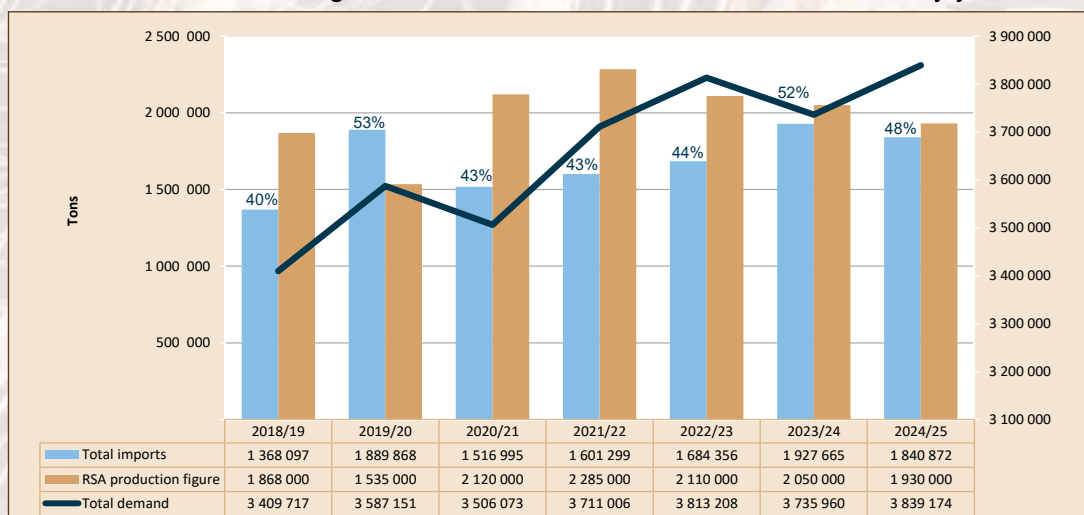
South Africa is a net importer of wheat and relies on imports to supply local demand. According to SAGIS figures (Table S1), wheat processing demand (human, animal and gristing) during the 2024/25 season was the highest (3 555 650 tons) of the last 27 seasons. The ten-year average is 3 301 445 tons.

During the 2024/25 season, 1 840 872 tons of wheat were imported. This figure is almost 5% lower than the amount of wheat imported during 2023/24. The largest amounts of wheat were imported from Australia and the Russian Federation with 567 313 tons (31%) and 445 668 tons (28%) respectively (Table S9). The ten-year import average is 1 699 201 tons.

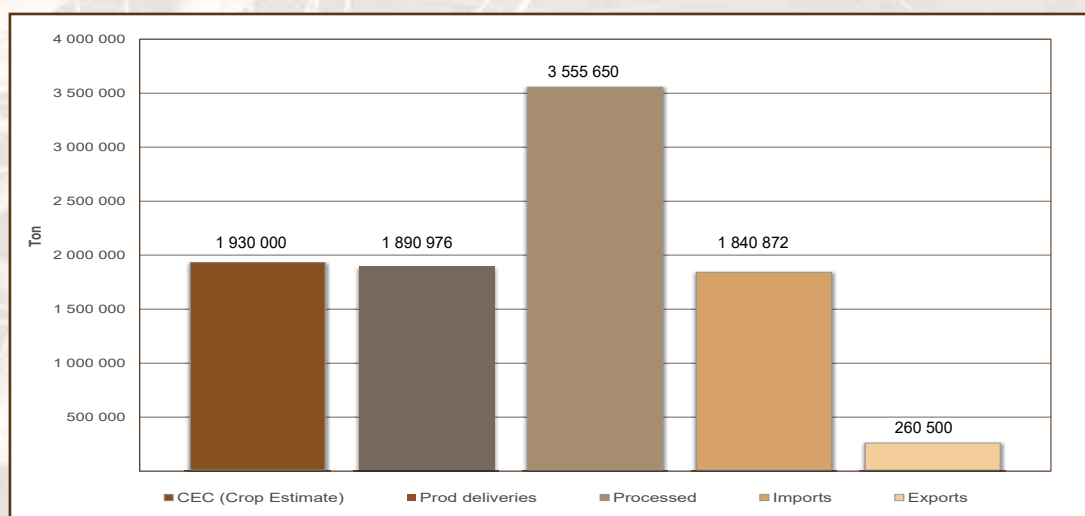
According to Table 8 on page 72, 28% of the wheat imported during the 2023/24 season for local consumption originated in the Russian Federation, followed by Lithuania (21%), Australia (20%) and Poland (19%). See pages 80 to 97 for the quality of the wheat imported during 2023/24.

223 536 tons of local wheat were exported to countries such as Zambia, Zimbabwe, Lesotho and Botswana during the 2024/25 season, refer to Table S9.

The South African wheat marketing season commences on the 1st of October every year.



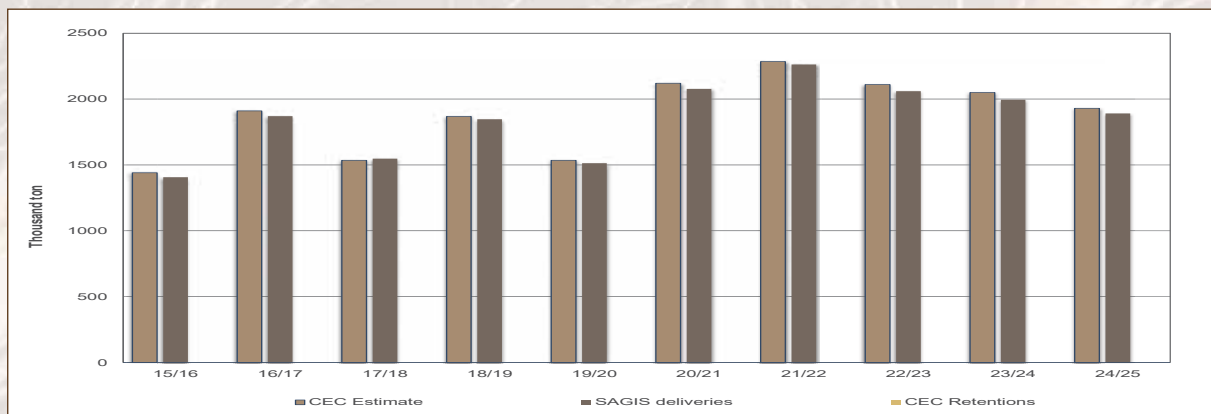
Graph 6: Wheat import figures as a percentage of the total demand over seven seasons



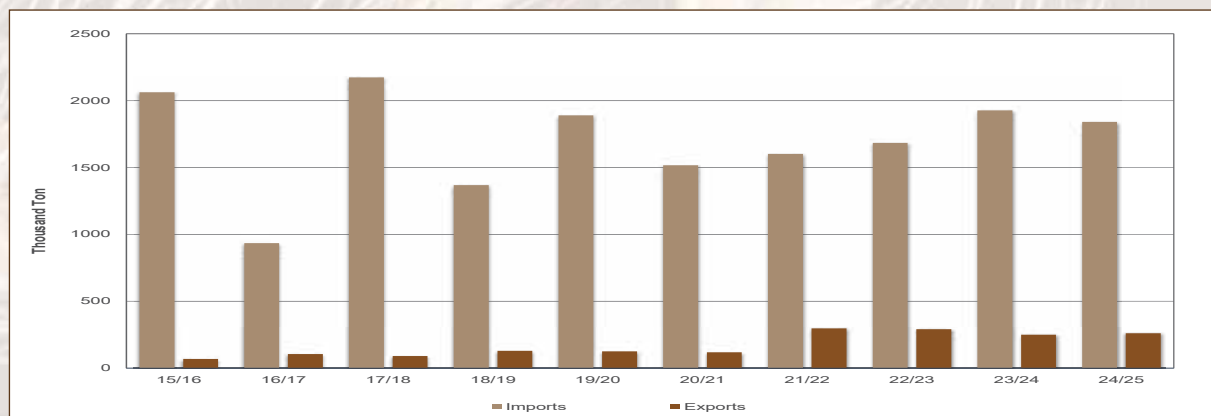
Graph 7: Wheat supply and demand overview 2024/25 season (Oct - Sep)

Figures provided by SAGIS, (Publication date: 2025-10-27)

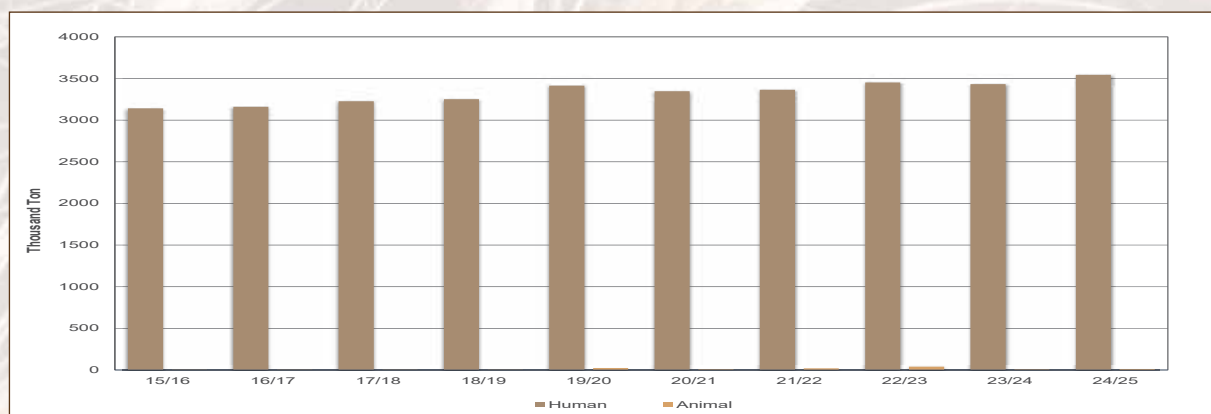
Table S1: WHEAT: SUPPLY AND DEMAND TABLE BASED ON SAGIS' INFO		Publication date: 2025-10-27																
		Season (Oct - Sep)															Current Season Oct - Sep	10 Year average 2014/15- 2023/24
		08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25***
		12																
CEC (Crop Estimate)		2 130 000	1 958 000	1 430 000	2 005 000	1 870 000	1 870 000	1 750 000	1 440 000	1 910 000	1 535 000	1 868 000	1 535 000	2 120 000	2 285 000	2 110 000	2 050 000	1 930 000
CEC (Retention)		43 000	29 000	27 000	26 500	35 000	30 000	0	0	0	0	0	0	0	0	0	0	0
SUPPLY																		
Opening stock (1 Oct)		509 000	694 000	579 000	478 000	651 180	489 253	488 526	596 823	827 232	341 424	721 534	539 079	364 908	467 404	625 083	563 259	749 838
Prod deliveries		2 130 000	1 910 000	1 389 000	1 973 000	1 837 137	1 816 981	1 699 546	1 406 752	1 870 525	1 547 486	1 847 171	1 513 300	2 077 136	2 262 938	2 059 649	1 994 874	1 890 976
Imports		1 192 000	1 285 000	1 649 000	1 724 000	1 393 215	1 668 412	1 832 441	2 062 765	934 765	2 173 757	1 368 097	1 889 868	1 516 995	1 601 299	1 684 356	1 927 665	1 840 872
Surplus		13 000	0	23 000	14 000	0	0	15 151	8 807	9 249	5 611	11 994	9 812	14 438	4 448	7 379	0	11 259
Total supply		3 844 000	3 889 000	3 640 000	4 189 000	3 881 532	3 974 646	4 035 664	4 075 147	3 641 771	4 068 278	3 948 796	3 952 059	3 973 477	4 336 089	4 376 467	4 485 798	4 492 945
DEMAND																		
Processed		2 857 000	3 017 000	2 945 000	3 202 000	3 040 086	3 175 834	3 112 718	3 144 414	3 163 196	3 229 861	3 254 656	3 437 768	3 355 869	3 384 445	3 491 898	3 439 625	3 555 650
-human		2 849 000	2 991 000	2 944 000	3 066 000	3 008 378	3 122 134	3 109 022	3 142 077	3 160 660	3 226 649	3 251 410	3 414 602	3 347 677	3 364 789	3 452 070	3 432 969	3 543 706
-animal		8 000	26 000	1 000	136 000	31 694	53 695	3 696	2 337	2 536	3 212	3 246	23 166	8 192	19 656	39 828	6 656	11 944
-gristing		0	0	0	0	14	5	0	0	0	0	0	0	0	0	0	0	0
-bio-fuel		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Withdrawn by producers		12 000	14 000	6 000	4 000	3 934	3 127	1 320	1 834	1 880	884	941	1 767	4 049	7 033	6 206	3 254	1 717
Released to end-consumers		5 000	3 000	6 000	7 000	7 322	3 095	2 802	1 907	1 256	1 990	2 186	1 269	1 453	1 426	1 411	1 095	1 605
Seed for planting purposes		26 000	17 000	13 000	18 000	15 998	18 198	22 705	18 800	24 067	18 237	19 222	16 595	20 561	19 377	18 612	19 741	17 154
Net receipts(-)/disp(+)		19 000	15 000	13 000	19 000	19 990	16 172	7 468	12 435	5 101	4 992	3 523	4 410	5 653	1 615	3 901	6 179	2 548
Deficit		0	4 000	0	0	713	1 243	0	0	0	0	0	0	0	0	0	16 355	0
Exports		231 000	240 000	179 000	288 000	304 236	268 451	291 828	68 525	104 847	90 780	129 189	125 342	118 488	297 110	291 180	249 711	260 500
Total Demand		3 150 000	3 310 000	3 162 000	3 538 000	3 392 279	3 486 120	3 438 841	3 247 915	3 300 347	3 346 744	3 409 717	3 587 151	3 506 073	3 711 006	3 813 208	3 735 960	3 839 174
Ending Stock (30 Sep)		694 000	579 000	478 000	651 000	489 253	488 526	596 823	827 232	341 424	721 534	539 079	364 908	467 404	625 083	563 259	749 838	653 771
- processed p/month		238 100	251 400	245 400	266 800	253 341	264 653	259 393	262 035	263 600	269 155	271 221	286 481	279 656	282 037	290 992	286 635	296 304
- months' stock		2.9	2.3	1.9	2.4	1.9	1.8	1.8	3.2	1.3	2.7	2.0	1.3	1.7	2.2	1.9	2.6	2.2
Note: ***Figures for current season up to date																		



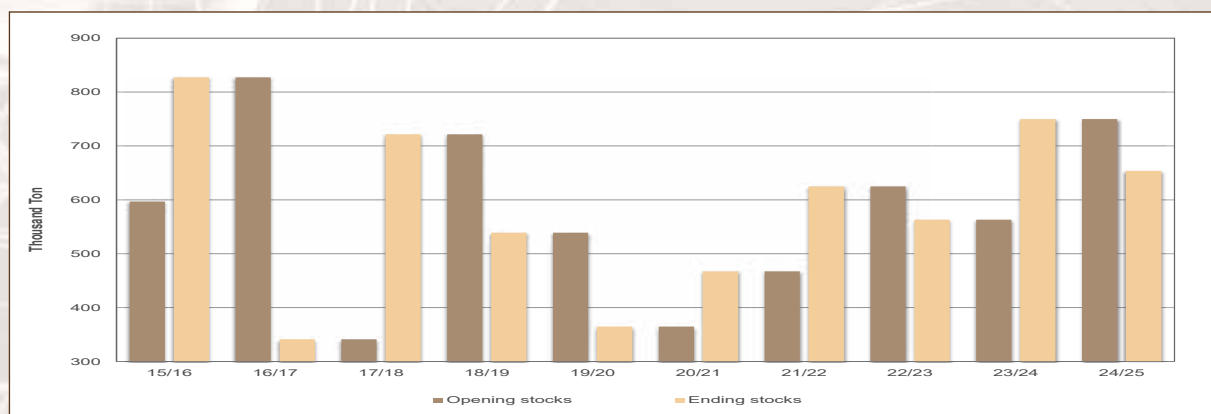
Graph 8: Wheat: CEC Estimate, Retentions and SAGIS deliveries over ten seasons



Graph 9: Wheat: Imports and exports over ten seasons



Graph 10: Wheat: RSA consumption over ten seasons



Graph 11: Wheat: Opening and ending stocks over ten seasons

Figures provided by SAGIS, 24/25 figures (Oct - Sep)

Table S2: Whole Wheat Processed per Province

PROGRESSIVE: October 2020 to September 2021 (Full 2020/21 Marketing Year)						
	Northern Cape Eastern Cape	Western Cape	KwaZulu-Natal Mpumalanga	Limpopo North West	Free State	Gauteng
Processed	318 435	667 940	690 889	1 965	558 378	1 145 318
						3 382 925

PROGRESSIVE: October 2021 to September 2022 (Full 2021/22 Marketing Year)						
	Northern Cape Eastern Cape	Western Cape	KwaZulu-Natal Mpumalanga	Limpopo North West	Free State	Gauteng
Processed	274 275	688 180	684 546	856	620 001	1 142 505
						3 410 363

PROGRESSIVE: October 2022 to September 2023 (2022/23 Marketing Year)						
	Northern Cape Eastern Cape	Western Cape	KwaZulu-Natal Mpumalanga	Limpopo North West	Free State	Gauteng
Processed	286 581	659 846	714 913	420	608 844	1 260 153
						3 530 757

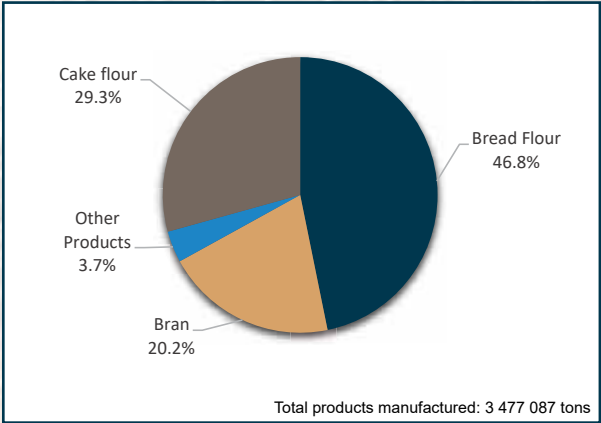
PROGRESSIVE: October 2023 to September 2024 (2023/24 Marketing Year)						
	Northern Cape Eastern Cape	Western Cape	KwaZulu-Natal Mpumalanga	Limpopo North West	Free State	Gauteng
Processed	288 924	687 333	654 610	277	622 293	1 220 205
						3 473 642

PROGRESSIVE: October 2024 to September 2025 (2024/25 Marketing Year)						
	Northern Cape Eastern Cape	Western Cape	KwaZulu-Natal Mpumalanga	Limpopo North West	Free State	Gauteng
Processed	274 922	711 624	688 215	82	646 381	1 271 390
						3 592 614

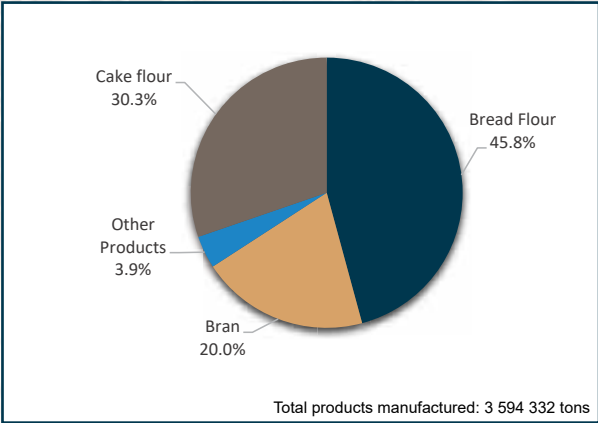
* Please note that included are the products destined for exports

SAGIS Wheat Product Information

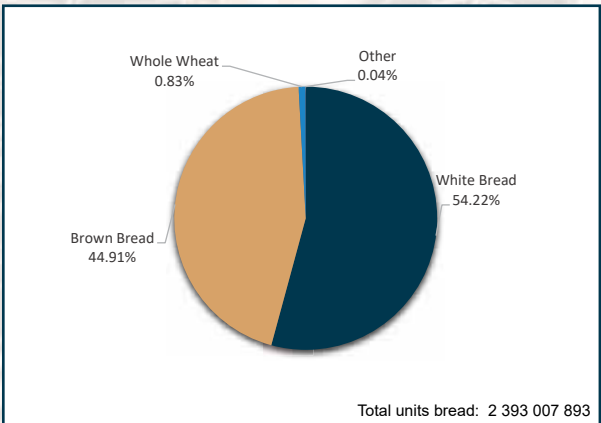
Please see graphs 12 to 17 below as well as Tables S3 to S6 on pages 10 and 11 for wheat product and pan baked product figures received by SAGIS. Figures for pan baked products manufactured per bakery group, are provided in Table S7a-d on pages 12 and 13.



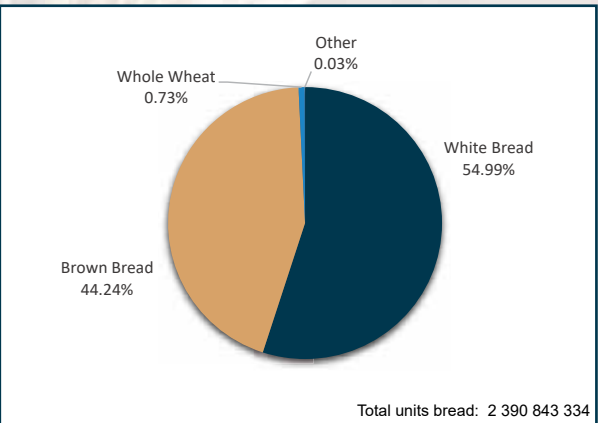
Graph 12: Wheat product manufactured from Oct 2023 - Sept 2024



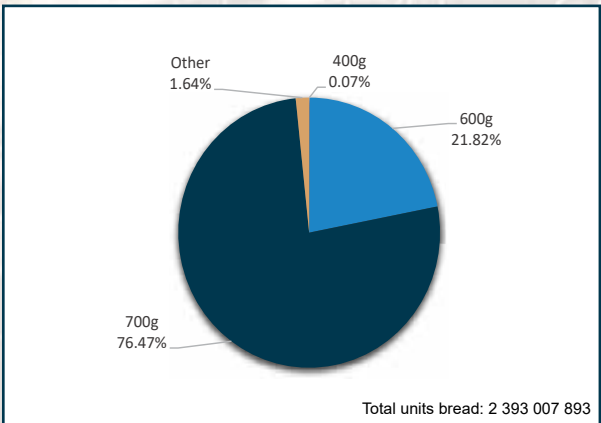
Graph 13: Wheat product manufactured from Oct 2024 - Sep 2025



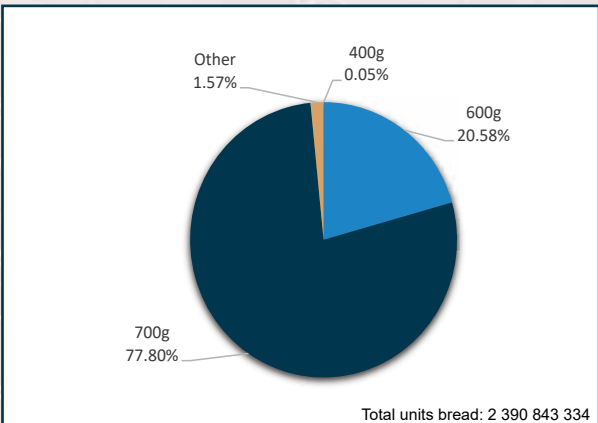
Graph 14: Pan baked bread per type from Oct 2023 - Sept 2024



Graph 15: Pan baked bread per type from Oct 2024 - Sep 2025



Graph 16: Pan baked bread per mass from Oct 2023 - Sept 2024



Graph 17: Pan baked bread per mass from Oct 2024 - Sep 2025

Table S3: WHEATEN PRODUCTS MANUFACTURED PER MARKETING YEAR

	Oct 2020 - Sep 2021 Tons Progressive: 12 Months	Oct 2021 - Sep 2022 Tons Progressive: 12 Months	Oct 2022 - Sep 2023 Tons Progressive: 12 Months	Oct 2023 - Sep 2024 Tons Progressive: 12 Months	Oct 2024 - Sep 2025 Tons Progressive: 12 Months
Cake Flour	996 325	993 216	1 004 173	1 019 026	1 089 280
Self-Raising Flour	18 302	16 228	16 583	15 871	16 348
White Bread Flour	1 248 539	1 289 487	1 335 956	1 349 184	1 361 245
Brown Bread Flour	310 161	279 856	280 328	273 007	279 034
Other Flour (Industrial)	116 786	117 568	122 324	108 627	118 187
Whole Wheat Meal	6 706	6 106	6 217	6 082	5 457
Bran	680 402	684 976	719 707	701 139	720 239
Semolina	4 537	4 663	4 624	4 151	4 542
Total	3 381 758	3 392 100	3 489 912	3 477 087	3 594 332

Table S4: WHEATEN PRODUCTS IMPORTED PER MARKETING YEAR

	Oct 2020 - Sep 2021 Tons Progressive: 12 Months	Oct 2021 - Sep 2022 Tons Progressive: 12 Months	Oct 2022 - Sep 2023 Tons Progressive: 12 Months	Oct 2023 - Sep 2024 Tons Progressive: 12 Months	Oct 2024 - Sep 2025 Tons Progressive: 12 Months
Cake Flour	3 985	4 205	5 151	4 993	4 930
Self-Raising Flour	25	24	4	13	9
White Bread Flour	10 116	13 947	13 125	12 775	14 422
Brown Bread Flour	7 120	6 888	5 766	5 082	5 861
Other Flour (Industrial)	0	0	0	106	27
Whole Wheat Meal	0	0	0	0	0
Bran	7 086	7 574	8 438	4 162	9 084
Semolina	0	0	0	0	0
Total	28 332	32 638	32 484	27 131	34 333

Table S5: WHEATEN PRODUCTS EXPORTED PER MARKETING YEAR

	Oct 2020 - Sep 2021 Tons Progressive: 12 Months	Oct 2021 - Sep 2022 Tons Progressive: 12 Months	Oct 2022 - Sep 2023 Tons Progressive: 12 Months	Oct 2023 - Sep 2024 Tons Progressive: 12 Months	Oct 2024 - Sep 2025 Tons Progressive: 12 Months
Cake Flour	1 310	1 869	2 417	1 106	7 495
Self-Raising Flour	3 685	3 808	3 198	3 408	111
White Bread Flour	4 407	5 363	10 408	10 937	12 584
Brown Bread Flour	11 097	9 177	13 884	11 170	8 866
Other Flour (Industrial)	21	0	0	0	0
Whole Wheat Meal	14	11	12	11	16
Bran	0	0	2 029	1 821	704
Semolina	7	13	12	13	32
Total	20 541	20 241	31 960	28 466	29 808

Table S6: PAN BAKED PRODUCTS MANUFACTURED PER YEAR

	Oct 2020 - Sep 2021 Units Progressive: 12 Months	Oct 2021 - Sep 2022 Units Progressive: 12 Months	Oct 2022 - Sep 2023 Units Progressive: 12 Months	Oct 2023 - Sep 2024 Units Progressive: 12 Months	Oct 2024 - Sep 2025 Units Progressive: 12 Months
WHITE BREAD					
400g (Units)	1 916 490	1 694 463	1 070 102	929 981	786 540
600g (Units)	242 926 271	255 130 078	258 864 432	255 887 216	245 987 191
700g (Units)	906 178 166	968 154 742	998 024 829	1 032 757 641	1 061 673 967
Other (Units)	9 185 895	11 825 665	10 363 681	8 024 656	6 379 471
White Bread (Total Units)	1 160 206 822	1 236 804 948	1 268 323 044	1 297 599 494	1 314 827 169
BROWN BREAD					
400g (Units)	366 727	360 750	1 514 923	711 088	287 446
600g (Units)	362 220 781	337 902 579	291 630 705	265 880 116	245 728 656
700g (Units)	805 850 607	797 206 075	799 183 797	794 806 015	796 100 851
Other (Units)	14 445 645	14 670 901	15 479 227	13 198 690	15 669 406
Brown Bread (Total Units)	1 182 883 760	1 150 140 305	1 107 808 652	1 074 595 909	1 057 786 359
WHOLE WHEAT					
400g (Units)	11 678	11 010	12 088	13 361	10 846
600g (Units)	502 886	481 868	498 848	366 142	338 228
700g (Units)	5 397 378	4 369 143	2 554 403	2 297 987	2 294 540
Other (Units)	19 734 109	19 686 320	17 446 150	17 173 869	14 751 400
Whole Wheat (Total Units)	25 646 051	24 548 341	20 511 489	19 851 359	17 395 014
OTHER					
400g (Units)	24 759	14 070	16 344	9 899	441
600g (Units)	128 498	109 541	100 425	12 823	12 603
700g (Units)	70 805	62 119	26 895	5 653	4 767
Other (Units)	1 057 879	1 073 105	1 060 000	932 756	816 981
Other (Total Units)	1 281 941	1 258 835	1 203 664	961 131	834 792
Total	2 370 018 574	2 412 752 429	2 397 846 849	2 393 007 893	2 390 843 334

PAN BAKED PRODUCTS MANUFACTURED PER BAKERY GROUP PER MARKETING YEAR

Table S7a: SUPERMARKET GROUPS	Oct 2021 - Sept 2022	Oct 2022 - Sept 2023	Oct 2023 - Sept 2024	Oct 2024 - Sept 2025
WHITE BREAD				
400g (Units)	222 924	308 991	225 963	213 185
600g (Units)	104 353 834	105 654 212	93 386 747	89 142 078
700g (Units)	7 370 730	9 308 614	7 086 555	5 350 927
Other (Units)	1 814 900	2 213 433	2 105 439	2 477 484
White Bread (Total Units)	113 762 388	117 485 250	102 804 704	97 183 674
BROWN BREAD				
400g (Units)	119 173	114 940	113 299	101 426
600g (Units)	155 206 196	108 858 713	101 296 962	98 434 987
700g (Units)	5 204 174	5 728 792	4 912 025	4 171 294
Other (Units)	865 212	1 108 391	1 405 561	1 578 572
Brown Bread (Total Units)	161 394 755	115 810 836	107 727 847	104 286 279
WHOLE WHEAT				
400g (Units)	0	0	0	0
600g (Units)	426 799	422 227	326 524	293 492
700g (Units)	2 102 161	620 058	137 323	58 651
Other (Units)	0	0	0	0
Whole Wheat (Total Units)	2 528 960	1 042 285	463 847	352 143
OTHER				
400g (Units)	0	0	0	0
600g (Units)	0	0	0	0
700g (Units)	0	0	0	0
Other (Units)	850 306	873 748	823 341	619 318
Other (Total Units)	850 306	873 748	823 341	619 318
Total	278 536 409	235 212 119	211 819 739	202 441 414

Note: Supermarket chain stores who will submit one return for all processing units in the specific group.

Table S7b: BAKERY GROUPS	Oct 2021 - Sept 2022	Oct 2022 - Sept 2023	Oct 2023 - Sept 2024	Oct 2024 - Sept 2025
WHITE BREAD				
400g (Units)	0	0	0	0
600g (Units)	96 555 426	102 275 869	100 485 098	98 995 957
700g (Units)	888 591 779	921 791 317	957 905 682	994 686 088
Other (Units)	2 462 060	2 148 300	1 965 780	158 866
White Bread (Total Units)	987 609 265	1 026 215 486	1 060 356 560	1 093 840 911
BROWN BREAD				
400g (Units)	0	1 159 063	385 326	0
600g (Units)	115 746 595	120 734 158	106 587 774	92 797 853
700g (Units)	733 826 197	738 562 362	732 931 185	742 145 020
Other (Units)	11 415 983	10 091 368	9 480 795	12 362 814
Brown Bread (Total Units)	860 988 775	870 546 951	849 385 080	847 305 687
WHOLE WHEAT				
400g (Units)	0	0	0	0
600g (Units)	0	0	0	0
700g (Units)	2 008 170	1 642 658	1 876 735	2 004 260
Other (Units)	19 676 075	17 439 822	17 166 991	14 748 038
Whole Wheat (Total Units)	21 684 245	19 082 480	19 043 726	16 752 298
OTHER				
400g (Units)	0	0	0	0
600g (Units)	0	0	0	0
700g (Units)	0	0	0	0
Other (Units)	66 809	0	0	0
Other (Total Units)	66 809	0	0	0
Total	1 870 349 094	1 915 844 917	1 928 785 366	1 957 898 896

Note: Plant bakeries who will submit one return for all the processing units in the specific group.

PAN BAKED PRODUCTS MANUFACTURED PER BAKERY GROUP PER MARKETING YEAR

Table S7c: INDEPENDENT BAKERIES	Oct 2021 - Sept 2022	Oct 2022 - Sept 2023	Oct 2023 - Sept 2024	Oct 2024 - Sept 2025
WHITE BREAD				
400g (Units)	803 922	0	0	0
600g (Units)	23 614 453	20 164 066	33 309 135	31 407 811
700g (Units)	55 358 272	48 511 492	49 050 001	45 491 877
Other (Units)	5 826 804	4 484 964	2 199 609	2 234 458
White Bread (Total Units)	85 603 451	73 160 522	84 558 745	79 134 146
BROWN BREAD				
400g (Units)	795	0	0	0
600g (Units)	33 209 283	30 098 047	26 492 523	24 931 810
700g (Units)	47 313 482	43 115 393	42 628 416	40 224 958
Other (Units)	763 902	3 025 354	525 182	432 473
Brown Bread (Total Units)	81 287 462	76 238 794	69 646 121	65 589 241
WHOLE WHEAT				
400g (Units)	0	0	0	0
600g (Units)	2 504	1 129	6 085	8 877
700g (Units)	118 795	114 201	105 883	60 653
Other (Units)	4 583	1 385	956	0
Whole Wheat (Total Units)	125 882	116 715	112 924	69 530
OTHER				
400g (Units)	0	0	0	0
600g (Units)	0	0	0	0
700g (Units)	0	0	0	0
Other (Units)	10 832	59 968	128 315	186 338
Other (Total Units)	10 832	59 968	128 315	186 338
Total	167 027 627	149 575 999	154 446 105	144 979 255

Note: Privately owned independent bakeries not part of a group.

Table S7d: INDEPENDENT SUPERMARKETS	Oct 2021 - Sept 2022	Oct 2022 - Sept 2023	Oct 2023 - Sept 2024	Oct 2024 - Sept 2025
WHITE BREAD				
400g (Units)	658 750	760 354	700 908	573 355
600g (Units)	30 630 511	29 980 618	28 445 663	26 441 345
700g (Units)	16 610 799	18 322 492	17 647 080	16 145 075
Other (Units)	1 698 820	1 506 283	1 648 408	1 508 663
White Bread (Total Units)	49 598 880	50 569 747	48 442 059	44 668 438
BROWN BREAD				
400g (Units)	229 694	240 698	210 507	186 020
600g (Units)	33 694 966	31 130 434	31 180 245	29 564 006
700g (Units)	10 820 150	11 714 046	10 462 198	9 559 579
Other (Units)	1 597 971	1 238 973	1 482 745	1 295 547
Brown Bread (Total Units)	46 342 781	44 324 151	43 335 695	40 605 152
WHOLE WHEAT				
400g (Units)	11 010	12 053	13 361	10 846
600g (Units)	52 565	64 663	34 949	35 859
700g (Units)	140 017	172 889	172 788	170 976
Other (Units)	5 662	4 943	5 648	3 362
Whole Wheat (Total Units)	209 254	254 548	226 746	221 043
OTHER				
400g (Units)	14 070	16 344	9 899	441
600g (Units)	109 541	100 425	36 037	12 603
700g (Units)	62 119	26 895	13 677	4 767
Other (Units)	145 158	135 941	29 074	11 325
Other (Total Units)	330 888	279 605	88 687	29 136
Total	96 481 803	95 428 051	92 093 187	85 523 769

Note: Supermarket chain stores (which are individually owned under a franchise agreement) will submit an individual or combined return for each processing unit (e.g. Spar, OK, Seven Eleven, Saverites, Foodzones, etc.)

Assuring the quality of South African wheat

South Africa operates in a free market economic system and participation by wheat-breeding and seed companies in the process for the release of bread wheat varieties is highly recommended. A new or introduction cultivar is only released for planting if it possesses improved agronomical as well as improved flour quality characteristics compared to the cultivars planted commercially in a specific area.

The release of wheat cultivars is an attempt to provide the wheat industry with new cultivars that perform well agronomically and possess suitable milling, rheological and baking characteristics. Analytical procedures and classification norms are compiled in conjunction with wheat breeders, producers, millers, bakers and storage companies to ensure market-directed and quality-driven wheat production in the interest of wheat producers and processors. The availability of new and improved wheat varieties is important as a constant demand exists for higher yields, better quality, better processing properties and increased disease resistance.

Release norms use cultivars as biological quality standards to provide a frame of reference against which new breeding lines are evaluated. Only cultivars that are successfully grown commercially and possess acceptable agronomical and quality characteristics may be considered as biological quality standards.

As the breeding and development of new wheat varieties with suitable quality characteristics is an expensive, long-term project, release norms and quality standards are provided to breeders as guidelines that should stand the test of time. Changing the release norms and establishing new quality standards are for this reason thoroughly investigated and carefully considered to ensure that the long-term goals of breeding programs are achieved. Amendments during recent years include introducing a new biological quality standard (SST 0117) for the dry land Southern (Winter rainfall) areas, an update to the determination of the 100 g bread evaluation scores and the inclusion of the Konica Minolta CM-5 colour results as part of the quality evaluation norms.

The effect of climate, rainfall, environmental interaction, cultivation practices and other factors that influence wheat quality, makes the use of fixed criteria or norms for release purposes impractical. For this reason, cultivars are used as biological quality standards, and acceptable deviations from the standard are established as release norms. Producers continuously strive to improve the wheat yield and quality by selecting the best cultivars for commercial production in a specific area. High grading standards are set to ensure adequate quality control.

The evaluation of wheat breeder lines and the approval of a new cultivar for release are, since April 2018, performed by the Wheat Forum Cultivar and Technical Committee. A line approved for release, is registered as a cultivar in accordance with the Plant Breeders' Act, Act 15 of 1976, by the applicable breeder company (plant breeder's rights are a form of Intellectual Property rights).

The Wheat Forum requested that two documents, namely 'Analysis Procedure and Evaluation Norms for the Release of Bread Wheat Breeder Varieties for the RSA', as well as the Cultivar List be hosted on the website of the SAGL. SAGL was also appointed as responsible party for the maintenance of the aforementioned documents.

The cultivar list hosted on the SAGL website is named the Wheat Forum Cultivar List, to distinguish this list from any other lists in existence. The criteria for listing a cultivar on the Wheat Forum Cultivar List is the minuted approval of the cultivar by the Cultivar and Technical Committee of the Wheat Forum. Approval indicates that the cultivar has passed the evaluation process as described in the 'Analysis Procedure and Evaluation Norms for the Release of Bread Wheat Breeder Varieties for the RSA' document.

Any addition or elimination of a cultivar to/from the Wheat Forum Cultivar List, shall be based on a resolution documented in Minutes of meetings of the Wheat Forum Cultivar and Technical Committee. The Wheat Forum Cultivar List shall be updated annually upon receipt of the Minutes of the Wheat Forum Cultivar and Technical Committee meeting. The latest revision of both these documents are available on the SAGL website.

Since wheat is a self-pollinating crop, meaning that grain produced has the same genetic composition as the parent, grain can be harvested and replanted as seed, which results in less seed being sold. In South Africa, approximately 70% of wheat is planted with farm saved seed. As a result, the investment in the development of new cultivars is only covered by a small portion of the market. A lack of return on investment therefore prevents new seed companies and new cultivars from entering the market. This situation is however not unique to South Africa. To address this issue, various End Point Royalty systems were investigated and the outcome was a proposal to establish a statutory levy for breeding and technology, in addition to the industry levy that has been implemented for many years.

After meetings and consultations with stakeholders and various experts, the South African Cultivar & Technology Agency NPC (SACTA) was established in June 2016. SACTA has been mandated by role-players in the different industries to administer the breeding and technology levy and make payments to the seed companies from funds collected by means of the levies. The payments are made annually and are based on the calculated market share of each seed company. It is envisaged that this system will eventually be implemented for all self-pollinating crops.

Wheat grades

The latest bread wheat grading regulations were published in the Government Gazette No. 42862, dated 29 November 2019. The regulations are detailed in Government Notice NO. R. 1547 of 29 November 2019. According to these regulations the classes of wheat are Bread Wheat and Other Wheat. The grades for Bread Wheat are Super Grade, Grade 1, Grade 2 and Grade 3. No grades are determined for Class Other Wheat.

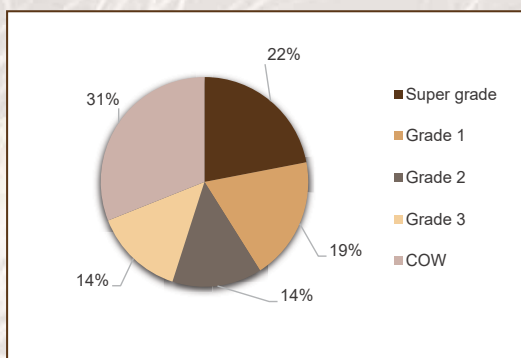
The 322 representative crop samples of the 2024/25 season received were graded as follows: 21% was graded Super Grade, 18% was graded Grade 1, 13% was graded Grade 2, 18% was graded Grade 3 and 30% Class Other Wheat (COW). Please refer to Graphs 18 to 21 for the percentage of wheat crop quality survey samples graded per Class and grade over the last four seasons.

Of the 96 samples received that were downgraded to COW, 13 samples (14%) had protein content values below 9.5% (12% mb), 5 samples (5%) had hectolitre mass values below 74 kg/hl, 2 samples had falling number values below 220 seconds and 32 samples (33%) had screening levels higher than 3%.

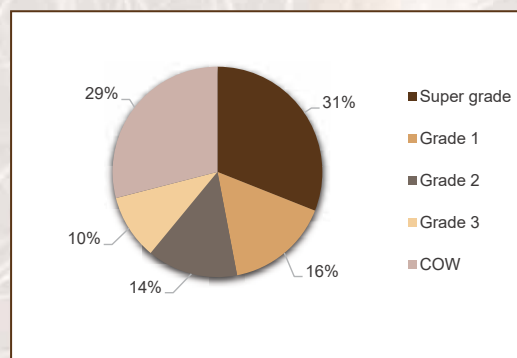
The deviations that caused the highest percentages of samples to be downgraded to COW was other grain and unthreshed ears with 40% (38 samples) and combined deviations with 38% (36 samples).

70% of the samples downgraded to COW originated from the Western Cape, 16% from the Free State and 14% from the irrigation areas. The main reason for the downgrades in the Western Cape was, as in previous seasons, Other grain and unthreshed ears exceeding the maximum limit of 1%.

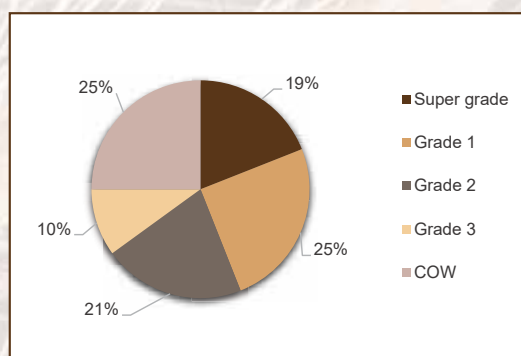
35% of wheat crop quality survey samples originating in the Free State were graded Super Grade. 42% of the wheat crop samples from the irrigation areas and 4% of wheat crop samples from the Western Cape Province graded Super Grade.



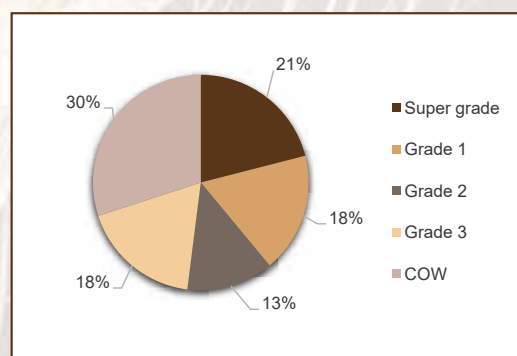
Graph 18: Percentage of samples per Class and grade in the 2021/22 season according to the current grading regulations



Graph 19: Percentage of samples per Class and grade in the 2022/23 season according to the current grading regulations



Graph 20: Percentage of samples per Class and grade in the 2023/24 season according to the current grading regulations



Graph 21: Percentage of samples per Class and grade in the 2024/25 season according to the current grading regulations

Wheat seed sold by commercial grain storage companies to wheat producers for the 2024 planting season

Cultivar	%	Cultivar	%
SST 0166	42.46	PAN 3681	0.15
SST 0187	36.46	SST 8177	0.11
SST 015	2.69	SST 374	0.061
SST 8205	2.63	Afficion	0.058
SST 0117	2.55	Renoster	0.057
SST 0147	2.05	PAN 3644	0.056
SST 88	1.82	SST 0208	0.051
SST 884	1.80	SST 8154	0.043
SST 056	1.51	PAN 3111	0.035
SST 843	1.49	SST 806	0.028
PAN 3497	0.80	PAN 3471	0.026
Ancia	0.73	Koedoes	0.023
PAN 3161	0.52	SST 3197	0.009
SST 8135	0.49	SST 347	0.009
SST 356	0.40	TORDO	0.007
Matlabas	0.27	Aroba	0.004
PAN 3373	0.25	Duzi	0.0034
DM1817T	0.20	SST 895	0.0028
PAN 3584	0.15		

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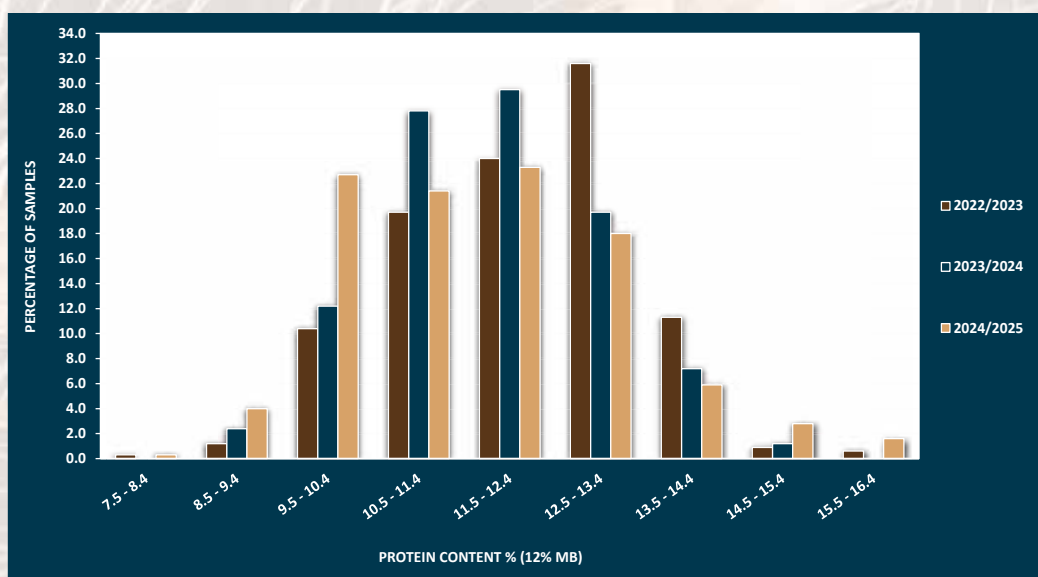
Table 2: Bread Wheat Grading Table - Government Notice No. R. 1547 of 29 November 2019

Grade	Minimum			Maximum percentage permissible deviation (m/m)									
	Hectolitre mass, kg/hl	Falling number, seconds	Protein content, %	A	B	C	D	E	F	G	H	I	J
				Heavily frost damaged kernels	Field fungi	Storage fungi	Screenings	Other grain and unthreshed ears	Gravel, stones and turf	Foreign matter plus F	Heat damaged kernels	Damaged kernels plus H	Deviations (D + E + G + I) collectively
Super Grade	76	220	12.5	5	2	0.5	3	1	0.5	1	0.5	2	5
Grade 1	76	220	11.5	5	2	0.5	3	1	0.5	1	0.5	2	5
Grade 2	76	220	10.5	5	2	0.5	3	1	0.5	1	0.5	2	5
Grade 3	74	220	9.5	5	2	0.5	3	1	0.5	1	0.5	2	5
Class Other Wheat	<74	<220	<9.5	>5	>2	>0.5	>3	>1	>0.5	>1	>0.5	>2	>5
Minimum size of working samples	1.5 kg unsifted	300 g cleaned	Apparatus instructions cleaned	25 g sifted	25 g sifted	100 g sifted	500 g unsifted	50 g sifted	100 g sifted	100 g sifted	100 g sifted	25 g sifted	-

Crop quality of the 2024/25 season

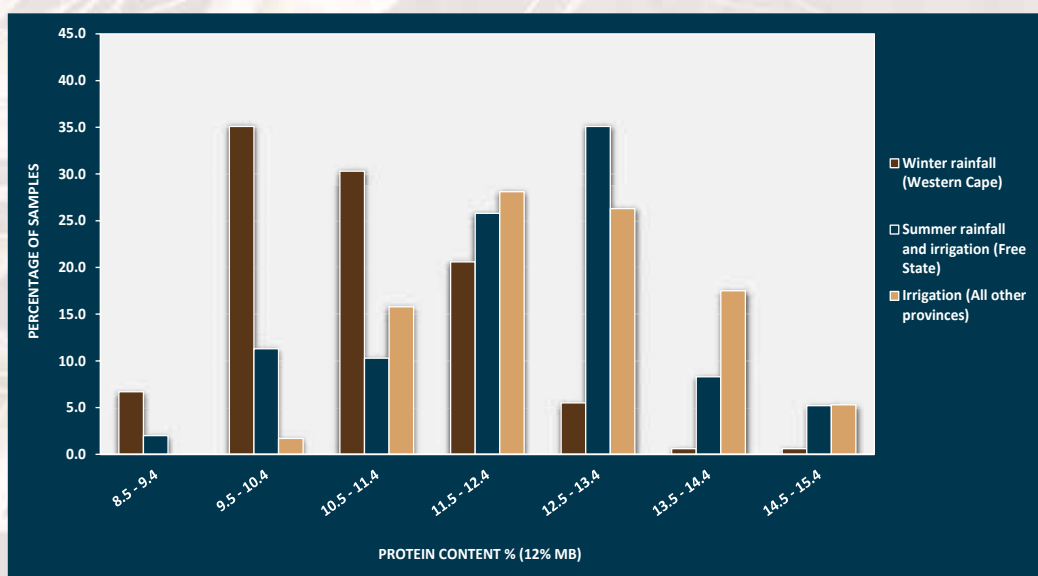
All national, seasonal and regional averages provided in this report are weighted averages.

The national whole wheat protein average decreased from 11.8% in the previous season to 11.6%. This is lowest national average since the 2013/14 season. The ten-year national average is 12.2%. Protein content is generally a function of the growing environment (soil and climatic conditions) as well as fertiliser application. Please see Graphs 22 and 23 for the protein content distribution over the last three seasons and between the three major production areas during 2024/25.



Graph 22: Protein content distribution over the last three seasons

The Summer rainfall and Irrigation areas of the Free State reported the highest whole wheat protein average, namely 12.6%. This production region traditionally reports the highest average protein content, however during the previous three seasons (2021/22 – 2023/24) the highest average protein contents were observed in the Irrigation areas. The Irrigation areas averaged 12.3% this season and the production regions in the Winter rainfall area of the Western Cape averaged 10.8%. See the Regional quality weighted averages summarized in Table 5 on pages 26 and 27.



Graph 23: Protein content distribution between the three production areas during the 2024/25 season

Flour protein content is on average 0.5 to 1.2% lower than that of whole wheat and averaged 10.8% this season, equal to the previous season. The difference in the protein content between the whole wheat and flour protein, can be attributed to the removal of the bran and aleuron layer as well as the germ during milling. The protein content is reported on a 12% moisture basis.

The average hectoliter mass of 80.3 kg/hl is 0.4 kg/hl lower than the previous season and equal to the ten-year national average. Twenty-three samples (7%) reported values below the 76 kg/hl minimum level for Super grade, Grade 1 and Grade 2 wheat. Eighteen of these samples originated in the Western Cape and five in the Free State. Five samples, three from the Western Cape and two from the Free State reported values below 74 kg/hl and were downgraded to Class Other wheat as a result. Regional averages ranged from 78.5 kg/hl in the Western Cape, 80.8 kg/hl in the Free State and 83.0 kg/hl in the Irrigation areas.

The average 1000 kernel mass, reported on a 13% moisture basis, decreased from 39.1 g last season to 38.4 g this season. The 2022/23 season's average was 37.0 g. Averages over production areas varied from 37.4 g in the Summer rainfall and irrigation areas of the Free State to 38.4 g in the Winter rainfall areas and 39.1 g in the Irrigation areas.

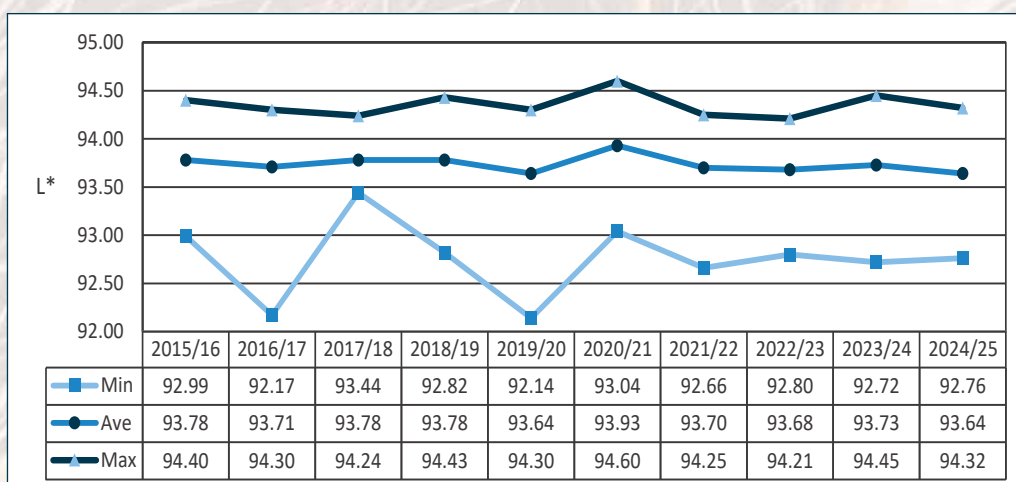
The weighted average percentage screenings obtained with a 1.8 mm slotted sieve was 1.52%, compared to the 1.45% and 1.69% of the previous two seasons respectively. The Summer rainfall and irrigation areas reported the highest average percentage namely 1.86%, followed by the 1.67% of the Winter rainfall areas and the 1.04% of the Irrigation areas. Almost 10% (32) of the 322 samples exceeded the 3% maximum permissible screenings level for Super grade to Grade 3. 53% of these samples originated in the Western Cape, 25% in the Free State, 13% in the Northern Cape, with single samples in North West and Limpopo.

The national weighted average falling number value was 371 seconds, compared to last season's average of 375 seconds. The ten-year weighted average value is 368 seconds. Only five (2%) of the samples analysed for this survey reported falling number values below 250 seconds. Of these, two samples (one from Mpumalanga and one from KwaZulu-Natal) were below 220 seconds and were downgraded to COW as a result. Last season 1% (4) samples analysed as part of the survey, was downgraded to COW due to a low falling number. Falling number values this season ranged between 194 and 542 seconds. All falling number values reported, are corrected for the altitude at which the test is performed.

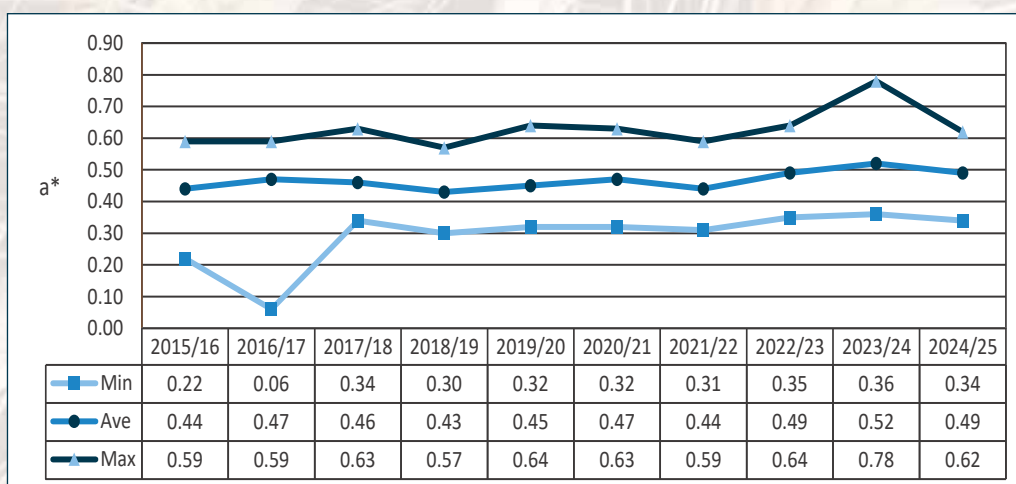
The mixogram peak time on flour milled on the Quadromat Junior mill averaged 3.2 minutes compared to the 3.1 minutes of the 2023/24 season. The ten-year average is 3.0 minutes. The weighted mixogram peak time of the flour from the Bühler mill was 2.9 minutes and on par with the 3.0 minutes of the previous season. Mixing time is a measure of optimum dough development and thus also of protein quality.

Extraction rate is an indication of the flour yield that can be obtained from a given amount of wheat. The extraction rate achievable on industrial scale mills is a number of percentage points higher than on laboratory scale mills due to an increase in roller surface area. Industrial type mills are also set to obtain optimum extraction rates within certain quality parameters, whereas the milling procedure and laboratory scale mills at SAGL is not set to optimise extraction but rather indicate differences in milling quality. Composite samples per class and grade per production region are cleaned, tempered/conditioned and then milled to facilitate flour and dough quality assessment. The weighted average Bühler MLU 202 laboratory mill extraction for the composite samples was 73.2% compared to the 72.8% of the previous season.

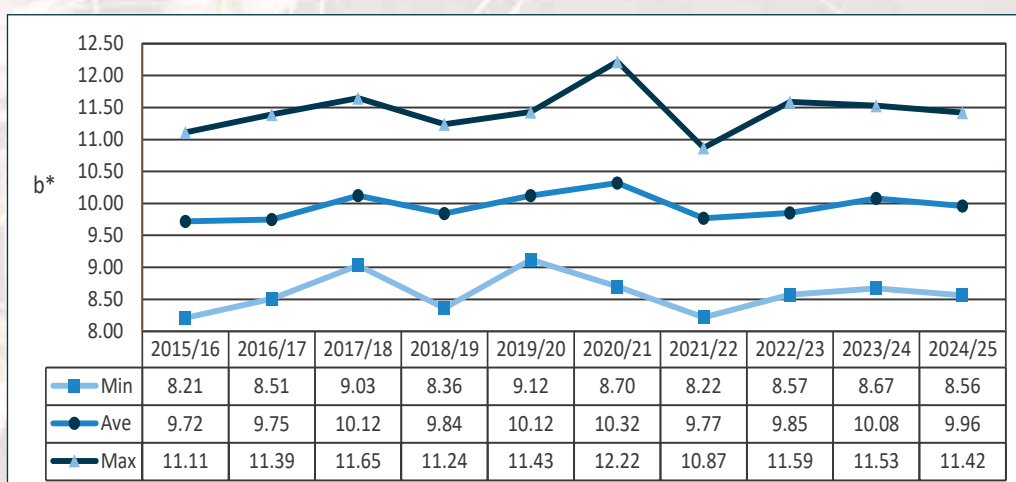
Colour is an important parameter of milled wheat since the colour of wheat flour affects the colour of the finished product, like the crumb colour of a loaf of bread. In general, a bright white colour flour is more desirable for most products. The CIE $L^*a^*b^*$ (CIELAB) colour model uses lightness (L^*) and two colour values (a^* and b^*), these colour coordinates define where a specific sample's colour lies in a Cartesian graph. L^* represents lightness (100 being white and 0 being black), a^* represents green to red variation and b^* represents variation from blue to yellow. Please see Graphs 24a (L^*), 24b (a^*) and 24c (b^*) for a comparison of the ranges in the CIE $L^*a^*b^*$ values obtained over ten seasons. The minimum and maximum values are based on a single composite sample's result in a specific season.



Graph 24a: Range of L^* values over ten seasons



Graph 24b: Range of a^* values over ten seasons



Graph 24c: Range of b^* values over ten seasons

The average ash content was 0.59% on a dry basis (moisture free basis), equal to the previous two seasons' average. According to the Wheat product regulations (Government Notice No. R. 405 of 5 May 2017), cake flour's ash content should not exceed 0.65%, white bread flour's ash content should be between 0.60 to 1.00% and that of all-purpose wheat flour between 0.55 and 0.75%.

The Rapid Visco Analyser (RVA) average peak viscosity of the samples analysed was 2385 cP (centipoise) (1151 – 2829 cP), the minimum viscosity 1868 cP (828 – 2391 cP) and the final viscosity 2675 cP (1223 – 3221 cP). The range of the values are provided in brackets. The previous season the average peak viscosity was 2291 cP (centipoise) (1548 – 2703 cP), the minimum viscosity 1773 cP (1266 – 2154 cP) and the final viscosity 2576 cP (1654 – 3071 cP). The RVA test parameters were kept constant during all the analyses. Results are reported on a 14% moisture basis. The effect of sprout damage on starch characteristics as measured by the RVA instrument was again observed as during the 2019/20 season, with reductions in the peak, minimum and final viscosities and shortening of the peak time measured in minutes.

Both the wet and dry gluten content averaged 0.1% lower than in the 2023/24 season. The wet gluten content (14% mb) averaged 29.0% and the dry gluten, also on a 14% moisture basis, 9.5%. The average gluten index value was 92 compared to the 96 of the previous season. Gluten index values ranged between 75 and 98. The gluten index provides an indication of the gluten strength (higher being better) and is not influenced by the protein content. A value between 70 and 100 is generally accepted as good quality for pan bread baking purposes.

The farinograph analysis resulted in an average water absorption of 59.7% (60.0% the previous season) and an average development time of 5.2 minutes, slightly shorter than the 5.4 minutes of the previous season. The stability value of 10.3 minutes was 0.9 minutes shorter than the previous average (11.2 minutes). The mixing tolerance index compared well, 39 BU this season, 35 BU previously.

The average alveogram strength was 38.8 cm² and the average P/L value 0.64 (39.3 cm² and 0.71 the previous season). The distensibility of the dough (127 mm) increased slightly on average compared to the previous season (122 mm). The average stability value of 78 mm was similar to the 80 mm of the previous season.

The average extensogram strength of 106 cm² compared very well with the 110 cm² in the previous season. The maximum height in Brabender Units was slightly lower than last season, 397 BU in 2024/25 versus 403 BU in 2023/24. The average extensibility value this season (194 mm) was slightly shorter than the previous season's 198 mm.

The 100 g loaves baked using the straight-dough optimised bread making method, showed on average an excellent relationship between the protein content and the bread volume.

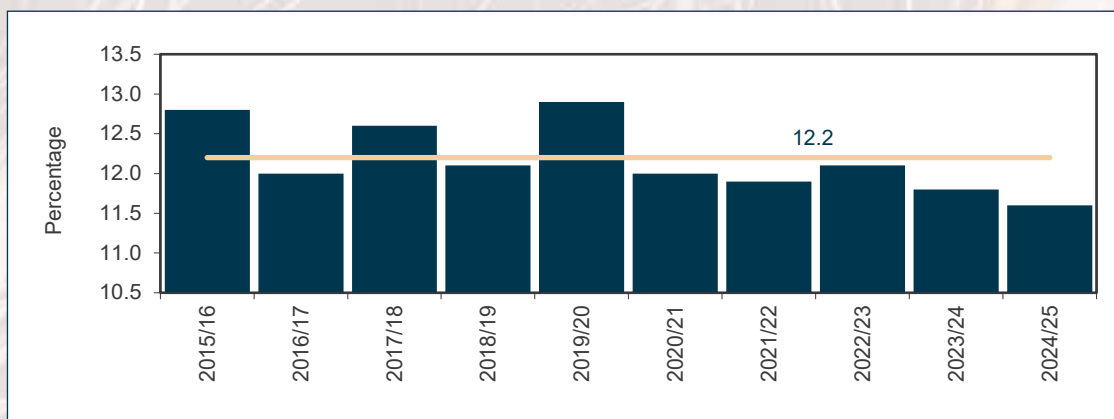
Please see the results per production region on pages 34 to 55.

The mycotoxin results are provided on pages 56 to 58.

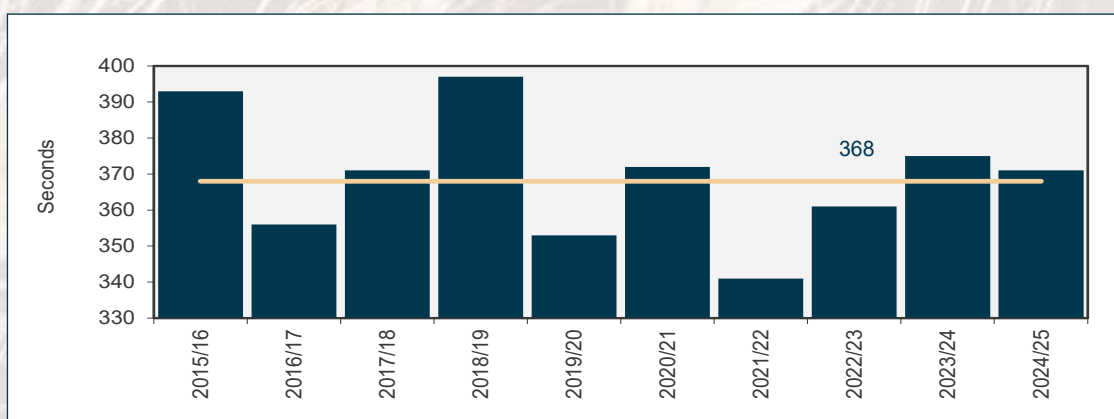


Table 3: Weighted average results for the last three seasons

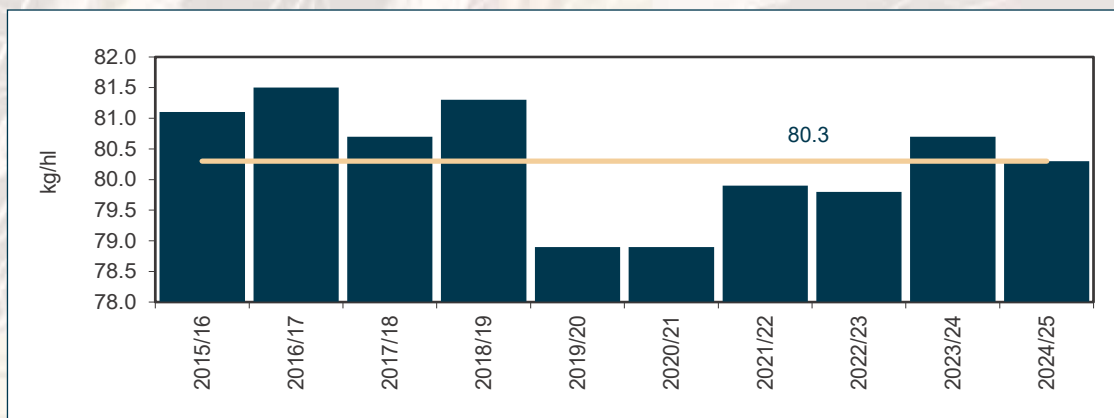
Region	2024/25					2023/24					2022/23				
	Protein (12% mb), %	FN, sec	Hlm, kg/hl	Mixo PT, min	<i>n</i>	Protein (12% mb), %	FN, sec	Hlm, kg/hl	Mixo PT, min	<i>n</i>	Protein (12% mb), %	FN, sec	Hlm, kg/hl	Mixo PT, min	<i>n</i>
1	11.5	402	78.2	3.0	4	11.7	369	80.4	3.0	4	12.1	403	80.4	2.8	4
2	10.9	374	79.3	3.5	11	10.9	404	79.0	2.8	12	12.0	378	78.5	3.3	13
3	10.8	396	79.7	3.2	62	11.0	387	80.9	2.8	66	12.4	400	79.1	3.2	63
4	10.7	403	79.0	3.4	16	11.0	392	81.3	2.7	19	11.5	397	80.5	3.2	23
5	10.8	373	78.3	3.2	23	11.4	378	79.3	3.1	27	11.1	388	80.6	3.1	32
6	10.8	350	76.7	3.1	49	11.6	339	79.0	3.4	26	11.6	398	80.8	3.0	23
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	12.2	360	83.7	3.1	42	13.1	380	83.8	2.7	17	13.0	361	81.5	2.7	21
11	11.2	339	83.4	3.0	7	12.2	408	83.6	3.1	11	12.3	358	80.0	3.2	23
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	15.6	447	78.8	4.1	2	13.4	364	81.2	3.2	3	13.2	316	80.1	3.1	2
15	12.5	385	81.0	3.5	2	11.9	404	81.8	3.2	9	12.4	372	79.8	3.1	17
16	-	-	-	-	-	-	-	-	-	-	13.2	319	78.7	3.9	2
17	-	-	-	-	-	12.0	383	81.7	2.8	4	-	-	-	-	-
18	-	-	-	-	-	12.5	374	82.2	3.5	6	12.3	306	80.1	3.3	2
19	12.2	405	86.3	1.7	1	-	-	-	-	-	-	-	-	-	-
20	13.3	495	84.1	2.9	3	12.0	389	82.5	3.6	3	-	-	-	-	-
21	13.6	374	81.2	2.7	4	13.1	285	77.4	4.0	2	11.9	319	80.4	3.4	2
22	13.4	427	85.8	2.7	1	-	-	-	-	-	13.1	291	79.0	3.6	10
23	12.2	377	81.7	3.1	11	11.6	386	81.3	3.3	13	11.5	317	78.6	3.9	24
24	11.9	369	81.2	3.3	20	12.0	363	79.3	3.2	20	11.4	314	79.7	3.4	12
25	13.8	357	78.3	3.4	13	12.5	360	77.7	3.8	21	10.6	301	76.9	3.2	2
26	-	-	-	-	-	11.4	384	81.0	3.5	13	12.1	313	80.2	3.7	7
27	-	-	-	-	-	13.5	354	78.7	3.1	2	-	-	-	-	-
28	12.5	370	81.4	3.6	11	12.8	360	81.0	3.3	16	12.5	288	78.6	3.6	10
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	11.5	335	83.0	3.5	19	11.7	403	81.2	3.5	8	12.1	416	81.4	3.8	11
34	-	-	-	-	-	12.0	348	84.4	3.3	8	-	-	-	-	-
35	12.5	388	82.8	3.1	12	12.2	362	80.2	3.5	17	11.7	376	77.7	4.0	10
36	13.6	310	80.7	4.1	9	13.1	353	83.5	3.3	8	13.3	251	80.8	4.0	22
Ave.	11.6	371	80.3	3.2	322	11.8	375	80.7	3.1	335	12.1	361	79.8	3.3	335



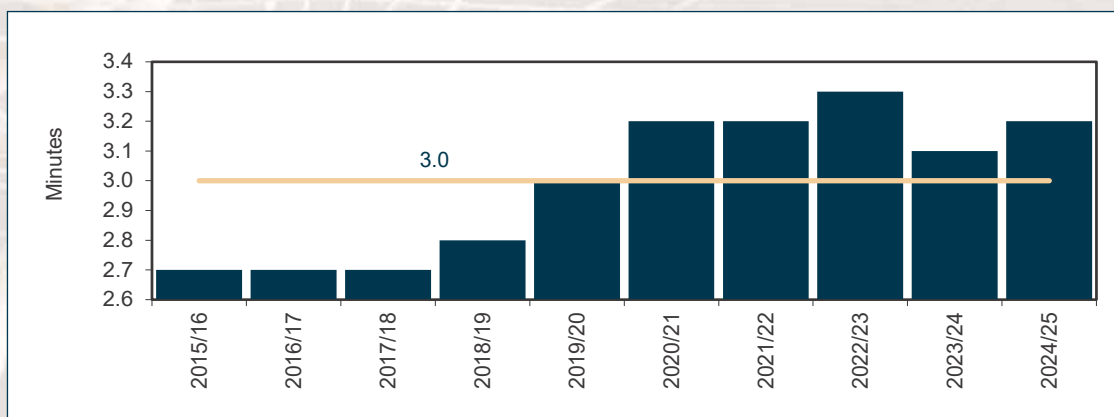
Graph 25a: Weighted average whole wheat protein (12% mb) over ten seasons



Graph 25b: Weighted average falling number over ten seasons



Graph 25c: Weighted average hectolitre mass over ten seasons



Graph 25d: Weighted average mixogram peak time (Quadromat mill) over ten seasons

Table 4: Comparison of Flour Quality over the last four seasons

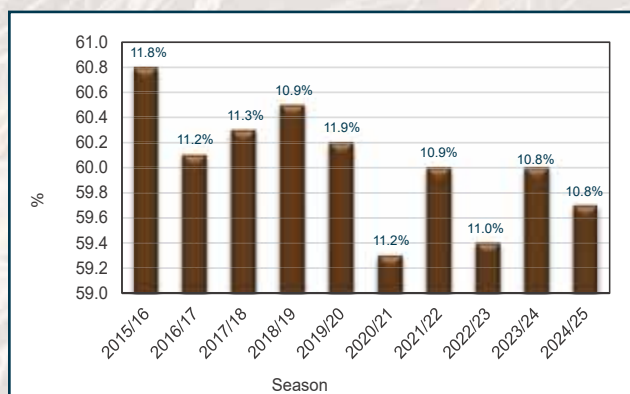
Flour Quality 2024/25 season			
Flour protein (12% mb) (%)	10.8	Farinogram abs. (14% mb) (%)	59.7
Bread volume 100 g (cm ³)	1014	Farinogram dev. time (min)	5.2
Mixogram (Bühler) peak time (min)	2.9	Alveogram strength (cm ²)	38.8
Wet gluten (14% mb) (%)	29.0	Alveogram P/L	0.64
Dry gluten (14% mb) (%)	9.5	Extensogram strength (cm ²)	106

Flour Quality 2023/24 season			
Flour protein (12% mb) (%)	10.8	Farinogram abs. (14% mb) (%)	60.0
Bread volume 100 g (cm ³)	1038	Farinogram dev. time (min)	5.4
Mixogram (Bühler) peak time (min)	3.0	Alveogram strength (cm ²)	39.3
Wet gluten (14% mb) (%)	29.1	Alveogram P/L	0.71
Dry gluten (14% mb) (%)	9.6	Extensogram strength (cm ²)	110

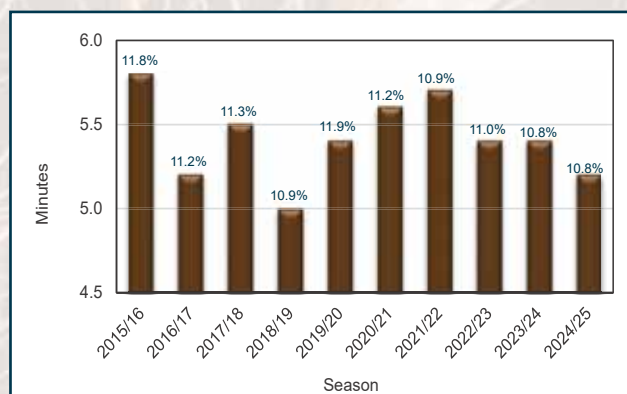
Flour Quality 2022/23 season			
Flour protein (12% mb) (%)	11.0	Farinogram abs. (14% mb) (%)	59.4
Bread volume 100 g (cm ³)	966	Farinogram dev. time (min)	5.4
Mixogram (Bühler) peak time (min)	3.1	Alveogram strength (cm ²)	41.4
Wet gluten (14% mb) (%)	29.5	Alveogram P/L	0.66
Dry gluten (14% mb) (%)	9.8	Extensogram strength (cm ²)	109

Flour Quality 2021/22 season			
Flour protein (12% mb) (%)	10.9	Farinogram abs. (14% mb) (%)	60.0
Bread volume 100 g (cm ³)	1065	Farinogram dev. time (min)	5.7
Mixogram (Bühler) peak time (min)	2.9	Alveogram strength (cm ²)	42.5
Wet gluten (14% mb) (%)	28.9	Alveogram P/L	0.77
Dry gluten (14% mb) (%)	9.6	Extensogram strength (cm ²)	103

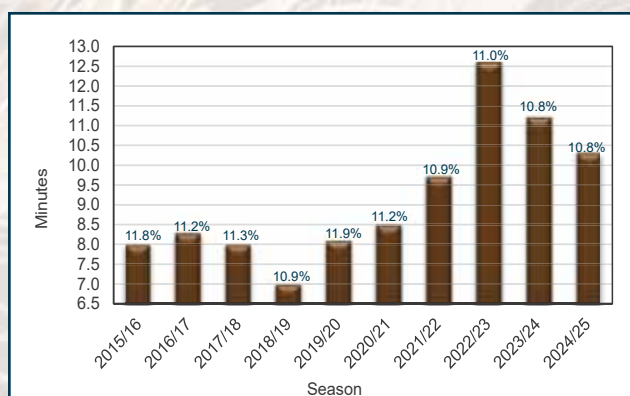
Graph 26a-h: Comparison of rheological quality over ten seasons (Flour protein content (12% mb) is indicated above each bar)



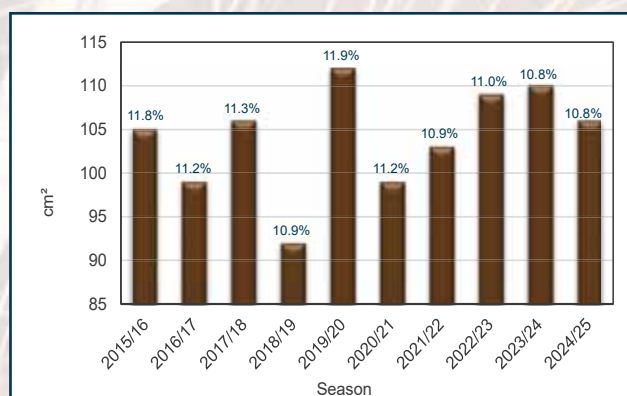
Graph 26a: Farinogram absorption (14%mb)



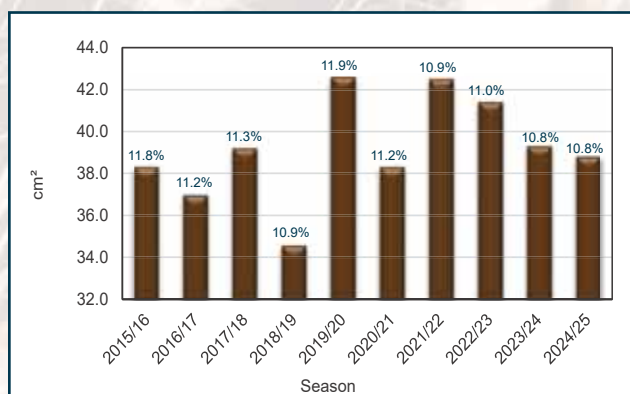
Graph 26b: Farinogram development time



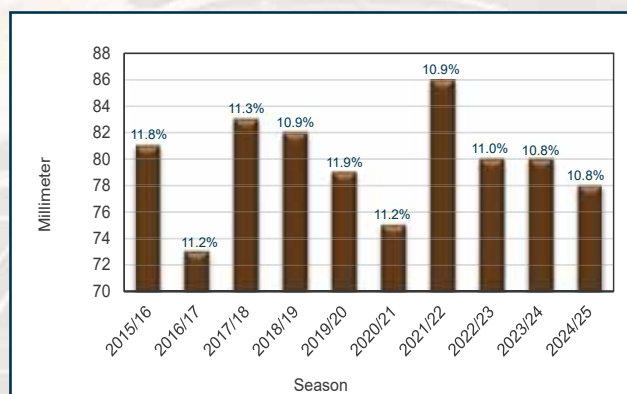
Graph 26c: Farinogram stability



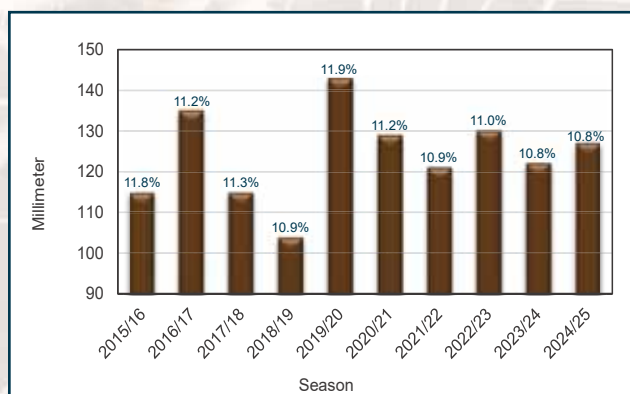
Graph 26d: Extensogram strength



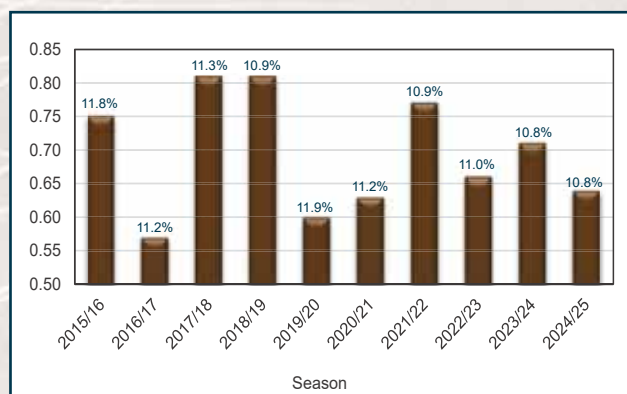
Graph 26e: Alveogram strength



Graph 26f: Alveogram stability



Graph 26g: Alveogram distensibility



Graph 26h: Alveogram P/L

Table 5: Regional quality weighted averages

	Winter rainfall area (Western Cape)			Summer rainfall and Irrigation area (Free State)			Irrigation areas (All other provinces)			RSA Average		
Number of samples per area	165			60			97			322		
Regions	1 - 6			21 - 28			10 - 11, 12 - 20, 29 - 36			All		
Hectolitre mass dirty, kg/hl	78.5			80.8			83.0			80.3		
1000 kernel mass (13% mb), g	38.4			37.4			39.1			38.4		
Falling number, sec	378			369			359			371		
Screenings (1.8 mm sieve), %	1.67			1.86			1.04			1.52		
Protein (12% mb), % (WWF)	10.8			12.6			12.3			11.6		
Mixogram peak time, min (Quadromat Junior)	3.2			3.3			3.3			3.2		
Composite samples per class and grade	Super	Gr1	Gr2	Super	Gr1	Gr2	Super	Gr1	Gr2	Super	Gr1	Gr2
	Gr3	COW	-	Gr3	COW	-	Gr3	COW	-	Gr3	COW	-
Composite samples, n = 69	4	5	5	6	4	4	8	5	5	18	14	14
	5	4	-	3	1	-	4	2	-	12	7	-
Bühler extraction, %	71.5	72.3	72.8	73.4	73.0	73.1	73.5	74.2	73.9	73.0	73.2	73.3
	72.6	72.6	-	73.6	74.3	-	74.8	73.7	-	73.6	73.1	-
Flour colour, Konica Minolta CM-5 (dry)												
L*	93.51	93.81	93.86	93.43	93.38	93.52	93.46	93.63	93.74	93.46	93.62	93.72
	94.01	93.91	-	93.45	93.49	-	93.74	93.54	-	93.78	93.74	-
a*	0.48	0.45	0.46	0.50	0.51	0.50	0.52	0.54	0.48	0.50	0.50	0.48
	0.43	0.42	-	0.49	0.52	-	0.49	0.51	-	0.46	0.46	-
b*	8.99	9.36	9.40	10.47	10.67	10.35	10.03	10.06	10.46	9.94	9.98	10.05
	9.36	9.23	-	10.72	10.71	-	10.23	10.21	-	9.99	9.72	-
Ash (db), %	0.71	0.57	0.57	0.59	0.60	0.59	0.57	0.63	0.57	0.61	0.60	0.57
	0.58	0.56	-	0.61	0.63	-	0.61	0.59	-	0.60	0.58	-

WWF = Whole Wheat Flour

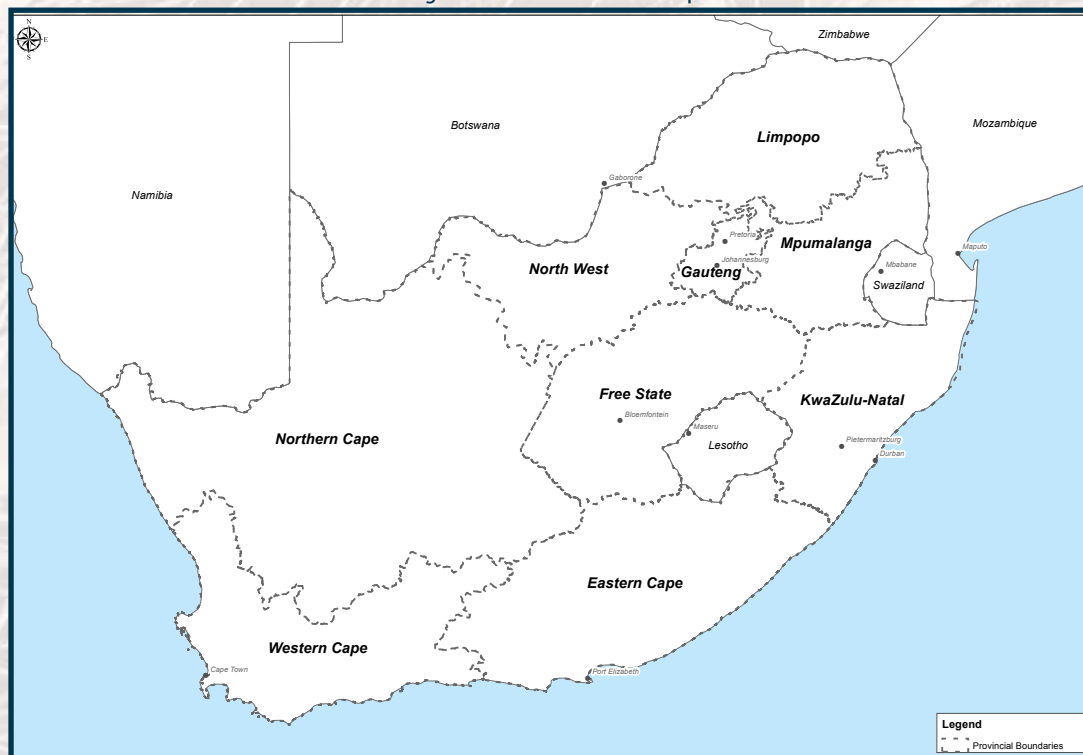
Table 5: Regional quality weighted averages (continue)

	Winter rainfall area (Western Cape)			Summer rainfall and Irrigation area (Free State)			Irrigation areas (All other provinces)			RSA Average		
Regions	1 - 6			21 - 28			10 - 11, 12 - 20, 29 - 36			All		
Composite samples per class and grade	Super	Gr1	Gr2	Super	Gr1	Gr2	Super	Gr1	Gr2	Super	Gr1	Gr2
	Gr3	COW	-	Gr3	COW	-	Gr3	COW	-	Gr3	COW	-
Composite samples, n = 69	4	5	5	6	4	4	8	5	5	18	14	14
	5	4	-	3	1	-	4	2	-	12	7	-
Flour protein (12% mb), %	12.0	10.7	10.0	12.6	10.9	10.2	12.3	11.0	10.1	12.3	10.9	10.1
	9.0	9.6	-	10.7	11.1	-	9.7	10.8	-	9.6	10.2	-
Wet gluten (14% mb), %	33.6	28.9	25.6	35.0	28.3	27.7	33.7	30.1	27.3	34.1	29.2	26.8
	22.7	24.8	-	28.6	30.7	-	25.5	29.5	-	25.1	27.0	-
Dry gluten (14% mb), %	11.1	9.5	8.5	11.4	9.2	9.0	11.3	9.7	8.8	11.3	9.5	8.7
	7.4	8.2	-	9.3	9.7	-	8.2	9.6	-	8.2	8.8	-
Gluten Index	84	90	94	87	91	93	92	94	95	89	92	94
	94	95	-	93	89	-	93	94	-	94	94	-
Farinogram: Water absorption (14% mb), %	60.9	58.6	56.5	62.7	60.7	60.0	61.9	60.7	61.0	61.9	60.0	59.1
	56.1	56.7	-	59.0	58.9	-	60.1	59.1	-	58.1	57.7	-
Farinogram: Development time, min	5.2	4.6	4.1	6.5	6.0	5.2	6.6	4.9	5.7	6.2	5.1	5.0
	2.3	4.2	-	5.6	5.4	-	5.2	5.3	-	4.1	4.7	-
Farinogram: Stability, min	12.3	10.5	10.6	11.2	9.7	8.4	12.1	10.4	10.7	11.8	10.2	10.0
	8.6	9.6	-	10.5	8.6	-	8.3	8.7	-	9.0	9.2	-
Alveogram: Strength (S), cm ²	41.6	37.0	33.8	45.2	39.2	35.4	49.2	40.8	41.3	46.2	39.0	36.9
	28.8	31.2	-	32.9	36.9	-	36.3	38.2	-	32.3	34.0	-
Alveogram: P/L	0.55	0.53	0.50	0.60	0.75	0.78	0.65	0.72	0.92	0.61	0.66	0.73
	0.61	0.51	-	0.50	0.38	-	0.81	0.58	-	0.65	0.51	-
Extensogram: Strength, cm ²	116	106	98	110	108	98	134	101	109	122	105	102
	84	92	-	90	-	-	96	109	-	89	99	-
Mixogram peak time, min	2.4	2.8	3.1	2.5	2.9	2.9	2.9	2.9	2.8	2.7	2.9	2.9
	3.1	3.2	-	2.9	3.2	-	3.1	3.0	-	3.0	3.1	-

RSA Production Regions

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

Figure 1: RSA Provinces map



Provincial map with gratitude to SiQ.

The 9 provinces are divided into 36 grain production regions.

The regions are distributed as follows:

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

Please see the Crop Production Regions map on page 30.

The production regions from which wheat samples were received for the crop quality survey of the 2024/25 production season, are named and described on pages 31 to 33. All the silo/intake stands as well as the type of storage structure, situated in a particular region, are provided.

The wheat production regions in South Africa are divided into three major production regions:

Winter Rainfall Region (Western Cape)

The Western Cape Province has a Mediterranean climate, characterised by cool, wet winters and hot dry summers. More than 80% of the rainfall occurs in winter between April and September, making the Western Cape a predominantly winter rainfall area. Arable land in this area covers approximately 1.5 million hectares, with winter cereals (wheat, barley, canola and oats) the major crops cultivated. This season, the Western Cape accounted for 55% of the wheat produced in South Africa. The Swartland (on the West Coast) and the Rûens (Southern Cape) are the main geographic regions of the winter rainfall area.

These two separate wheat farming regions are divided into sub-regions according to soil and climatic characteristics. The Swartland region is divided into four sub-regions: High Rainfall, Middle Swartland, Koringberg and Sandveld. The Rûens region is divided into three sub regions namely the Western Rûens, Southern Rûens and Eastern Rûens.

The Rûens generally receives higher rainfall than the Swartland, but some areas of the Swartland have better, deeper soils. Wheat is generally planted from the second half of April until the middle of June and harvested mainly during November.

Summer Rainfall Region (Free State)

The summer rainfall area (predominantly the Free State Province) is a major dryland wheat production region of South Africa. Significant variation in precipitation, soil types and average temperature occurs from east to west. The Free State is therefore typically divided into four distinct dryland wheat production regions, namely: the South Western Free State, North Western Free State, Central Free State and Eastern Free State.

Rainfall, particularly the distribution thereof through the growing season, is important for successful wheat production in the summer rainfall areas. Planting dates vary from early to late according to region and commences in May and continues until July. Harvesting takes place from late November/early December to January.

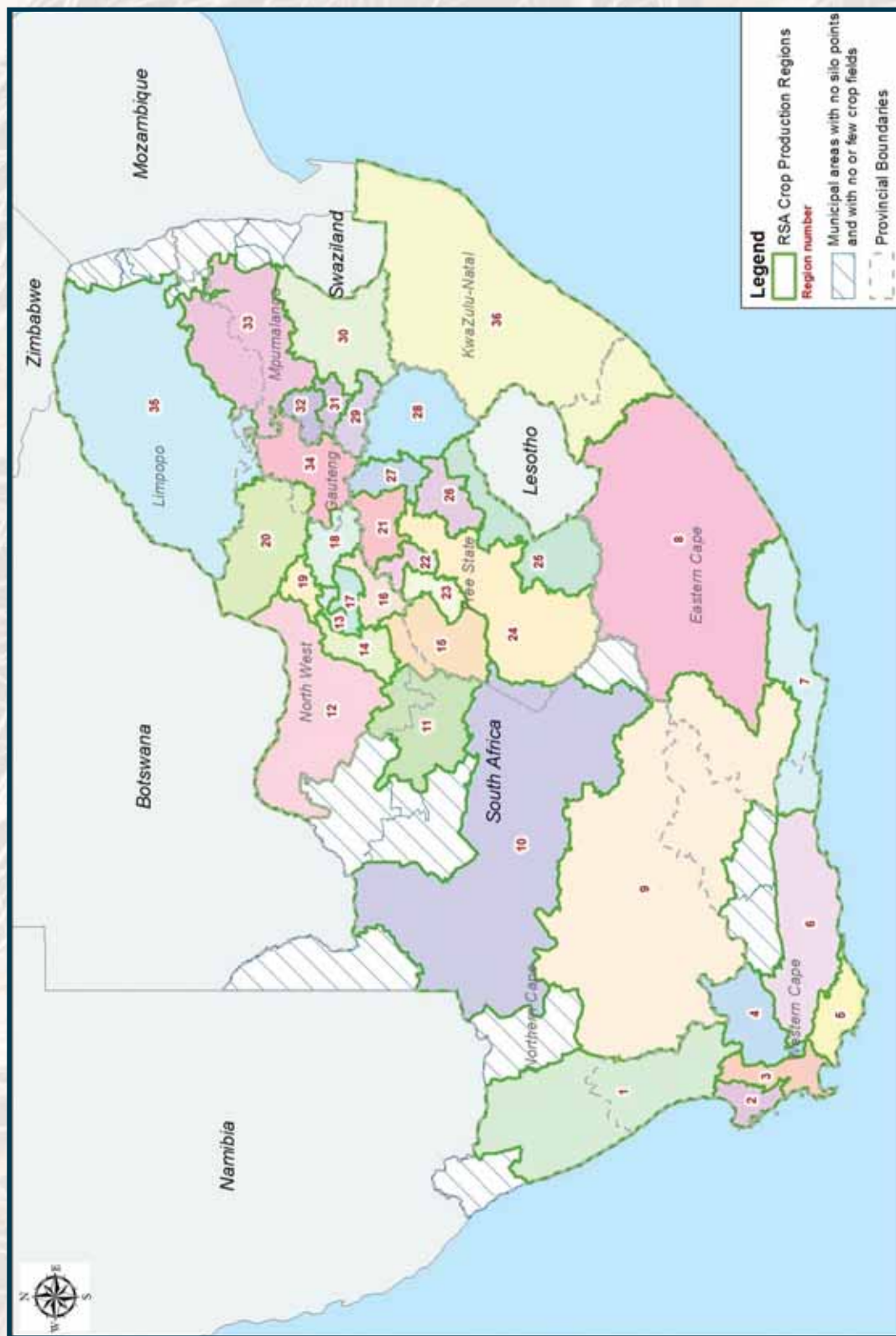
Irrigation Areas (Northern Cape, North West, Mpumalanga, Gauteng, Limpopo and KwaZulu-Natal)

The irrigation wheat production area of South Africa can be broadly categorized into four main geographic regions: the Cooler Central irrigation region in the Northern Cape, the Warmer Northern irrigation region in the North West, Limpopo and Gauteng provinces, the Highveld region in Mpumalanga and the Free State and lastly, the KwaZulu-Natal region.

Planting commences as early as the second half of May and continues until July and even the beginning of August, depending on the region. Harvesting takes place from the end of October to December also depending on the specific region.

Production area information were obtained from the ARC-Small Grain's National Small Grain Cultivar Evaluation Programme reports.

Figure 2: RSA Crop Production Regions map



Regional map with gratitude to Agbiz Grain and SiQ.

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 1: Namakwaland Region

Agrimark Graafwater (*Bags/Bins*)

Region 2: Swartland Western Region

Agrimark Darling (*Bins*) Overberg Agri Bergrivier (*Bins*)
Agrimark Vredenburg (*Bins*) Overberg Agri Koperfontein (*Bins*)

Region 3: Swartland Central Region

Agrimark Doornkuil (*Bunkers*) Overberg Agri Moorreesburg (*Bins*)
Agrimark Eendekuil (*Bins*) Overberg Agri Moravia (*Bins*)
Agrimark Klipheuwel (*Bins*) Afgri Eensgezindt (*Bunkers*)
Agrimark Malmesbury (*Bins*) Afgri Eenboom (*Bunkers*)
Agrimark Piketberg (*Bins*) Afgri Klipfontein (*Bunkers*)
Agrimark Pools (*Bins*) Afgri Malansdam (*Bunkers*)
Agrimark Ruststasie (*Bins*) BKB GrainCo Melkboom (*Bunkers*)
Overberg Agri Koringberg (*Bins*) BKB GrainCo Pampoenkraal (*Bunkers*)

Region 4: Swartland Eastern Region

Agrimark Ceres (*Bunkers*) Agrimark Porterville (*Bins*)
Agrimark Ceres (*Bins*) Agrimark Riebeeck-Wes (*Bins*)
Agrimark Gouda (*Bins*) Overberg Agri Leliedam (*Bins*)
Agrimark Halfmanshof (*Bins*) BKB GrainCo Winterhoek (*Bunkers*)

Region 5: Rûens Western Region

BKB GrainCo Hassiesdrift (*Bunkers*) Overberg Agri Lemoenskop (*Bunkers*)
Overberg Agri Bredasdorp (*Bags/Bins/Bunkers*) Overberg Agri Napier (*Bags/Bins*)
Overberg Agri Caledon (*Bins/Bunkers*) Overberg Agri Ou Plaas (*Bunkers*)
Overberg Agri Jongensklip (*Bunkers*) Overberg Agri Ou Plaas (*Bunkers*)
Overberg Agri Klipdale (*Bags/Bins*) Overberg Agri Proteem (*Bags/Bins*)
Overberg Agri Krige (*Bags/Bins/Bunkers*) Overberg Agri Rietpoel (*Bags/Bins/Bunkers*)

Region 6: Rûens Eastern Region

SSK Albertinia (*Bins*) SSK Krombeks (*Bins*)
SSK Ashton (*Bags/Bins*) SSK Proteem (*Bags/Bins*)
SSK Heidelberg (*Bins*) SSK Riversdal (*Bins*)
SSK Herold (*Bins*) SSK Swellendam (*Bags/Bins*)
SSK Karringmelk (*Bags/Bins*)

Region 10: Griqualand-West Region

GWK Douglas (*Bags/Bins*) OVK Havenga Brug (*Bins*)
GWK Luckhoff (*Bins*) OVK Morgenzon (*Bins*)
GWK Marydale (*Bins*) OVK Oranjerivier (*Bins/Bunkers*)
GWK Modderivier (*Bags/Bins/Bulk*) OVK Prieska (*Bins/Bunkers*)
GWK Prieska (*Bins/Dams*) OVK Rietrivier (*Bins*)
GWK Rietrivier (*Bins*) OVK Swemkuil (*Bunkers*)
GWK Trans Oranje (*Bags/Bins/Bunkers*)

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

Region 11: Vaalharts Region

GWK	Barkly-Wes (<i>Bins/Bulk</i>)	Senwes	Jan Kempdorp (<i>Bins</i>)
GWK	Jan Kempdorp (<i>Bags/Bunkers</i>)	Senwes	Magogong (<i>Bins</i>)
Senwes	Hartswater (<i>Bins</i>)	Senwes	Tadcaster (<i>Bins</i>)

Region 14: North West Southern Region

NWK	Barberspan (<i>Bins</i>)	NWK	Taaibospan (<i>Bins</i>)
NWK	Delareyville (<i>Bins</i>)	Senwes	Amalia (<i>Bins</i>)
NWK	Excelsior (<i>Bins</i>)	Senwes	Hallatshope (<i>Bins</i>)
NWK	Geysdorp (<i>Bins</i>)	Senwes	Migdol (<i>Bins</i>)
NWK	Migdol (<i>Bins</i>)	Senwes	Schweizer-Reneke (<i>Bins</i>)
NWK	Nooitgedacht (<i>Bins</i>)		

Region 15: North West Southern Region

GWK	Christiana (<i>Bins</i>)	Senwes	Hoopstad (<i>Bins</i>)
Senwes	Bloemhof (<i>Bins</i>)	Senwes	Kingswood (<i>Bins</i>)
Senwes	Christiana (<i>Bins</i>)	Senwes	Kruising (<i>Bunkers</i>)
Senwes	Helpman Depot 726 (<i>Bags</i>)	Senwes	Poppieland (<i>Bunkers</i>)
Senwes	Hertzogville (<i>Bins</i>)		

Region 19: North West Central Region (Lichtenburg)

Afgri	Lichtenburg (<i>Bunker</i>)	NWK	Hibernia (<i>Bins</i>)
NWK	Grootpan (<i>Bunker</i>)	NWK	Lottie Halte (<i>Bins</i>)
NWK	Grootpan 1 (<i>Bins</i>)	NWK	Lusthof (<i>Bins</i>)
NWK	Grootpan 2 (<i>Bins</i>)	NWK	Lichtenburg Silo 3 (<i>Bins</i>)
NWK	Grootpan 3 (<i>Bins</i>)	NWK	Lichtenburg Silo 5 (<i>Bins</i>)
NWK	Halfpad (<i>Bins</i>)	NWK	Mafikeng (<i>Bins</i>)

Region 20: North West Eastern Region

Afgri	Battery (<i>Bins</i>)	NWK	Derby (<i>Bins</i>)
Afgri	Beestekraal (<i>Bunker</i>)	NWK	Koster (<i>Bins</i>)
Afgri	Brits (<i>Bins</i>)	NWK	Swartruggens (<i>Bins</i>)
NWK	Boons (<i>Bins</i>)	NWK	Syferbult (<i>Bins</i>)

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

Afgri	Kommandonek (<i>Bunkers</i>)	Senwes	Vierfontein (<i>Bins</i>)
Senwes	Attie (<i>Bins</i>)	Senwes	Viljoenskroon G232 (<i>Bins</i>)
Senwes	Groenbloem (<i>Bins</i>)	Senwes	Viljoenskroon G266 (<i>Bins</i>)
Senwes	Heuningspruit (<i>Bins</i>)	Senwes	Vredefort (<i>Bins</i>)
Senwes	Koppies (<i>Bins</i>)	Senwes	Weiveld (<i>Bins</i>)
Senwes	Rooiwal (<i>Bins</i>)		

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

Senwes	Allanridge (<i>Bins</i>)	Senwes	Odendaalsrus (<i>Bins</i>)
Senwes	Bothaville Depot (<i>Bins</i>)	Senwes	Schoonspruit (<i>Bins</i>)
Senwes	Bothaville Silo A (<i>Bins</i>)	Senwes	Schuttendraai (<i>Bins</i>)
Senwes	Bothaville Silo B (<i>Bins</i>)	Senwes	Misgunst (<i>Bunkers</i>)
Senwes	Mirage (<i>Bins</i>)		

Grain Production Regions

Silo/Intake stands per region indicating type of storage structure

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

Senwes	Bultfontein (<i>Bins</i>)	Senwes	Tierfontein (<i>Bins</i>)
Senwes	Losdoorns (<i>Bins</i>)	Senwes	Wesselsbron (<i>Bins/Bunkers</i>)
Senwes	Protespan (<i>Bins</i>)	Senwes	Willemsrust (<i>Bins</i>)

Region 24: Free State Central Region

Senwes	Bloemfontein (<i>Bins</i>)	Senwes	Petrusburg (<i>Bins</i>)
Senwes	Brandfort (<i>Bins</i>)	Senwes	Theunissen (<i>Bins</i>)
Senwes	De Brug (<i>Bins</i>)	Senwes	Van Tonder (<i>Bins</i>)
Senwes	Geneva (<i>Bins</i>)	Senwes	Welgeleë (<i>Bins</i>)
Senwes	Hennenman (<i>Bins</i>)	Senwes	Winburg (<i>Bins</i>)
Senwes	Kroonstad (<i>Bins</i>)		

Region 25: Free State South-Western Region

Afgri	Bethlehem (<i>Bins</i>)	OVK	Marseilles (<i>Bins</i>)
Afgri	Slabberts (<i>Bins</i>)	OVK	Modderpoort (<i>Bins</i>)
OVK	Clocolan (<i>Bins</i>)	OVK	Tweespruit (<i>Bins</i>)
OVK	Ficksburg (<i>Bins</i>)	OVK	Westminster (<i>Bins</i>)
OVK	Fouriesburg (<i>Bins</i>)	Senwes	Dewetsdorp (<i>Bins</i>)

Region 28: Free State Eastern Region

Afgri	Afrikaskop (<i>Bins/Bunkers</i>)	VKB	Jim Fouché (<i>Bins</i>)
Afgri	Eeram (<i>Bins</i>)	VKB	Memel (<i>Bins</i>)
Afgri	Harrismith (<i>Bins</i>)	VKB	Reitz (<i>Bins</i>)
Afgri	Kransfontein (<i>Bins/Bunkers</i>)	VKB	Tweeling (<i>Bins</i>)
VKB	Ascent (<i>Bins</i>)	VKB	Villiers (<i>Bins/Bulk</i>)
VKB	Cornelia (<i>Bins</i>)	VKB	Vrede (<i>Bins</i>)
VKB	Daniëlsrus (<i>Bins</i>)	VKB	Warden (<i>Bins</i>)
VKB	Frankfort (<i>Bins</i>)	VKB	Windfield (<i>Bins</i>)

Region 33: Mpumalanga Northern Region

Afgri	Arnot (<i>Bins</i>)	Afgri	Middelburg (<i>Bins</i>)
Afgri	Broodsnyersplaas (<i>Bunkers</i>)	Afgri	Pan (<i>Bins</i>)
Afgri	Driefontein (<i>Bins</i>)	Afgri	Stoffberg (<i>Bins</i>)
Afgri	Lydenburg (<i>Bins</i>)	Afgri	Wonderfontein (<i>Bins</i>)
Afgri	Marble Hall (<i>Bins</i>)		

Region 35: Limpopo Region

Afgri	Northam Silo (<i>Bins</i>)	VKB	Nylstroom (<i>Bins</i>)
VKB	Alma (<i>Bins</i>)	VKB	Potgietersrus (<i>Bins</i>)
VKB	Lehau (<i>Bins</i>)	VKB	Roedtan (<i>Bins</i>)
VKB	Naboomspruit (<i>Bins</i>)	VKB	Settlers (<i>Bins</i>)
VKB	Nutfield (<i>Bins</i>)	VKB	Warmbad (<i>Bins</i>)

Region 36: KwaZulu-Natal Region

Afgri	Bergville (<i>Bins/Bunkers</i>)	Afgri	Mizpah (<i>Bins</i>)
Afgri	Bloedrivier (<i>Bins</i>)	Afgri	Paulpietersburg (<i>Bins</i>)
Afgri	Chelmsford dam (<i>Bunkers</i>)	Afgri	Pietermaritzburg (<i>Bins</i>)
Afgri	Dannhauser (<i>Bins</i>)	Afgri	Vryheid (<i>Bins</i>)
Afgri	Dundee (<i>Bins</i>)	Afgri	Winterton (<i>Bins/Bunkers</i>)

South African quality data per production region

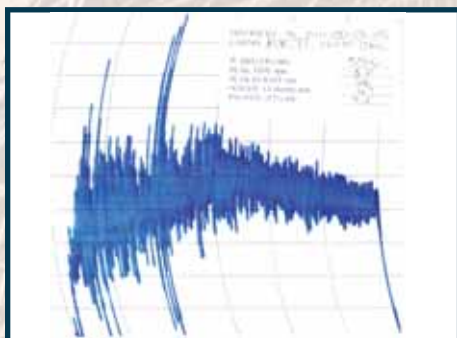
WINTER RAINFALL WHEAT

PRODUCTION REGION	(1)				(2)					
	Namakwaland Region				Swartland Western Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	11.5	10.2	13.3	1.35	10.9	9.7	12.9	1.01		
Falling number, sec	402	372	417	20.17	374	350	412	18.93		
Moisture, %	11.2	11.1	11.3	0.10	11.3	10.7	11.8	0.39		
1000 Kernel mass (13% mb), g	38.5	35.9	42.0	2.93	35.1	32.7	36.7	1.47		
Hectolitre mass (dirty), kg/hl	78.2	77.4	78.8	0.61	79.3	76.6	81.1	1.26		
Screenings (<1.8 mm sieve), %	3.19	2.56	3.57	0.45	1.59	0.30	3.66	1.27		
Total damaged kernels, %	0.95	0.17	1.95	0.77	0.30	0.09	0.80	0.22		
Combined deviations, %	4.75	2.92	6.42	1.49	2.27	0.70	4.90	1.39		
Number of samples	4				11					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.0	2.3	3.9	0.67	3.5	2.9	4.4	0.40		
Tail height (6 min), mm	47	43	48	2.38	47	42	52	2.77		
Number of samples	4				11					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	-	-	-	70.9	-	69.4	70.1	71.5	71.3	-
FLOUR										
Protein (12% mb), %	-	-	-	9.0	-	11.7	10.9	10.0	9.0	-
Moisture, %	-	-	-	13.5	-	13.4	13.8	13.5	13.4	-
Ash (db), %	-	-	-	0.60	-	0.65	0.62	0.54	0.55	-
Colour, Konica Minolta CM5 (dry)										
L*	-	-	-	94.32	-	94.03	94.03	94.17	94.20	-
a*	-	-	-	0.41	-	0.45	0.41	0.43	0.43	-
b*	-	-	-	9.63	-	10.05	10.34	9.91	9.83	-
RVA										
Peak Viscosity, cP	-	-	-	2378	-	2471	2366	2501	2520	-
Minimum viscosity (Trough), cP	-	-	-	1780	-	1701	1773	1877	1918	-
Final Viscosity, cP	-	-	-	2756	-	2812	2765	2933	2957	-
Peak Time, min	-	-	-	7.00	-	7.00	7.00	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	-	-	-	22.8	-	30.5	28.0	24.8	21.6	-
Dry gluten (14% mb), %	-	-	-	7.5	-	10.4	9.3	8.3	7.2	-
Gluten Index	-	-	-	97	-	95	95	94	97	-
FARINOGRAM										
Water absorption (14% mb), %	-	-	-	56.7	-	58.9	57.3	55.4	54.8	-
Development time, min	-	-	-	2.0	-	5.1	5.2	4.5	1.6	-
Stability, min	-	-	-	8.1	-	16.3	14.4	14.3	12.3	-
Mixing tolerance index, BU	-	-	-	28	-	20	23	21	14	-
EXTENSOGRAM (45 min pull)										
Area, cm²	-	-	-	86	-	131	108	99	93	-
Maximum height, BU	-	-	-	387	-	479	434	454	450	-
Extensibility, mm	-	-	-	161	-	202	183	161	151	-
ALVEOGRAM										
Strength (S), cm²	-	-	-	32.1		46.2	39.9	36.5	28.4	-
Stability (P), mm	-	-	-	74		75	73	68	67	-
Distensibility (L), mm	-	-	-	104		164	140	143	97	-
Configuration ratio (P/L)	-	-	-	0.71		0.46	0.52	0.48	0.69	-
MIXOGRAM										
Peak time, min	-	-	-	3.1	-	2.9	3.1	3.0	3.3	-
100 g BAKING TEST										
Loaf volume, cm³	-	-	-	938	-	1089	1033	961	932	-

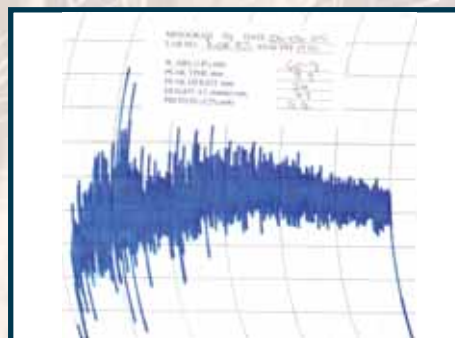
Rheological Graphs Per Production Region

MIXOGRAM

1

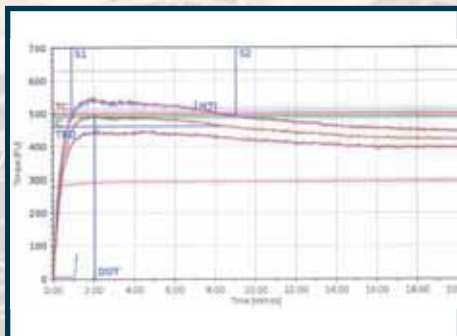


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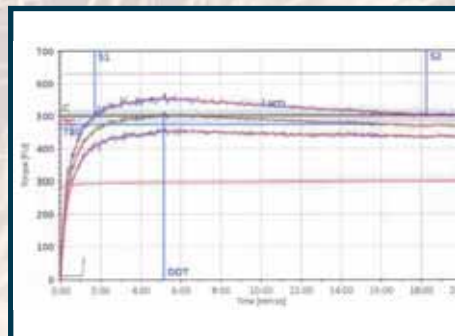


FARINOGRAM

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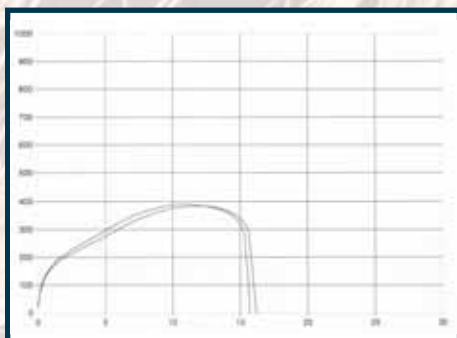


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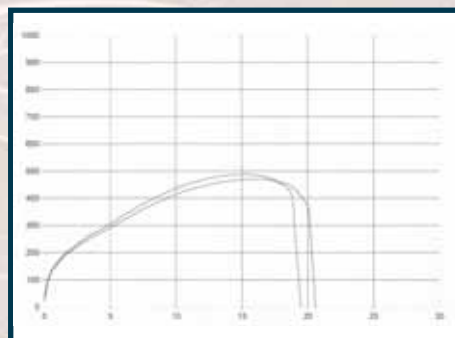


EXTENSOGRAM

1

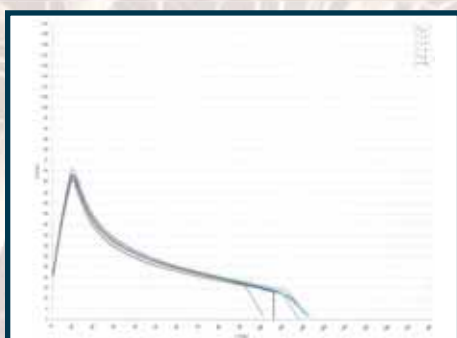


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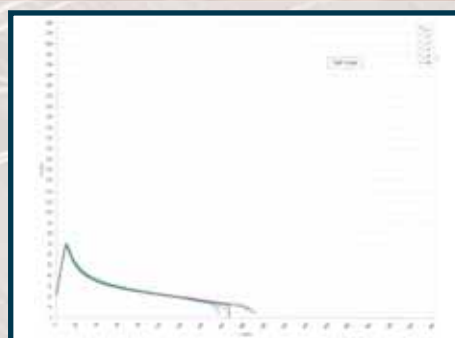


ALVEOGRAM

1



2



South African quality data per production region

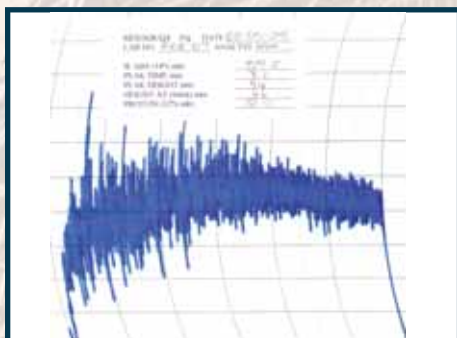
WINTER RAINFALL WHEAT

PRODUCTION REGION	(3)				(4)					
	Swartland Central Region				Swartland Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	10.8	8.1	14.9	1.12	10.7	8.6	13.5	1.28		
Falling number, sec	396	273	542	47.62	403	344	510	50.03		
Moisture, %	10.5	9.4	11.7	0.48	10.3	8.9	10.7	0.42		
1000 Kernel mass (13% mb), g	36.2	32.6	39.4	1.64	35.3	32.9	37.6	1.28		
Hectolitre mass (dirty), kg/hl	79.7	74.9	81.5	1.22	79.0	76.7	80.9	1.25		
Screenings (<1.8 mm sieve), %	2.25	0.70	5.19	0.73	2.62	0.17	14.12	3.35		
Total damaged kernels, %	0.28	0.00	1.18	0.23	1.56	0.10	8.40	2.48		
Combined deviations, %	3.79	1.72	6.26	1.14	5.52	1.41	15.01	3.28		
Number of samples	62				16					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.2	2.2	4.3	0.34	3.4	2.9	3.7	0.23		
Tail height (6 min), mm	46	39	54	3.40	45	37	49	3.59		
Number of samples	62				16					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	69.5	72.1	71.5	72.3	71.6	-	72.5	72.2	-	72.5
FLOUR										
Protein (12% mb), %	12.8	10.8	9.9	9.1	9.6	-	10.3	9.9	-	9.5
Moisture, %	13.5	13.3	13.8	13.1	13.7	-	13.5	13.5	-	13.4
Ash (db), %	0.97	0.55	0.54	0.54	0.50	-	0.57	0.58	-	0.58
Colour, Konica Minolta CM5 (dry)										
L*	92.76	93.83	94.00	94.09	94.30	-	93.85	94.01	-	94.09
a*	0.40	0.44	0.48	0.44	0.41	-	0.48	0.43	-	0.41
b*	8.56	9.25	9.41	9.50	9.33	-	9.53	9.35	-	9.57
RVA										
Peak Viscosity, cP	2090	2484	2503	2579	2545	-	2542	2607	-	2495
Minimum viscosity (Trough), cP	1515	1868	1925	2017	1950	-	2033	1946	-	1971
Final Viscosity, cP	2261	2890	2933	3044	3001	-	2870	2876	-	2830
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	-	7.00
GLUTEN										
Wet gluten (14% mb), %	37.3	28.5	25.4	22.7	24.4	-	27.5	25.7	-	23.7
Dry gluten (14% mb), %	11.9	9.3	8.3	7.4	8.0	-	9.2	8.4	-	7.9
Gluten Index	86	94	94	95	95	-	96	96	-	97
FARINOGRAM										
Water absorption (14% mb), %	64.4	58.3	57.2	56.1	56.6	-	57.0	56.0	-	55.9
Development time, min	7.0	4.5	3.2	1.4	4.3	-	4.3	5.3	-	5.4
Stability, min	16.4	11.4	11.2	8.1	11.4	-	9.3	13.1	-	12.3
Mixing tolerance index, BU	26	31	24	38	27	-	40	31	-	33
EXTENSOGRAM (45 min pull)										
Area, cm²	122	116	107	86	109	-	117	110	-	101
Maximum height, BU	402	431	410	368	431	-	446	467	-	408
Extensibility, mm	222	198	192	172	184	-	193	175	-	185
ALVEOGRAM										
Strength (S), cm²	45.0	37.2	36.4	30.0	36.1	-	34.9	35.6	-	31.5
Stability (P), mm	93	72	68	65	70	-	66	67	-	63
Distensibility (L), mm	127	127	144	117	133	-	137	135	-	128
Configuration ratio (P/L)	0.73	0.57	0.47	0.56	0.53	-	0.48	0.50	-	0.49
MIXOGRAM										
Peak time, min	2.3	3.3	3.3	3.3	3.4	-	2.9	3.4	-	3.2
100 g BAKING TEST										
Loaf volume, cm³	1095	998	991	914	953	-	1015	947	-	919

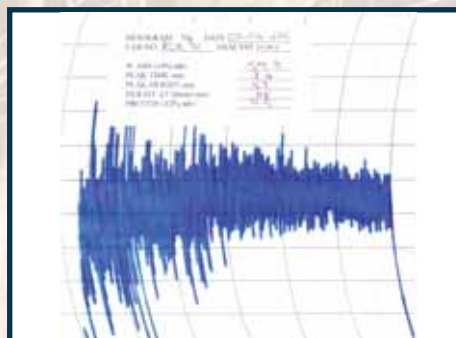
Rheological Graphs Per Production Region

MIXOGRAM

3

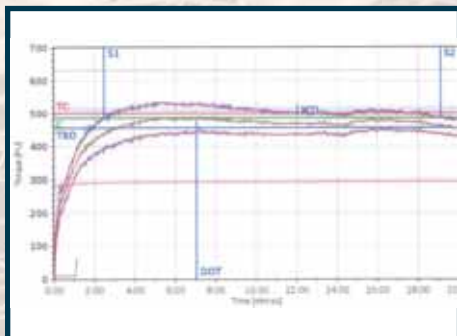


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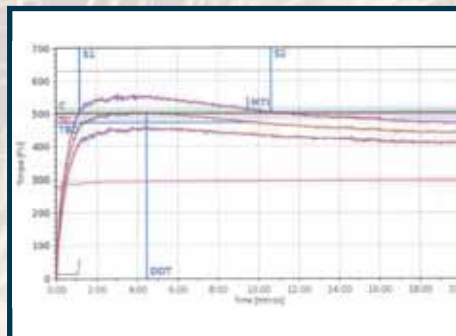


FARINOGRAM

3

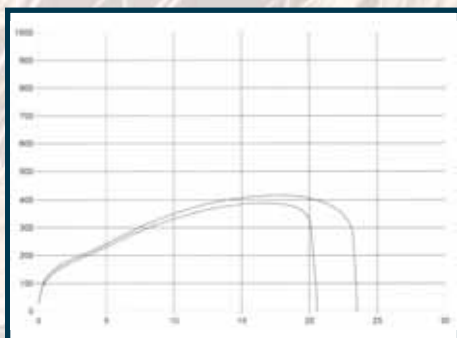


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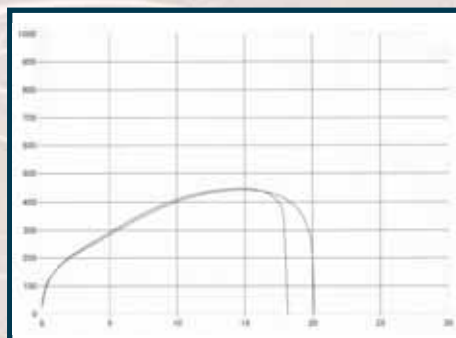


EXTENSOGRAM

3

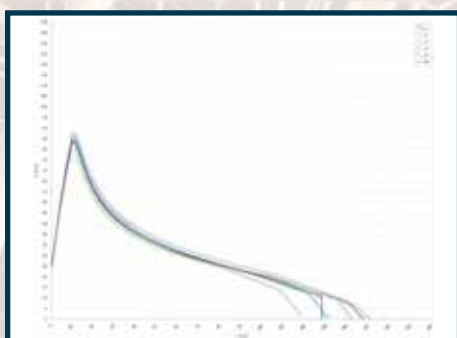


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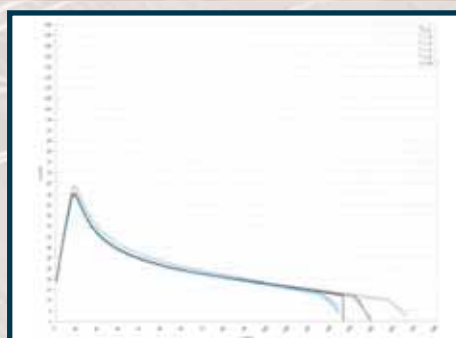


ALVEOGRAM

3



4



South African quality data per production region

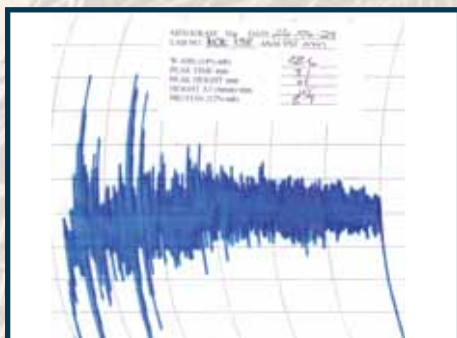
WINTER RAINFALL WHEAT

PRODUCTION REGION	(5) Rüens Western Region				(6) Rüens Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	10.8	9.1	12.8	1.15	10.8	9.0	12.9	0.90		
Falling number, sec	373	272	473	46.16	350	266	440	36.84		
Moisture, %	10.8	8.1	11.8	0.96	11.0	8.8	12.4	0.63		
1000 Kernel mass (13% mb), g	40.0	31.4	45.9	3.37	42.2	31.6	49.7	3.42		
Hectolitre mass (dirty), kg/hl	78.3	75.8	79.9	1.28	76.7	72.8	80.9	1.83		
Screenings (<1.8 mm sieve), %	1.13	0.25	3.09	0.61	0.78	0.08	4.26	0.81		
Total damaged kernels, %	0.29	0.03	1.19	0.26	0.86	0.00	6.49	1.16		
Combined deviations, %	1.98	0.49	5.05	1.06	1.97	0.41	6.99	1.43		
Number of samples	23				49					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.2	2.4	3.9	0.32	3.1	2.3	3.9	0.38		
Tail height (6 min), mm	46	40	51	2.59	45	29	56	5.20		
Number of samples	23				49					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.5	73.0	74.2	74.4	73.4	73.5	73.9	74.4	74.0	72.9
FLOUR										
Protein (12% mb), %	11.7	10.9	10.0	8.9	9.8	11.9	10.8	10.0	9.1	9.6
Moisture, %	13.2	13.0	12.6	12.4	13.0	12.4	12.3	12.1	13.6	13.0
Ash (db), %	0.58	0.57	0.58	0.60	0.59	0.62	0.56	0.61	0.59	0.58
Colour, Konica Minolta CM5 (dry)										
L*	93.68	93.77	93.55	93.70	93.75	93.56	93.59	93.59	93.76	93.50
a*	0.56	0.49	0.53	0.46	0.41	0.49	0.45	0.44	0.41	0.46
b*	8.76	9.06	9.58	9.06	9.30	8.59	8.60	8.74	8.76	8.70
RVA										
Peak Viscosity, cP	2407	2344	2414	2616	2717	2224	2232	2282	2375	2283
Minimum viscosity (Trough), cP	1832	1818	1865	2022	1993	1681	1749	1802	1867	1831
Final Viscosity, cP	2659	2657	2773	2987	3055	2432	2453	2502	2648	2524
Peak Time, min	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
GLUTEN										
Wet gluten (14% mb), %	32.3	30.1	25.6	23.0	25.6	34.2	30.4	26.6	23.5	25.4
Dry gluten (14% mb), %	10.8	9.9	8.6	7.4	8.5	11.1	9.9	8.7	7.7	8.4
Gluten Index	78	82	91	88	95	76	83	96	92	92
FARINOGRAM										
Water absorption (14% mb), %	57.9	59.6	56.5	55.7	56.3	62.3	60.7	57.6	57.1	57.8
Development time, min	4.4	4.5	4.1	4.2	3.6	4.4	4.3	3.6	2.1	3.5
Stability, min	7.3	9.1	7.2	8.1	8.2	9.2	8.2	7.1	6.5	6.4
Mixing tolerance index, BU	59	41	55	45	41	35	44	52	43	58
EXTENSOGRAM (45 min pull)										
Area, cm²	112	112	89	75	84	97	78	87	80	72
Maximum height, BU	442	386	345	346	352	315	304	350	336	325
Extensibility, mm	184	211	187	155	173	219	186	177	170	162
ALVEOGRAM										
Strength (S), cm²	38.1	37.5	30.7	26.8	27.8	36.9	35.3	29.8	26.9	29.2
Stability (P), mm	69	72	59	60	60	76	75	70	64	66
Distensibility (L), mm	152	143	144	118	124	136	131	109	114	125
Configuration ratio (P/L)	0.45	0.50	0.41	0.51	0.48	0.56	0.57	0.64	0.56	0.53
MIXOGRAM										
Peak time, min	2.4	2.5	2.7	2.8	3.1	2.1	2.3	2.9	2.8	3.0
100 g BAKING TEST										
Loaf volume, cm³	1037	999	955	862	940	1006	978	977	924	915

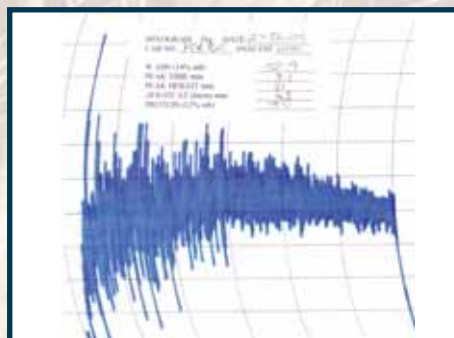
Rheological Graphs Per Production Region

MIXOGRAM

5

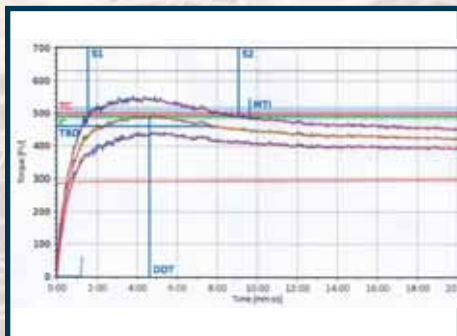


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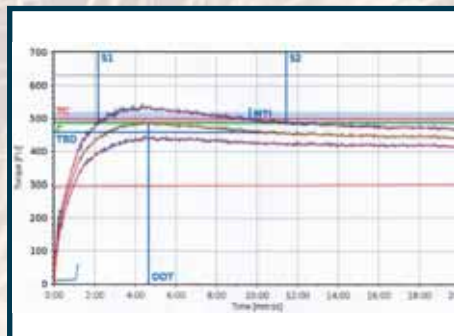


FARINOGRAM

5

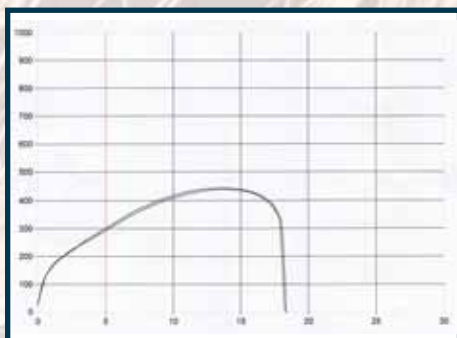


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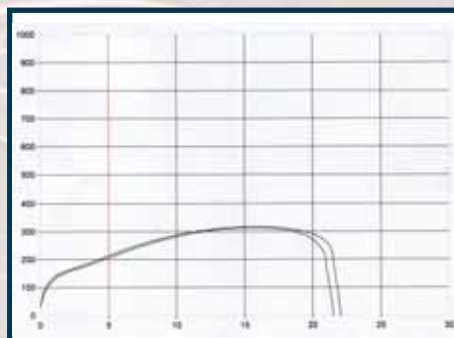


EXTENSOGRAM

5

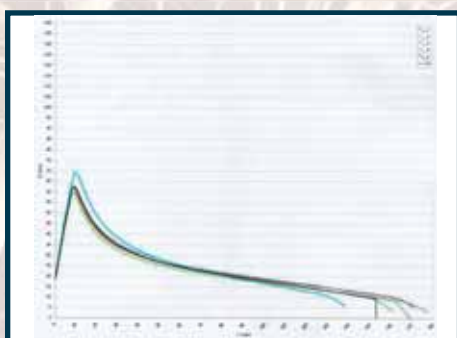


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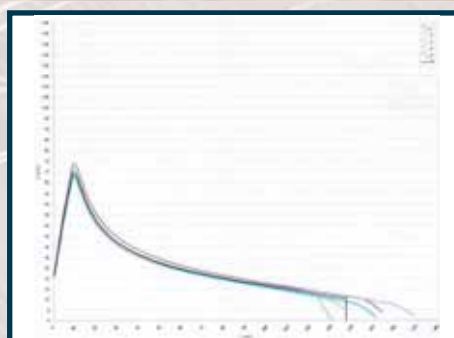


ALVEOGRAM

5



6



South African quality data per production region

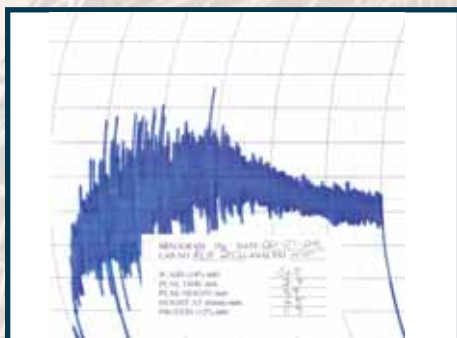
IRRIGATION WHEAT

PRODUCTION REGION	(10) Griqualand West Region					(11) Vaalharts Region				
WHEAT										
	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	12.2	8.8	14.5	1.27		11.2	10.0	12.8	1.11	
Falling number, sec	360	262	499	58.98		339	306	370	21.88	
Moisture, %	9.4	7.0	12.1	1.08		10.8	10.1	11.3	0.48	
1000 Kernel mass (13% mb), g	39.3	32.4	45.0	3.20		42.1	40.9	43.8	1.07	
Hectolitre mass (dirty), kg/hl	83.7	80.0	86.1	1.70		83.4	82.7	84.0	0.46	
Screenings (<1.8 mm sieve), %	1.22	0.09	5.77	1.28		0.45	0.13	2.19	0.77	
Total damaged kernels, %	0.17	0.00	0.61	0.16		0.31	0.08	0.61	0.20	
Combined deviations, %	1.61	0.22	6.41	1.34		1.12	0.46	2.56	0.71	
Number of samples	42					7				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	3.1	2.1	5.7	0.77		3.0	2.4	3.4	0.35	
Tail height (6 min), mm	46	37	57	4.63		47	44	53	3.31	
Number of samples	42					7				
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.8	73.7	74.9	74.9	73.8	-	75.5	73.8	74.9	-
FLOUR										
Protein (12% mb), %	11.5	11.0	9.9	10.0	10.2	-	11.1	10.5	10.2	-
Moisture, %	13.7	13.7	13.4	13.2	13.1	-	13.1	13.6	13.5	-
Ash (db), %	0.61	0.60	0.61	0.63	0.60	-	0.74	0.58	0.63	-
Colour, Konica Minolta CM5 (dry)										
L*	93.44	93.64	93.55	93.61	93.46	-	93.29	93.74	93.28	-
a*	0.59	0.60	0.55	0.55	0.51	-	0.58	0.60	0.51	-
b*	10.78	10.92	11.29	11.19	10.98	-	10.96	11.20	11.02	-
RVA										
Peak Viscosity, cP	2304	2195	2245	2227	2474	-	2213	2186	2264	-
Minimum viscosity (Trough), cP	1822	1760	1721	1744	1983	-	1822	1722	1850	-
Final Viscosity, cP	2543	2471	2544	2520	2762	-	2459	2479	2544	-
Peak Time, min	7.00	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	31.9	30.9	27.1	26.7	27.5	-	31.1	29.2	27.2	-
Dry gluten (14% mb), %	10.8	9.8	8.7	8.5	8.8	-	9.8	9.4	8.7	-
Gluten Index	88	89	94	95	95	-	94	93	96	-
FARINOGRAM										
Water absorption (14% mb), %	61.5	61.8	60.5	60.0	58.4	-	61.1	60.7	59.9	-
Development time, min	6.5	5.1	5.5	5.1	5.1	-	4.3	4.4	5.2	-
Stability, min	12.3	9.4	8.4	8.2	9.0	-	8.2	6.5	7.4	-
Mixing tolerance index, BU	32	41	48	54	44	-	43	49	50	-
EXTENSOGRAM (45 min pull)										
Area, cm²	121	102	98	95	105	-	88	-	95	-
Maximum height, BU	439	380	422	408	453	-	292	-	366	-
Extensibility, mm	206	194	172	172	172	-	215	-	191	-
ALVEOGRAM										
Strength (S), cm²	45.1	39.4	42.0	40.5	36.4	-	31.8	34.9	33.6	-
Stability (P), mm	84	80	94	85	77	-	66	74	74	-
Distensibility (L), mm	130	122	102	111	111	-	133	124	110	-
Configuration ratio (P/L)	0.65	0.66	0.92	0.77	0.69	-	0.50	0.60	0.67	-
MIXOGRAM										
Peak time, min	2.9	2.5	2.8	3.0	3.3	-	2.4	2.4	3.1	-
100 g BAKING TEST										
Loaf volume, cm³	1053	1077	931	937	968	-	1042	1027	928	-

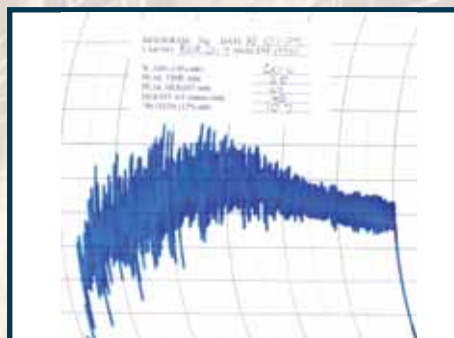
Rheological Graphs Per Production Region

MIXOGRAM

10

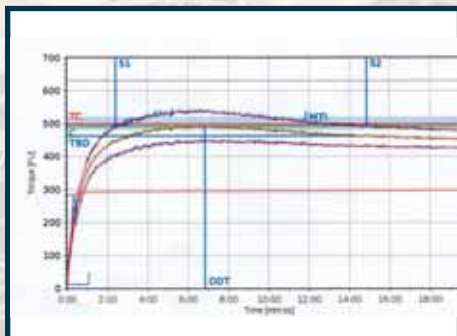


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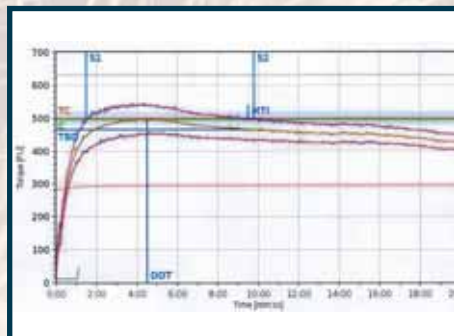


FARINOGRAM

10

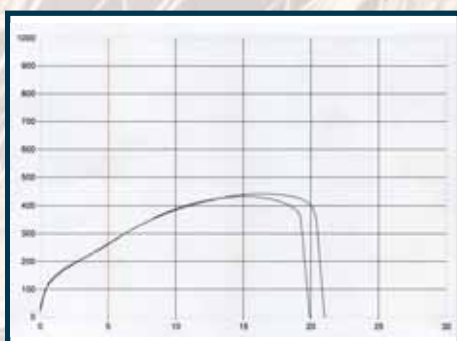


11



EXTENSOGRAM

10

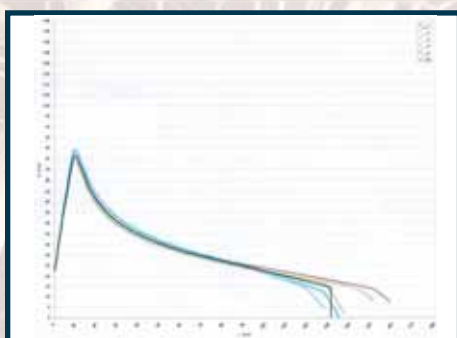


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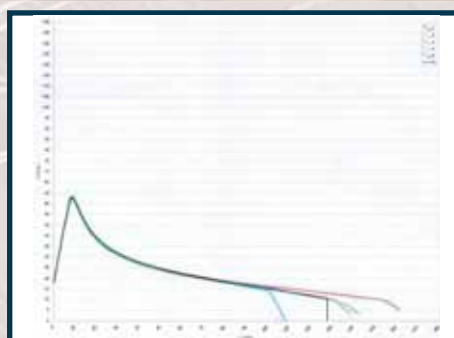


ALVEOGRAM

10



11



South African quality data per production region

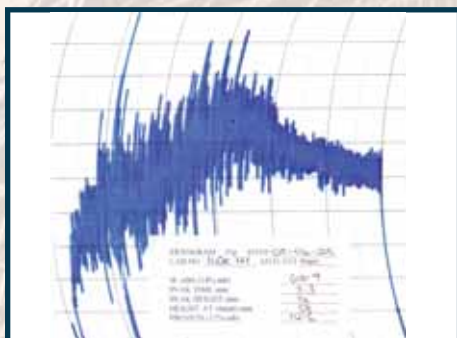
IRRIGATION WHEAT

PRODUCTION REGION	(14)				(15)					
	North West Southern Region				North West South-Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	15.6	15.5	15.7	0.14	12.5	11.4	13.6	1.56		
Falling number, sec	447	415	478	44.55	385	384	385	0.71		
Moisture, %	11.2	11.1	11.3	0.14	11.0	11.0	11.0	0.00		
1000 Kernel mass (13% mb), g	33.1	30.5	35.6	3.61	43.7	43.0	44.3	0.92		
Hectolitre mass (dirty), kg/hl	78.8	76.4	81.1	3.32	81.0	81.0	81.0	0.00		
Screenings (<1.8 mm sieve), %	2.19	0.89	3.49	1.84	0.45	0.34	0.56	0.16		
Total damaged kernels, %	0.39	0.30	0.48	0.13	0.24	0.06	0.41	0.25		
Combined deviations, %	3.05	1.19	4.91	2.63	0.86	0.51	1.21	0.49		
Number of samples	2				2					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	4.1	3.3	4.8	1.06	3.5	3.3	3.7	0.28		
Tail height (6 min), mm	61	58	64	4.24	50	50	50	0.00		
Number of samples	2				2					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	70.2	-	-	-	-	70.1	-	72.3	-	-
FLOUR										
Protein (12% mb), %	14.7	-	-	-	-	11.5	-	10.0	-	-
Moisture, %	13.8	-	-	-	-	13.4	-	12.9	-	-
Ash (db), %	0.59	-	-	-	-	0.46	-	0.43	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.47	-	-	-	-	93.57	-	93.81	-	-
a*	0.56	-	-	-	-	0.40	-	0.34	-	-
b*	9.62	-	-	-	-	10.95	-	10.87	-	-
RVA										
Peak Viscosity, cP	2441	-	-	-	-	2338	-	2371	-	-
Minimum viscosity (Trough), cP	1858	-	-	-	-	1857	-	1943	-	-
Final Viscosity, cP	2596	-	-	-	-	2713	-	2813	-	-
Peak Time, min	7.00	-	-	-	-	7.00	-	7.00	-	-
GLUTEN										
Wet gluten (14% mb), %	38.4	-	-	-	-	32.1	-	26.7	-	-
Dry gluten (14% mb), %	13.2	-	-	-	-	10.7	-	8.9	-	-
Gluten Index	97	-	-	-	-	93	-	97	-	-
FARINOGRAM										
Water absorption (14% mb), %	61.5	-	-	-	-	64.6	-	61.5	-	-
Development time, min	10.1	-	-	-	-	6.2	-	8.2	-	-
Stability, min	20.0	-	-	-	-	10.0	-	20.0	-	-
Mixing tolerance index, BU	12	-	-	-	-	39	-	25	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	223	-	-	-	-	104	-	116	-	-
Maximum height, BU	594	-	-	-	-	353	-	461	-	-
Extensibility, mm	273	-	-	-	-	211	-	186	-	-
ALVEOGRAM										
Strength (S), cm²	81.5	-	-	-	-	47.6	-	48.8	-	-
Stability (P), mm	101	-	-	-	-	120	-	124	-	-
Distensibility (L), mm	166	-	-	-	-	82	-	79	-	-
Configuration ratio (P/L)	0.61	-	-	-	-	1.46	-	1.57	-	-
MIXOGRAM										
Peak time, min	3.9	-	-	-	-	2.8	-	3.7	-	-
100 g BAKING TEST										
Loaf volume, cm³	1239	-	-	-	-	1005	-	955	-	-

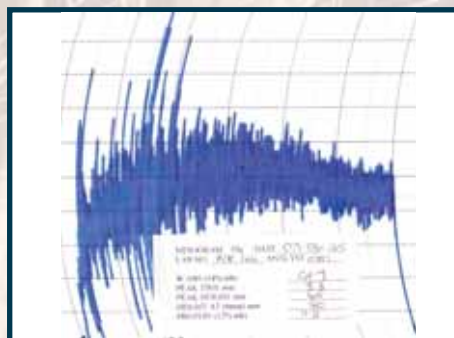
Rheological Graphs Per Production Region

MIXOGRAM

14

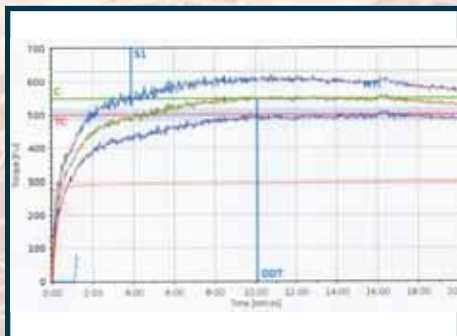


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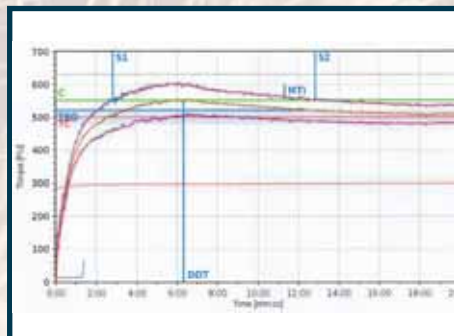


FARINOGRAM

14

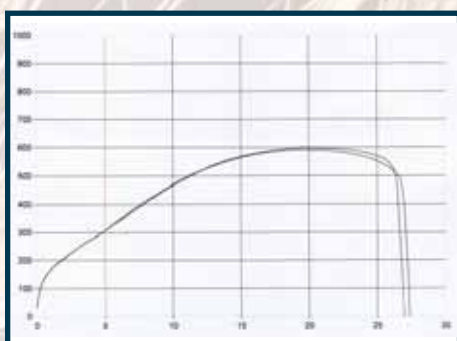


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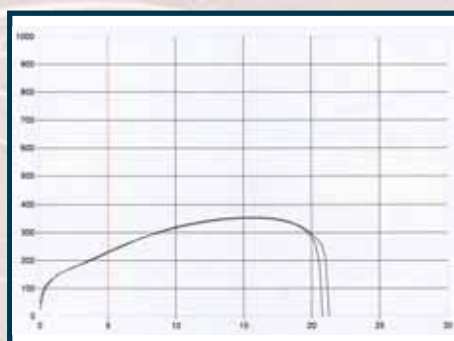


EXTENSOGRAM

14

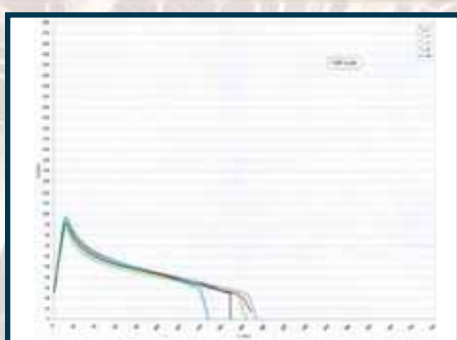


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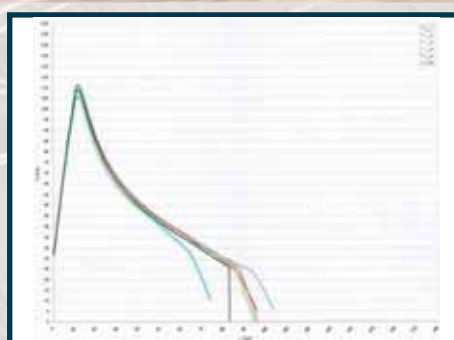


ALVEOGRAM

14



15



South African quality data per production region

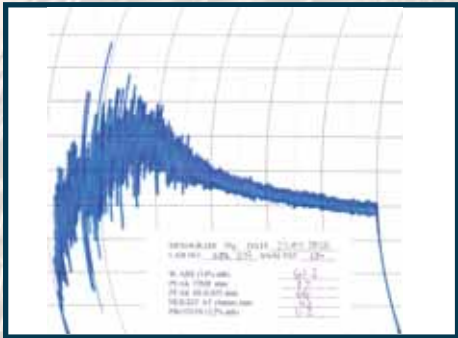
IRRIGATION WHEAT

PRODUCTION REGION	(19)				(20)					
	North West Central Region (Lichtenburg)				North West Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	12.2	-	-	-	13.3	12.8	13.7	0.47		
Falling number, sec	405	-	-	-	495	473	509	19.29		
Moisture, %	9.0	-	-	-	9.2	8.0	10.8	1.46		
1000 Kernel mass (13% mb), g	43.9	-	-	-	40.0	32.8	48.8	8.13		
Hectolitre mass (dirty), kg/hl	86.3	-	-	-	84.1	82.0	85.8	1.93		
Screenings (<1.8 mm sieve), %	0.13	-	-	-	0.71	0.27	1.00	0.39		
Total damaged kernels, %	0.72	-	-	-	0.09	0.06	0.13	0.04		
Combined deviations, %	0.85	-	-	-	1.03	0.67	1.49	0.42		
Number of samples	1				3					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	1.7	-	-	-	2.9	2.4	3.2	0.44		
Tail height (6 min), mm	43	-	-	-	48	46	51	2.65		
Number of samples	1				3					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	75.6	-	-	-	-	75.8	-	-	-	-
FLOUR										
Protein (12% mb), %	11.1	-	-	-	-	12.3	-	-	-	-
Moisture, %	13.3	-	-	-	-	12.7	-	-	-	-
Ash (db), %	0.53	-	-	-	-	0.62	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.60	-	-	-	-	93.40	-	-	-	-
a*	0.47	-	-	-	-	0.57	-	-	-	-
b*	9.32	-	-	-	-	10.50	-	-	-	-
RVA										
Peak Viscosity, cP	2803	-	-	-	-	2361	-	-	-	-
Minimum viscosity (Trough), cP	2391	-	-	-	-	1865	-	-	-	-
Final Viscosity, cP	3126	-	-	-	-	2596	-	-	-	-
Peak Time, min	6.87	-	-	-	-	7.00	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	34.3	-	-	-	-	33.8	-	-	-	-
Dry gluten (14% mb), %	11.5	-	-	-	-	10.9	-	-	-	-
Gluten Index	92	-	-	-	-	86	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	62.9	-	-	-	-	61.8	-	-	-	-
Development time, min	3.3	-	-	-	-	7.0	-	-	-	-
Stability, min	7.2	-	-	-	-	12.3	-	-	-	-
Mixing tolerance index, BU	38	-	-	-	-	33	-	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	70	-	-	-	-	117	-	-	-	-
Maximum height, BU	227	-	-	-	-	414	-	-	-	-
Extensibility, mm	216	-	-	-	-	205	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	29.1	-	-	-	-	42.2	-	-	-	-
Stability (P), mm	67	-	-	-	-	75	-	-	-	-
Distensibility (L), mm	143	-	-	-	-	143	-	-	-	-
Configuration ratio (P/L)	0.47	-	-	-	-	0.52	-	-	-	-
MIXOGRAM										
Peak time, min	2.0	-	-	-	-	2.7	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1110	-	-	-	-	1113	-	-	-	-

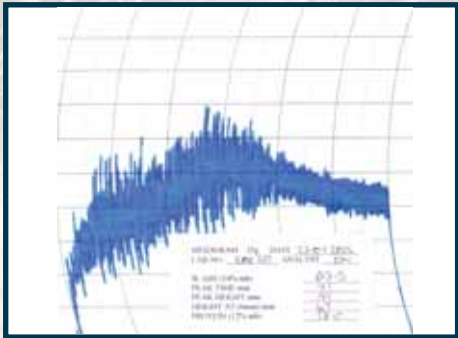
Rheological Graphs Per Production Region

MIXOGRAM

19

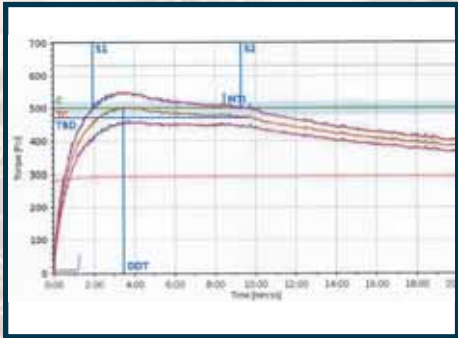


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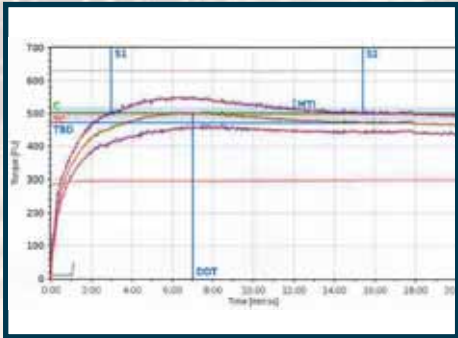


FARINOGRAM

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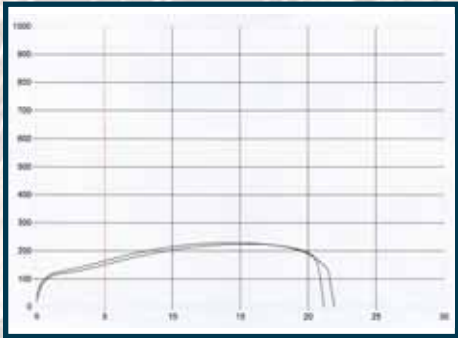


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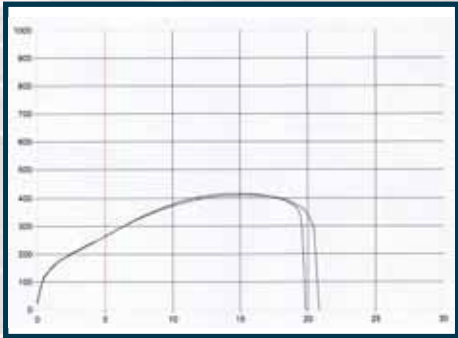


EXTENSOGRAM

19

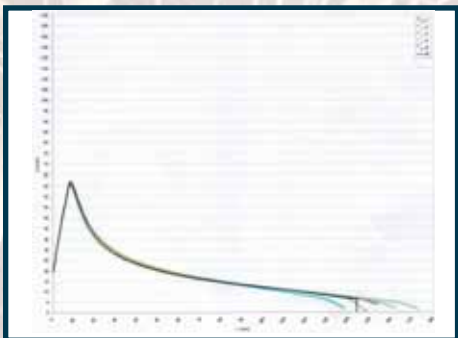


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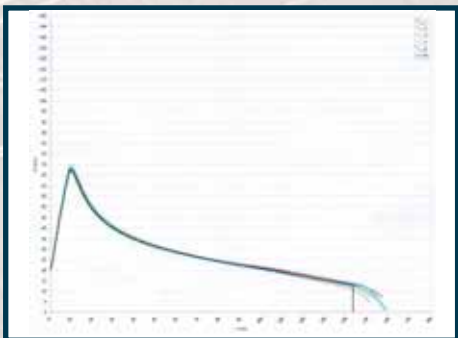


ALVEOGRAM

19



20



South African quality data per production region

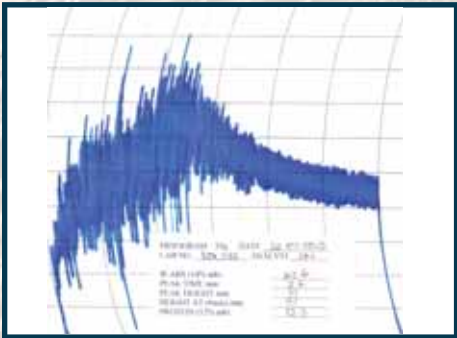
SUMMER RAINFALL AND IRRIGATION

PRODUCTION REGION	(21) Free State North-Western Region (Viljoenskroon)				(22) Free State North-Western Region (Bothaville)					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	13.6	11.8	16.3	1.98	13.4	-	-	-		
Falling number, sec	374	342	445	48.46	427	-	-	-		
Moisture, %	11.1	10.9	11.4	0.24	7.6	-	-	-		
1000 Kernel mass (13% mb), g	38.5	33.5	46.5	5.75	40.1	-	-	-		
Hectolitre mass (dirty), kg/hl	81.2	78.4	84.5	2.66	85.8	-	-	-		
Screenings (<1.8 mm sieve), %	2.71	1.97	3.56	0.65	0.07	-	-	-		
Total damaged kernels, %	0.37	0.11	0.65	0.23	0.10	-	-	-		
Combined deviations, %	4.40	2.39	6.78	1.81	0.20	-	-	-		
Number of samples	4				1					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	2.7	2.6	2.8	0.10	2.7	-	-	-		
Tail height (6 min), mm	50	47	52	2.16	45	-	-	-		
Number of samples	4				1					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.2	-	-	-	-	75.9	-	-	-	-
FLOUR										
Protein (12% mb), %	13.7	-	-	-	-	12.4	-	-	-	-
Moisture, %	12.4	-	-	-	-	13.6	-	-	-	-
Ash (db), %	0.64	-	-	-	-	0.60	-	-	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.16	-	-	-	-	93.60	-	-	-	-
a*	0.54	-	-	-	-	0.62	-	-	-	-
b*	10.45	-	-	-	-	10.94	-	-	-	-
RVA										
Peak Viscosity, cP	2290	-	-	-	-	2289	-	-	-	-
Minimum viscosity (Trough), cP	1824	-	-	-	-	1923	-	-	-	-
Final Viscosity, cP	2432	-	-	-	-	2497	-	-	-	-
Peak Time, min	7.00	-	-	-	-	6.93	-	-	-	-
GLUTEN										
Wet gluten (14% mb), %	39.0	-	-	-	-	34.4	-	-	-	-
Dry gluten (14% mb), %	12.7	-	-	-	-	11.1	-	-	-	-
Gluten Index	82	-	-	-	-	91	-	-	-	-
FARINOGRAM										
Water absorption (14% mb), %	63.4	-	-	-	-	61.5	-	-	-	-
Development time, min	8.3	-	-	-	-	6.1	-	-	-	-
Stability, min	10.4	-	-	-	-	10.5	-	-	-	-
Mixing tolerance index, BU	39	-	-	-	-	37	-	-	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	133	-	-	-	-	82	-	-	-	-
Maximum height, BU	382	-	-	-	-	330	-	-	-	-
Extensibility, mm	251	-	-	-	-	179	-	-	-	-
ALVEOGRAM										
Strength (S), cm²	44.5	-	-	-	-	43.7	-	-	-	-
Stability (P), mm	70	-	-	-	-	72	-	-	-	-
Distensibility (L), mm	180	-	-	-	-	154	-	-	-	-
Configuration ratio (P/L)	0.39	-	-	-	-	0.47	-	-	-	-
MIXOGRAM										
Peak time, min	2.4	-	-	-	-	2.7	-	-	-	-
100 g BAKING TEST										
Loaf volume, cm³	1293	-	-	-	-	1149	-	-	-	-

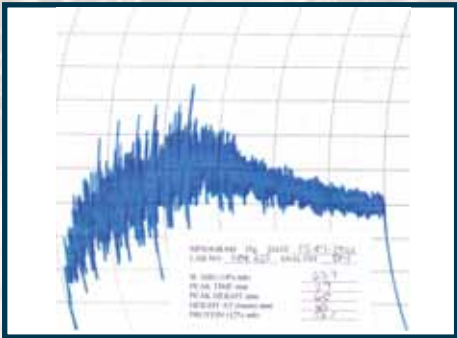
Rheological Graphs Per Production Region

MIXOGRAM

21

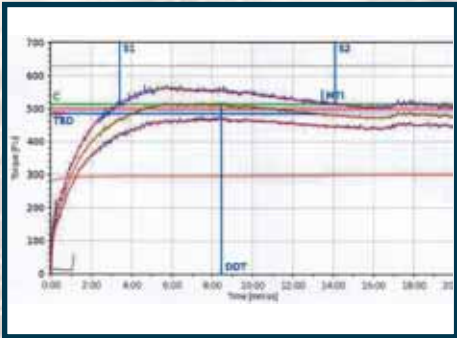


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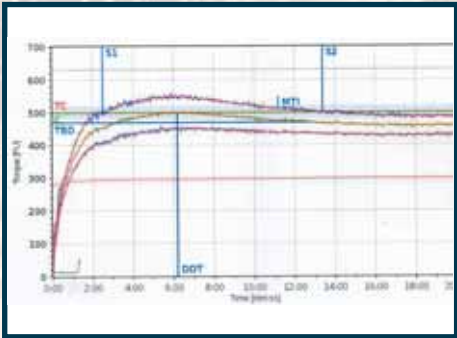


FARINOGRAM

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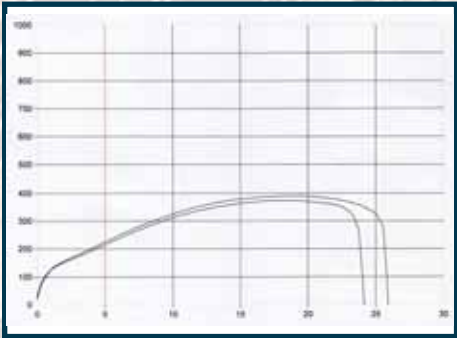


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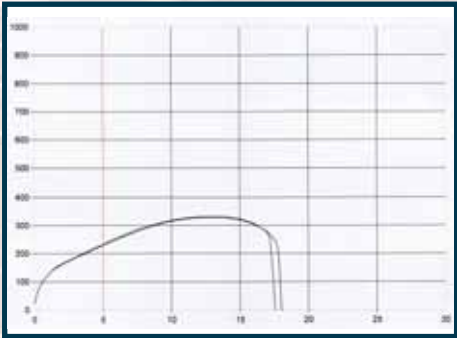


EXTENSOGRAM

21

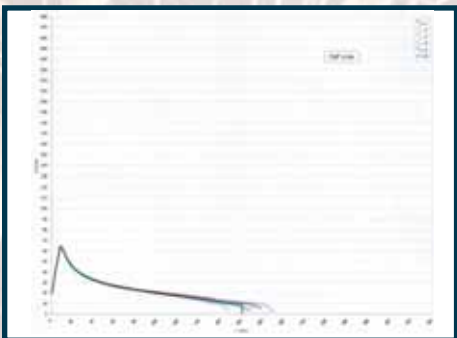


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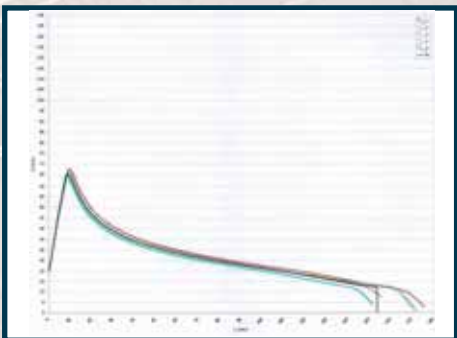


ALVEOGRAM

21



22



South African quality data per production region

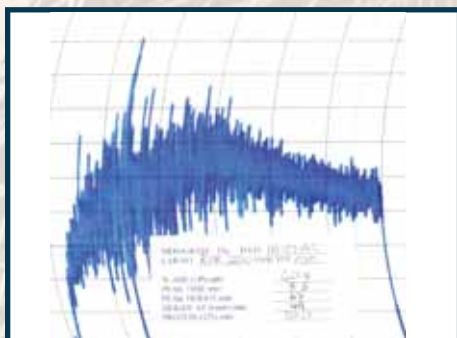
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(23) Free State North-Western Region (Bultfontein)					(24) Free State Central Region				
WHEAT										
	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	12.2	9.8	14.5	1.46		11.9	9.9	14.1	1.16	
Falling number, sec	377	331	513	50.34		369	296	495	54.29	
Moisture, %	9.7	8.1	11.0	0.93		10.5	8.5	11.3	0.75	
1000 Kernel mass (13% mb), g	38.1	33.7	44.2	3.31		37.1	29.9	47.5	4.02	
Hectolitre mass (dirty), kg/hl	81.7	80.4	85.1	1.59		81.2	76.8	85.5	1.94	
Screenings (<1.8 mm sieve), %	1.40	0.73	3.61	0.90		2.53	0.26	7.52	2.00	
Total damaged kernels, %	0.24	0.00	0.44	0.14		0.33	0.00	1.45	0.39	
Combined deviations, %	1.85	0.88	4.10	0.99		3.23	0.94	9.17	2.15	
Number of samples	11					20				
MIXOGRAM (Quadromat Junior)										
Peak time, min	3.1	2.4	4.0	0.47		3.3	2.2	5.3	0.85	
Tail height (6 min), mm	47	42	53	4.31		48	42	61	4.87	
Number of samples	11					20				
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	73.2	73.0	70.5	75.6	-	72.5	71.6	73.0	74.6	74.3
FLOUR										
Protein (12% mb), %	12.4	10.9	10.4	9.3	-	12.4	11.0	9.8	9.3	11.1
Moisture, %	12.9	12.7	13.4	13.5	-	13.0	13.7	13.7	13.6	13.1
Ash (db), %	0.50	0.61	0.63	0.63	-	0.67	0.58	0.58	0.67	0.63
Colour, Konica Minolta CM5 (dry)										
L*	93.32	93.31	93.18	93.85	-	93.27	93.38	93.75	93.56	93.49
a*	0.45	0.51	0.51	0.51	-	0.55	0.57	0.51	0.56	0.52
b*	10.36	10.26	10.00	9.95	-	10.18	10.78	10.79	11.26	10.71
RVA										
Peak Viscosity, cP	2487	2251	2210	2581	-	2456	2522	2358	2553	2189
Minimum viscosity (Trough), cP	1911	1785	1825	2070	-	1890	2014	1854	2101	1771
Final Viscosity, cP	2795	2494	2409	2928	-	2732	2850	2671	2844	2362
Peak Time, min	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	7.00	7.00
GLUTEN										
Wet gluten (14% mb), %	34.6	31.4	29.2	25.5	-	35.2	29.4	26.7	25.4	30.7
Dry gluten (14% mb), %	11.4	10.0	9.4	8.2	-	11.4	9.6	8.8	8.2	9.7
Gluten Index	87	75	89	97	-	87	95	92	91	89
FARINOGRAM										
Water absorption (14% mb), %	63.6	61.1	59.6	58.9	-	62.7	59.9	59.9	55.6	58.9
Development time, min	5.4	4.2	4.4	4.1	-	4.5	7.2	5.4	4.3	5.4
Stability, min	8.4	7.3	6.2	5.5	-	9.4	8.1	7.6	6.1	8.6
Mixing tolerance index, BU	46	45	53	57	-	37	50	55	73	46
EXTENSOGRAM (45 min pull)										
Area, cm²	103	87	77	81	-	108	119	100	-	-
Maximum height, BU	367	322	354	316	-	378	445	402	-	-
Extensibility, mm	203	193	155	186	-	206	197	182	-	-
ALVEOGRAM										
Strength (S), cm²	47.9	35.9	32.0	27.8	-	37.6	43.7	37.9	25.1	36.9
Stability (P), mm	92	78	83	65	-	78	85	85	49	63
Distensibility (L), mm	130	121	93	124	-	119	127	108	163	165
Configuration ratio (P/L)	0.71	0.64	0.89	0.52	-	0.66	0.67	0.79	0.30	0.38
MIXOGRAM										
Peak time, min	2.5	2.3	2.6	2.5	-	2.2	2.9	3.0	2.9	3.2
100 g BAKING TEST										
Loaf volume, cm³	1110	993	907	1026	-	1070	965	900	1033	976

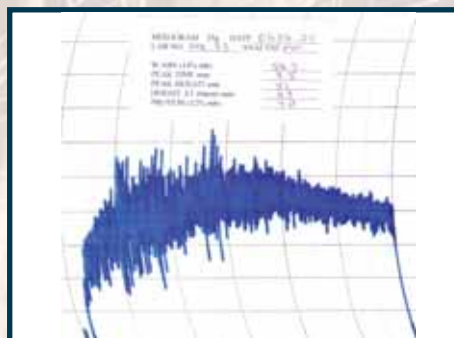
Rheological Graphs Per Production Region

MIXOGRAM

23

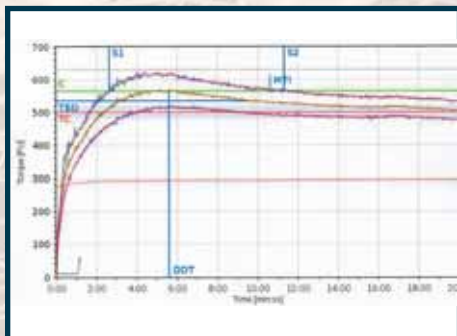


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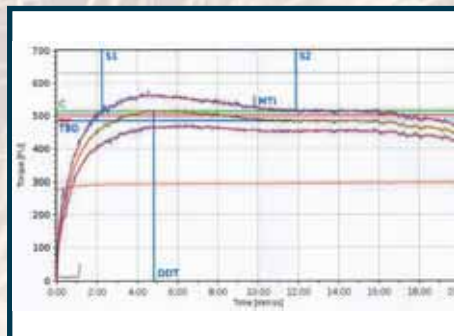


FARINOGRAM

23

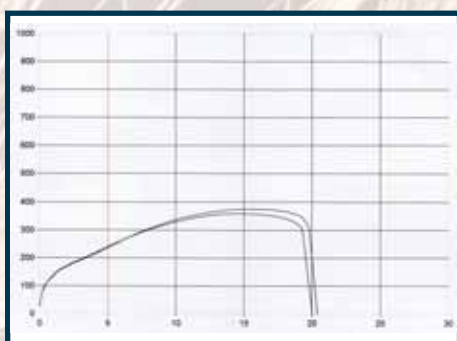


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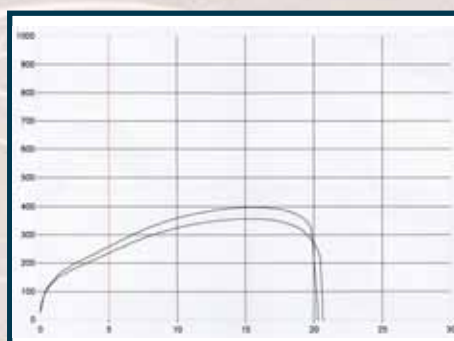


EXTENSOGRAM

23

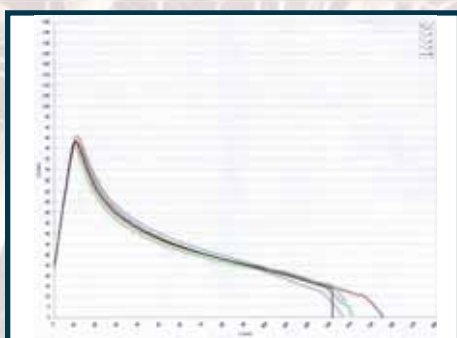


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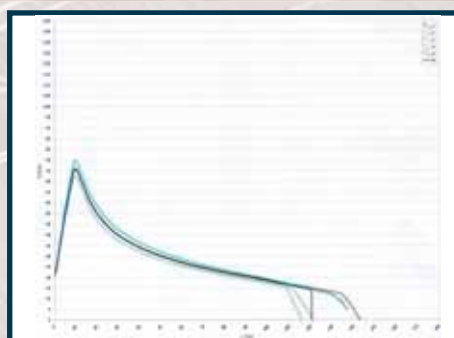


ALVEOGRAM

23



24



South African quality data per production region

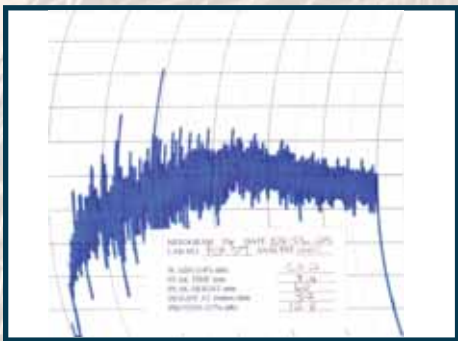
SUMMER RAINFALL AND IRRIGATION WHEAT

PRODUCTION REGION	(25)				(28)					
	Free State South-Western Region				Free State Eastern Region					
WHEAT										
	ave	min	max	stdev	ave	min	max	stdev		
Protein (12% mb), %	13.8	11.4	15.7	1.35	12.5	10.7	13.8	0.94		
Falling number, sec	357	245	413	42.51	370	282	514	60.97		
Moisture, %	11.3	10.0	13.4	0.90	11.4	10.4	12.4	0.54		
1000 Kernel mass (13% mb), g	36.3	25.0	50.2	7.66	38.1	30.6	41.7	3.58		
Hectolitre mass (dirty), kg/hl	78.3	66.5	85.4	5.09	81.4	76.7	85.3	2.55		
Screenings (<1.8 mm sieve), %	1.89	0.15	8.23	2.12	0.94	0.21	2.18	0.88		
Total damaged kernels, %	0.25	0.00	2.21	0.60	0.70	0.11	2.74	0.73		
Combined deviations, %	2.57	0.62	9.47	2.60	1.98	0.44	4.07	1.32		
Number of samples	13				11					
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev	ave	min	max	stdev		
Peak time, min	3.4	2.8	5.4	0.67	3.6	2.3	5.2	1.02		
Tail height (6 min), mm	51	45	57	3.56	50	44	56	3.63		
Number of samples	13				11					
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	71.2	74.8	74.4	70.7	-	74.4	72.6	74.5	-	-
FLOUR										
Protein (12% mb), %	12.4	10.6	10.4	13.4	-	12.4	11.0	10.0	-	-
Moisture, %	13.5	12.8	13.2	13.7	-	13.6	13.4	13.2	-	-
Ash (db), %	0.53	0.65	0.59	0.54	-	0.57	0.57	0.56	-	-
Colour, Konica Minolta CM5 (dry)										
L*	93.68	93.30	93.17	92.94	-	93.54	93.52	93.98	-	-
a*	0.39	0.54	0.54	0.39	-	0.46	0.43	0.42	-	-
b*	10.77	11.42	11.36	10.94	-	10.10	10.23	9.26	-	-
RVA										
Peak Viscosity, cP	2367	2119	2316	2262	-	2462	2537	2536	-	-
Minimum viscosity (Trough), cP	1790	1686	1869	1626	-	1974	1953	2114	-	-
Final Viscosity, cP	2724	2350	2550	2681	-	2749	2884	2879	-	-
Peak Time, min	7.00	7.00	7.00	7.00	-	7.00	7.00	7.00	-	-
GLUTEN										
Wet gluten (14% mb), %	32.9	25.1	28.5	35.0	-	33.8	27.3	26.3	-	-
Dry gluten (14% mb), %	10.8	8.1	9.1	11.4	-	11.0	9.0	8.6	-	-
Gluten Index	91	96	91	92	-	82	98	98	-	-
FARINOGRAM										
Water absorption (14% mb), %	63.3	61.6	60.9	62.4	-	61.8	60.1	59.6	-	-
Development time, min	9.3	4.2	5.5	8.5	-	5.1	8.3	5.4	-	-
Stability, min	20.0	6.1	9.2	20.0	-	8.5	17.1	10.6	-	-
Mixing tolerance index, BU	22	50	37	13	-	40	25	39	-	-
EXTENSOGRAM (45 min pull)										
Area, cm²	131	-	-	99	-	103	119	116	-	-
Maximum height, BU	444	-	-	364	-	340	467	424	-	-
Extensibility, mm	215	-	-	195	-	222	188	202	-	-
ALVEOGRAM										
Strength (S), cm²	55.5	32.4	34.6	45.7	-	41.9	44.8	37.0	-	-
Stability (P), mm	106	80	83	85	-	70	94	76	-	-
Distensibility (L), mm	113	109	100	123	-	175	100	122	-	-
Configuration ratio (P/L)	0.94	0.73	0.83	0.69	-	0.40	0.94	0.62	-	-
MIXOGRAM										
Peak time, min	3.0	2.6	2.9	3.4	-	2.2	3.9	2.9	-	-
100 g BAKING TEST										
Loaf volume, cm³	1126	947	940	1113	-	1168	979	1058	-	-

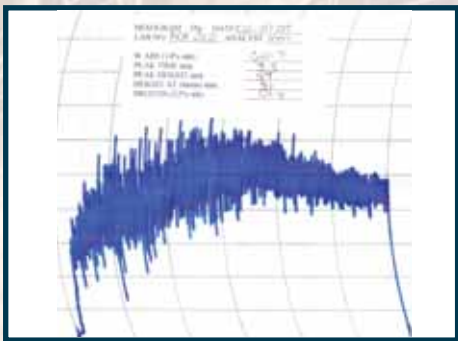
Rheological Graphs Per Production Region

MIXOGRAM

25

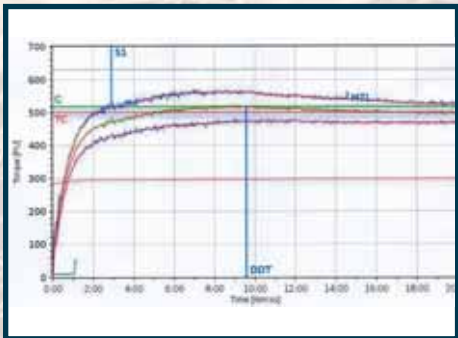


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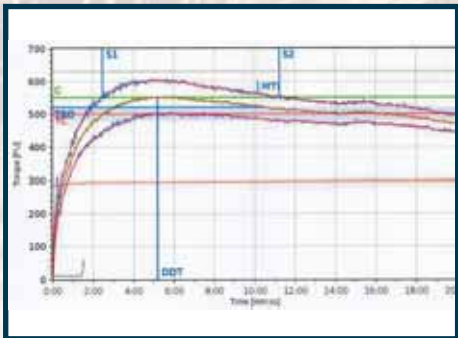


FARINOGRAM

25

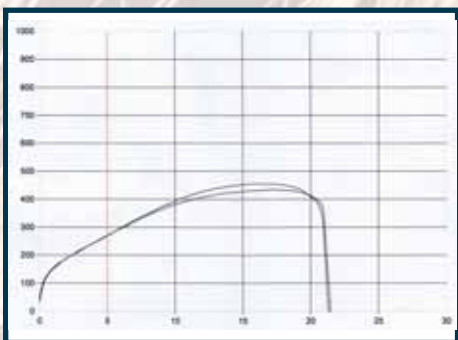


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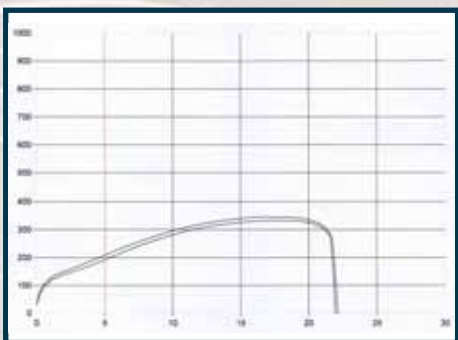


EXTENSOGRAM

25

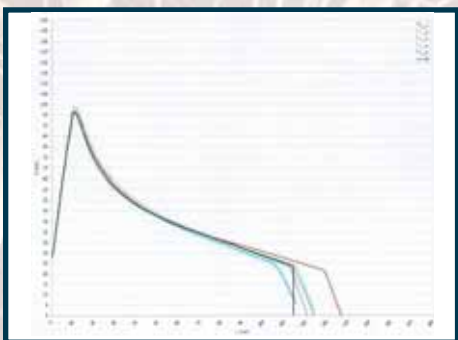


28

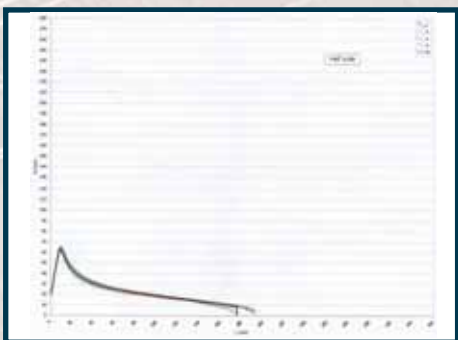


ALVEOGRAM

25



28



South African quality data per production region

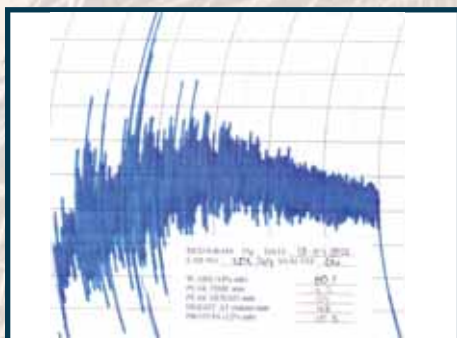
IRRIGATION WHEAT

PRODUCTION REGION	(33) Mpumalanga Northern Region					(35) Limpopo Region				
WHEAT										
	ave	min	max	stdev		ave	min	max	stdev	
Protein (12% mb), %	11.5	9.7	12.9	0.95		12.5	10.3	14.9	1.47	
Falling number, sec	335	194	419	51.20		388	322	485	55.69	
Moisture, %	11.0	10.5	12.0	0.42		10.0	8.9	11.3	0.72	
1000 Kernel mass (13% mb), g	38.0	30.2	42.8	3.11		38.8	33.4	45.8	4.47	
Hectolitre mass (dirty), kg/hl	83.0	80.9	85.4	1.37		82.8	78.4	85.6	2.05	
Screenings (<1.8 mm sieve), %	0.69	0.09	1.11	0.31		1.55	0.04	5.20	1.77	
Total damaged kernels, %	0.34	0.00	2.05	0.53		0.29	0.00	0.66	0.22	
Combined deviations, %	1.17	0.09	3.75	0.84		2.17	0.77	5.82	1.69	
Number of samples	19					12				
MIXOGRAM (Quadromat Junior)										
	ave	min	max	stdev		ave	min	max	stdev	
Peak time, min	3.5	2.8	4.1	0.39		3.1	2.4	4.0	0.58	
Tail height (6 min), mm	46	5	52	10.29		49	44	56	3.16	
Number of samples	19					12				
COMPOSITE SAMPLES										
CLASS AND GRADE	Super	Grade 1	Grade 2	Grade 3	COW	Super	Grade 1	Grade 2	Grade 3	COW
Bühler Extraction, %	74.7	75.0	74.5	74.8	73.5	73.6	73.0	73.9	74.4	-
FLOUR										
Protein (12% mb), %	11.8	10.9	10.0	9.2	11.3	12.7	10.7	10.3	9.3	-
Moisture, %	13.6	13.3	13.4	13.3	13.2	13.9	13.8	13.2	13.1	-
Ash (db), %	0.54	0.61	0.58	0.56	0.58	0.60	0.61	0.63	0.63	-
Colour, Konica Minolta CM5 (dry)										
L*	93.49	93.61	93.50	93.83	93.61	93.38	93.87	94.09	94.22	-
a*	0.48	0.53	0.48	0.48	0.51	0.59	0.51	0.45	0.41	-
b*	9.69	9.66	9.79	9.65	9.43	10.31	9.46	9.15	9.05	-
RVA										
Peak Viscosity, cP	2040	2562	2664	2749	1151	2532	2526	2829	2767	-
Minimum viscosity (Trough), cP	1722	2073	2209	2240	828	2027	1962	2090	2087	-
Final Viscosity, cP	2177	2770	2942	2933	1223	2768	2845	3221	3215	-
Peak Time, min	6.53	7.00	6.93	7.00	5.80	7.00	7.00	7.00	7.00	-
GLUTEN										
Wet gluten (14% mb), %	31.6	28.7	26.2	22.9	31.4	34.3	29.4	27.3	25.1	-
Dry gluten (14% mb), %	10.5	9.3	8.4	7.5	10.3	11.2	9.5	8.7	8.1	-
Gluten Index	92	95	95	98	93	95	94	96	94	-
FARINOGRAM										
Water absorption (14% mb), %	59.2	60.5	60.1	58.3	59.7	61.4	61.6	62.2	62.0	-
Development time, min	5.6	5.4	5.0	6.2	5.4	6.0	4.4	5.3	4.2	-
Stability, min	10.3	9.4	7.5	9.3	8.3	11.2	9.3	11.2	8.2	-
Mixing tolerance index, BU	39	45	54	46	50	28	42	30	46	-
EXTENSOGRAM (45 min pull)										
Area, cm²	128	113	101	93	123	140	102	121	100	-
Maximum height, BU	469	435	404	407	424	440	384	412	368	-
Extensibility, mm	205	190	181	166	212	235	195	213	194	-
ALVEOGRAM										
Strength (S), cm²	43.3	42.5	35.5	33.9	39.9	48.8	41.4	45.1	37.3	-
Stability (P), mm	72	89	82	78	71	75	87	94	98	-
Distensibility (L), mm	150	115	108	102	153	156	116	127	93	-
Configuration ratio (P/L)	0.48	0.77	0.76	0.76	0.46	0.48	0.75	0.74	1.05	-
MIXOGRAM										
Peak time, min	3.0	3.1	2.8	3.6	2.7	2.9	2.9	2.5	2.5	-
100 g BAKING TEST										
Loaf volume, cm³	1134	1064	997	924	1076	1116	960	1026	949	-

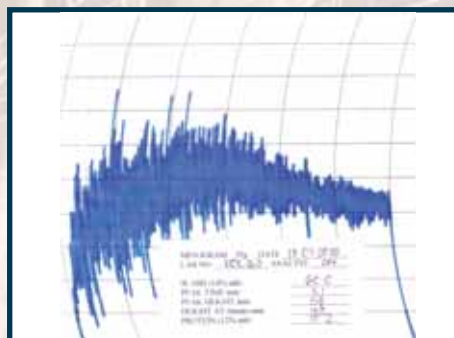
Rheological Graphs Per Production Region

MIXOGRAM

33

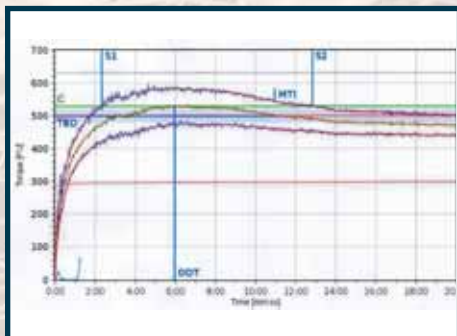


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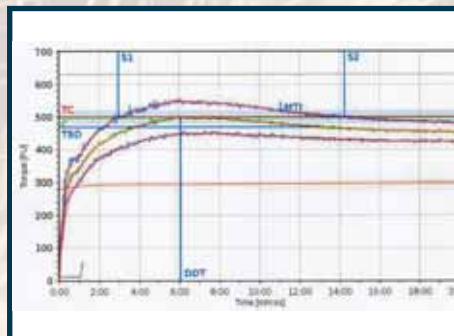


FARINOGRAM

33

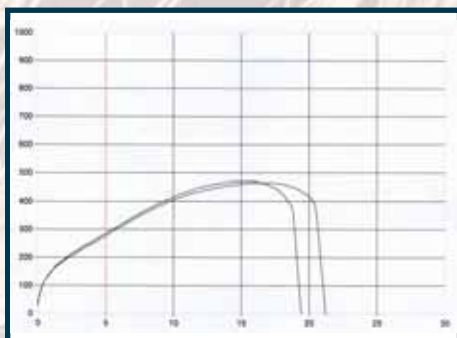


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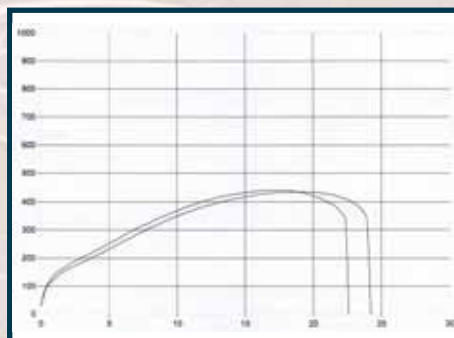


EXTENSOGRAM

33

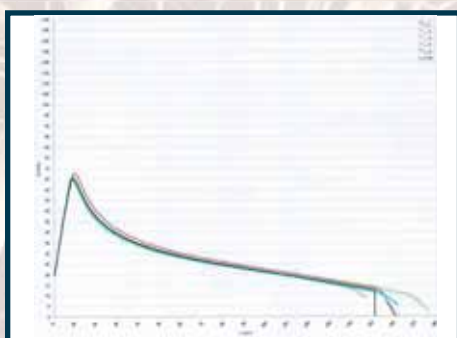


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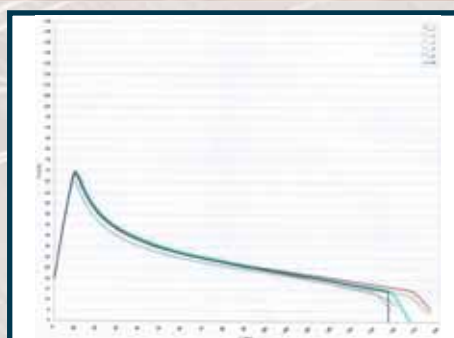


ALVEOGRAM

33



35



South African quality data per production region

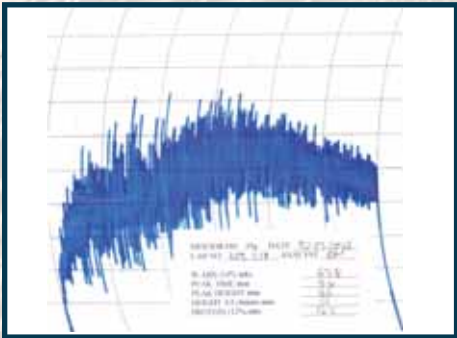
IRRIGATION WHEAT

PRODUCTION REGION		(36) KwaZulu-Natal				
WHEAT						
	ave	min	max	stdev		
Protein (12% mb), %	13.6	12.4	14.9	0.84		
Falling number, sec	310	215	374	58.41		
Moisture, %	10.8	9.9	11.3	0.44		
1000 Kernel mass (13% mb), g	37.5	33.8	40.6	2.74		
Hectolitre mass (dirty), kg/hl	80.7	77.2	84.2	2.45		
Screenings (<1.8 mm sieve), %	0.79	0.40	1.45	0.34		
Total damaged kernels, %	0.72	0.20	2.06	0.64		
Combined deviations, %	1.59	0.60	2.78	0.73		
Number of samples	9					
MIXOGRAM (Quadromat Junior)						
	ave	min	max	stdev		
Peak time, min	4.1	3.0	5.5	0.78		
Tail height (6 min), mm	53	51	56	2.26		
Number of samples	8					
CLASS AND GRADE	COMPOSITE SAMPLES					
	Super	Grade 1	Grade 2	Grade 3	COW	
Bühler Extraction, %	74.5	73.8	-	-	-	
FLOUR						
Protein (12% mb), %	12.6	11.4	-	-	-	
Moisture, %	13.3	12.9	-	-	-	
Ash (db), %	0.61	0.60	-	-	-	
Colour, Konica Minolta CM5 (dry)						
L*	93.33	93.72	-	-	-	
a*	0.51	0.50	-	-	-	
b*	9.06	9.30	-	-	-	
RVA						
Peak Viscosity, cP	1751	2259	-	-	-	
Minimum viscosity (Trough), cP	1396	1705	-	-	-	
Final Viscosity, cP	1851	2308	-	-	-	
Peak Time, min	6.27	6.27	-	-	-	
GLUTEN						
Wet gluten (14% mb), %	33.4	30.4	-	-	-	
Dry gluten (14% mb), %	11.2	10.2	-	-	-	
Gluten Index	96	96	-	-	-	
FARINOGRAM						
Water absorption (14% mb), %	62.3	58.7	-	-	-	
Development time, min	8.1	5.2	-	-	-	
Stability, min	13.5	15.6	-	-	-	
Mixing tolerance index, BU	27	16	-	-	-	
EXTENSOGRAM (45 min pull)						
Area, cm²	170	-	-	-	-	
Maximum height, BU	484	-	-	-	-	
Extensibility, mm	259	-	-	-	-	
ALVEOGRAM						
Strength (S), cm²	56.3	49.1	-	-	-	
Stability (P), mm	83	96	-	-	-	
Distensibility (L), mm	162	102	-	-	-	
Configuration ratio (P/L)	0.51	0.94	-	-	-	
MIXOGRAM						
Peak time, min	3.2	3.8	-	-	-	
100 g BAKING TEST						
Loaf volume, cm³	1105	1046	-	-	-	

Rheological Graphs Per Production Region

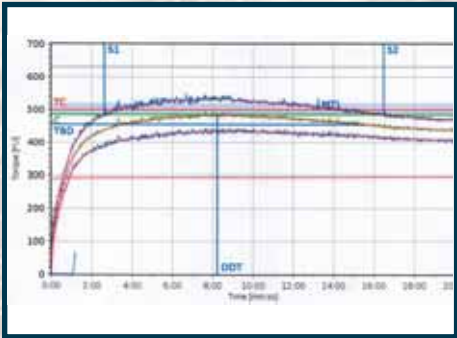
MIXOGRAM

36



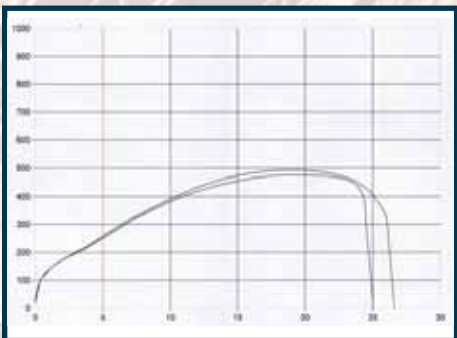
FARINOGRAM

36



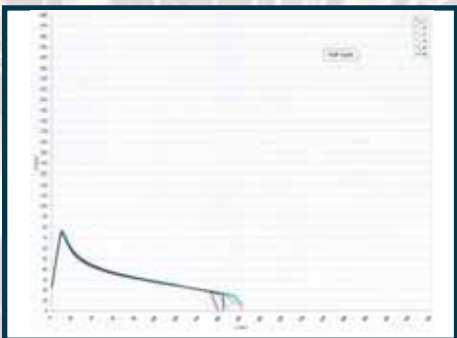
EXTENSOGRAM

36



ALVEOGRAM

36



Mycotoxins

The accredited multi-mycotoxin assessments included in the annual wheat crop quality survey for the past fourteen seasons, provide the most comprehensive overview of the multi-mycotoxin risk in commercial wheat produced and delivered to commercial grain storage companies in South Africa. Between 10 and 20% of the wheat crop samples were selected every season to proportionally represent all the production regions.

Constant monitoring of mycotoxin occurrence is crucial, as it is well documented that mycotoxin risk can vary significantly between production seasons and also different production regions. Application of good agricultural practices and storage conditions as well as effective mycotoxin risk management programs are essential elements in preventing the negative effects of mycotoxins. Continued research on the prevention and mitigation of mycotoxin contamination is also necessary.

The only proven way to determine whether grain, cereals, feed or food are contaminated, is to obtain reliable testing data through analytical testing.

Mycotoxin analyses were performed on 40 wheat samples, randomly selected to represent different regions. 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 B₁, B₂, G₁, G₂, Fumonisin B₁, B₂, B₃, Deoxynivalenol, 15-ADON, HT-2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A are possible in one run.

The absence of Aflatoxin B₁, B₂, G₁, G₂, Fumonisin B₁, B₂, B₃, Ochratoxin A, T2-toxin and HT-2 toxin in the wheat samples over the past fourteen seasons were confirmed in the 2024/25 season. Zearalenone residues have only been detected in three seasons, namely 2019/20, 2021/2022 and 2022/23.

Six of the samples (15%) tested positive for Deoxynivalenol (DON) residues, compared to the 28%, 43% and 35% of the previous three seasons respectively. None of the positive DON residue levels measured this season exceeded the national maximum allowable level (2 000 µg/kg) for cereals intended for further processing. No 15-ADON residues were detected.

The average value of the six positive DON results was 269 µg/kg (ppb) and the highest value measured 408 µg/kg. Last season, 11 samples (28%) tested positive for DON residues with an average value of 239 µg/kg (ppb), the highest value obtained was 478 µg/kg.

Please see the mycotoxin results in Table 6 on pages 57 and 58.



Table 6: Mycotoxin results for the 2024/25 season

Region	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	B ₁	B ₂	B ₃									
	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				
1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	155	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 6: Mycotoxin results for the 2024/25 season (continue)

Region	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	B ₁	B ₂	B ₃						
	LOQ												
	5 µg/kg	5 µg/kg	5 µg/kg	5 µg/kg	20 µg/kg	20 µg/kg	20 µg/kg						
	ND	ND	ND	ND	ND	ND	ND	408	ND	ND	ND	ND	ND
	ND	ND	ND	ND	ND	ND	ND	178	ND	ND	ND	ND	ND
	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	ND	ND	ND	ND	ND	ND	ND	334	ND	ND	ND	ND	ND
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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	ND												

Note:

- Limit of quantitation (LOQ) means the lowest concentration level that can be quantified with acceptable precision and accuracy by the UPLC-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).
- Mycotoxin levels lower than the LOQ were seen as tested negative for calculation purposes.
- 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 (B₁+B₂+G₁+G₂)	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 B ₁ 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 M₁	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
Fumonisin (B₁+B₂)	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

Amino Acid Profile

Amino acid profile or composition is an important feature in determining the nutritional value of wheat for human and animal diets and are considered crucial to good health. Amino acids are the building blocks of proteins and approximately 22 amino acids are commonly distributed among the proteins of all biological materials. Of these, 18 can be found in cereal grain proteins. Amino acids are organic compounds containing basic amine (-NH_2) and acidic carboxyl (-COOH) functional groups, in addition to a side chain (R group) specific to each amino acid.

The classification of amino acids is based on different features, one being whether the amino acid can be acquired through the diet. According to this, three types are identified: essential, conditionally essential and non-essential amino acids. Classification as essential or non-essential, does however not reflect their actual importance, since all of them are necessary for human health. Essential amino acids are considered “essential” as they cannot be synthesised by the body and must be obtained from the diet. The nine essential amino acids are phenylalanine, valine, threonine, tryptophan, methionine, leucine, isoleucine, lysine and histidine. Arginine, cysteine, glycine, glutamine, proline and tyrosine, are considered conditionally essential in the human diet, meaning their synthesis can be limited under special pathophysiological conditions. Alanine, aspartic acid, asparagine, glutamic acid and serine are non-essential amino acids, meaning they can be synthesized by the body.^(1,2)

The results of the 40 samples analysed by SAGL and reported as g amino acid/100 g sample, are provided in Table 7 on pages 61 and 62. The values obtained for all amino acids on these samples, were within the normal range reported for wheat in literature, deficient in certain essential amino acids, such as tryptophan, lysine, threonine, methionine and histidine, but high in glutamic acid and proline, which is not essential. The range per season per individual amino acid compared well over the seven seasons for which data is available.

Due to the fact that protein and amino acid composition of wheat vary with crop varieties, application of fertilisers, irrigation practices, soil composition and climatic conditions, the amino acid content generally showed a wide variation between samples. The exception being tryptophan, ranging from 0.12 to 0.18 g/100 g this season. Similar small differences were observed in previous seasons. The World Health Organisation’s (WHO) recommended daily dose for tryptophan is 4 mg/kg/day.⁽³⁾

Lysine values varied between 0.31 and 0.42 g/100 g, comprising $\pm 2.3 - 3.1\%$ of the total amino acid content. The WHO recommended daily dose for lysine is 30 mg/kg/day. Threonine’s WHO recommended daily dose is 15 mg/kg/day⁽³⁾ and ranged from 0.33 to 0.51 g/100 g this season. Methionine values compared well with previous seasons, ranging from 0.09 to 0.23 g/100 g. The WHO daily recommendation is 15 mg/kg/day for the sulphur containing amino acids in total.⁽³⁾

The values for histidine varied between 0.24 and 0.39 g/100 g. The results also showed that the samples were high in the essential amino acid leucine, with values ranging from 0.70 to 1.13 g/100 g. Phenylalanine values varied between 0.45 and 0.79 g/100 g. According to the results, the samples were rich in glutamic acid and proline, together contributing $\pm 40\%$ of the total amino acid content.

References:

1. Richard D. Semba, Michelle Shardell, Fayrouz A. Sakr Ashour, Ruin Moaddel, Indi Trehan, Kenneth M. Maleta, M. Isabel Ordiz, Klaus Kraemer, Mohammed A. Khadeer, Luigi Ferrucci, Mark J. Manary. (2016). Child Stunting is Associated with Low Circulating Essential Amino Acids. *EbioMedicine* (6), page 246-252.
2. Williams, P. 2011. *A Practical Introduction to Cereal Chemistry*. First Choice Books, page 4-19.
3. World Health Organization. Protein and amino acids requirements in human nutrition: report of a joint FAO/WHO/UNU expert consultation, Teck. Rep. Series no 935, World Health Organization, Geneva, Switzerland 2007.

Table 7: Amino acid composition of wheat samples originating from different production regions

Region	Amino Acid																	
	Tryptophan	Methionine	Cystine	Histidine	Serine	Arginine	Glycine	Aspartic acid	Glutamic acid	Threonine	Alanine	Proline	Lysine	Tyrosine	Valine	Isoleucine	Leucine	Phenylalanine
g/100g (as is)																		
1	0.13	0.18	0.39	0.244	0.539	0.487	0.471	0.565	3.312	0.332	0.424	1.043	0.314	0.258	0.444	0.356	0.735	0.491
2	0.12	-	-	0.277	0.621	0.497	0.517	0.726	3.475	0.362	0.439	1.108	0.320	0.300	0.473	0.376	0.772	0.517
3	0.16	0.19	0.42	0.299	0.662	0.544	0.587	0.789	3.980	0.389	0.462	1.275	0.345	0.314	0.520	0.421	0.854	0.575
3	0.13	0.17	0.41	0.281	0.648	0.505	0.558	0.735	3.473	0.370	0.442	1.130	0.325	0.284	0.480	0.380	0.777	0.514
3	0.14	0.20	0.41	0.300	0.686	0.517	0.588	0.839	4.011	0.391	0.469	1.295	0.347	0.320	0.509	0.411	0.854	0.580
3	0.18	0.14	0.28	0.372	0.834	0.615	0.707	0.927	5.683	0.454	0.547	1.835	0.380	0.468	0.617	0.528	1.079	0.788
3	0.15	0.21	0.45	0.263	0.577	0.534	0.501	0.625	3.591	0.356	0.427	1.137	0.329	0.313	0.476	0.380	0.788	0.529
3	0.14	0.16	0.35	0.239	0.541	0.501	0.488	0.588	3.242	0.342	0.409	1.026	0.318	0.272	0.448	0.352	0.731	0.478
3	0.15	0.09	0.22	0.263	0.587	0.534	0.511	0.634	3.572	0.363	0.436	1.119	0.334	0.308	0.474	0.375	0.785	0.522
3	0.14	0.18	0.38	0.272	0.607	0.550	0.540	0.656	3.867	0.369	0.450	1.233	0.338	0.315	0.493	0.396	0.831	0.552
4	0.13	0.16	0.36	0.248	0.547	0.456	0.495	0.681	2.988	0.335	0.401	0.975	0.310	0.250	0.432	0.337	0.695	0.452
4	0.16	0.18	0.36	0.277	0.606	0.551	0.518	0.653	3.793	0.373	0.445	1.208	0.340	0.299	0.505	0.407	0.825	0.556
5	0.16	0.19	0.39	0.296	0.653	0.586	0.544	0.687	4.296	0.386	0.458	1.368	0.344	0.365	0.530	0.438	0.890	0.615
5	0.15	0.16	0.35	0.243	0.533	0.484	0.458	0.584	3.271	0.329	0.404	1.034	0.308	0.240	0.450	0.360	0.735	0.489
5	0.16	0.18	0.43	0.283	0.637	0.517	0.514	0.669	3.876	0.369	0.443	1.213	0.334	0.286	0.511	0.403	0.828	0.567
6	0.15	0.17	0.39	0.271	0.607	0.534	0.518	0.647	3.863	0.365	0.435	1.229	0.327	0.324	0.485	0.392	0.820	0.555
6	0.14	0.17	0.39	0.250	0.549	0.506	0.477	0.627	3.305	0.346	0.411	1.046	0.319	0.297	0.449	0.355	0.742	0.487
6	0.16	0.19	0.41	0.284	0.640	0.551	0.546	0.708	4.287	0.378	0.452	1.375	0.340	0.330	0.522	0.433	0.881	0.608
6	0.15	0.16	0.34	0.251	0.545	0.489	0.460	0.616	3.409	0.331	0.402	1.090	0.305	0.267	0.456	0.367	0.748	0.504
6	0.16	0.18	0.39	0.279	0.624	0.540	0.530	0.690	3.856	0.368	0.447	1.229	0.339	0.316	0.498	0.402	0.830	0.560
6	0.15	0.20	0.47	0.310	0.685	0.607	0.596	0.707	4.603	0.405	0.486	1.479	0.354	0.367	0.560	0.465	0.940	0.644
10	0.15	0.18	0.41	0.318	0.706	0.555	0.608	0.862	4.268	0.390	0.482	1.338	0.344	0.306	0.529	0.429	0.874	0.602
10	0.15	0.18	0.39	0.309	0.712	0.615	0.610	0.718	4.874	0.402	0.488	1.470	0.351	0.398	0.543	0.451	0.942	0.658
10	0.14	0.17	0.35	0.253	0.571	0.507	0.486	0.664	3.589	0.335	0.419	1.073	0.312	0.291	0.440	0.348	0.750	0.501
10	0.14	0.16	0.35	0.273	0.592	0.560	0.504	0.671	3.753	0.350	0.442	1.113	0.330	0.313	0.488	0.387	0.789	0.525
10	0.16	0.19	0.39	0.272	0.640	0.541	0.531	0.636	4.087	0.361	0.444	1.239	0.323	0.348	0.481	0.390	0.825	0.559
11	0.17	0.19	0.40	0.292	0.683	0.603	0.587	0.716	4.475	0.400	0.487	1.365	0.356	0.389	0.532	0.431	0.905	0.614

Table 7: Amino acid profile of wheat samples originating from different production regions (continue)

Region	Amino Acid																	
	Tryptophan	Methionine	Cystine	Histidine	Serine	Arginine	Glycine	Aspartic acid	Glutamic acid	Threonine	Alanine	Proline	Lysine	Tyrosine	Valine	Isoleucine	Leucine	Phenylalanine
	g/100g (as is)																	
14	0.18	0.20	0.31	0.376	0.853	0.665	0.755	0.979	5.395	0.478	0.569	1.719	0.408	0.437	0.640	0.528	1.083	0.746
20	0.16	0.20	0.41	0.328	0.779	0.328	0.482	0.712	4.430	0.414	0.509	1.405	0.356	0.346	0.566	0.459	0.931	0.639
21	0.17	0.23	0.48	0.394	0.884	0.687	0.758	1.031	5.682	0.505	0.590	1.808	0.424	0.431	0.676	0.561	1.125	0.782
23	0.16	0.21	0.46	0.357	0.769	0.685	0.642	0.760	5.329	0.445	0.527	1.641	0.383	0.434	0.610	0.515	1.026	0.757
24	0.15	0.20	0.40	0.328	0.723	0.555	0.619	0.828	4.365	0.417	0.493	1.388	0.354	0.344	0.545	0.441	0.906	0.621
24	0.13	0.17	0.38	0.280	0.631	0.483	0.531	0.715	3.688	0.364	0.438	1.175	0.323	0.326	0.481	0.389	0.787	0.543
25	0.15	0.21	0.50	0.354	0.796	0.638	0.671	0.938	4.932	0.448	0.542	1.670	0.380	0.451	0.601	0.504	1.016	0.693
28	0.15	0.23	0.51	0.341	0.797	0.610	0.659	0.908	4.908	0.434	0.520	1.533	0.366	0.422	0.572	0.472	0.973	0.682
33	0.16	0.16	0.36	0.258	0.586	0.533	0.535	0.633	3.829	0.342	0.436	1.219	0.317	0.350	0.470	0.379	0.804	0.539
33	0.17	0.17	0.41	0.277	0.629	0.563	0.532	0.650	3.991	0.370	0.448	1.243	0.326	0.362	0.490	0.394	0.835	0.561
35	0.16	0.17	0.38	0.379	0.836	0.629	0.701	0.956	5.216	0.466	0.551	1.691	0.386	0.412	0.641	0.522	1.076	0.736
35	0.17	0.17	0.40	0.273	0.637	0.566	0.531	0.661	3.964	0.367	0.444	1.206	0.332	0.361	0.481	0.385	0.821	0.552
36	0.16	0.18	0.40	0.295	0.689	0.603	0.594	0.754	4.611	0.384	0.477	1.416	0.340	0.376	0.517	0.425	0.907	0.633
2024/25 Minimum	0.12	0.09	0.22	0.24	0.53	0.33	0.46	0.57	2.99	0.33	0.40	0.98	0.31	0.24	0.43	0.34	0.70	0.45
2024/25 Maximum	0.18	0.23	0.51	0.39	0.88	0.69	0.76	1.03	5.68	0.51	0.59	1.84	0.42	0.47	0.68	0.56	1.13	0.79
2023/24 Minimum	0.12	0.13	0.18	0.22	0.50	0.45	0.44	0.55	2.88	0.31	0.37	0.95	0.29	0.26	0.41	0.32	0.69	0.44
2023/24 Maximum	0.18	0.24	0.51	0.34	0.75	0.67	0.66	0.81	5.09	0.43	0.53	1.63	0.39	0.42	0.61	0.49	1.01	0.73
2021/22 Minimum	0.14	0.08	0.17	0.23	0.49	0.45	0.43	0.55	3.06	0.30	0.36	0.99	0.29	0.27	0.42	0.33	0.67	0.45
2021/22 Maximum	0.19	0.25	0.52	0.35	0.77	0.69	0.65	0.80	5.37	0.45	0.54	1.70	0.39	0.46	0.63	0.53	1.06	0.77
2019/20 Minimum	0.13	0.14	0.31	0.24	0.51	0.48	0.46	0.58	3.08	0.32	0.38	1.03	0.31	0.25	0.47	0.34	0.71	0.47
2019/20 Maximum	0.18	0.26	0.49	0.36	0.79	0.69	0.67	0.79	4.91	0.45	0.51	1.72	0.40	0.43	0.68	0.53	1.07	0.77
2018/19 Minimum	0.12	0.17	0.35	0.23	0.55	0.50	0.48	0.59	3.35	0.33	0.40	1.11	0.31	0.29	0.43	0.32	0.72	0.50
2018/19 Maximum	0.19	0.30	0.62	0.40	0.86	0.79	0.73	0.87	5.76	0.50	0.58	2.02	0.45	0.49	0.76	0.63	1.21	0.86
2017/18 Minimum	0.14	0.22	0.29	0.26	0.57	0.50	0.39	0.60	3.64	0.35	0.42	1.17	0.33	0.22	0.51	0.39	0.43	0.53
2017/18 Maximum	0.17	0.37	0.48	0.39	0.89	0.73	0.75	0.86	5.88	0.52	0.58	2.03	0.44	0.43	0.76	0.60	1.20	0.88
2016/17 Minimum	0.13	0.18	0.31	0.23	0.51	0.45	0.45	0.54	3.02	0.32	0.37	0.99	0.31	0.23	0.46	0.34	0.70	0.46
2016/17 Maximum	0.19	0.26	0.55	0.44	0.93	0.83	0.77	0.88	6.39	0.54	0.61	2.18	0.49	0.49	0.82	0.66	1.32	1.01

Note: Amino acid composition was not determined for the 2020/21 and 2022/23 seasons

RSA Wheat Crop Quality Summary

RSA Crop Quality 2022/23 and 2024/25 Seasons

Country of origin	RSA Crop Average 2022/23						RSA Crop Average 2024/25					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
	103	55	47	35	95	335	69	57	43	57	96	322

WHEAT

GRADING

Protein (12% mb), %	13.2	12.0	11.1	10.3	12.2	12.1	13.4	11.9	11.0	10.1	11.2	11.6
Moisture, %	11.2	11.2	11.3	11.5	11.2	11.3	10.2	10.4	10.7	10.6	10.7	10.5
Falling number, sec	370	372	378	374	331	361	377	368	371	363	373	371
1000 Kernel mass (13% mb), g	36.8	37.4	38.6	39.2	35.4	37.0	38.5	38.7	39.2	39.1	37.4	38.4
Hlm (dirty), kg/hl	80.3	80.4	80.7	79.5	78.7	79.8	82.2	81.5	80.4	79.3	78.7	80.3
Screenings (<1.8 mm sieve), %	1.26	1.21	1.32	1.41	2.72	1.69	1.01	0.94	1.24	1.25	2.51	1.52
Gravel, stones, turf and glass, %	0.00	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.00	0.02	0.01	0.01
Foreign matter, %	0.11	0.11	0.11	0.12	0.21	0.14	0.05	0.05	0.05	0.07	0.15	0.08
Other grain & unthreshed ears, %	0.33	0.36	0.38	0.39	0.78	0.48	0.17	0.27	0.29	0.35	0.94	0.47
Heat damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.04	0.02
Immature kernels, %	0.06	0.03	0.04	0.03	0.03	0.04	0.10	0.06	0.05	0.02	0.04	0.05
Insect damaged kernels, %	0.45	0.48	0.55	0.58	0.66	0.54	0.16	0.19	0.27	0.31	0.69	0.36
Sprouted kernels, %	0.11	0.07	0.04	0.03	0.42	0.17	0.02	0.02	0.01	0.01	0.06	0.03
Total damaged kernels, %	0.62	0.58	0.64	0.63	1.11	0.76	0.29	0.27	0.33	0.34	0.82	0.46
Combined deviations, %	2.32	2.27	2.45	2.55	4.82	3.06	1.53	1.54	1.90	2.02	4.44	2.54
Heavily frost damaged kernels, %	0.00	0.00	0.01	0.00	0.11	0.03	0.02	0.01	0.00	0.00	0.15	0.05
Field fungi, %	0.33	0.33	0.16	0.14	0.59	0.36	0.34	0.31	0.32	0.37	0.53	0.39
Storage fungi, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No

	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	19	17	13	11	5	65	18	14	14	12	7	65
Bühler Extraction, %	74.4	73.9	73.7	73.1	73.3	73.8	73.0	73.2	73.3	73.6	73.1	73.2

FLOUR

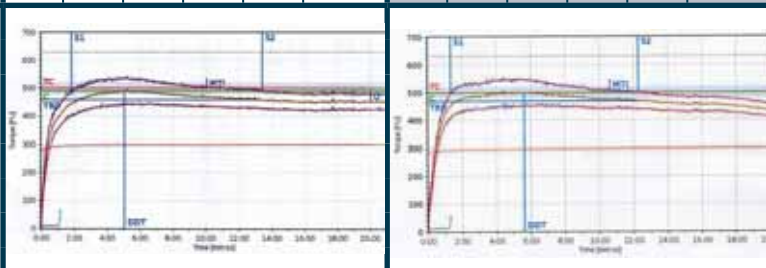
Colour, Konica Minolta CM5 (dry)												
L*	93.6	93.69	93.67	93.76	93.8	93.68	93.46	93.62	93.72	93.78	93.74	93.64
a*	0.51	0.48	0.47	0.44	0.48	0.48	0.50	0.50	0.48	0.46	0.46	0.49
b*	10.02	10.26	10.58	9.99	10.23	10.20	9.94	9.98	10.05	9.99	9.72	9.96
Ash (db), %	0.59	0.60	0.60	0.59	0.59	0.59	0.61	0.60	0.57	0.60	0.58	0.59
Protein (12% mb), %	12.2	11.1	10.2	9.6	10.9	11.0	12.3	10.9	10.1	9.6	10.2	10.8
Wet Gluten (14% mb), %	32.9	29.6	27.5	25.6	29.7	29.5	34.1	29.2	26.8	25.1	27.0	29.0
Dry Gluten (14% mb), %	11.1	9.9	9.1	8.2	9.9	9.8	11.3	9.5	8.7	8.2	8.8	9.5
Gluten Index	95	96	96	97	96	96	89	92	94	94	94	92

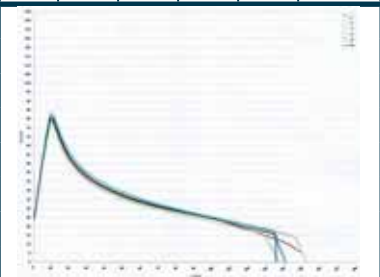
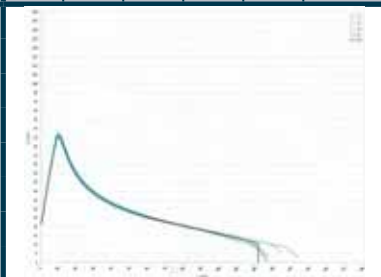
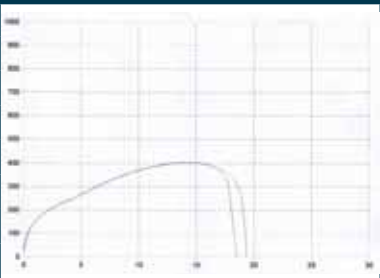
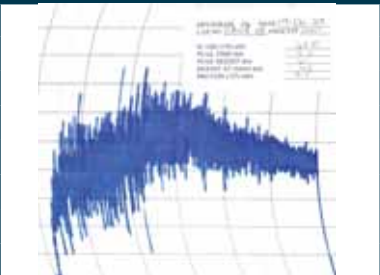
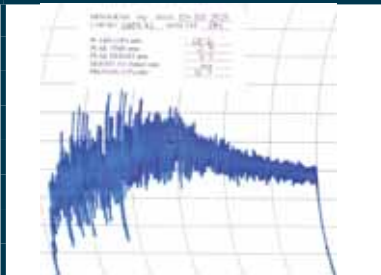
100 g BAKING TEST

Baking water absorption, %	62.4	61.0	60.0	59.7	60.9	61.0	62.6	60.8	59.9	59.6	60.0	60.8
Loaf volume, cm ³	1034	972	916	898	963	966	1112	1007	969	957	964	1014

FARINOGRAM

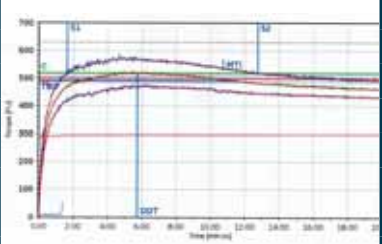
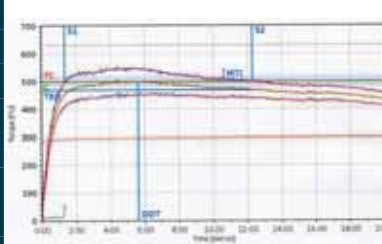
Water absorption (14% mb), %	60.3	59.7	58.7	58.3	59.2	59.4	61.9	60.0	59.1	58.1	57.7	59.7
Development time, min	6.5	6.0	4.3	4.2	4.8	5.4	6.2	5.1	5.0	4.1	4.7	5.2
Stability, mm	15.8	12.9	9.7	10.3	12.4	12.6	11.8	10.2	10.0	9.0	9.2	10.3
Mixing tolerance index, BU	25	31	37	36	30	31	34	38	41	42	43	39



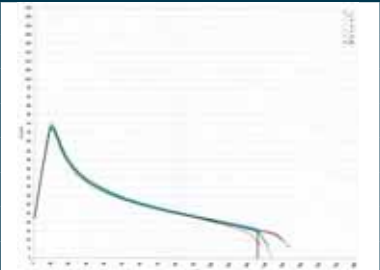
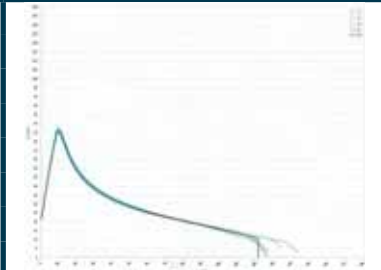
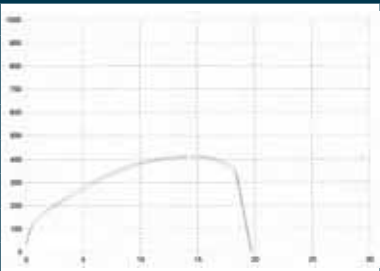
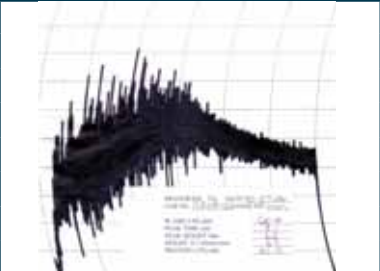
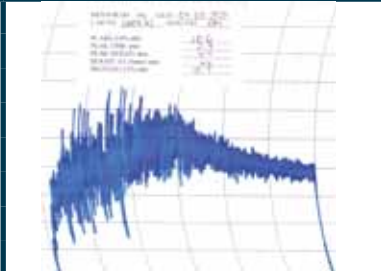
Country of origin	RSA Crop Average 2022/23						RSA Crop Average 2024/25					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	19	17	13	11	5	65	18	14	14	12	7	65
ALVEOGRAM												
Strength (S), cm²	48.0	42.7	35.6	35.4	40.6	41.4	46.2	39	36.9	32.3	34.0	38.8
Stability (P), mm	78	82	78	84	77	80	82	80	81	72	67	78
Distensibility (L), mm	152	130	119	101	137	130	143	123	117	115	134	127
P/L	0.52	0.66	0.72	0.86	0.60	0.66	0.61	0.66	0.73	0.65	0.51	0.64
												
EXTENSOGRAM												
Strength, cm²	134	108	91	85	113	109	122	105	102	89	99	106
Max. height, BU	454	407	371	384	419	411	406	394	409	374	399	397
Extensibility, mm	218	194	178	159	200	192	217	195	182	174	181	194
												
MIXOGRAM												
Peak time, min	3.1	3.2	3.0	3.4	3.2	3.1	2.7	2.9	2.9	3	3.1	2.9
Water absorption (14% mb), %	62.4	61	60	59.5	60.9	60.9	62.6	60.8	59.9	59.6	60	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	ND						ND					
Aflatoxin B ₂ (µg/kg)	ND						ND					
Aflatoxin G ₁ (µg/kg)	ND						ND					
Aflatoxin G ₂ (µg/kg)	ND						ND					
Fumonisin B ₁ (µg/kg)	ND						ND					
Fumonisin B ₂ (µg/kg)	ND						ND					
Fumonisin B ₃ (µg/kg)	ND						ND					
Deoxynivalenol (µg/kg) [max. value]	757 [6 463]						40 [408]					
15-ADON (µg/kg) [max. value]	46 [301]						ND					
Ochratoxin A (µg/kg)	ND						ND					
Zearalenone (µg/kg) [max. value]	1 [36]						ND					
HT-2 (µg/kg)	ND						ND					
T-2 Toxin (µg/kg)	ND						ND					
No. of samples	40						40					

RSA Wheat Crop Quality Summary

RSA Crop Quality 2023/24 and 2024/25 Seasons

Country of origin		RSA Crop Average 2023/24						RSA Crop Average 2024/25					
Class and Grade bread wheat		Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples		64	83	70	33	85	335	69	57	43	57	96	322
WHEAT													
GRADING													
Protein (12% mb), %		13.3	12.0	11.0	10.4	11.6	11.8	13.4	11.9	11.0	10.1	11.2	11.6
Moisture, %		10.8	11.1	11.0	11.1	11.2	11.1	10.2	10.4	10.7	10.6	10.7	10.5
Falling number, sec		378	375	380	373	371	375	377	368	371	363	373	371
1000 Kernel mass (13% mb), g		38.1	40	40.5	38.7	38.1	39.1	38.5	38.7	39.2	39.1	37.4	38.4
Hlm (dirty), kg/hl		81.7	80.5	81.6	80.8	79.3	80.7	82.2	81.5	80.4	79.3	78.7	80.3
Screenings (<1.8 mm sieve), %		1.01	1.24	1.04	1.27	2.37	1.45	1.01	0.94	1.24	1.25	2.51	1.52
Gravel, stones, turf and glass, %		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.01	0.01
Foreign matter, %		0.06	0.13	0.10	0.06	0.22	0.13	0.05	0.05	0.05	0.07	0.15	0.08
Other grain & unthreshed ears, %		0.22	0.32	0.28	0.32	0.93	0.45	0.17	0.27	0.29	0.35	0.94	0.47
Heat damaged kernels, %		0.01	0.01	0.01	0.03	0.04	0.02	0.01	0.00	0.00	0.01	0.04	0.02
Immature kernels, %		0.10	0.10	0.06	0.04	0.14	0.09	0.10	0.06	0.05	0.02	0.04	0.05
Insect damaged kernels, %		0.32	0.35	0.37	0.32	0.56	0.40	0.16	0.19	0.27	0.31	0.69	0.36
Sprouted kernels, %		0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.02	0.01	0.01	0.06	0.03
Total damaged kernels, %		0.45	0.48	0.45	0.39	0.76	0.53	0.29	0.27	0.33	0.34	0.82	0.46
Combined deviations, %		1.75	2.17	1.88	2.04	4.28	2.55	1.53	1.54	1.90	2.02	4.44	2.54
Heavily frost damaged kernels, %		0.05	0.00	0.04	0.00	0.02	0.02	0.02	0.01	0.00	0.00	0.15	0.05
Field fungi, %		0.28	0.32	0.22	0.27	0.60	0.36	0.34	0.31	0.32	0.37	0.53	0.39
Storage fungi, %		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)		0	0	0	0	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)		0	0	0	0	0	0	0	0	0	0	0	0
Live insects		No	No	No	No	No	No	No	No	No	No	No	No
Undesirable odour		No	No	No	No	No	No	No	No	No	No	No	No
		Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples		16	20	15	10	4	65	18	14	14	12	7	65
Bühler Extraction, %		73.2	73.2	72.6	72.1	71.7	72.8	73.0	73.2	73.3	73.6	73.1	73.2
FLOUR													
Colour, Konica Minolta CM5 (dry)													
L*		93.62	93.67	93.89	93.82	93.72	93.73	93.46	93.62	93.72	93.78	93.74	93.64
a*		0.54	0.54	0.50	0.47	0.57	0.52	0.50	0.50	0.48	0.46	0.46	0.49
b*		10.23	10.01	10.12	10.11	9.66	10.08	9.94	9.98	10.05	9.99	9.72	9.96
Ash (db), %		0.59	0.61	0.58	0.60	0.61	0.59	0.61	0.60	0.57	0.60	0.58	0.59
Protein (12% mb), %		12.1	11.1	9.9	9.7	10.4	10.8	12.3	10.9	10.1	9.6	10.2	10.8
Wet Gluten (14% mb), %		32.4	30.2	26.6	25.6	28.6	29.1	34.1	29.2	26.8	25.1	27.0	29.0
Dry Gluten (14% mb), %		11.0	9.9	8.5	8.3	9.4	9.6	11.3	9.5	8.7	8.2	8.8	9.5
Gluten Index		96	96	95	96	96	96	89	92	94	94	94	92
100 g BAKING TEST													
Baking water absorption, %		62.3	61.0	59.7	59.7	60.3	60.8	62.6	60.8	59.9	59.6	60	60.8
Loaf volume, cm³		1140	1068	968	950	970	1038	1112	1007	969	957	964	1014
FARINOGRAM													
Water absorption (14% mb), %		61.3	60.3	59.2	58.9	59.5	60.0	61.9	60.0	59.1	58.1	57.7	59.7
Development time, min		6.7	5.2	5.2	4.5	4.1	5.4	6.2	5.1	5.0	4.1	4.7	5.2
Stability, mm		14.3	10.5	10.2	9.5	9.5	11.2	11.8	10.2	10.0	9.0	9.2	10.3
Mixing tolerance index, BU		30	36	36	38	34	35	34	38	41	42	43	39
													

RSA Crop Quality 2023/24 and 2024/25 Seasons

Country of origin	RSA Crop Average 2023/24						RSA Crop Average 2024/25					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	16	20	15	10	4	65	18	14	14	12	7	65
ALVEOGRAM												
Strength (S), cm²	44.8	40.7	36.0	33.6	37.3	39.3	46.2	39	36.9	32.3	34.0	38.8
Stability (P), mm	77	79	84	80	79	80	82	80	81	72	67	78
Distensibility (L), mm	145	129	103	102	116	122	143	123	117	115	134	127
P/L	0.55	0.62	0.88	0.87	0.68	0.71	0.61	0.66	0.73	0.65	0.51	0.64
												
EXTENSOGRAM												
Strength, cm²	131	115	97	87	104	110	122	105	102	89	99	106
Max. height, BU	422	416	401	351	396	403	406	394	409	374	399	397
Extensibility, mm	227	203	176	177	189	198	217	195	182	174	181	194
												
MIXOGRAM												
Peak time, min	2.9	3.0	3.2	3.0	3.2	3.0	2.7	2.9	2.9	3.0	3.1	2.9
Water absorption (14% mb), %	62.3	61.0	59.7	59.7	60.3	60.8	62.6	60.8	59.9	59.6	60.0	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	ND						ND					
Aflatoxin B ₂ (µg/kg)	ND						ND					
Aflatoxin G ₁ (µg/kg)	ND						ND					
Aflatoxin G ₂ (µg/kg)	ND						ND					
Fumonisin B ₁ (µg/kg)	ND						ND					
Fumonisin B ₂ (µg/kg)	ND						ND					
Fumonisin B ₃ (µg/kg)	ND						ND					
Deoxynivalenol (µg/kg) [max. value]	66 [478]						40 [408]					
15-ADON (µg/kg) [max. value]	ND						ND					
Ochratoxin A (µg/kg)	ND						ND					
Zearalenone (µg/kg) [max. value]	ND						ND					
HT-2 (µg/kg)	ND						ND					
T-2 Toxin (µg/kg)	ND						ND					
No. of samples	40						40					

Methods

GRADING:

Full grading was conducted in accordance with the Regulations relating to the grading, packing and marking of bread wheat intended for sale in the Republic of South Africa (Government Notice No. R. 1547 of 29 November 2019). Please see pages 104 to 115.

Hectolitre mass, screenings, protein and falling number were determined. The determination of deviations relating to wheat kernels comprised foreign matter including gravel, stones, turf and glass; other grain and unthreshed ears; damaged kernels including heat-damaged kernels, immature kernels, insect-damaged kernels and sprouted kernels; heavily frost-damaged kernels; field fungi; storage fungi; ergot; poisonous seeds; possible presence of undesirable odours and live insects.

Hectolitre mass means the mass in kilogram per hectolitre and was determined according to ISO 7971-3, 2019 by means of the Kern 222 instrument.

Hectolitre mass provides a measure of the bulk density of grain and is also useful as a guide to grain soundness and potential milling extraction (flour yield).

Screenings means all material that passes through a standard 1.8 mm slotted sieve. For the definition and description of the standard sieve please refer to the definitions of Regulation No. R. 1547 on page 106 of this report.

Damaged wheat means wheat -

- (a) which have been damaged by insects;
- (b) which have been distinctly discoloured (orange-brown, dark brown or black) by external heat or as a result of heating caused by internal fermentation in wheat with an excessive moisture content, excluding wheat kernels in respect of which the discolouration is confined to the germ end;
- (c) which are immature and have a distinctly green colour; and
- (d) in which germination has proceeded to such an extent that the skin covering the embryo has been broken or the developing sprouts and/or rootlets are clearly visible.

Combined deviations means the sum of the percentages screenings, other grain and unthreshed ears, foreign matter and damaged kernels.

THOUSAND KERNEL MASS:

This is the weight in grams of one thousand kernels of wheat 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 SAGL Industry Accepted Method 008. Thousand kernel mass is reported on a 13% moisture basis.

FALLING NUMBER MILLING:

At least 300 g of wheat is cleaned by using the standard 1.8 mm sieve and by removing coarser impurities by hand. The sample is then milled on a falling number hammer mill fitted with a 0.8 mm sieve.

NEAR INFRARED SPECTROSCOPY (NIRS):

NIRS is a measurement technique based on the fact that the constituents to be measured, absorb electromagnetic radiation in the near infrared region of the electromagnetic spectrum. The moisture and protein content of the whole wheat flour as well as Quadromat milled flour samples are measured with a SpectraStar 2400 NIR Analyser RTW.

The calibration on the NIR was developed by the SAGL and is verified by analysing every fifth sample by means of the primary methods, described on the next page under Moisture and Protein.

FALLING NUMBER:

This method is based upon the rapid gelatinisation of an aqueous suspension of meal or flour in a boiling water bath and subsequent measurement of the liquefaction of the starch paste by the alpha-amylase in the sample. The method measures the enzyme activity, mainly the α -amylase activity.

ICC Standard No. 107/1, latest edition is used to determine the falling number. The altitude-corrected value is reported on a 14% moisture basis.

QUADROMAT JUNIOR MILLING:

Cleaned wheat samples are conditioned by adding 3 mL water per 100 g wheat, 18 hours prior to milling. The samples are then milled on a Quadromat Junior laboratory mill.

BÜHLER MILLING:

Cleaned wheat samples are conditioned to between 15.0% and 16.0% moisture according to the wheat moisture and kernel hardness and allowed to stand for a minimum of 18 hours (18 - 24 hours). Samples are then milled on a Bühler MLU 202 mill and passed through a bran finisher.

BÜHLER EXTRACTION:

The extraction represents the flour yield after milling plus flour obtained from bran that passed through a bran finisher. Flour extraction is calculated from the mass of the total products. The Bühler MLU 202 mill is set for South African wheat, mill settings and sieve sizes deviate from AACCI method 26-21.02, latest edition.

MOISTURE:

ICC Standard No. 110/1, latest edition is used to determine the moisture content of wheat flour. This method determines moisture content as a loss in weight of a sample when dried in an oven at 130 °C for 90 minutes for flour or 2 hours for whole wheat flour.

PROTEIN:

The Dumas combustion analysis technique is used, according to AACCI method 46-30.01, latest edition.

This method prescribes a generic combustion method for the determination of crude protein. Combustion of the sample at high temperature (1 100 °C) in pure oxygen sets nitrogen free, which is measured by thermal conductivity detection. The total nitrogen content of the whole wheat flour and flour samples are determined and converted to equivalent protein by multiplication with a factor of 5.7 to obtain the protein content.

COLOUR:

Colour is one of the important properties of milled grains and the colour of wheat flour often affects the colour of the finished product. In general, a bright white colour flour is more desirable for most products.

The colour of wheat flour can be measured accurately and precisely with the Konica Minolta

CM-5 spectrophotometer. CIE L*a*b* (CIELAB) is a colour model using lightness (L*) and two colour values (a* and b*). The colour coordinates define where a specific colour lies in a Cartesian graph. L* represents lightness (100 being white and 0 being black), a* represents green to red variation and b* represents variation from blue to yellow. The results reported are for the 10° observer and D65 illuminant.

ASH:

Ash is defined as the quantity of mineral matter that remains as incombustible residue, after incineration of a sample in a muffle furnace by application of the described working method. The ash constituents of wheat are taken from the minerals of the soil. The total mineral content as well as the relative proportions of individual elements depend largely upon the soil, rainfall and other climatic conditions during growth.

Since the level of minerals present in flour is related to the rate of extraction, the ash content also indicates milling performance by indirectly revealing the amount of bran contamination. In-house method No. 011, based on the AACCI method 08-02.01 Rapid (Magnesium Acetate) method, is used for the ash determination.

RAPID VISCO ANALYSER:

AACCI method 76-21.02, latest edition, is followed to prepare a complete pasting curve by means of the Rapid Visco Analyser (RVA). The RVA is a rotational viscometer, able to continuously record the viscosity of a sample (under controlled temperature conditions) as the starch granules hydrate, swell and disintegrate (gelatinisation and pasting), followed by possible realignment of the starch molecules during cooling (retrogradation).

Maximum viscosity before the onset of cooling (peak viscosity), time to peak viscosity, minimum viscosity after peak (trough) and final viscosity are measured and provide indications of the pasting properties of the samples and therefore its processing value for baking and other applications.

The results are reported in centipoise (cP) on a 14% moisture basis. Results can also be converted to RVU (rapid visco unit), 1 RVU = 12 cP.

GLUTEN:

Wheat gluten is the water-insoluble complex protein fraction present in wheat flours. The ability

of wheat flour to produce dough with good gas retaining properties is attributed to gluten. Gluten is a plastic elastic substance composed principally of two functional protein components. Glutenin, the high molecular weight fraction, contributes elasticity (is less extensible) and Gliadin, the low molecular weight fraction, provides the viscous component (is highly extensible and less elastic).

The gluten content of wheat flour is determined by means of AACCI Method 38-12.02, latest edition. Wet gluten is washed from meal or flour by an automatic washing apparatus (Glutomatic).

The wet gluten is dried under standardised conditions in a Glutork to obtain the dry gluten. The total wet and total dry gluten contents are expressed as percentages of the sample on a 14% moisture basis.

Wet gluten content correlates to loaf volume and dry gluten content to the crude protein content. The difference between the wet and dry gluten contents is an indication of the water-holding capacity of the gluten proteins, which is in turn, related to flour water absorption.

The gluten index is the ratio of the wet gluten remaining on the sieve (after centrifugation) to the total wet gluten. The gluten index provides an indication of the gluten strength and is not influenced by the protein content.

FARINOGRAPH:

AACCI method 54-21.02, latest edition constant flour weight procedure is followed, using 300 g of flour on a 14% moisture basis.

The farinograph measures and records the resistance of a dough to mixing, as it is formed from flour and water, developed and broken down. This resistance is called consistency. The dough is subjected to a prolonged, relatively gentle mixing action.

The water absorption is the amount of water required for a dough to reach a definite consistency (500 Brabender units). The amount of water added to the flour is expressed as a percentage of the flour mass and reported on a 14% moisture basis.

The development time, measured in minutes, is the time from the beginning of water addition until the dough reaches its optimum consistency and the point immediately before the first indication of weakening. A long mixing time can be associated

with flour with a high percentage of gluten-forming proteins.

The stability, measured in minutes, is the time during which the top of the curve intercepts a horizontal line drawn through the centre of the curve. This gives an indication of the dough's tolerance to mixing: the longer the stability, the longer the mixing time that the dough can withstand. Dough with a longer stability can also withstand a longer fermentation period.

The mixing tolerance index (MTI) value is the difference, in Brabender units (BU), between the top of the curve at the peak and the top of the curve measured 5 minutes after the peak is reached. This value provides an indication of the extent to which breakdown of the dough occurs. The higher the value, the more and the quicker the breakdown of the dough occurs. This value is similar to the mixogram tail height.

EXTENSOGRAPH:

The extensograph measures the resistance and extensibility of a fully mixed, relaxed flour-water dough, by measuring the force required to stretch the dough with a hook until it breaks. ICC Standard No. 114/1, latest edition is followed.

The strength, measured in cm^2 , provides an indication of the total force (work) needed to stretch the dough and is represented by the area under the curve.

The maximum height/resistance, measured in BU, gives an indication of the dough's resistance to stretching and is measured as the mean of the maximum heights of the curves of the two test pieces.

The extensibility, measured in millimeters, is the mean length at the base of the two curves and indicates the stretch ability of the dough.

ALVEOGRAPH:

The alveograph measures the resistance of the dough to stretching as well as the extensibility of the dough. The alveograph stretches the dough in more than one direction (as is happening during proofing), whereas the extensograph stretches the dough in only one direction. ICC Standard No. 121, latest edition is followed.

Strength (S): The area under the curve gives an indication of the dough strength and is measured in cm^2 .

Stability (P): Obtained by multiplying the maximum height of the curve with a constant factor of 1.1. This value is an indication of the resistance of the dough to extension (force required to blow the bubble of dough) and is measured in millimetres.

Distensibility (L): The length of the curve in millimetres, measured along the base line, corresponds to the maximum volume of air that the bubble can withhold. This provides an indication of the extensibility of the dough.

P/L-value: This ratio is obtained by dividing the P-value by the L-value, thus providing an approximate indication of the shape of the curve that combines stability and extensibility (viscoelastic properties).

MIXOGRAPH:

A 35 g mixograph is used. The amount of flour weighed is adjusted according to the flour moisture content and the amount of water added to the flour is adjusted according to the flour protein content. Industry Accepted Method 020 based on AACCI method 54-40.02, latest edition is followed.

Mixogram peak time, is the time measured in minutes, that dough takes to reach its maximum consistency or first indication of dough weakening. The peak time is a measure of optimum dough development and thus a measure of protein quality.

Mixogram tail height at 6 minutes, is the distance in millimetres measured from the base line of the paper at 6 minutes to the graph centre point at 6 minutes. This figure is an indication of the weakening effect of the dough. Higher values indicate flours that are more tolerant to mixing.

100 g BAKING TEST:

This procedure, according to Industry Accepted Method 022 based on AACCI Method 10-10.03, latest edition, provides an optimised bread-making method for evaluating bread wheat flour quality and a variety of dough ingredients by a straight-dough method in which all ingredients are incorporated in the initial mixing step.

MYCOTOXIN ANALYSES:

Mycotoxins are secondary metabolites produced by fungi on agricultural commodities intended for human and animal consumption. These mycotoxins are potentially dangerous to humans and animals since they are, amongst other also carcinogens. 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 method using UPLC - MS/MS. 40 of the 335 wheat crop samples were tested for Aflatoxin B₁, B₂, G₁, G₂, Fumonisin B₁, B₂, B₃, Deoxynivalenol, 15-ADON, HT2 Toxin, T-2 Toxin, Zearalenone and Ochratoxin A.

AMINO ACID PROFILE:

The protein bound amino acids (Aspartic acid (Asp), Glutamic acid (Glu), Serine (Ser), Glycine (Gly), Histidine (His), Arginine (Arg), Threonine (Thr), Alanine (Ala), Proline (Pro), Tyrosine (Tyr), Valine (Val), Isoleucine (Ileu), Leucine (Leu), Phenylalanine (Phe) and Lysine (Lys)) were determined by using In-house method No. 028, (AccQ-Tag method).

Samples (200 mg) are hydrolysed with 6 N hydrochloric acid (HCl) for 24 hours and then derivatised with 6-aminoquinolyl-N-hydroxysuccinimidyl carbamate (AQC) to produce stable derivatives. These amino acids are then analysed by a reverse phase UPLC method, using a Waters Acquity H-Class UPLC with Empower software (Waters, Millipore Corp., Milford, MA).

The determination of Cysteine (as Cysteic acid) and Methionine (as Methionine sulfone) were done by means of In-house method No. 15. The sample is first oxidised and dried and then analysed with liquid chromatography using a modified Pico-Tag method.

The determination of Tryptophan, according to In-house method No. 007, entails the hydrolysis of samples under alkaline conditions with a saturated barium hydroxide solution heated to 110 °C for 20 hours. The hydrolysate is analysed by reverse phase liquid chromatography with UV detection at 285 nm.



Wheat Exports and Imports



Table S8: WHEAT EXPORTS/IMPORTS PER COUNTRY

2023/24 SEASON (30 Sep 2023 - 27 Sep 2024)

RSA EXPORTS		IMPORTS FOR RSA		IMPORTS FOR OTHER COUNTRIES		EXPORTS OF IMPORTED WHEAT		IMPORTS PER HARBOUR*	
To Country	Tons	From Country	Tons	From Country	Tons	To Country	Tons	Harbour	Tons
Botswana	40 731	Argentina	3 899	Argentina	11 102	Botswana	74 550	Cape Town	196 543
Congo	999	Australia	390 060	Australia	19 387	Eswatini (Swaziland)	65 377	Durban	1 875 729
Lesotho	32 638	Canada	4 300	Estonia	11 469	Lesotho	46 140	East London	12 607
Namibia	11 254	Estonia	32 441	Latvia	7 516	Zambia	9 773	Port Elizabeth	54 779
Zambia	65 955	Latvia	137 608	Lithuania	45 010	Zimbabwe	39 919		
Zimbabwe	63 219	Lithuania	408 142	Poland	73 793				
		Poland	374 147	Russian Federation	43 882				
		Russian Federation	544 173						
		United States	32 729						
Total	214 796	Total	1 927 499	Total	212 159	Total	235 759	Total	2 139 658

*Includes: Imports for RSA and Other Countries

Table S9: WHEAT EXPORTS/IMPORTS PER COUNTRY

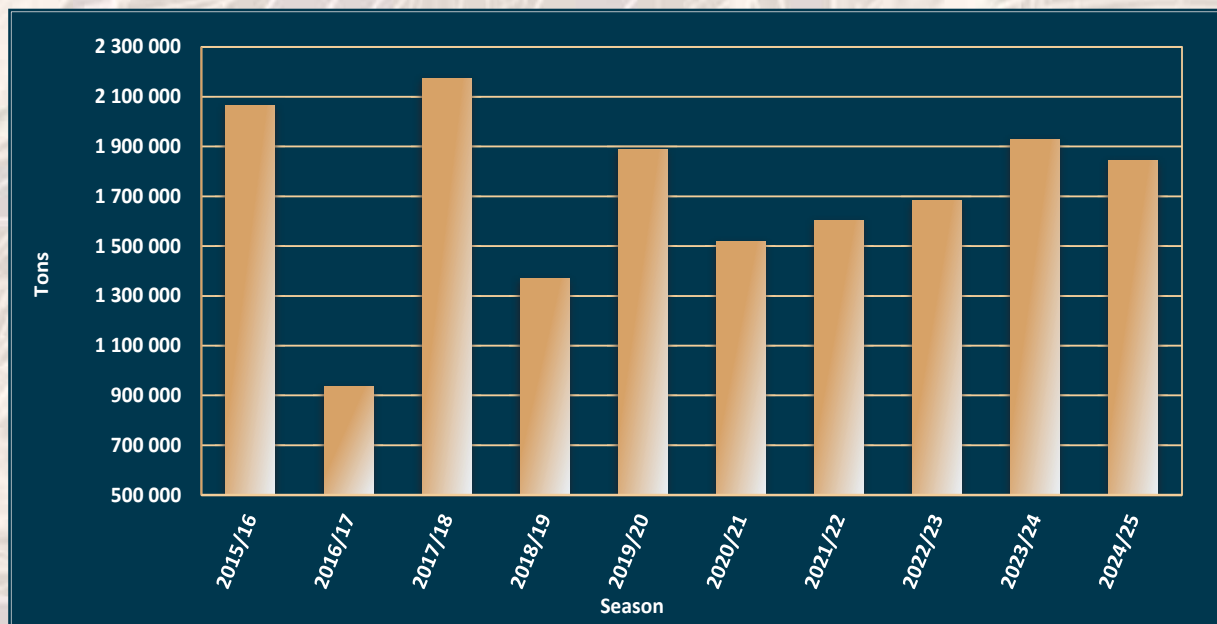
2024/25 SEASON (28 Sep 2024 - 26 Sep 2025)

RSA EXPORTS		IMPORTS FOR RSA		IMPORTS FOR OTHER COUNTRIES		EXPORTS OF IMPORTED WHEAT		IMPORTS PER HARBOUR*	
To Country	Tons	From Country	Tons	From Country	Tons	To country	Tons	Harbour	Tons
Botswana	24 805	Argentina	27 404	Australia	82 839	Botswana	80 064	Cape Town	208 258
Eswatini (Swaziland)	69	Australia	567 313	Germany	3 523	Eswatini (Swaziland)	71 779	Durban	1 860 869
Lesotho	26 378	Canada	135 876	Latvia	3 338	Lesotho	37 585	East London	19 103
Mozambique	250	Germany	51 414	Lithuania	57 535	Mozambique	36	Port Elizabeth	33 053
Namibia	7 671	Latvia	83 678	Poland	6 988	Namibia	6 960		
Zambia	94 765	Lithuania	194 337	Romania	16 894	Zambia	26 663		
Zimbabwe	69 598	Poland	92 326	Russian Federation	106 329	Zimbabwe	63 119		
		Romania	80 058	United States	8 180				
		Russian Federation	445 668						
		United States	164 138						
Total	223 536	Total	1 842 212	Total	285 626	Total	286 206	Total	2 121 283

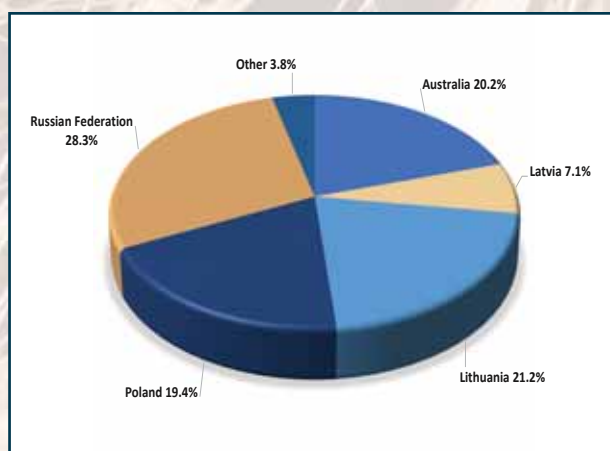
*Includes: Imports for RSA and Other Countries

Quantity of wheat imported to the RSA

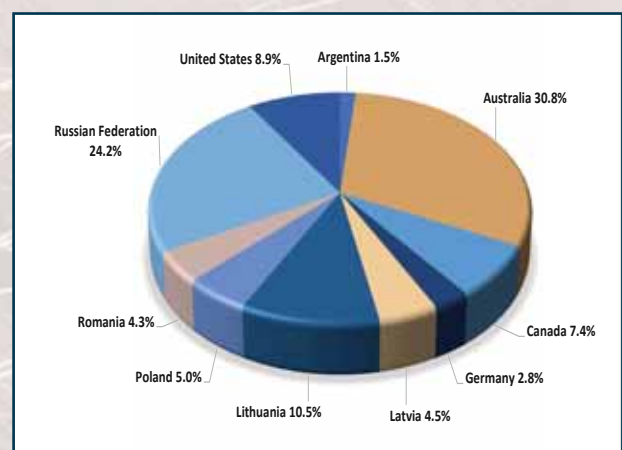
The graphs and table given below and on the next page, are based on progressive import figures per country provided by SAGIS.



Graph 27: Total wheat imports for domestic use over 10 seasons



Graph 28: Wheat imports per origin for domestic use 2023/24 season



Graph 29: Wheat imports per origin for domestic use 2024/25 season

Table 8: Total wheat imports per country per season for use in the RSA

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Total (Tons)
Argentina	49 516	35 613	132 433	35 519	-	-	298 543	33 719	3 899	27 404	676 253
Australia	38 457	24 816	-	-	-	455 717	382 604	260 151	390 060	567 313	2 214 372
Brazil	-	-	-	-	-	-	242 639	135 833	-	-	378 472
Canada	102 816	27 841	90 944	85 428	51 001	136 481	-	-	4 300	135 876	740 144
Czech Republic	-	144 402	47 904	110 636	52 365	8 965	-	32 856	-	-	397 128
Estonia	-	-	-	-	-	-	-	-	32 441	-	32 441
Finland	-	-	-	-	21 860	-	-	-	-	-	21 860
Germany	283 451	237 508	282 312	358 343	274 283	51 461	2 732	117 449	-	51 414	2 007 338
Latvia	-	17 098	140 007	39 290	54 803	115 250	47 391	76 832	137 608	83 678	772 962
Lithuania	151 047	-	182 241	124 161	202 656	275 903	312 795	232 867	408 142	194 337	2 127 940
Poland	185 036	76 912	17 514	24 998	543 325	220 604	282 262	512 319	374 147	92 326	2 420 926
Romania	-	112 334	101 449	-	-	-	-	-	-	80 058	293 841
Russian Federation	956 705	182 993	955 697	401 385	536 757	210 399	-	263 783	544 173	445 668	5 217 344
Ukraine	109 350	13 568	135 669	48 210	94 726	7 341	-	-	-	-	688 228
USA	186 387	61 680	87 064	140 127	58 092	34 874	32 333	18 547	32 729	164 138	844 282
Total	2 062 765	934 765	2 173 234	1 368 097	1 889 868	1 516 995	1 601 299	1 684 356	1 927 499	1 842 212	18 833 531

Quality summary of imported wheat

(Wheat imported from 30 September 2023 to 27 September 2024) (Previous season)

The quality of all wheat imported into South Africa is monitored by the SAGL. A subsample of all samples drawn by inspectors of the National Plant and Plant Production Inspection Services (NPPPI) of the Department of Agriculture (NDA) is forwarded to the SAGL for analysis. To assist with quality comparisons between local and imported wheat, the same scope of analysis is used for both sets of samples. The import quality results are published at the end of each production and marketing season. The results of samples of wheat imported during the current season are updated quarterly and available on the SAGL website.

For grading as well as dough and baking quality results of the imported wheat per country, please refer to pages 80 to 97. This imported wheat quality is compared to a summary of the local crop quality of the corresponding (2023/24) season. To simplify the comparison between the quality of the different countries of import, the average quality per country was summarised in Table 9 on pages 78 and 79. The minimum, maximum and standard deviation per country was also calculated. Please take note of the number of samples analysed when comparing results, the higher the number of samples, the more reliable the average result will be.

A total number of 166 samples of wheat imported from the following nine countries were received (number of samples received in brackets): Argentina (3), Australia (30), Canada (2), Estonia (5), Latvia (15), Lithuania (44), Poland (31), the Russian Federation (31) and the USA (5). Wheat imported for purposes other than bread baking (e.g. soft types for biscuit making) is included in this data set.

Most of the wheat imported to South Africa is blended with local wheat to obtain a certain milling and baking quality as per individual company specifications. Milling companies will blend higher and lower quality wheat to obtain the most cost-effective grist formulation that conforms to a specific quality. The main objective is to supply the most consistent quality of flour to their customers (bakers) as possible, as in the end, consistency is one of the most important quality parameters.

Towards the end of the production season, it may however become necessary for milling companies to mill wheat blends consisting only of imported wheat. Transportation cost is also an important factor for consideration. The grist formulation of mills situated at the coast will as a result consist mainly of imported wheat whereas inland mills will mill a combination of local and imported wheat.

The imported wheat samples as well as the 2023/24 wheat crop samples, were graded according to the national wheat grading regulations published in the Government Notice NO. R. 1547 of 29 November 2019. Hectolitre mass is an important grading factor that also provides an indication of flour extraction potential. 7% of the imported samples had hectolitre mass values below 76 kg/hl (minimum requirement for South African Super Grade to Grade 2 wheat), compared to the 12% and 2% of the previous two seasons respectively. Six of the samples originated in Lithuania and another six in the Russian Federation.

Screenings represent all material that passes through a standard slotted sieve (1.8 mm), with 3% the maximum allowed for Super Grade to Grade 3 according to local grading regulations. When comparing screening results originating from different countries, it is important to keep in mind that sieve aperture size and shape as well as sample preparation procedures vary between countries. 10% of samples exceeded screening levels of 3%. Samples from Australia, Poland and the Russian Federation reported the highest levels of screenings.

Two samples from Lithuania reported falling number values below 220 seconds. All of the countries' average falling number values, except for Argentina, were above 300 seconds. The RSA national average for the same season was 375 seconds.

The average whole wheat protein content exceeded 11% (12% mb) for all the countries of import, except the USA (9.4%). The average flour protein content of Poland and the Russian Federation were below 10% (12% mb) and that of the USA below 8% (12% mb). The resultant weak rheological quality of especially the American wheat is indicative of wheat intended for biscuit or cookie making purposes.

The ability of wheat flour to produce dough with good gas-holding capability is attributable to gluten as gluten imparts the elasticity and extensibility characteristics to the dough. Good quality gluten is capable of producing a loaf of bread with a high volume and good crumb texture. When evaluating gluten results, it is important to take the protein content into account. The ratio of wet gluten to total protein content is normally between 2.5 – 2.8 to 1. The wet gluten content of good quality white bread flour normally ranges between 27 – 33% (14% mb). The difference between wet and dry gluten is an indication of the water-holding capacity of the gluten proteins which is in turn related to protein quality. This water-holding capacity is also one of the factors determining flour water absorption.

Flour with higher water absorption is preferred by bakers as this results in increased dough yields. The acceptable range for white bread flour is normally between 60.0 – 64.0%, averaging 61.0 – 62.0%. In general, longer farinogram development times of 3.5 to 6.0 minutes and stabilities of 8.0 to 12.0 minutes will be an indication of good baking quality, which is associated with good protein quality.

Acceptable ranges for the alveogram parameters generally are as follows: Strength 30 – 45 cm², stability (P) 65 – 120 mm, distensibility (L) 80 – 120 mm and P/L 0.70 – 1.50. A good correlation exists between alveogram strength and protein quality. Low/short distensibility values, indicated by high P/L values can result in lower loaf volumes. High/long distensibility values, are indicative of soft doughs with excess stretching properties, which can also result in low loaf volumes due to poor gas retention properties. In general, extensogram strength values ranging between 80 – 150 cm², maximum heights of 300 – 550 BU and extensibility values of 170 – 220 mm, indicate good baking quality.

Imported wheat samples (the Australian and Canadian samples to a lesser extent), again showed a tendency towards long mixogram mixing times. Some of these long mixing times can be explained by low protein levels in the samples. Mixing time provides an indication of the amount of time required to mix a dough to optimum development, 2.5 to 3.5 minutes are considered acceptable in South Africa. The longer the mixing time, the larger the risk that the dough will not be mixed to optimum development, which will negatively influence the bread quality and cause lower loaf volumes. Long mixing times can also result in increased dough temperatures. Warmer doughs will proof faster and generally carry less water.

Composite samples of holds per shipment per country were tested for the presence of mycotoxin residues by means of an accredited multi-mycotoxin analysis. All samples tested negative for Aflatoxin B₁, B₂, G₁, G₂, Fumonisin B₁, B₂, B₃, Ochratoxin A, HT-2 Toxin, T-2 Toxin and Zearalenone. Deoxynivalenol (DON) was the only mycotoxin found to be present in these samples. All the positive DON results were well below the national maximum allowable level of 2 000 µg/kg for cereal grains intended for further processing.



Table 9: Summary of the quality results of imported wheat during the 2023/24 season

Quality parameter	Argentina				Australia				Canada				Estonia				Latvia				Lithuania			
	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev
Hectolitre mass, kg/hl	76.2	76.1	76.4	0.15	82.2	79.8	92.2	2.19	83.4	83.3	83.5	0.14	79.7	79.4	80.5	0.45	77.2	76.0	78.3	0.77	78.1	70.9	81.8	2.41
Screenings (<1.8mm), %	2.15	1.58	2.56	0.51	2.46	1.03	10.92	1.97	1.35	1.34	1.36	0.01	0.81	0.72	0.90	0.07	1.69	0.98	3.00	0.62	1.38	0.45	2.63	0.53
1000 Kernel mass, g (13 % mb)	34.6	33.0	37.5	2.49	35.4	22.2	45.3	4.30	33.8	33.3	34.2	0.64	42.4	37.4	44.4	2.85	41.6	36.7	44.2	1.98	43.0	35.6	49.7	2.76
WWF Moisture, %	11.9	11.8	12.2	0.23	10.8	9.3	12.5	0.92	12.9	12.7	13.0	0.21	11.9	11.3	12.3	0.42	12.3	11.3	14.4	0.75	12.4	11.4	13.9	0.54
WWF Protein (12% mb), %	11.5	11.5	11.5	0.03	12.5	11.4	13.8	0.66	14.8	14.8	14.8	0.01	11.3	11.2	11.3	0.06	11.6	11.1	12.6	0.55	11.5	10.6	12.5	0.46
WWF Falling number, sec	284	277	297	11.02	513	316	711	96.35	375	365	385	14.14	308	291	327	14.49	312	258	378	31.02	342	132	449	60.06
Number of samples	3				30				2				5				15				44			
Extraction, % (Bühler)	72.7	72.4	72.9	0.25	71.9	69.9	73.7	1.21	71.5	71.3	71.6	0.21	72.6	72.1	73.0	0.36	73.0	71.5	73.9	0.80	74.0	72.6	75.9	0.70
Flour moisture, %	13.5	13.2	13.7	0.25	13.3	12.5	13.8	0.33	14.5	14.4	14.5	0.07	12.9	12.4	13.4	0.41	13.6	13.0	14.1	0.36	13.6	12.5	14.5	0.47
Flour Protein, % (12 % mb)	10.3	10.3	10.3	0.0	11.4	9.9	12.6	0.7	13.6	13.6	13.7	0.0	10.0	9.9	10.1	0.1	10.2	9.7	11.3	0.5	10.2	9.6	11.2	0.4
Ash, % (db)	0.56	0.56	0.56	0.00	0.57	0.48	0.70	0.04	0.55	0.55	0.55	0.00	0.53	0.52	0.55	0.01	0.55	0.49	0.63	0.05	0.50	0.44	0.61	0.03
Konica Minolta CM-5 colour, L*	93.21	93.16	93.28	0.06	93.94	92.79	94.29	0.30	92.83	92.80	92.85	0.04	93.18	93.00	93.33	0.14	92.96	90.73	93.39	0.67	93.11	91.28	93.57	0.41
Konica Minolta CM-5 colour, a*	0.43	0.43	0.43	0.00	0.53	0.39	0.62	0.06	0.68	0.67	0.68	0.01	0.48	0.47	0.49	0.01	0.48	0.42	0.54	0.03	0.51	0.36	0.62	0.06
Konica Minolta CM-5 colour, b*	10.35	10.32	10.37	0.03	9.81	8.94	10.51	0.44	10.27	10.23	10.31	0.06	9.67	9.56	9.84	0.10	9.43	0.74	11.24	2.46	10.07	9.18	10.52	0.30
Gluten																								
Wet gluten, % (14 % mb)	25.6	24.9	26.3	0.70	29.6	25.4	33.8	2.28	33.6	33.3	33.8	0.35	26.7	25.7	27.6	0.68	25.1	24.2	27.6	0.96	25.4	16.2	28.3	1.93
Dry gluten, % (14 % mb)	8.4	8.3	8.5	0.12	10.7	8.6	29.1	3.59	11.9	11.7	12.0	0.21	8.9	8.7	9.1	0.18	8.5	8.1	9.1	0.30	8.6	6.0	9.8	0.61
Gluten Index	98	97	99	1.00	98	97	99	0.78	97	96	98	1.41	97	95	99	1.48	98	96	99	1.01	98	97	99	0.70
Fat/ogram																								
Water absorption, % (14% mb)	55.8	55.7	55.8	0.06	59.4	54.5	62.5	1.71	61.4	61.1	61.6	0.35	56.3	55.5	56.9	0.58	56.7	56.1	59.7	0.86	55.8	54.1	57.5	0.76
Dev. time,min	1.4	1.3	1.4	0.06	6.5	1.4	9.1	1.87	7.8	7.2	8.3	0.78	2.1	1.4	4.3	1.24	2.4	1.4	7.4	1.88	2.0	1.3	10.2	1.62
Stability, mm	10.2	5.3	18.1	6.91	17.7	7.1	20.0	3.38	20.0	20.0	20.0	0.00	9.4	8.3	10.1	0.75	7.7	3.3	12.4	3.25	10.1	2.3	20.0	5.12
Alveogram																								
Strength, cm²	39.1	38.4	39.6	0.62	50.0	34.1	58.9	5.13	63.7	62.8	64.5	1.20	32.1	31.0	33.5	1.04	35.3	22.0	40.4	4.23	37.0	32.4	44.2	2.69
Stability, mm	83	82	84	1.15	86	68	95	6.17	94	92	96	2.83	73	71	77	2.55	81	74	92	4.58	76	60	115	8.71
Distsibility, mm	89	88	89	0.58	129	87	164	15.73	138	131	144	9.19	96	87	101	5.66	90	79	112	10.67	101	60	124	12.55
P/L	0.93	0.92	0.94	0.01	0.68	0.52	1.09	0.11	0.69	0.64	0.73	0.06	0.76	0.70	0.85	0.07	0.92	0.67	1.14	0.14	0.77	0.50	1.92	0.23
Extensogram																								
Strength, cm²	126	118	138	10.58	147	98	179	18.69	160	158	161	2.12	87	83	94	4.39	98	82	120	8.88	110	88	139	11.26
Max. height, BU	528	488	586	51.60	543	403	658	50.83	565	557	572	10.61	387	367	425	22.98	476	435	586	43.96	497	363	629	47.84
Extensibility, mm	180	155	214	30.37	202	153	234	19.02	215	214	215	0.71	160	157	165	3.16	151	105	177	17.19	162	127	190	11.40
Mikogram																								
Water absorption, % (14% mb)	60.1	60.1	60.1	0.00	61.4	59.7	63.0	0.84	64.5	64.4	64.5	0.07	59.8	59.7	59.9	0.07	60.1	59.5	61.3	0.60	60.1	59.4	61.2	0.46
Peak time, min	5.6	5.4	5.7	0.15	3.8	3.0	5.3	0.51	3.6	3.5	3.6	0.07	4.0	3.4	4.4	0.39	4.6	3.5	5.4	0.44	4.5	3.6	5.5	0.42
100 g Baking Test																								
Loaf volume, cm³	952	942	964	11.24	1077	952	1192	52.92	1244	1220	1268	33.94	953	900	1000	36.89	980	786	1111	74.76	982	774	1073	67.76
Number of samples	3				30				2				5				15				44			

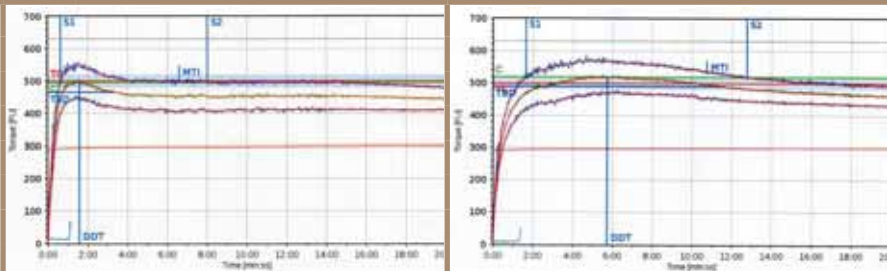
Table 9: Summary of the quality results of imported wheat during the 2023/24 season
(continue)

Quality parameter	Poland			Russian Federation			USA			RSA crop average 2023/24		
	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev	Ave	Min	Max	Stdev
Hectolitre mass, kg/hl	78.2	76.0	80.5	1.17	76.8	73.8	78.8	1.19	79.2	77.9	80.1	1.08
Screenings (<1.8mm), %	2.08	0.73	3.70	0.75	2.66	1.07	5.59	1.11	1.44	1.05	1.90	0.36
1000 Kernel mass, g (13 % mb)	38.7	35.4	41.5	1.89	38.3	31.6	44.0	2.99	36.4	35.8	36.9	0.44
WWF Moisture, %	12.1	11.3	13.1	0.44	11.8	10.9	13.1	0.50	12.4	11.8	13.2	0.72
WWF Protein (12% mb), %	11.0	9.2	12.5	0.84	11.2	10.8	12.2	0.32	9.4	9.2	9.4	0.11
WWF Falling number, sec	329	238	462	47.20	353	255	548	79.23	371	348	404	21.16
Number of samples	31			31			5			335		
Extraction, % (Bühler)	73.1	70.8	74.2	0.73	73.3	72.5	74.7	0.53	70.8	68.8	72.2	1.44
Flour moisture, %	13.6	12.7	14.3	0.38	13.3	12.4	13.8	0.39	13.1	12.9	13.5	0.23
Flour Protein, % (12 % mb)	9.6	7.5	11.4	1.0	9.9	9.6	10.9	0.3	7.4	7.3	7.5	0.1
Ash, % (db)	0.51	0.44	0.56	0.04	0.58	0.52	0.68	0.04	0.46	0.44	0.49	0.02
Konica Minolta CM-5 colour, L*	93.64	93.02	95.20	0.63	93.32	92.99	94.40	0.25	95.07	94.95	95.19	0.10
Konica Minolta CM-5 colour, a*	0.44	0.22	0.64	0.11	0.48	0.42	0.58	0.03	0.19	0.15	0.22	0.03
Konica Minolta CM-5 colour, b*	9.89	8.28	11.16	0.73	10.88	10.20	11.41	0.28	8.37	8.29	8.44	0.06
Gluten												
Wet gluten, % (14 % mb)	25.1	18.3	32.8	2.74	24.6	22.2	28.4	1.57	17.7*	-	-	-
Dry gluten, % (14 % mb)	8.5	5.8	11.0	0.96	8.2	7.0	9.4	0.56	5.6*	-	-	-
Gluten Index	98	95	99	1.03	98	95	99	0.89	98*	-	-	-
Fatnogram												
Water absorption, % (14% mb)	55.3	50.5	60.4	2.29	56.3	53.5	57.7	0.95	49.2	48.3	50.0	0.62
Dev. time,min	1.6	1.0	4.2	0.61	1.7	1.3	9.0	1.36	1.0	1.0	1.0	0.00
Stability, mm	6.4	1.2	16.1	3.97	8.4	2.6	15.3	3.59	2.0	1.3	4.2	1.25
Alveogram												
Strength, cm²	33.8	13.1	46.8	9.23	34.1	25.1	50.9	5.11	13.9	12.4	16.4	1.59
Stability, mm	72	41	87	13.80	78	57	90	8.22	39	32	48	7.98
Distensibility, mm	94	59	135	16.83	87	67	128	10.70	81	59	96	16.43
P/L	0.77	0.50	1.01	0.14	0.90	0.66	1.18	0.14	0.51	0.33	0.81	0.22
Extensogram												
Strength, cm²	91	56	122	15.66	91	78	106	8.31	56	48	65	6.11
Max. height, BU	422	257	531	49.43	455	387	537	43.32	349	224	422	75.67
Extensibility, mm	158	105	193	22.38	148	134	163	7.20	117	103	149	18.32
Mixogram												
Water absorption, % (14% mb)	59.5	57.8	61.4	0.90	59.7	59.4	60.8	0.35	57.7	57.7	57.8	0.05
Peak time, min	4.5	2.9	5.5	0.61	4.9	4.0	5.4	0.41	4.9	4.4	5.5	0.55
100 g Baking Test												
Loaf volume, cm³	953	725	1096	93.53	979	871	1093	50.57	899	872	954	34.46
Number of samples	31			31			5			65		

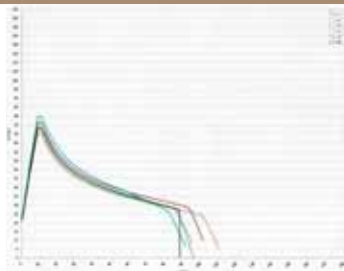
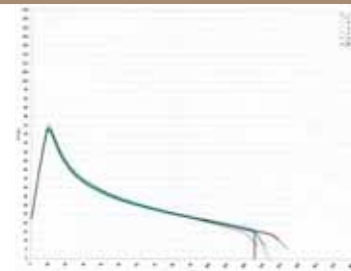
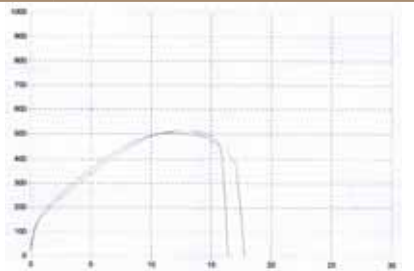
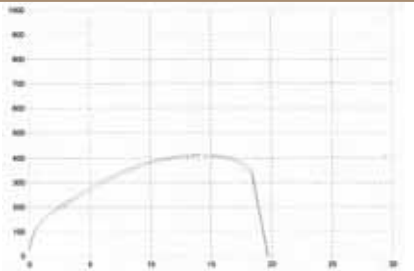
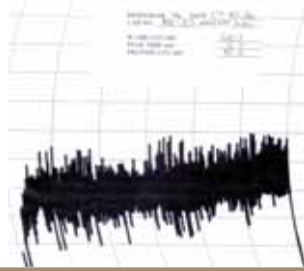
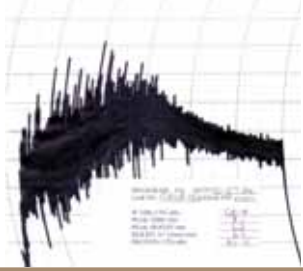
*Note: Only one sample's gluten results are available due to clogging of the 88 µm Glutomatic sieve.

Imported Wheat Quality - Argentina (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

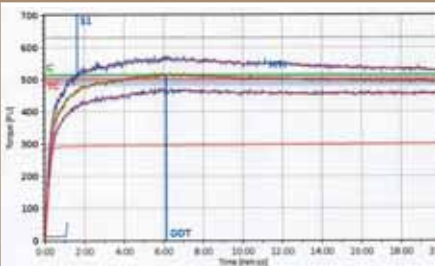
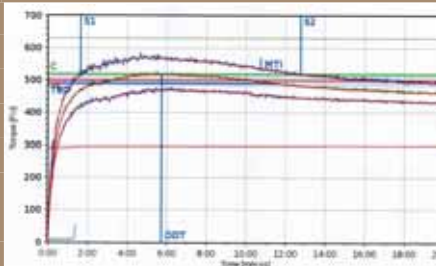
Country of origin	Argentina Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	1	2	-	-	3	64	83	70	33	85	335
WHEAT												
GRADING												
Protein (12% mb), %	-	11.5	11.5	-	-	11.5	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	-	12.2	11.8	-	-	11.9	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	-	277	288	-	-	284	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	-	37.5	33.2	-	-	34.6	38.1	40	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	-	76.1	76.3	-	-	76.2	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	-	1.58	2.44	-	-	2.15	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	-	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	0.00	0.13	-	-	0.09	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	-	0.00	0.12	-	-	0.08	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	-	0.16	0.20	-	-	0.19	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	-	0.00	0.00	-	-	0.00	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	-	0.4	0.84	-	-	0.69	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	-	0.00	0.24	-	-	0.16	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	-	0.56	1.28	-	-	1.04	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	-	2.14	3.97	-	-	3.36	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	-	0.00	0.00	-	-	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	-	0.44	0.16	-	-	0.25	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	-	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	-	0.00	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	-	0	0	-	-	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	-	0	0	-	-	0	0	0	0	0	0	0
Live insects	-	No	No	-	-	No	No	No	No	No	No	No
Undesirable odour	-	No	No	-	-	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	1	2	-	-	3	16	20	15	10	4	65
Bühler Extraction, %	-	72.4	72.8	-	-	72.7	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	-	93.28	93.18	-	-	93.21	93.62	93.67	93.89	93.82	93.72	93.73
a*	-	0.43	0.43	-	-	0.43	0.54	0.54	0.50	0.47	0.57	0.52
b*	-	10.32	10.36	-	-	10.35	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	-	0.56	0.56	-	-	0.56	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	-	10.3	10.3	-	-	10.3	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	-	24.9	25.9	-	-	25.6	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	-	8.3	8.5	-	-	8.4	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	-	98	98	-	-	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	-	60.1	60.1	-	-	60.1	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	-	964	946	-	-	952	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	-	55.8	55.8	-	-	55.8	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	-	1.4	1.4	-	-	1.4	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	-	7.2	11.7	-	-	10.2	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	-	49	41	-	-	43	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

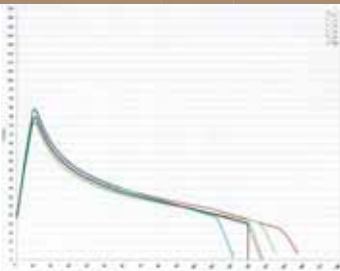
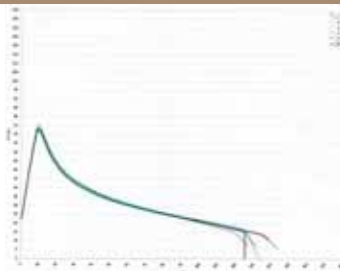
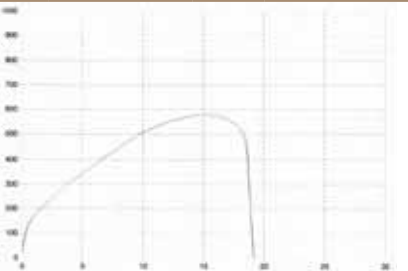
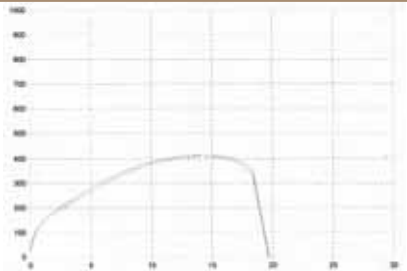
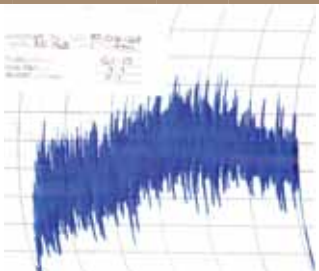
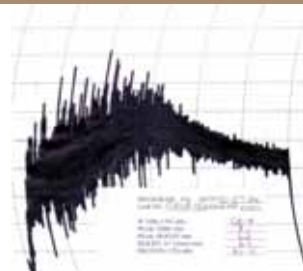
Country of origin	Argentina Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	1	2	-	-	3	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	-	39.3	39.0	-	-	39.1	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	-	82	83	-	-	83	77	79	84	80	79	80
Distensibility (L), mm	-	89	89	-	-	89	145	129	103	102	116	122
P/L	-	0.92	0.94	-	-	0.93	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	-	118	130	-	-	126	131	115	97	87	104	110
Max. height, BU	-	509	537	-	-	528	422	416	401	351	396	403
Extensibility, mm	-	172	185	-	-	180	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	-	5.6	5.6	-	-	5.6	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	-	60.1	60.1	-	-	60.1	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	0 [0]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	1						40					

Imported Wheat Quality - Australia (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

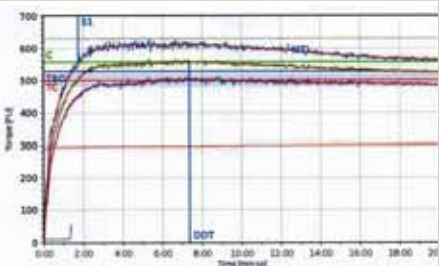
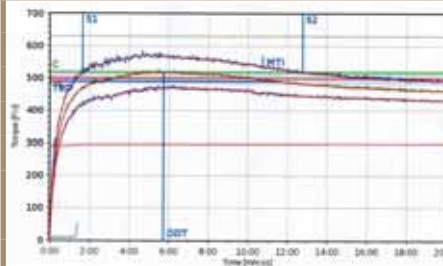
Country of origin	Australia Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	8	16	2	-	4	30	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	13.4	12.2	11.4	-	12.2	12.5	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	10.8	10.7	12.5	-	10.2	10.8	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	549	485	428	-	601	513	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	36.1	34.7	43.3	-	32.9	35.4	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	81.1	82.4	80.4	-	84.6	82.2	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	1.94	1.86	1.34	-	6.44	2.46	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	0.00	0.00	0.34	-	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.13	0.05	0.34	-	0.09	0.09	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	0.25	0.22	0.32	-	0.58	0.28	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	0.00	0.00	0.08	-	0.00	0.01	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	0.42	0.01	0.00	-	0.00	0.12	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	0.03	0.03	0.02	-	0.00	0.03	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	0.00	0.10	0.12	-	0.05	0.07	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	0.46	0.14	0.22	-	0.05	0.22	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	2.77	2.26	2.56	-	7.16	3.07	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	0.02	0.02	0.00	-	0.00	0.02	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	0.45	0.22	0.63	-	0.12	0.30	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	0	0	0	-	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	0	0	0	-	0	0	0	0	0	0	0	0
Live insects	No	No	No	-	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	-	No	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	8	16	2	-	4	30	16	20	15	10	4	65
Bühler Extraction, %	70.6	72.6	73.5	-	71.0	71.9	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	93.91	94.03	93.48	-	93.87	93.94	93.62	93.67	93.89	93.82	93.72	93.73
a*	0.57	0.52	0.52	-	0.55	0.53	0.54	0.54	0.50	0.47	0.57	0.52
b*	9.80	9.70	9.80	-	10.26	9.81	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	0.56	0.58	0.51	-	0.57	0.57	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	12.3	11.1	9.9	-	11.3	11.4	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	32.6	28.6	25.6	-	29.4	29.6	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	11.2	10.8	8.8	-	9.9	10.7	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	98	98	98	-	98	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	62.5	61.1	59.8	-	61.3	61.4	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm³	1118	1074	956	-	1066	1077	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	61.2	59.1	54.9	-	59.3	59.4	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	8.0	6.3	1.8	-	6.9	6.5	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	20.0	16.8	11.8	-	20.0	17.7	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	14	20	31	-	18	19	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

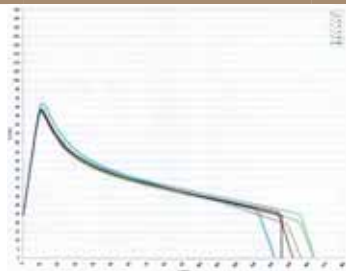
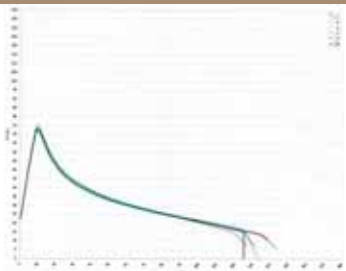
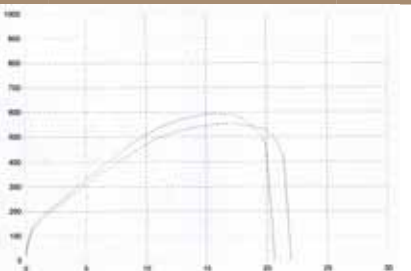
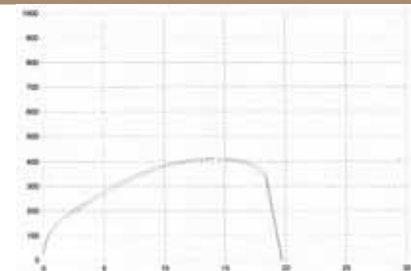
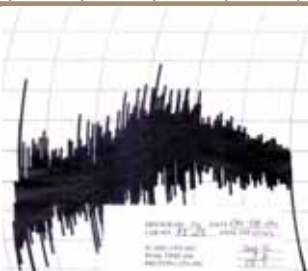
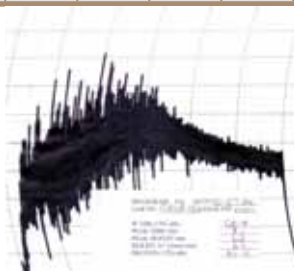
Country of origin	Australia Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	8	16	2	-	4	30	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	53.8	49.6	36.0	-	51.2	50.0	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	87	87	69	-	89	86	77	79	84	80	79	80
Distensibility (L), mm	145	124	113	-	129	129	145	129	103	102	116	122
P/L	0.61	0.71	0.61	-	0.69	0.68	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	159	146	112	-	151	147	131	115	97	87	104	110
Max. height, BU	523	555	517	-	543	543	422	416	401	351	396	403
Extensibility, mm	225	197	162	-	206	202	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	3.3	3.9	5.2	-	3.5	3.8	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	62.5	61.1	59.8	-	61.3	61.4	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	0 [<100]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	8						40					

Imported Wheat Quality - Canada (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

Country of origin	Canada Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	2	-	-	-	-	2	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	14.8	-	-	-	-	14.8	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	12.9	-	-	-	-	12.9	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	375	-	-	-	-	375	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	33.8	-	-	-	-	33.8	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	83.4	-	-	-	-	83.4	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	1.35	-	-	-	-	1.35	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	0.00	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.05	-	-	-	-	0.05	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	0.28	-	-	-	-	0.28	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	0.00	-	-	-	-	0.00	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	0.09	-	-	-	-	0.09	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	0.27	-	-	-	-	0.27	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	0.16	-	-	-	-	0.16	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	0.52	-	-	-	-	0.52	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	2.20	-	-	-	-	2.20	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	1.08	-	-	-	-	1.08	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	0.08	-	-	-	-	0.08	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	0.00	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	0.02	-	-	-	-	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	0	-	-	-	-	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	0	-	-	-	-	0	0	0	0	0	0	0
Live insects	No	-	-	-	-	No	No	No	No	No	No	No
Undesirable odour	No	-	-	-	-	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	2	-	-	-	-	2	16	20	15	10	4	65
Bühler Extraction, %	71.5	-	-	-	-	71.5	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	92.83	-	-	-	-	92.83	93.62	93.67	93.89	93.82	93.72	93.73
a*	0.68	-	-	-	-	0.68	0.54	0.54	0.50	0.47	0.57	0.52
b*	10.27	-	-	-	-	10.27	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	0.55	-	-	-	-	0.55	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	13.6	-	-	-	-	13.6	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	33.6	-	-	-	-	33.6	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	11.9	-	-	-	-	11.9	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	97	-	-	-	-	97	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	64.5	-	-	-	-	64.5	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	1244	-	-	-	-	1244	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	61.4	-	-	-	-	61.4	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	7.8	-	-	-	-	7.8	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	20.0	-	-	-	-	20.0	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	20	-	-	-	-	20	30	36	36	38	34	35
												

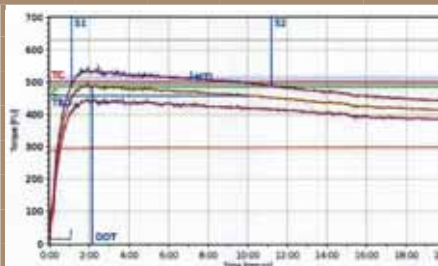
2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

Country of origin	Canada Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	2	-	-	-		2	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	63.7	-	-	-	-	63.7	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	94	-	-	-	-	94	77	79	84	80	79	80
Distensibility (L), mm	138	-	-	-	-	138	145	129	103	102	116	122
P/L	0.69	-	-	-	-	0.69	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	160	-	-	-	-	160	131	115	97	87	104	110
Max. height, BU	565	-	-	-	-	565	422	416	401	351	396	403
Extensibility, mm	215	-	-	-	-	215	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	3.6	-	-	-	-	3.6	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	64.5	-	-	-	-	64.5	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	0 [0]						66 [478]					
15-ADON (µg/kg) [max. value]	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	1						40					

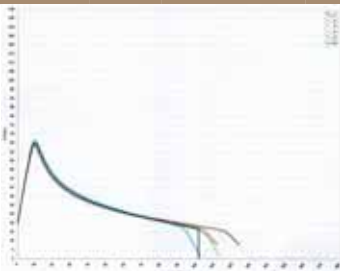
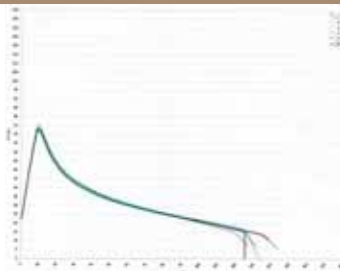
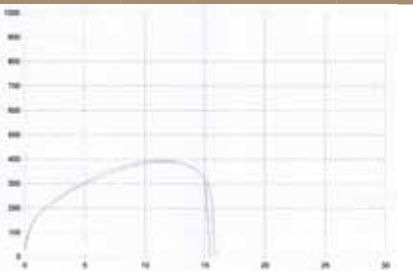
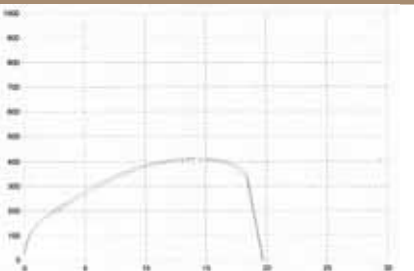
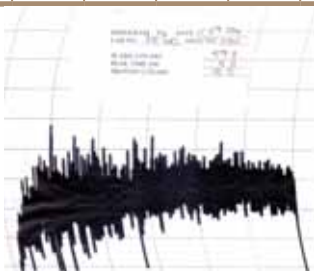
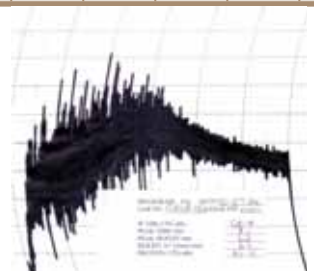
Imported Wheat Quality - Estonia (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

Country of origin	Estonia Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	5	-	-	5	64	83	70	33	85	335
WHEAT												
GRADING												
Protein (12% mb), %	-	-	11.3	-	-	11.3	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	-	-	11.9	-	-	11.9	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	-	-	308	-	-	308	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	-	-	42.4	-	-	42.4	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	-	-	79.7	-	-	79.7	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	-	-	0.81	-	-	0.81	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	-	-	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	-	0.15	-	-	0.15	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	-	-	0.68	-	-	0.68	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	-	-	0.01	-	-	0.01	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	-	-	0.12	-	-	0.12	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	-	-	0.73	-	-	0.73	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	-	-	0.02	-	-	0.02	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	-	-	0.88	-	-	0.88	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	-	-	2.52	-	-	2.52	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	-	-	0.00	-	-	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	-	-	0.33	-	-	0.33	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	-	-	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	-	-	0.00	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	-	-	0	-	-	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	-	-	0	-	-	0	0	0	0	0	0	0
Live insects	-	-	No	-	-	No	No	No	No	No	No	No
Undesirable odour	-	-	No	-	-	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	5	-	-	5	16	20	15	10	4	65
Bühler Extraction, %	-	-	72.6	-	-	72.6	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	-	-	93.18	-	-	93.18	93.62	93.67	93.89	93.82	93.72	93.73
a*	-	-	0.48	-	-	0.48	0.54	0.54	0.50	0.47	0.57	0.52
b*	-	-	9.67	-	-	9.67	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	-	-	0.53	-	-	0.53	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	-	-	10.0	-	-	10.0	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	-	-	26.7	-	-	26.7	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	-	-	8.9	-	-	8.9	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	-	-	97	-	-	97	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	-	-	59.8	-	-	59.8	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	-	-	953	-	-	953	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	-	-	56.3	-	-	56.3	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	-	-	2.1	-	-	2.1	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	-	-	9.4	-	-	9.4	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	-	-	30	-	-	30	30	36	38	34	34	35

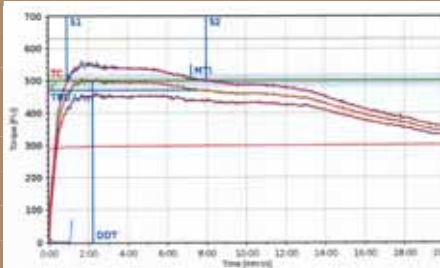
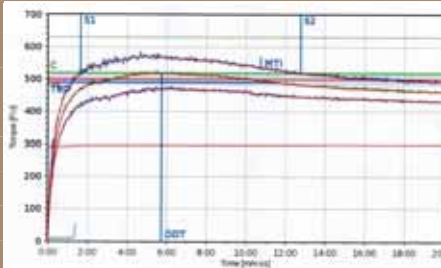


2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

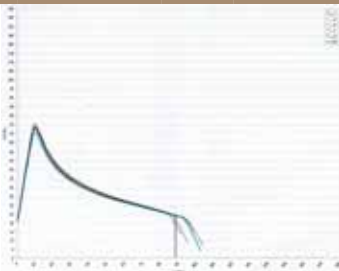
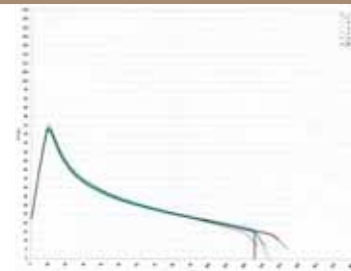
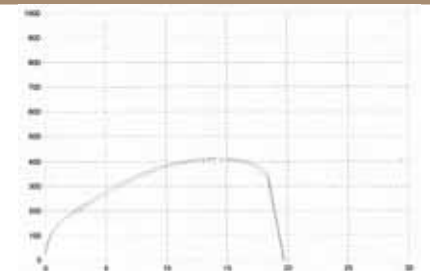
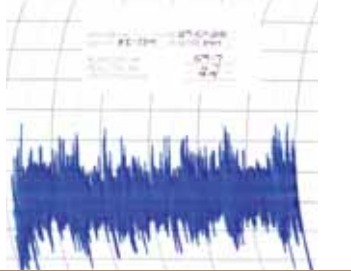
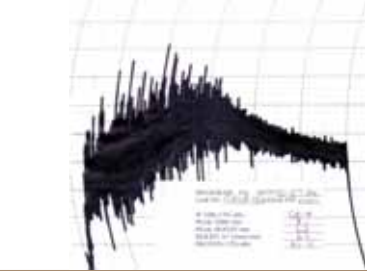
Country of origin	Estonia Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	5	-	-	5	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	-	-	32.1	-	-	32.1	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	-	-	73	-	-	73	77	79	84	80	79	80
Distensibility (L), mm	-	-	96	-	-	96	145	129	103	102	116	122
P/L	-	-	0.76	-	-	0.76	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	-	-	87	-	-	87	131	115	97	87	104	110
Max. height, BU	-	-	387	-	-	387	422	416	401	351	396	403
Extensibility, mm	-	-	160	-	-	160	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	-	-	4.0	-	-	4.0	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	-	-	59.8	-	-	59.8	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	0 [0]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	1						40					

Imported Wheat Quality - Latvia (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

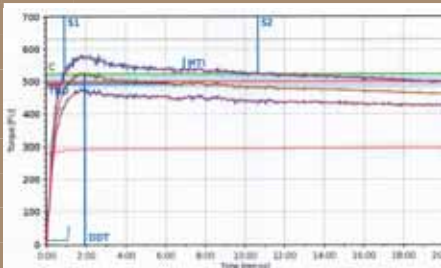
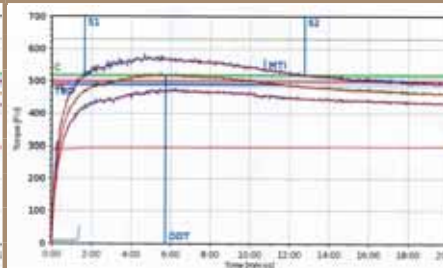
Country of origin	Latvia Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	1	4	6	-	4	15	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	12.6	12.1	11.2	-	11.4	11.6	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	14.4	12.3	12.0	-	12.3	12.3	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	330	314	305	-	318	312	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	40.9	41.4	41.2	-	42.4	41.6	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	76.4	76.4	77.5	-	77.9	77.2	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	1.80	1.61	2.11	-	1.14	1.69	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.12	0.10	0.08	-	0.14	0.10	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	0.14	0.20	0.18	-	0.73	0.33	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	0.00	0.00	0.00	-	0.08	0.02	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	0.00	0.00	0.01	-	0.05	0.02	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	2.00	1.68	0.37	-	0.19	0.78	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	0.00	0.16	0.01	-	0.04	0.06	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	2.00	1.84	0.4	-	0.35	0.87	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	4.06	3.73	2.76	-	2.35	3.00	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	0.00	0.00	0.00	-	0.00	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	0.14	0.10	0.38	-	2.06	0.73	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	0	0	0	-	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	0	0	0	-	3	1	0	0	0	0	0	0
Live insects	No	No	No	-	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	-	No	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	1	4	6	-	4	15	16	20	15	10	4	65
Bühler Extraction, %	71.7	72.1	73.6	-	73.4	73.0	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	90.73	92.74	93.24	-	93.31	92.96	93.62	93.67	93.89	93.82	93.72	93.73
a*	0.54	0.49	0.46	-	0.48	0.48	0.54	0.54	0.50	0.47	0.57	0.52
b*	9.67	7.46	10.21	-	10.18	9.43	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	0.60	0.53	0.53	-	0.60	0.55	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	11.3	10.8	10.0	-	9.8	10.2	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	24.7	26.2	24.9	-	24.4	25.1	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	8.4	8.8	8.4	-	8.2	8.5	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	99	98	98	-	99	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	61.3	60.7	59.8	-	59.6	60.1	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	786	957	988	-	1041	980	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	59.7	56.6	56.6	-	56.4	56.7	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	5.1	4.1	1.5	-	1.6	2.4	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	5.6	8.4	6.6	-	9.1	7.7	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	135	45	42	-	35	47	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

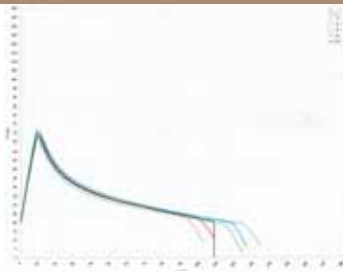
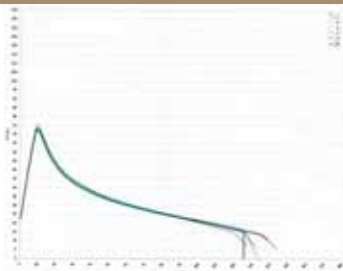
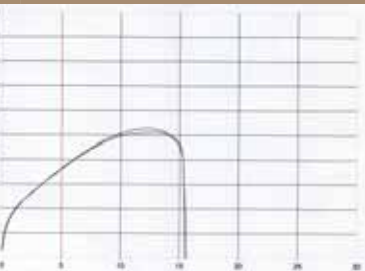
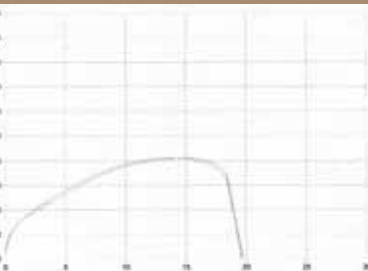
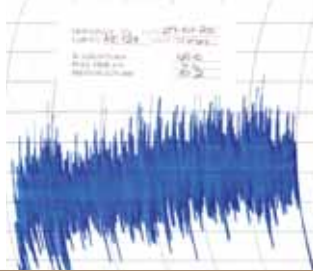
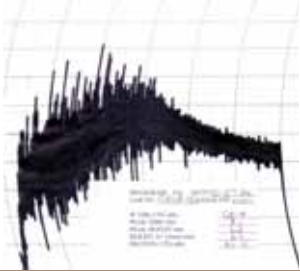
Country of origin	Latvia Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	1	4	6	-	4	15	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	22.0	37.2	36.0	-	35.8	35.3	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	77	85	78	-	83	81	77	79	84	80	79	80
Distensibility (L), mm	79	91	95	-	84	90	145	129	103	102	116	122
P/L	0.97	0.95	0.84	-	0.99	0.92	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	82	104	98	-	94	98	131	115	97	87	104	110
Max. height, BU	586	499	458	-	444	476	422	416	401	351	396	403
Extensibility, mm	105	150	157	-	156	151	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	4.4	4.6	4.6	-	4.8	4.6	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	61.3	60.7	59.8	-	59.6	60.1	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	5 [21]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	99 [237]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	4						40					

Imported Wheat Quality - Lithuania (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

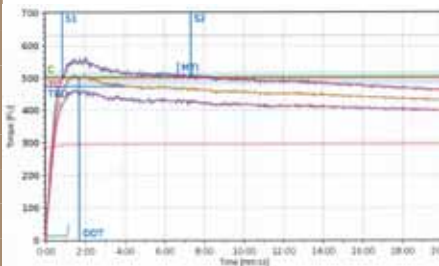
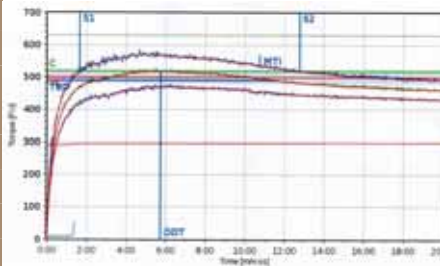
Country of origin	Lithuania Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	2	2	14	1	6	44	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	12.5	11.8	11.1	11.3	11.3	11.5	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	12.2	12.2	12.3	12.9	13.3	12.4	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	401	358	344	271	270	342	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	48.6	43.3	43.3	38.0	40.2	43.0	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	81.7	78.7	78.9	75.4	73.5	78.1	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	0.72	1.42	1.03	2.15	2.13	1.38	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.02	0.06	0.04	0.06	0.09	0.06	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	0.14	0.19	0.19	0.64	0.42	0.23	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	0.00	0.05	0.06	0.00	0.00	0.05	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	0.00	0.01	0.01	0.00	0.02	0.01	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	0.02	0.20	0.13	0.18	0.82	0.25	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	0.00	0.05	0.04	1.76	1.02	0.21	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	0.02	0.31	0.24	1.94	1.85	0.52	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	0.90	1.99	1.51	4.79	4.49	2.19	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	1.01	0.87	0.44	0.24	0.16	0.63	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	2	21	14	1	6	44	16	20	15	10	4	65
Bühler Extraction, %	75.6	74.2	73.8	73.1	73.4	74.0	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	93.41	93.17	93.24	93.33	92.47	93.11	93.62	93.67	93.89	93.82	93.72	93.73
a*	0.50	0.52	0.50	0.56	0.48	0.51	0.54	0.54	0.50	0.47	0.57	0.52
b*	10.25	10.13	10.14	10.14	9.63	10.07	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	0.51	0.49	0.52	0.52	0.50	0.50	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	11.1	10.5	9.8	10.0	10.0	10.2	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	26.1	26.5	24.8	25.9	22.9	25.4	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	8.9	9.0	8.4	8.7	7.9	8.6	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	99	98	99	98	99	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	61.1	60.3	59.7	59.8	59.8	60.1	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm³	1033	1014	936	993	957	982	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	54.6	55.5	55.8	56.6	56.8	55.8	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	2.3	1.7	1.5	1.5	4.5	2.0	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	20.0	11.7	7.8	4.3	7.3	10.1	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	20	34	41	51	57	39	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

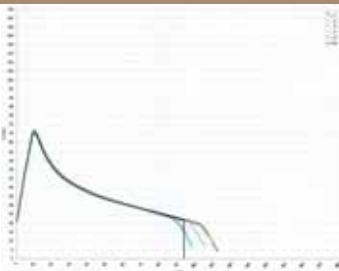
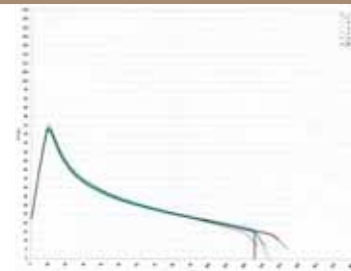
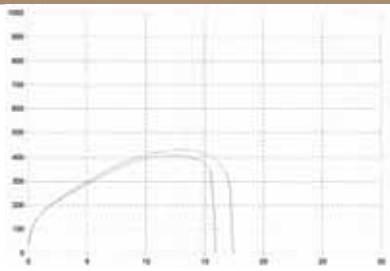
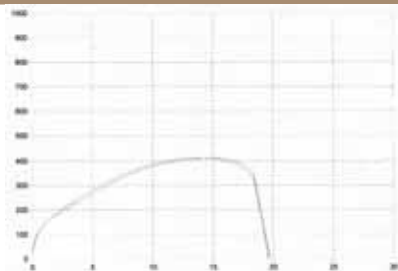
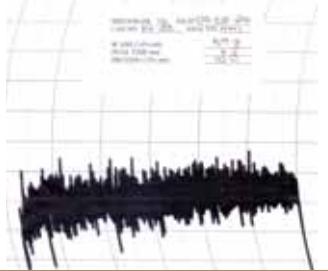
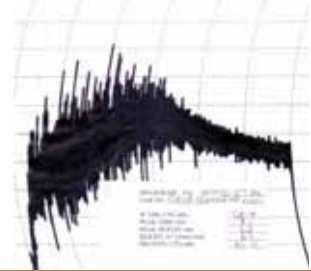
Country of origin	Lithuania Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	2	21	14	1	6	44	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	40.0	37.8	36.8	35.0	34.2	37.0	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	65	74	75	74	86	76	77	79	84	80	79	80
Distensibility (L), mm	117	104	102	97	83	101	145	129	103	102	116	122
P/L	0.56	0.73	0.73	0.76	1.09	0.77	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	137	111	110	106	103	110	131	115	97	87	104	110
Max. height, BU	471	501	495	450	500	497	422	416	401	351	396	403
Extensibility, mm	173	163	163	173	151	162	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	5.0	4.6	4.4	4.3	4.7	4.5	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	61.1	60.3	59.7	59.8	59.8	60.1	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	0 [0]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	12						40					

Imported Wheat Quality - Poland (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

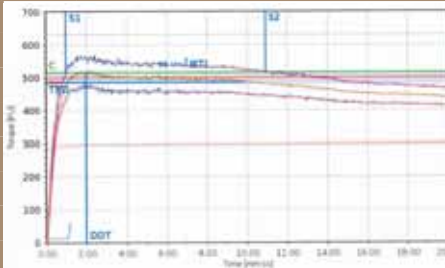
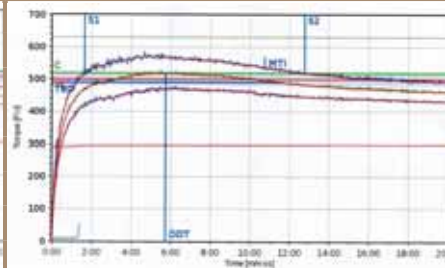
Country of origin	Poland Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	1	5	18	3	4	31	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	12.5	11.9	11.1	9.5	10.4	11.0	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	12.3	12.5	11.8	12.6	12.2	12.1	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	445	360	307	352	346	329	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	39.0	40.6	38.6	37.7	37.4	38.7	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	79.3	78.3	77.8	80.3	78.2	78.2	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	2.95	2.13	2.13	0.75	2.60	2.08	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	0.04	0.08	0.13	0.49	0.27	0.17	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	0.56	0.66	0.26	0.31	0.43	0.36	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	0.00	0.00	0.01	0.03	0.00	0.01	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	0.08	0.12	0.12	0.07	0.05	0.11	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	0.00	0.00	0.06	0.08	0.08	0.05	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	0.08	0.12	0.19	0.17	0.13	0.17	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	3.63	2.98	2.71	1.72	3.42	2.78	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	0.08	0.05	0.34	0.13	0.14	0.24	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	0	0	0	0	0	0	0	0	0	0	0	0
Live insects	No	No	No	No	No	No	No	No	No	No	No	No
Undesirable odour	No	No	No	No	No	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	1	5	18	3	4	31	16	20	15	10	4	65
Bühler Extraction, %	74.1	73.6	73.3	71.8	72.8	73.1	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	93.02	93.36	93.4	95.02	94.14	93.64	93.62	93.67	93.89	93.82	93.72	93.73
a*	0.64	0.53	0.46	0.23	0.38	0.44	0.54	0.54	0.50	0.47	0.57	0.52
b*	9.98	9.87	10.20	8.66	9.41	9.89	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	0.51	0.51	0.52	0.45	0.49	0.51	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	11.4	10.6	9.8	7.6	8.8	9.6	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	32.8	28.0	24.1	-	23.8	25.1	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	11.0	9.5	8.2	-	7.8	8.5	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	97	98	99	-	97	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	61.4	60.5	59.6	58.2	58.9	59.6	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	916	1011	972	848	886	953	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	60.4	56.9	55.8	50.6	53.6	55.3	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	4.2	1.9	1.5	1.0	1.2	1.5	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	10.4	11.5	6.0	1.4	4.5	6.4	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	31	30	45	97	76	51	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

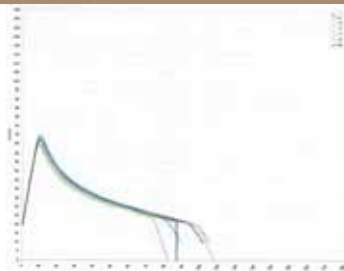
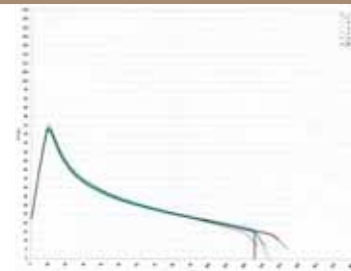
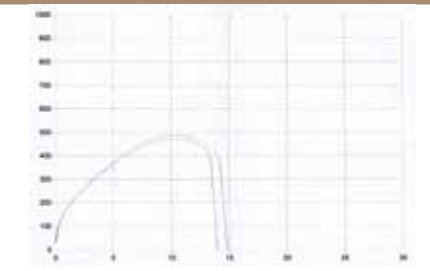
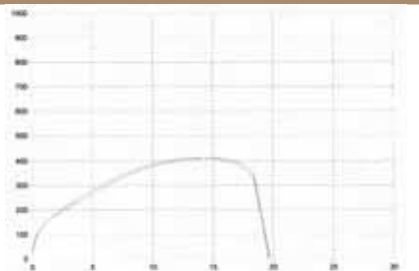
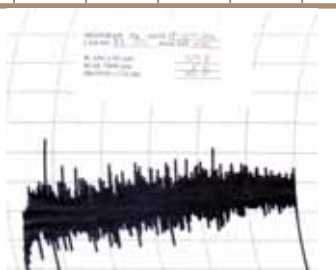
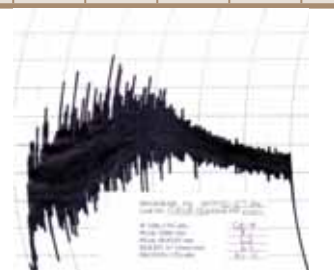
Country of origin	Poland Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	1	5	18	3	4	31	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	46.8	41.3	35.8	15.2	26.2	33.8	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	84	81	76	43	60	72	77	79	84	80	79	80
Distensibility (L), mm	135	106	93	72	88	94	145	129	103	102	116	122
P/L	0.62	0.77	0.83	0.61	0.69	0.77	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	96	104	95	63	78	91	131	115	97	87	104	110
Max. height, BU	355	475	421	365	418	422	422	416	401	351	396	403
Extensibility, mm	193	162	165	129	133	158	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	2.9	4.1	4.7	5.3	4.4	4.5	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	61.4	60.5	59.6	57.9	58.9	59.5	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	55 [308]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	9						40					

Imported Wheat Quality - Russian Federation (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

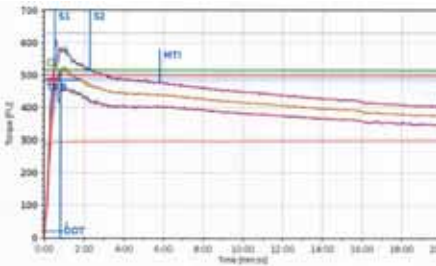
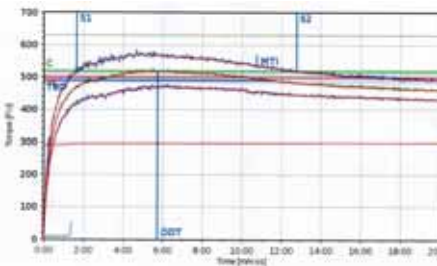
Country of origin	Russian Federation Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	13	1	17	31	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	-	-	11.3	11.6	11.2	11.2	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	-	-	11.9	10.9	11.8	11.8	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	-	-	333	443	362	353	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	-	-	39.0	35.4	37.9	38.3	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	-	-	77.6	75.7	76.3	76.8	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	-	-	1.76	2.50	3.37	2.66	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	-	0.17	0.04	0.28	0.22	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	-	-	0.25	0.00	0.21	0.22	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	-	-	0.00	0.00	0.05	0.03	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	-	-	0.01	0.00	0.01	0.01	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	-	-	0.16	0.12	0.43	0.31	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	-	-	0.09	0.00	0.08	0.09	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	-	-	0.26	0.12	0.57	0.43	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	-	-	2.43	2.66	4.43	3.54	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	-	-	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	-	-	0.72	0.66	1.13	0.94	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	-	-	0	0	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	-	-	1	0	6	4	0	0	0	0	0	0
Live insects	-	-	No	No	No	No	No	No	No	No	No	No
Undesirable odour	-	-	No	No	No	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	13	1	17	31	16	20	15	10	4	65
Bühler Extraction, %	-	-	73.3	73.8	73.2	73.3	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	-	-	93.32	93.39	93.32	93.32	93.62	93.67	93.89	93.82	93.72	93.73
a*	-	-	0.48	0.42	0.48	0.48	0.54	0.54	0.50	0.47	0.57	0.52
b*	-	-	10.88	10.77	10.89	10.88	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	-	-	0.56	0.64	0.59	0.58	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	-	-	10.0	10.1	9.9	9.9	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	-	-	25.0	25.3	24.2	24.6	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	-	-	8.3	8.4	8.0	8.2	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	-	-	98	97	98	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	-	-	59.7	59.9	59.7	59.7	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	-	-	1004	967	960	979	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	-	-	56.7	56.8	56.1	56.3	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	-	-	1.5	1.4	1.9	1.7	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	-	-	8.7	11.4	8.0	8.4	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	-	-	35	32	37	36	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

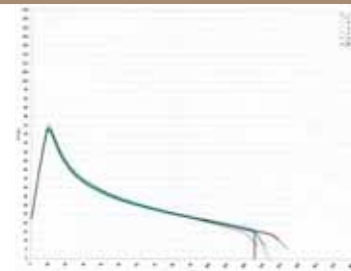
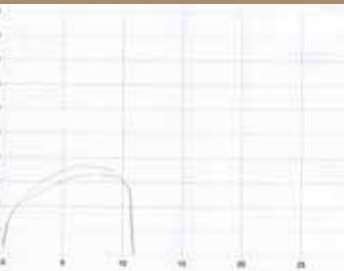
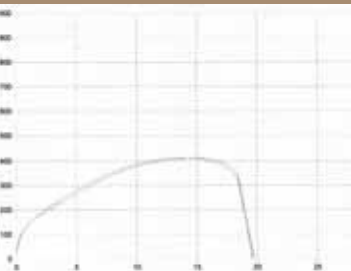
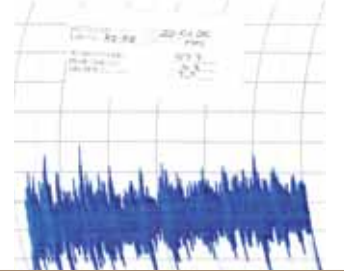
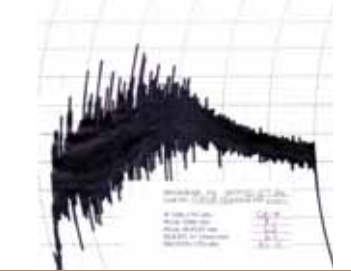
Country of origin	Russian Federation Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	13	1	17	31	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	-	-	35.3	34.6	33.1	34.1	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	-	-	81	80	75	78	77	79	84	80	79	80
Distensibility (L), mm	-	-	87	85	88	87	145	129	103	102	116	122
P/L	-	-	0.94	0.94	0.87	0.90	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	-	-	96	92	88	91	131	115	97	87	104	110
Max. height, BU	-	-	483	410	437	455	422	416	401	351	396	403
Extensibility, mm	-	-	147	163	148	148	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	-	-	4.8	4.8	5.0	4.9	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	-	-	59.8	59.9	59.7	59.7	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [0]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	256 [743]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	6						40					

Imported Wheat Quality - USA (30 Sep 2023 to 27 Sep 2024)

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

Country of origin	USA Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	-	-	5	5	64	83	70	33	85	335
WHEAT GRADING												
Protein (12% mb), %	-	-	-	-	9.4	9.4	13.3	12.0	11.0	10.4	11.6	11.8
Moisture, %	-	-	-	-	12.4	12.4	10.8	11.1	11.0	11.1	11.2	11.1
Falling number, sec	-	-	-	-	371	371	378	375	380	373	371	375
1000 Kernel mass (13% mb), g	-	-	-	-	36.4	36.4	38.1	40.0	40.5	38.7	38.1	39.1
Hlm (dirty), kg/hl	-	-	-	-	79.2	79.2	81.7	80.5	81.6	80.8	79.3	80.7
Screenings (<1.8 mm sieve), %	-	-	-	-	1.44	1.44	1.01	1.24	1.04	1.27	2.37	1.45
Gravel, stones, turf and glass, %	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign matter, %	-	-	-	-	0.15	0.15	0.06	0.13	0.10	0.06	0.22	0.13
Other grain & unthreshed ears, %	-	-	-	-	0.26	0.26	0.22	0.32	0.28	0.32	0.93	0.45
Heat damaged kernels, %	-	-	-	-	0.06	0.06	0.01	0.01	0.01	0.03	0.04	0.02
Immature kernels, %	-	-	-	-	0.01	0.01	0.10	0.10	0.06	0.04	0.14	0.09
Insect damaged kernels, %	-	-	-	-	0.11	0.11	0.32	0.35	0.37	0.32	0.56	0.40
Sprouted kernels, %	-	-	-	-	0.07	0.07	0.02	0.02	0.02	0.01	0.03	0.02
Total damaged kernels, %	-	-	-	-	0.25	0.25	0.45	0.48	0.45	0.39	0.76	0.53
Combined deviations, %	-	-	-	-	2.11	2.11	1.75	2.17	1.88	2.04	4.28	2.55
Heavily frost damaged kernels, %	-	-	-	-	0.00	0.00	0.05	0.00	0.04	0.00	0.02	0.02
Field fungi, %	-	-	-	-	0.52	0.52	0.28	0.32	0.22	0.27	0.60	0.36
Storage fungi, %	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ergot, %	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poisonous seeds (<i>Crotalaria spp.</i> , etc.)	-	-	-	-	0	0	0	0	0	0	0	0
Poisonous seeds (<i>Argemone mexicana</i> , etc.)	-	-	-	-	0	0	0	0	0	0	0	0
Live insects	-	-	-	-	No	No	No	No	No	No	No	No
Undesirable odour	-	-	-	-	No	No	No	No	No	No	No	No
	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	-	-	5	5	16	20	15	10	4	65
Bühler Extraction, %	-	-	-	-	70.8	70.8	73.2	73.2	72.6	72.1	71.7	72.8
FLOUR												
Colour, Konica Minolta CM5 (dry)												
L*	-	-	-	-	95.07	95.07	93.62	93.67	93.89	93.82	93.72	93.73
a*	-	-	-	-	0.19	0.19	0.54	0.54	0.50	0.47	0.57	0.52
b*	-	-	-	-	8.37	8.37	10.23	10.01	10.12	10.11	9.66	10.08
Ash (db), %	-	-	-	-	0.46	0.46	0.59	0.61	0.58	0.60	0.61	0.59
Protein (12% mb), %	-	-	-	-	7.4	7.4	12.1	11.1	9.9	9.7	10.4	10.8
Wet Gluten (14% mb), %	-	-	-	-	17.7	17.7	32.4	30.2	26.6	25.6	28.6	29.1
Dry Gluten (14% mb), %	-	-	-	-	5.6	5.6	11.0	9.9	8.5	8.3	9.4	9.6
Gluten Index	-	-	-	-	98	98	96	96	95	96	96	96
100 g BAKING TEST												
Baking water absorption, %	-	-	-	-	57.4	57.4	62.3	61.0	59.7	59.7	60.3	60.8
Loaf volume, cm ³	-	-	-	-	899	899	1140	1068	968	950	970	1038
FARINOGRAM												
Water absorption (14% mb), %	-	-	-	-	49.2	49.2	61.3	60.3	59.2	58.9	59.5	60.0
Development time, min	-	-	-	-	1.0	1.0	6.7	5.2	5.2	4.5	4.1	5.4
Stability, mm	-	-	-	-	2.0	2.0	14.3	10.5	10.2	9.5	9.5	11.2
Mixing tolerance index, BU	-	-	-	-	95	95	30	36	36	38	34	35
												

2023/24 Imported Wheat Quality Versus 2023/24 RSA Wheat Quality

Country of origin	USA Average						RSA Crop Average					
Class and Grade bread wheat	Super	Gr1	Gr2	Gr3	COW	Average	Super	Gr1	Gr2	Gr3	COW	Average
No. of samples	-	-	-	-	5	5	16	20	15	10	4	65
ALVEOGRAM												
Strength (S), cm²	-	-	-	-	13.9	13.9	44.8	40.7	36.0	33.6	37.3	39.3
Stability (P), mm	-	-	-	-	39	39	77	79	84	80	79	80
Distensibility (L), mm	-	-	-	-	81	81	145	129	103	102	116	122
P/L	-	-	-	-	0.51	0.51	0.55	0.62	0.88	0.87	0.68	0.71
												
EXTENSOGRAM												
Strength, cm²	-	-	-	-	56	56	131	115	97	87	104	110
Max. height, BU	-	-	-	-	349	349	422	416	401	351	396	403
Extensibility, mm	-	-	-	-	117	117	227	203	176	177	189	198
												
MIXOGRAM												
Peak time, min	-	-	-	-	4.9	4.9	2.9	3.0	3.2	3.0	3.2	3.0
Water absorption (14% mb), %	-	-	-	-	57.7	57.7	62.3	61.0	59.7	59.7	60.3	60.8
												
MYCOTOXINS												
Aflatoxin B ₁ (µg/kg)	0 [0]						ND					
Aflatoxin B ₂ (µg/kg)	0 [0]						ND					
Aflatoxin G ₁ (µg/kg)	0 [0]						ND					
Aflatoxin G ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₁ (µg/kg)	0 [<20]						ND					
Fumonisin B ₂ (µg/kg)	0 [0]						ND					
Fumonisin B ₃ (µg/kg)	0 [0]						ND					
Deoxynivalenol (µg/kg) [max. value]	188 [203]						66 [478]					
15-ADON (µg/kg)	0 [0]						ND					
Ochratoxin A (µg/kg)	0 [0]						ND					
Zearalenone (µg/kg)	0 [0]						ND					
HT-2 (µg/kg)	0 [0]						ND					
T-2 Toxin (µg/kg)	0 [0]						ND					
No. of samples	2						40					



ISO/IEC 17025:2017 Accreditation



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



Facility Number: T0116

ANNEXURE A
SCHEDULE OF ACCREDITATION

Facility Number: **T0116**

Permanent Address of Laboratory:

South African Grain Laboratories
Agri-Hub Office Park - Grain Building
477 Witherite Road
The Willows
Pretoria
0040

Technical Signatories:

Ms J Nortje (All Methods excl. In-house method 029)
Ms A de Jager (Nutrients & Contaminants Methods)
Ms W Louw (In-house Methods 001, 002, 003, 010 & 026)
Ms D Moleke (Rheological Methods)
Mrs H Meyer (All Chemical, Nutrients and Contaminants & Grading Methods)
Ms M Motlanthe (In-house Methods 001, 003 & 026)
Ms T de Beer (Rheological Methods)
Ms S Makhoba (In-House Method 026)
Ms T Mabobo (In-House Methods 001 & 010)
Mr J Kobola (All Grading Methods)
Ms J Ntimane (All Chemical Methods)

Postal Address:

Postnet Suite # 391
Private Bag X1
The Willows
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Nominated Representative:

Ms M Motlanthe

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Issue No.: 36

Date of Issue: 14 March 2025

Expiry Date: 31 October 2029

Material or Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Techniques / Equipment Used
CHEMICAL		
Ground Barley	Moisture (Oven Method)	Analytical EBC Method 3.2, latest Edition (2 hour; 130°C)
Cereal and cereal products specifically-wheat, rice, (hulled paddy), barley, millet, rye, and oats as grain, semolina and flour	Moisture (Oven Method)	ICC Std No.110/1, Latest Edition (90 min; 130°C) (2 hour; 130°C)
Flour, semolina, bread, all kind of grains and cereal products and food products (except those that are sugar coated)	Moisture (Oven Method)	AACCI 44-15.02, Latest Edition (1 hour; 130°C) (72 hour; 103°C)
Animal feed, Plant tissue and Sunflower (Milled)	Moisture (Oven Method)	AgriLASA 2.1 Latest Edition (% hours, 105°C)

Facility Number: T0116

All flours, cereal grains, oilseeds and animal feeds	Nitrogen and protein (Combustion method - Dumas)	AACCI 46-30.01, Latest Edition
Cereal based food stuff	Dietary fibres (Total)	In-house method 012
Food stuff and feeds	Carbohydrates (by difference) (calculation) Energy value (calculation) Total digestible nutritional value (calculation)	SOP MC 23
Food Stuff and feeds	Determination of Ash	In-house method 011
Wheat Kernels	Moisture (Oven Method)	Government Gazette Wheat Regulation, Latest Edition (72 hour, 103°C)
Flours of grains e.g. barley, oats, triticale, maize, rye, sorghum and wheat; oilseeds like soybeans and sunflower, feeds and mixed feeds and foodstuffs	Crude fat (Ether extraction by Soxhlet)	In-house method 024
Meal and flour of wheat, rye, barley, other grains, starch containing and malted products	Falling number	ICC Std 107/1, Latest Edition
NUTRIENTS AND CONTAMINANTS		
Vitamin fortified food and feed products and fortification mixes grain based	Vitamin A as all trans Retinol (Saponification) (HPLC)	In-house method 001
	Thiamine Mononitrate (HPLC) Riboflavin (HPLC) Nicotinamide (HPLC) Pyridoxine Hydrochloride (HPLC)	In-house method 002
	Folic Acid (HPLC)	In-house method 003
	Total Sodium (Na) Total Iron (Fe) Total Zinc (Zn)	In-house method 010
Grain based food and feed products (fortified and unfortified) and fortification mixes		
Yeast and Bread	Vitamin D ₂ (HPLC)	In-House method 029
Food and feed	Multi-Mycotoxin: -Aflatoxin G ₁ , B ₁ , G ₂ , B ₂ and total -Deoxynivalenol (DON), 15-ADON -Fumonisin B ₁ , B ₂ , B ₃ -Ochratoxin A -T2, HT-2 -Zearalenone	In-house method 026

Facility Number: T0116

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. 42862
29 November 2019

GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES**NO. R. 1547****29 NOVEMBER 2019**

AGRICULTURAL PRODUCT STANDARDS ACT NO. 119 OF 1990

**REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF
BREAD WHEAT 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 119 of 1990, has --

- (a) made the regulations in the Schedule;
- (b) determined that the said regulations shall come into operations on the date of publication; and
- (c) read together with section 3(1) of the said Act, repealed the regulations published by Government Notice Nos. R. 905 of 10 July 1998, R. 1421 of 6 November 1998, R.876 of 14 September 2001, R.979 of July 2002, R.1210 of 29 August 2003, R.1186 of December 2010, R.64 of 29 January 2016 and R. 1218 of 7 October 2016.

SCHEDULE**Definitions**

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

“animal filth” means dead rodents, dead birds and dung;

“bag” means a bag manufactured from --

- (a) jute or phormium or a mixture of jute and phormium; or
- (b) polypropylene that complies with SANS specification CKS632 1246:2012;

“bulk container” means any vehicle or container in which bulk wheat is stored or transported;

“consignment” means --

- (a) a quantity of wheat 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 bulk container;

“damaged wheat” means wheat --

- (a) which have been damaged by insects;

- (b) which have been distinctly discoloured (orange-brown, dark brown or black) by external heat or as a result of heating caused by internal fermentation in wheat with an excessive moisture content, excluding wheat kernels in respect of which the discolouration is confined to the germ end;
- (c) which are immature and have a distinctly green colour; and
- (d) in which germination has proceeded to such an extent that the skin covering the embryo has been broken or the developing sprouts and/or rootlets are clearly visible.

"ergot sclerotia" means the sclerotia of the fungus *Claviceps purpurea*; and "ergot" has a corresponding meaning;

"falling number" means the time in seconds according to Hagberg-Perten as a measure of the degree of Alpha-Amylase activity in grain and flour;

"field fungi-infected wheat" means wheat of which the kernels are visibly infected with fungi, and that--

- (a) clearly have greyish brush-ends that are discoloured as a whole; or where field fungi growth is present from the brush-ends into the crease; and
- (b) have a dull, lifeless, chalky or pinkish and shrunken appearance as a result of *Fusarium* infection.

"foreign matter" means all matter excluding wheat, other grain and unthreshed ears. Coal, dung, glass and metal shall not be present in the consignment concerned;

"heavily frost-damaged wheat" means --

- (a) wheat which have been damaged by severe frost during the milk to soft dough stage and which is characterised by the kernels being fairly plump, but covered entirely with small blisters extending into the crease, excluding --
 - (i) kernels in which blistering is confined to the back of the kernel; and
 - (ii) immature wrinkled kernels in which wrinkling has been caused by frost while the kernels were still immature; and
- (b) kernels which have a slightly flaked-off bran coat due to frost: Provided that evidence of frost damage is present and that the bran coat had not been rubbed off due to handling.

"hectolitre mass" means the mass in kilogram per hectolitre;

"insect" means any live grain insect that is injurious to stored grain irrespective of the stage of development of that insect;

"other grain" means the kernels or pieces of kernels of barley, oats, triticale, maize, rye and sorghum;

"poisonous seeds" means the seeds or bits of seeds of plant species that may in terms of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972 represent a hazard to human or animal health when consumed, including seeds of *Argemone mexicana*, *Convolvulus* spp., *Crotalaria* spp., *Datura* spp., *Ipomoea purpurea*, *Lolium temulentum*, *Ricinus communis* or *Xanthium* spp.;

"protein content" means the percentage protein in wheat on a 12 percent moisture basis;

“screenings” means all material that passes through the standard sieve;

“standard sieve” means a slotted sieve --

- (a) with a flat bottom of metal sheet of 1.0 mm thickness with apertures 12.7mm long and 1.8 mm wide with rounded ends. The spacing between the slots in the same row must be 2.43 mm wide and the spacing between the rows of slots must be 2.0 mm wide. The slots must be alternately orientated with a slot always opposite the solid inter segment of the next row of slots;
- (b) of which the upper surface of the sieve is smooth;
- (c) with a round frame of suitable material with an inner diameter of between 300 mm and 310 mm maximum and at least 50 mm high; and
- (d) that fits onto a tray with a solid bottom and must be at least 20 mm above the bottom of the tray.

“stinking smut infection” means wheat that is infected with *Tilletia spp.* with the exception of wheat infected with *Tilletia indica* (karnal bunt). Wheat is considered to be infected by stinking smut if one or more of the following characteristics are present--

- (a) an unmistakable stinking smut odour; or
- (b) wheat kernels that are smeared with stinking smut; or
- (c) more than four stinking smut balls (or pieces of balls equal to four stinking smut balls) per 100 g of wheat.

“storage fungi infected wheat” means wheat that are visibly infected with fungi, and that show--

- (a) blue, green, blackish or yellow fungal growth anywhere on the kernel; or
- (b) visible mould beneath the bran.

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

“unthreshed ears” means ears and bits of ears of wheat, barley, triticale and rye that still contain seeds that are completely covered with glumes; and

“wheat” means the kernels and pieces of kernels of the species *Triticum aestivum*.

Restrictions on sale of wheat

2. (1) No person shall sell a consignment of wheat in the Republic of South Africa --
- (a) unless the wheat is sold according to the classes set out in regulation 3;
 - (b) unless the wheat complies with the standards for the classes set out in regulation 4;
 - (c) unless the wheat, where applicable, complies with the grades of wheat and the standards for grades set out in regulations 5 and 6 respectively;
 - (d) unless the wheat 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 wheat 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 wheat

3. The classes of wheat are --

- (a) Bread Wheat; and
- (b) Other Wheat.

Standards for classes

4. (1) Notwithstanding the provisions of sub-regulations (2) and (3), a consignment of wheat shall --

- (a) be free from any toxin, chemical or any other substance that renders it unsuitable for human consumption or for processing into or utilisation thereof as food or feed and may not exceed the permissible deviations regarding aflatoxin in terms of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972;
- (b) not contain more poisonous seeds or ergot sclerotia than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972;
- (c) be free from organisms of phytosanitary importance as determined in terms of the Agricultural Pest Act 36 of 1983;
- (d) be free from mould infected, sour and rancid other grain and foreign matter;
- (e) be free from any undesired odour, taste or colour not typical of undamaged and sound wheat;
- (f) be free from animal filth;
- (g) be free from glass, metal, coal or dung;
- (h) with the exception of Class Other Wheat, be free from grain insects;
- (i) with the exception of Class Other Wheat, be free from stinking smut infection; and
- (j) with the exception of Class Other Wheat, have a moisture content not exceeding 13 percent.

(2) A consignment shall be classified as Bread Wheat if --

- (a) the wheat in the consignment consists of at least 95 percent (m/m) of one or more of the bread wheat seeds; and

- (b) it complies with the standards for Super Grade, Grade 1, Grade 2 or Grade 3 set out in regulation 6.

(3) A consignment of wheat shall be classified as Class Other Wheat if it does not comply with the standards for Bread Wheat.

Grades of wheat

5. (1) The grades for Bread Wheat shall be as follows:

- (a) Super Grade;
- (b) Grade 1;
- (c) Grade 2; and
- (d) Grade 3.

(2) No grades are determined for Class Other Wheat.

Standards for grades of wheat

6. (1) Subject to the provisions of subregulations (2), (3) and (4), a consignment of wheat shall be graded as --

- (a) Super Grade if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 2 of the said table opposite the deviation concerned;
- (b) Grade 1 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 3 of the said table opposite the deviation concerned;
- (c) Grade 2 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 4 of the said table opposite the deviation concerned; and
- (d) Grade 3 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 5 of the said table opposite the deviation concerned."

(2) The minimum hectolitre masses for the different grades are as follows:

- (a) Super Grade – 76 kg;
- (b) Grade 1 – 76 kg;
- (c) Grade 2 – 76 kg; and
- (d) Grade 3 – 74 kg.

- (3) (a) Super Grade, Grade 1, Grade 2 and Grade 3 shall have a minimum falling number value of not less than 250 seconds.
- (b) Notwithstanding the provision of paragraph (a), wheat shall be deemed to comply with the requirements of the paragraph concerned if it deviates with not more than 30 seconds lower than the minimum prescribed for Super Grade, Grade 1, Grade 2 and Grade 3.
- (4) The minimum protein content (on a 12 percent moisture basis) for the different grades shall be as follows:
 - (a) Super Grade – 12.5 percent;
 - (b) Grade 1 – 11.5 percent;
 - (c) Grade 2 – 10.5 percent; and
 - (d) Grade 3 – 9.5 percent.

PART II

PACKING AND MARKING REQUIREMENTS

Packing requirements

7. Wheat of different grades shall be packed in different containers, or stored separately.

Marking requirements

8. (1) Every container or the accompanying sale documents of a consignment of wheat shall be marked or endorsed by means of appropriate symbols specified in sub-regulation (2), with --
- (a) the class of the wheat; and
 - (b) the grade.
- (2) The symbols referred to in sub-regulation (1) shall appear in the order of class and grade.
- (3) The symbols used to indicate the different-
- (a) classes shall be --
 - (i) B in the case of Bread Wheat; and
 - (ii) O in the case of Other Wheat.
 - (b) grades shall be --
 - (i) SG in the case of Super Grade
 - (ii) 1 in the case of Grade 1;
 - (iii) 2 in the case of Grade 2; and
 - (iv) 3 in the case of Grade 3.

PART III**SAMPLING*****Obtaining a sample from the consignment***

9. (1) An inspection sample of a consignment of wheat shall --
- (a) in the case of wheat delivered in bags and subject to regulation 10, be obtained by sampling at least ten percent of the bags, chosen from that consignment at random, with a bag probe: Provided that at least 25 bags in a consignment shall be sampled and where a consignment consists of less than 25 bags, all the bags in that consignment shall be sampled; and
 - (b) in the case of wheat 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 by means of dividing before further examination.
- (3) If it is suspected that the sample referred to in sub-regulation (1) (a) is not representative of that consignment, an additional five percent of the remaining bags, chosen from that consignment at random, shall be emptied into a suitable bulk container and sampled in the manner contemplated in sub-regulation (1) (b).
- (4) If it is suspected that the sample referred to in sub-regulation (1) (b) is not representative of that consignment, an additional representative sample shall be obtained by using an alternative sampling pattern, apparatus or method.
- (5) A sample taken in terms of these regulations shall be deemed representative of the consignment from which it was taken.

Sampling if contents differ

10. (1) If, after an examination of the wheat 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 wheat 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 wheat already in the hopper shall be sampled anew with a bulk sampling apparatus or by catching at least 20 samples, by means of a suitable container, at regular intervals throughout the whole offloading period from the stream of wheat flowing in bulk.

Working sample

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

PART IV**DETERMINATION OF OTHER SUBSTANCES****Determination of undesirable odours and harmful substances**

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

- (a) it contains a substance that renders the wheat unfit for human consumption or for processing into or for utilisation as food or feed such as poisonous seeds, stones, glass, metal, coal or dung; and
- (b) it has a musty, sour, rancid or other undesirable odour: Provided that a working sample of unscreened wheat that is ground in a grain mill to a fine meal may be used for the determination concerned.

PART V**DETERMINATION OF CLASS, HECTOLITRE MASS,
MOISTURE CONTENT, PROTEIN CONTENT AND FALLING NUMBER****Determination of class**

13. The class of a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 500 g and screen the working sample in the manner prescribed in regulation 18.
- (b) Take at least 100 g of the screened wheat and remove all other grain, unthreshed ears and foreign matter by hand.
- (c) Obtain a working sample of at least 25 g each after all other grain, unthreshed ears and foreign matter have been removed and separate the different cultivars.
- (d) Determine the combined mass of all of the cultivars that belong to the same class and express the mass thus determined as a percentage of the mass of the working sample.
- (e) Such percentage represents the percentage of all the cultivars that belong to the same class in the consignment.

Determination of the hectolitre mass

14. The hectolitre mass of a consignment of unscreened wheat may be determined by any suitable instrument: Provided that the instrument complies with and has been calibrated to the specifications detailed in ISO (International Organization for Standardization) 7971-3.

Determination of moisture content

15. The moisture content of a consignment wheat may be determined by any suitable method: Provided that the results thus obtained is in accordance with the maximum permissible deviation for a class 1 moisture meter as detailed in ISO (International Organization for Standardization) 7700/1 based

on the results of the 72 hour, 103°C oven dried method [the latest revision of the AACCI (American Association of Cereal Chemists International) Method 44-15A].

Determination of protein content

16. The percentage of protein of a consignment of wheat may be determined according to any suitable method: Provided that --

- (a) the determination shall be conducted on a sample which had been sifted using a screen with the same apertures as the standard sieve and from which other grain, un threshed ears and foreign matter had been removed by hand; and
- (b) the results thus obtained are in accordance (± 0.3 percent) with the results obtained by the Dumas Combustion Analysis Method [the latest revision of the AACCI (American Association of Cereal Chemists International) Method 46-30].

Determination of falling number in wheat

17. (1) The falling number of a consignment of wheat may be determined according to any suitable method: Provided that --

- (a) the determination shall be conducted on a sample which had been sifted using a screen with the same apertures as the standard sieve and from which other grain, unthreshed ears and foreign matter had been removed by hand; and
- (b) the results thus obtained are in accordance (± 5 percent) with the results obtained by the latest revision of the ICC (International Association for Cereal Science and Technology) 107/1 method.

(2) If the falling number of a consignment of wheat is determined according to the latest revision of the ICC (International Association for Cereal Science and Technology) 107/1 method --

- (a) the sampling in the mentioned method shall be replaced with the manner prescribed in regulation 9; and
- (b) only the altitude corrected value shall be used.

PART VI

DETERMINATION OF PERCENTAGE DEVIATIONS

Determination of percentage screenings

18. (1) The percentage screenings in a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 500 g.
- (b) Place the sample on the standard sieve and screen the sample by moving the sieve 50 strokes to and fro, alternately away from and towards the operator of the sieve, in the same direction as the long axes of the slots of the sieve. Move the sieve, which rests on a table or other suitable smooth surface, 250 mm to 460 mm away from and towards the operator with each stroke. The prescribed 50 strokes must be completed within 50 to 60 seconds: Provided that the screening process may also be performed with the standard sieve in some or other container or an automatic sieving apparatus.
- (c) Determine the mass of the material that has passed through the sieve and express it as a percentage of the mass of the working sample.

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

Determination of the percentage heavily frost-damaged wheat

19. The percentage heavily frost-damaged wheat in a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 25 g of a screened sample.
- (b) Remove all heavily frost-damaged kernels by hand and determine the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage heavily frost-damaged wheat in the consignment concerned.

Determination of the percentages other grain and unthreshed ears

20. The percentage other grain and unthreshed ears in a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 50 g from a screened sample.
- (b) Remove all other grain and unthreshed ears by hand and determine the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage other grain and unthreshed ears in the consignment concerned.

Determination of the percentage foreign matter

21. The percentage foreign matter in a consignment of wheat is determined as follows:

- (a) Obtain a working sample of at least 100 g from a screened sample.
- (b) Remove all foreign matter by hand and determine the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage foreign matter in the consignment concerned.

Determination of the percentage damaged wheat

22. The percentage of damaged wheat in a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 25 g of a screened sample.
- (b) Remove all damaged kernels by hand and determines the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage damaged wheat in the consignment concerned.

Determination of the percentage heat-damaged wheat

23. The percentage heat-damaged wheat in a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 100 g from a screened sample.
 - (b) Remove all heat-damaged kernels by hand and determine the mass thereof. Kernels from an additional working sample may also be sensorially assessed (by smelling and tasting the kernels) to confirm suspicion of heat damage.
 - (c) Express the mass thus determined as a percentage of the mass of the working sample.
 - (d) Such percentage represents the percentage heat-damaged wheat in the consignment concerned.

Determination of percentage field fungi infected wheat

24. The percentage field fungi infected wheat in a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 25 g from a screened sample.
 - (b) Remove all field fungi infected kernels by hand and determine the mass thereof.
 - (c) Express the mass thus determined as a percentage of the mass of the working sample.
 - (d) Such percentage represents the percentage of field fungi infected wheat in the consignment concerned.

Determination of percentage storage fungi infected wheat

25. The percentage storage fungi infected wheat in a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 100 g from a screened sample.
 - (b) Remove all storage fungi infected kernels by hand and determine the mass thereof.
 - (c) Express the mass thus obtained as a percentage of the mass of the working sample.
 - (d) Such percentage represents the percentage storage fungi infected wheat in the consignment concerned.

PART VII***Offence and penalties***

26. 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 to imprisonment in accordance with section 11 of the Act.

ANNEXURE

TABLE 1
STANDARDS FOR GRADES OF BREAD WHEAT

Nature of deviation	Maximum percentage permissible deviation (m/m)			
	Super Grade	Grade 1	Grade 2	Grade 3
Column 1	Column 2	Column 3	Column 4	Column 5
(a) Heavily frost-damaged kernel	5	5	5	5
(b) Field fungi infected kernels	2	2	2	2
(c) Storage fungi infected kernels	0.5	0.5	0.5	0.5
(d) Screenings	3	3	3	3
(e) Other grain and unthreshed ears	1	1	1	1
(f) Gravel, stones and turf	0.5	0.5	0.5	0.5
(g) Foreign matter including gravel, stones and turf: Provided that such deviations are individually within the limits specified in item (f)	1	1	1	1
(h) Heat-damaged kernels	0.5	0.5	0.5	0.5
(i) Damaged kernels, including heat-damaged kernels: Provided that such deviations are individually within the limit specified in item (h) and provided further that the minimum falling number value prescribed in regulation 6(3) for the grade concerned is at least complied with	2	2	2	2
(j) Deviations in items (d), (e), (g) and (i) collectively: Provided that such deviations are individually within the limits of the said items	5	5	5	5

